



The Open University



[LearningAnalytics.net](http://LearningAnalytics.net) Open Course, Feb. 2011, (Athabasca U)

# Learning Analytics: Notes on the Future

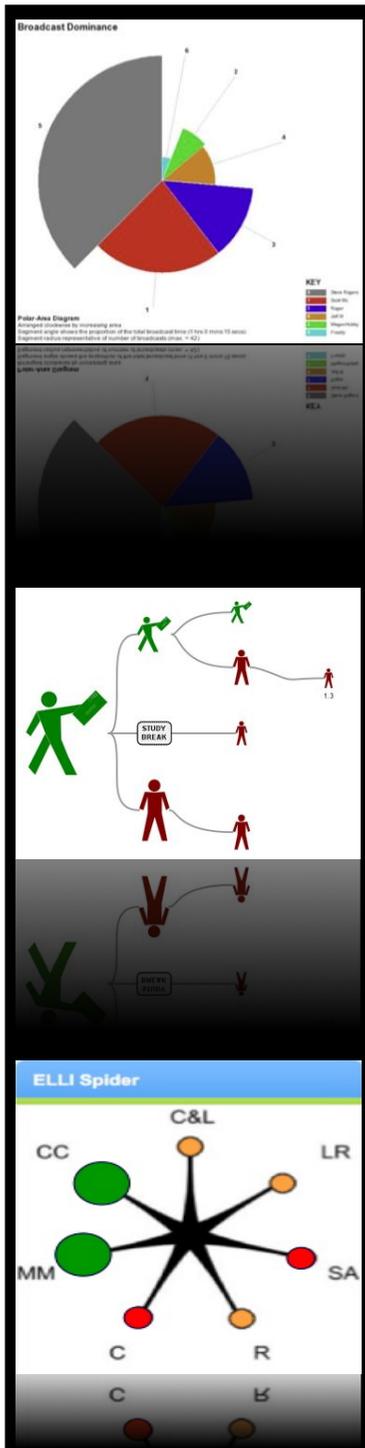
Simon Buckingham Shum

Knowledge Media Institute  
Open University UK

<http://simon.buckinghamshum.net>  
<http://open.edu>



<http://creativecommons.org/licenses/by-nc/2.0/uk>



# **The lost key**

**One night a neighbor of Mullah Nasrudin was walking home and found Mullah squatting on the ground beside a lamp post evidently looking for something.**

**"What's the matter mullah?" asked the concerned neighbor. "I have lost my keys" replied mullah**

**"Oh! Here let me help you" and the kindly neighbor got down on his knees and started searching for Mullah's keys as well.**

**After some time spent looking the neighbor straightened up and quite puzzled asked, "Are you sure you dropped your keys here?"**

**"Oh, I didn't drop them here" replied Mullah.**

**"Where did you drop them?!" exclaimed the now bewildered neighbor.**

**"Over there..." and Mullah pointed to the front of his house that was in darkness.**

**"So why are you looking for them here??!!" shouted the angry neighbor.**

**"Because there is light here." replied mullah.**

# Ethics

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**Predictions**  
commoditization  
institutionalization  
academic shaping

---

**Emerging  
Examples**



# **On the ethics of analytics, and acting on them**

**Analogous to the ethics of constructing any simplifying  
abstraction of reality, and acting on it: cf. economic  
modelling, migration simulations, insurance risk...  
— what can we learn from such fields?**

# Ethical Dilemmas

- **Ensuring that what's “good’ for the organization is not bad for students/staff — or learning/real work**
  - learning is a mysterious process: beware the lamp-post
  - institutions love to count stuff and demonstrate “impact”
  - models only provide probabilities and averages, but in the hands of people with a little knowledge...
- **Ensuring that students are aware of and have consented to the use of data**
  - in possible tension with our ethical duty to understand students, and use that knowledge to maximise their success
  - reporting student feedback in an unbiased way, protecting confidentiality

**Prediction 1:**

**Commoditization of analytics  
services and tools**

# Social analytics start to become a commodity service

The screenshot shows the Mzinga website interface. At the top is the Mzinga logo and a navigation bar with links for Solutions, Products, Services, Customers, Partners, Community, Company, and Social. Below this is the 'OmniSocial Suite.' header with a laptop icon. A secondary navigation bar includes Overview, Features, Launch Options, Cloud Deployment, Firefly Simulation Developer, and Mzinga Publisher. A breadcrumb trail reads 'Products > OmniSocial Features > Reporting, Analytics & Dashboards'. On the left is a vertical menu with icons for Social Networking & Communication, Sharing & Collaboration, Learning & Assessing Knowledge, OmniMobile, OmniSocial Bridging, Platform & Control Panel, and Reporting, Analytics & Dashboards (which is highlighted). The main content area is titled 'Reporting, Analytics & Dashboards' and contains a paragraph: 'You can't manage what you don't measure—so with OmniSocial, we give you access to the data you need to assess your solution growth and success. Standard and ad hoc reporting capabilities allow you to capture the value of your programs and tie the results to your business goals, while dashboards and sophisticated analytics reports help you stay on top of your most reputable, influential and engaged members, hot topics, ongoing activities, trends, and more.' Below the text are several dashboard preview images showing charts for Member Logins, Trending Content, Most Engaged Members, and a list of 'Users with the highest Reputation score for this site'.

**Social Application Ranking and Trends**  
Stay abreast of the social applications that your members are using most to connect and interact with one another, and then use that insight to plan updates for the future evolution of your site structure.

**Member Engagement & Trends**  
Identify your most engaged members—those with the highest and most active participation in all or parts of your community. Members are ranked using proprietary scoring algorithms that analyze and assign values to members' community behaviors and interactions.

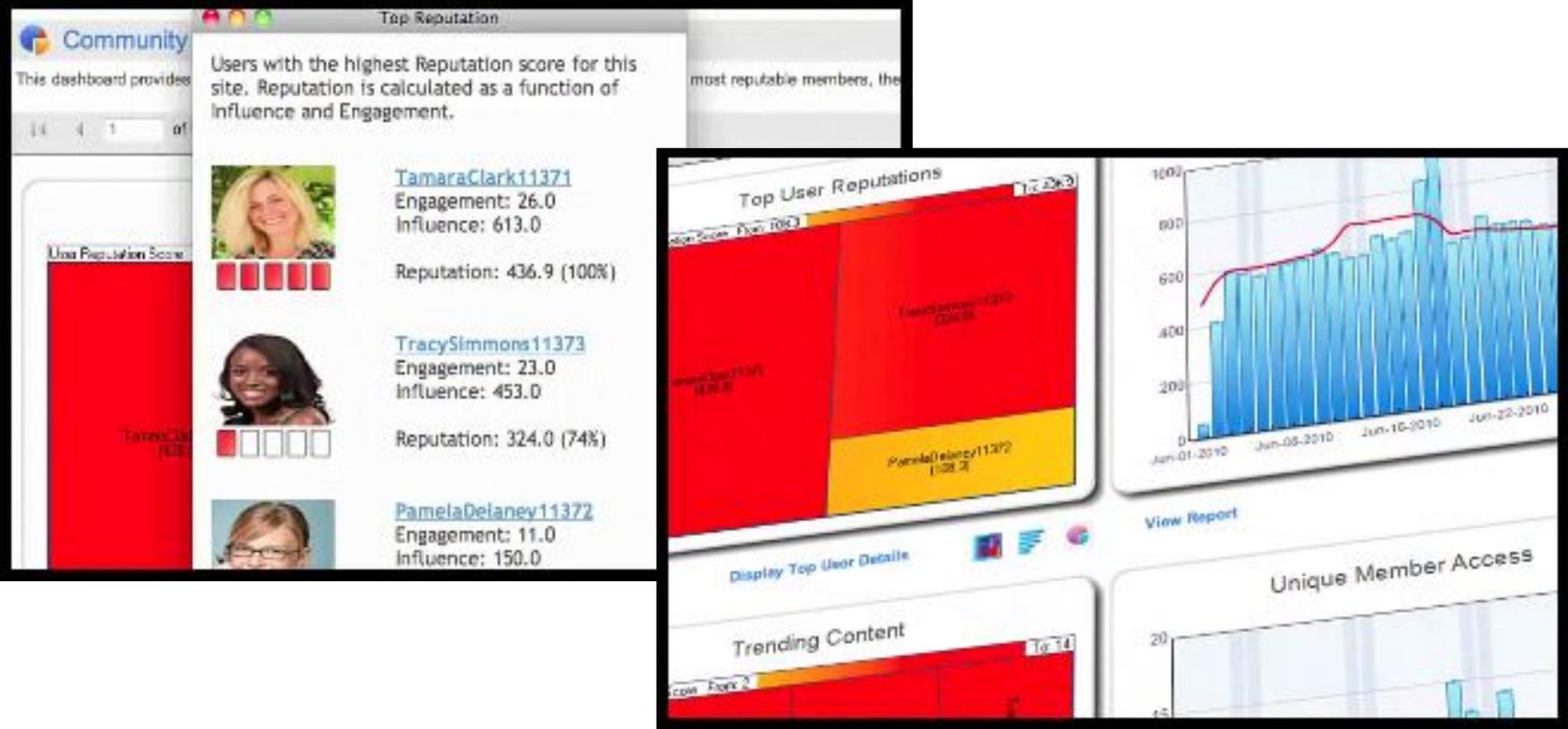
**Member Influence & Trends**  
Determine which members are having the most influence on other member activity and your overall community growth. Using this data, you can then recruit those members to become ongoing brand and program advocates for future initiatives.

**User Reputation**  
Gain an understanding of your most reputable users—those who have the most potential impact on your community based on how engaged and influential they are.

# Social analytics start to become a commodity service



OmniSocial Suite.

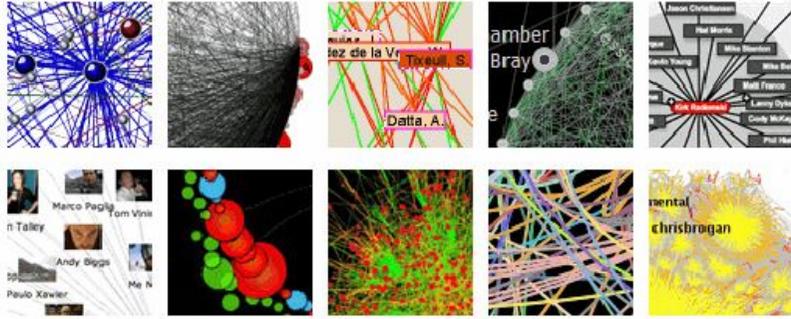


# Organizational network analytics start to become a commodity service

Organizational Network Analysis — Inbox

Delete Junk Reply Reply All Forward Print To Do

**From:** Future of Networks <Future\_of\_Networks@mail.vresp.com>  
**Subject:** Organizational Network Analysis  
**Date:** 10 February 2011 14:52:35 GMT  
**To:** s.buckingham.shum@open.ac.uk  
**Reply-To:** Future of Networks <reply-ee8e8784a3-8df47f66b9-be13@u.cts.vresp.com>



The Network Singularity, the Future of Networks, and KM Silicon Valley are delighted to invite you to your next Northern California leadership retreat on Organizational Network Analysis (ONA).

**Details**

**What:** Organizational Network Analysis

**Where:** San Francisco, California USA

**When:** 11 March 2011, 9AM-5PM

**Who:** Valdis Krebs - <http://www.orgnet.com/>

**Register:** [Organizational Network Analysis](#) (Register by 11 February for a 20% discount)

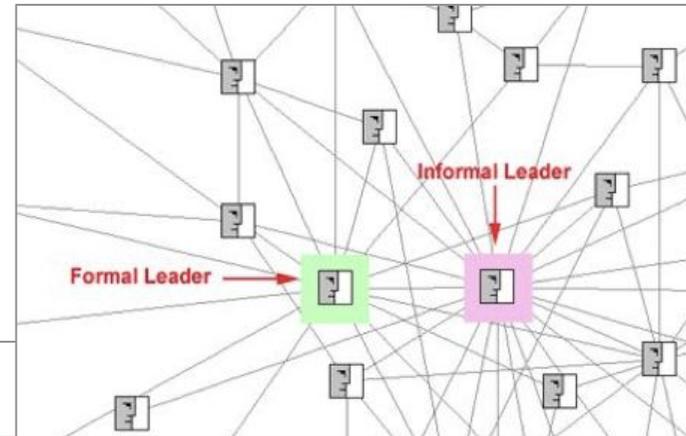
# Organizational network analytics start to become a commodity service

**orgnet.com**

Rapid eLearning Software  
Create Flash courses in hours Remote authoring capabilities

Free 5 Hr Coach Training  
Anthony Robbins & Cloe Madanes Learn Coaching From the Masters

Home Software Training Consulting Case Studies TNT Blog Contact



**orgnet.com**

Home Software Training Consulting Case Studies TNT Blog Contact

**SNA & ONA Projects, Cases & Research**

**SNA & ONA Training**

We provide both general and customized training for all types of network analysis & visualization. First time users of SNA/ONA like our approach, where they get software, training and hands-on assistance, in one simple purchase. Our InFlow software is easy to use and requires very little instruction. Our highest value training, based on experience from almost 500 SNA/ONA projects, provides expert mentoring to our customers with their initial projects.

Client feedback...

*I was lucky enough to be trained for three days by*

We have provided custom network analysis in the following areas:

- social network analysis
- organizational network analysis
- network analysis for entrepreneurs
- influence networks and key opinion leaders
- business networks and industry ecosystems
- contagion and disease networks
- alumni & association networks
- covert and criminal networks

**Local Communities**

- Network Mapping and Network Weaving [Blog...]
- Building Local Economic Networks [PDF]
- SNA supports Economic Justice [Read...]

**Influence, Diffusion & Contagion**

- Social Networking in Academia [Read...]
- Contact Tracing and the Spread of Disease [Read...]
- Co-Authorship Networks [Read...]
- Key Opinion Leaders [Read...]

**Politics & Power**

- Social Networks and Voting [PDF]
- Lobbying and Influence in Government [Read...]
- Interactive Network Map of the Mideast [Read...]
- Knowledge exchange amongst EU countries [Read...]
- Russia v. Ukraine - Pipeline Politics & Power [Read...]
- Understanding Power in Networks [PDF]
- Political Book Networks [Read...]

**Organizations, Projects, & Teams**

**Hidden Networks**

We have participated in 500+ diverse consulting projects applying social network analysis [SNA] and organizational network analysis [ONA]. We have worked with large, medium, and small businesses, governments, universities, not-for-profits and their funders, and many consulting firms.

## **Commodity analytics/recommendation services?**

- **Browsing, discussing, tagging, friending, following, shopping, rating, media consumption...**
- **Because intense effort is going into these, the associated analytics and recommendation engines will become commodity services, including open source and publicly available algorithms**
- **There will be a value-added service industry to help tune these to your needs**

## **Prediction 2:**

**Embedding of institutional analytics services and diffusion of lessons learnt from robust patterns**

# **OU Analytics service: Predictive modelling**

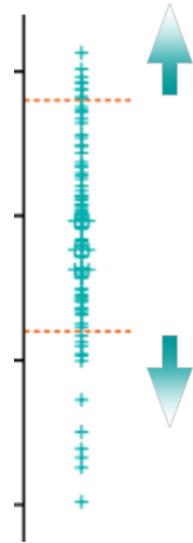
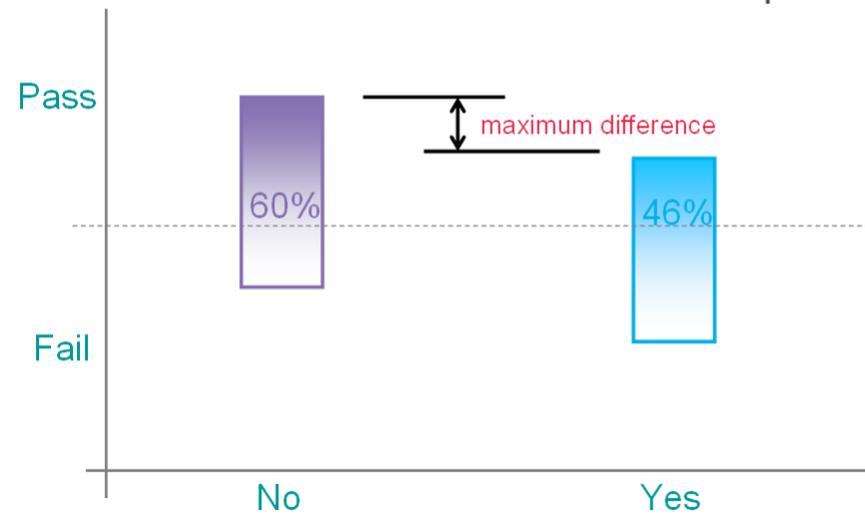
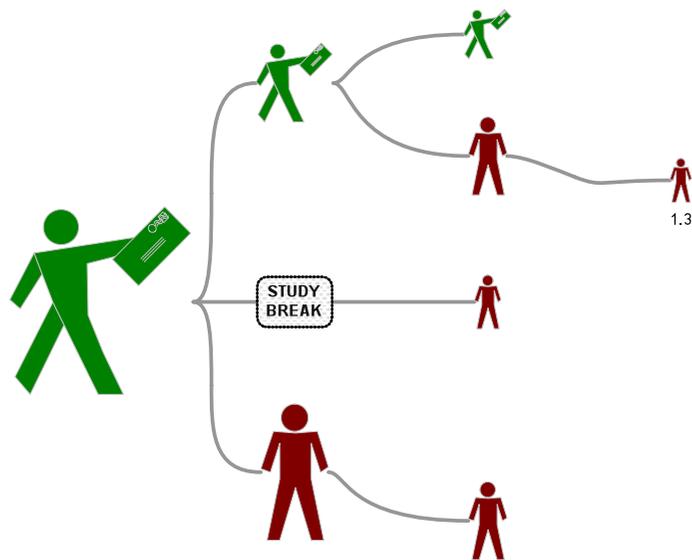
- **Probability models help us to identify patterns of success that vary between:**
  - student groups
  - areas of curriculum
  - study methods
- **Previous OU study data – quantity and results – are the best predictors of future success**
- **The results provide a more robust comparison of module pass rates and support the institution in identifying aspects of good performance that can be shared and aspects where improvement could be realised**

# OU Analytics service: Effective Interventions

- **Proactive measures targeted at specific points in the student journey are associated with improved retention and progression**
  - Telephone contact with students considered to be potentially 'at risk' before the start of their first course is associated with around a 5% improved likelihood of course completion.
  - Additional tutor contact mid-way through a course is associated with between 15% to 30% improved likelihood of course completion.
  - Additional tutor contact around course results is associated with between 10% to 25% improved likelihood of registering for a further course.
  - Contact with students intending to withdraw before course start is associated with retaining 4% of students on their current course.

# OU Analytics service: Engaging faculties

- **Various delivery methods:**
  - Self-guided presentations on a website
  - Workshops and briefings
  - Ad-hoc queries: available and approachable
- **Graphics help non-experts use complex statistics**



## **Prediction 3:**

**Emergence of analytics and recommendation engines grounded in theories of learning and sensemaking**

**Do we simply take what the vendors offer?**

**While we can gratefully reuse  
generic web/business/social analytics  
in educational and business institutions**

*— isn't there anything special about...*

***learning***

***scholarship***

***sensemaking***

**?**

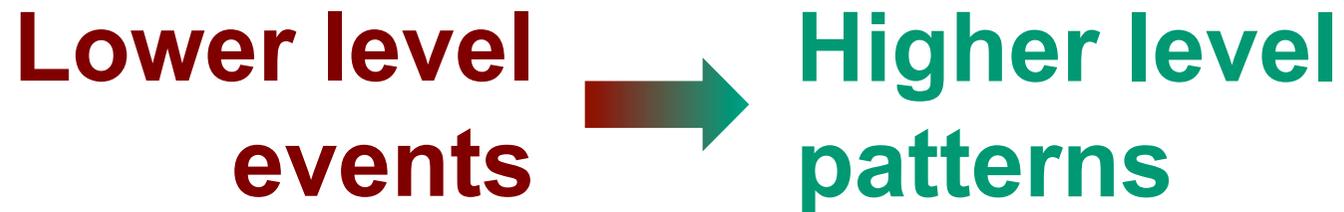
**Moreover, are many of us not also questioning conventional definitions of “authentic learning” and “scholarship”?...**

- **In learning/research/org-life, there are conventional success indicators which are easy to measure**
  - course completions, passes, withdrawals...
  - citations, grants, editorial boards, invited keynotes...
  - no. customers, contracts secured, projects completed...

# Moreover, are many of us not also questioning conventional definitions of “authentic learning” and “scholarship”?...

- In learning/research/org-life, there are conventional success indicators which are easy to measure
  - course completions, passes, withdrawals...
  - citations, grants, editorial boards, invited keynotes...
  - no. customers, contracts secured, projects completed...
- **But the emerging “2.0” landscapes for learning, scholarship and knowledge work, and new pedagogies, demand new, more meaningful indicators**
  - social capital, critical questioning/reasoning, citizenship values, habits of mind, resilience, collaboration skills, creativity, emotional intelligence...

## Raising our game



Investigate analytics that build on **lower level events** to define **higher level patterns** tuned to the dimensions of learning/scholarship/knowledge work which distinguish it from other activity

# Raising our game

Lower level events  Higher level patterns

People like you...

People *not* like you in particular ways...

(because you need to be stretched out of your comfort zone)

# Raising our game

**Lower level events**



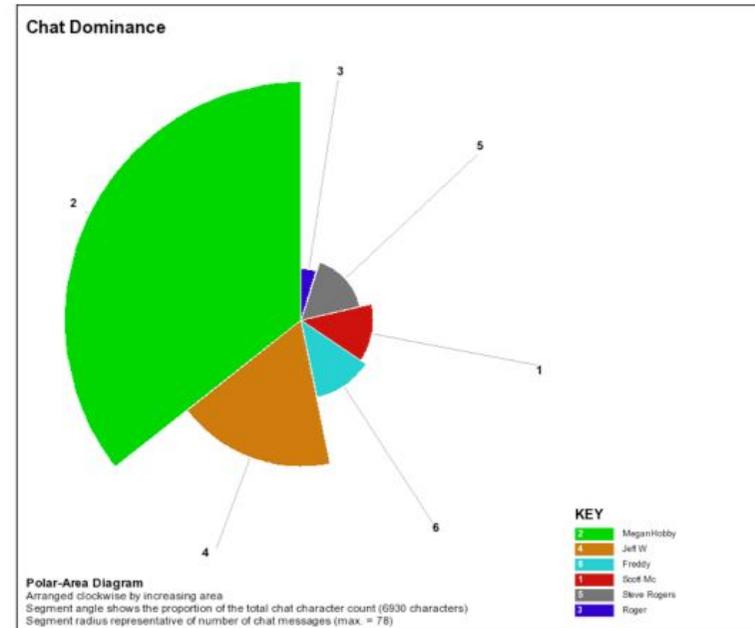
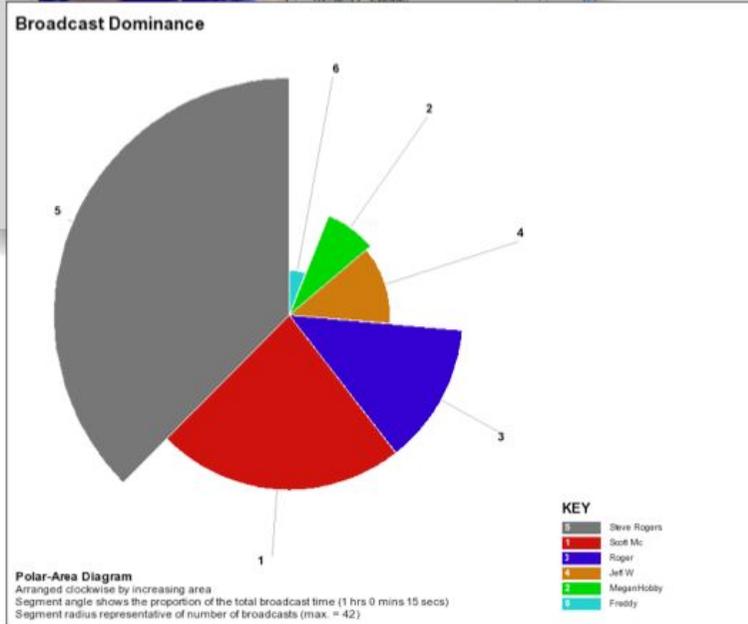
**Higher level patterns**

**Other webinars with  
matching  
keywords...**

**Other tutorials in which  
the mentor played a  
decreasing role and  
newcomers played an  
increasing role...**

# Video conference analytics (OU's Flashmeeting)

<http://fm.ea-tel.eu/public>



Scott, Castaneda, Quick & Linney (2008) Synchronous symmetrical support: a naturalistic study of live online peer-to-peer learning via software videoconferencing. Interactive Learning Environments. 10.1080/10494820701794730

# Video conference analytics (OU's Flashmeeting)

Video conference foreign language tutorials:

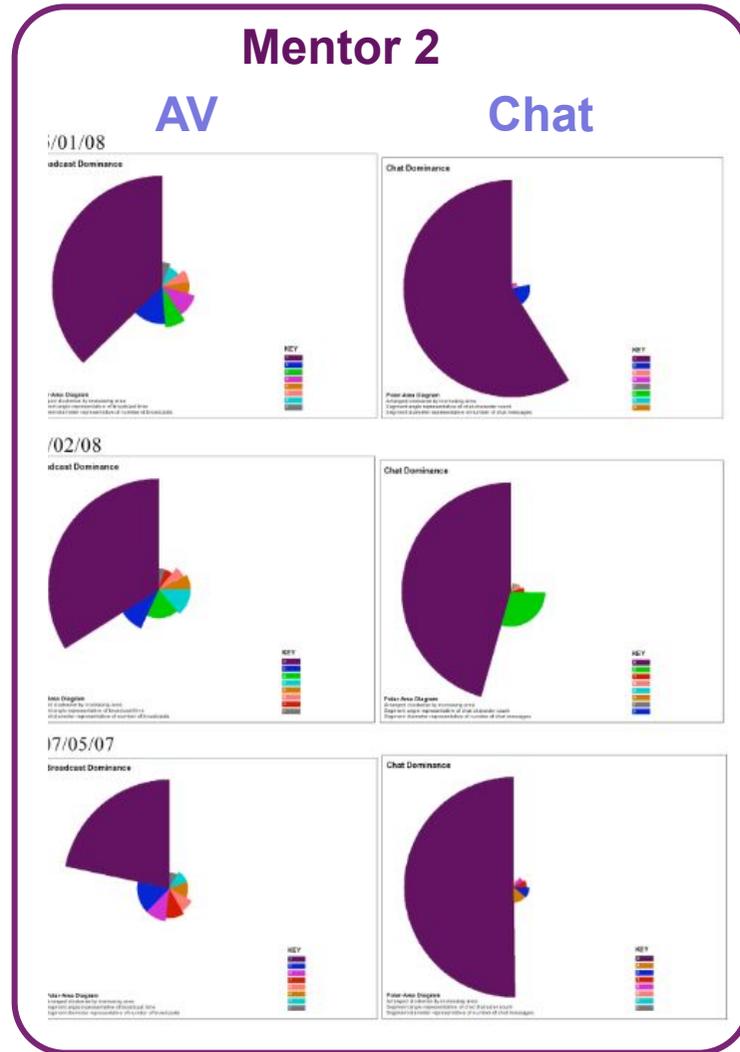
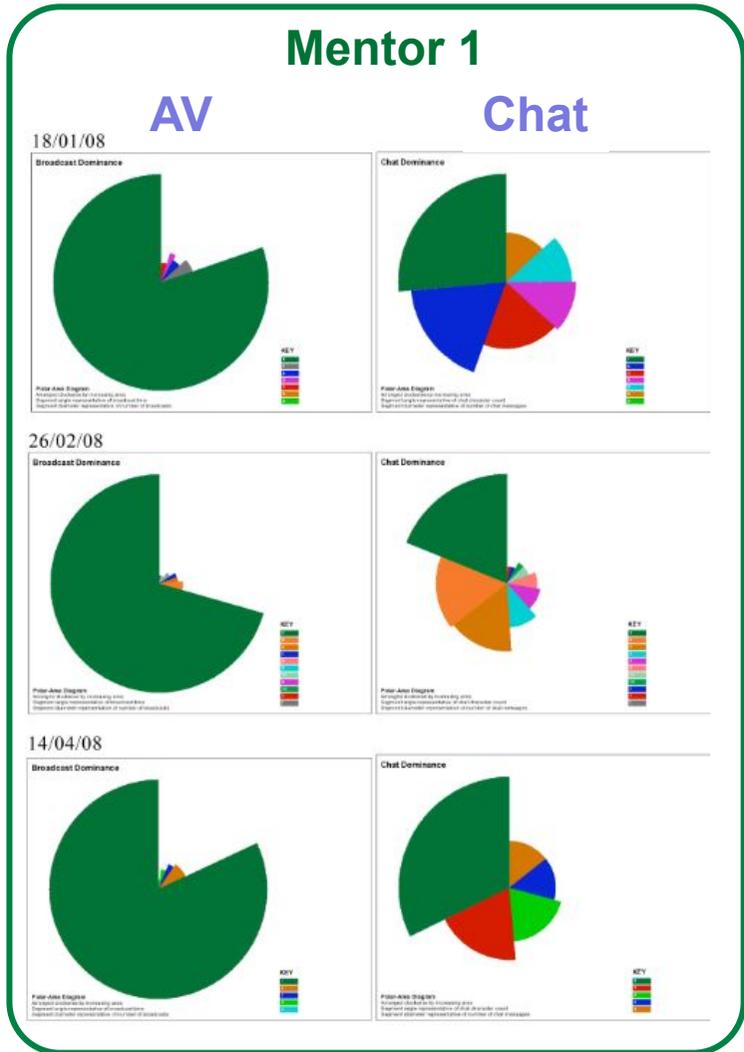
Which mentor would you want to have?...

Session

1

2

3





## Raising our game

Lower level events



Higher level patterns

Other blogs with  
matching  
keywords to your  
post...

*Villa, Mosaic,  
Hadrian, Picts,  
Romans*

Other scholars working  
on the same open  
question that you  
blogged about:

*“Why Hadrian did not  
invade Scotland  
sooner remains a  
matter of debate”*

# Raising our game

**Lower level events**



**Higher level patterns**

**Viewed 5 comments**

**Replied to 3**

**Posted 2 new ones**

**Challenged a peer's  
assumption with a  
good critical question**

**Introduced a counter-  
example**

# Socio-cultural discourse analysis (Mercer et al)

- **Disputational talk**, characterised by disagreement and individualised decision making.
  - Few attempts to pool resources, to offer constructive criticism or make suggestions. Disputational talk also has some characteristic discourse features - short exchanges consisting of assertions and challenges or counter assertions ('Yes, it is.' 'No it's not!').
- **Cumulative talk**, in which speakers build positively but uncritically on what the others have said.
  - Partners use talk to construct a 'common knowledge' by accumulation. Cumulative discourse is characterised by repetitions, confirmations and elaborations.

# Socio-cultural discourse analysis (Mercer et al)

- **Exploratory talk, in which partners engage critically but constructively with each other's ideas.**
  - Statements and suggestions are offered for joint consideration.
  - These may be challenged and counter-challenged, but challenges are justified and alternative hypotheses are offered.
  - Partners all actively participate and opinions are sought and considered before decisions are jointly made.
  - Compared with the other two types, in Exploratory talk knowledge is made more publicly accountable and reasoning is more visible in the talk.



# Structured deliberation and debate in which Questions, Evidence and Connections are first class entities (linkable, addressable, embeddable, contestable...)

The screenshot shows a light blue question card. At the top left is a question mark icon. The main text of the question is: "How can we build a robust evidence base to support and enhance the design, evaluation and use of OERs?". To the right of the question is a small profile picture of a woman and the date "7/6/10". Below the question is a white bar containing a star icon and the text "Details\* - | URLs (1)- | Groups (1)+ | Tags (3)-". At the bottom right of the card is a circular icon with a stylized 'S' and a small square icon with a downward arrow.

# Analyst-defined visual connection language

The image displays a software interface for defining visual connections. It features a main menu on the left with categories: Prediction, Pro, Question, Scenario, Software, and Theory. A secondary menu is open, listing connection types: Assumption, Con, Data, Idea, Method, and Opinion. A dropdown menu titled 'Select link type...' is also open, showing a list of link types categorized into Positive, Neutral, and Negative.

Category	Icon	Label	Actions
Prediction	Globe	Prediction	edit   delete
Pro	Plus	Pro	
Question	Question Mark	Question	
Scenario	Theater Masks	Scenario	
Software	CD-ROM	Software	
Theory	Head with Brain	Theory	
Assumption	Anchor	Assumption	edit   delete
Con	Minus	Con	edit   delete
Data	Beaker	Data	edit   delete
Idea	Lightbulb	Idea	default
Method	Gears	Method	edit   delete
Opinion	Red Lips	Opinion	edit   delete

**Select link type...**

- Positive**
- +
- causes
- improves on
- is an example of
- is analogous to
- is consistent with
- predicts
- proves
- solves the problem
- supports
- uses/applies
- Neutral**
- responds to
- Negative**
- 
- challenges
- is inconsistent with
- refutes

# cohere — node creation via web annotation

5 Ideas for: [cnx.org/content/m21063/latest](http://cnx.org/content/m21063/latest)

Select: All My Pro Con Clear

 **Anna De Liddo**  
12 Jan 2010  
Connections : 1

What are the main effect of climate change?

 **Ivana Quinto**  
17 Dec 2009  
Connections : 1

We cannot know the physical and ecological damages due to climate change

**source: current page**  
scientific knowledge about the physical and ecological damages due to climate change is a work in progress. Scientists have no accurate way to determine how rapidly future GHGs will accumulate in the atmosphere or how sensitive biological systems will be to increases in the concentration of those gases. We do not know at what GHG concentrations "tipping points" or catastrophic climate events may occur. It is difficult to estimate how willing or able people will be to adapt to new climate conditions. Finally it is virtually impossible to put a value on damage that will be incurred in the future.

 **Ivana Quinto**  
17 Dec 2009  
Connections : 1

**Adaptation**

Adaptation is action taken to cope with increased rainfall, higher temperatures, scarce water, and more frequent storms.

**source: current page**  
Adaptation may need to tackle present problems or to anticipate changes in the future, aiming to reduce risk and damage cost-effectively, and perhaps even exploiting potential benefits.

 **Ivana Quinto**  
17 Dec 2009  
Connections : 1

**Mitigation**

**source: current page**

Teacher... Cohere ... Downlo... hmv.co... Cohere ... Disaste... Cohere ... Q4: ...

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You are here: Home » Content » Q4: What can be done about climate change

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## Q4: What can be done about climate change

Module by: [Ronald Sass](#). [E-mail the author](#)

User rating (?): ★★★★★ (1 ratings)

### Responding to climate change predictions: What if anything can be done about it

**Short answer**

We have seen that the world's climate is changing, in part at least, because of the anthropogenic emissions of greenhouse gases, primarily carbon dioxide from fossil fuel. Humans have a choice that must be made soon; we will either mitigate the problems of climate change by a massive reduction of greenhouse gas emissions or adapt by changing our life style. **Mitigation** is the stabilization of the climate by the removal of some or of all the fossil fuel derived atmospheric carbon dioxide from the energy equation. Adaptation is action taken to cope with increased rainfall, higher temperatures, scarce water, and more frequent storms. **Adaptation may need to tackle present problems or to anticipate changes in the future, aiming to reduce risk and damage cost-effectively, and perhaps even exploiting potential benefits.** Somewhere in the middle of these two alternatives we will find an optimal path. It will depend on many factors and different approaches. Success will require an increase in available technology as well as shifts in the culture of people.

**Detailed answer**

Some of the ways that we can reduce our emissions of fossil fuel carbon dioxide and mitigate climate change are presented below

Immediately implementable with several tangible benefits

- Increase the efficiency of vehicles and reduce the use of these vehicles.
- Build more energy efficient buildings and equip them with energy efficient appliances.

Available technologies with some added costs

- Increase the efficiency of coal and gas power plants, for example, by combining the production and use of both heat and power.



# Structured deliberation and debate in which Questions, Evidence and Connections are first class entities (linkable, addressable, embeddable, contestable...)

The screenshot shows a user interface for a question-based system. At the top, a question card is displayed with a question mark icon, the text "How can we build a robust evidence base to support and enhance the design, evaluation and use of OERs?", a profile picture, and the date "7/6/10". Below the question, there are navigation options: "Details\* -", "URLs (1)-", "Groups (1)+", and "Tags (3)-". A "Share" icon (S) is also present. A context menu is open over the "Share" icon, listing "Connect", "Tweet", "Get Snippet", and "Get URL". Below the question, a "Clip" is shown with the same text and a URL: "http://people.kmi.open.ac.uk/anna/OLnet\_Proposal\_OU\_and\_public.htm visit site". At the bottom, a "Tags:" section lists "OLnet", "Project Proposal", and "research question".



# Structured deliberation and debate in which Questions, Evidence and Connections are first class entities (linkable, addressable, embeddable, contestable...)

How can we build a robust evidence base to support and enhance the design, evaluation and use of OERs?

Show Description

Ideas (1) Websites (1) **Connections (9)** People & Groups (2)

Visualize as: [Icons] Sort by: Create Date Descending Go [Refresh] [Link] [Code]

Filter by: Link Type All Link Types or Choose... Go

some prelim findings from oer stakeholder engagement 9/6/10

link to presentation Social Learning in the context of OpenLearn 9/6/10

What motivates registered users to learn in socio-collaborative ways on OpenLearn? 9/6/10

OER effectiveness cycles and ideas on use linking to communities of practice 9/6/10

How can OLnet create a research roadmap for OER? 9/6/10

What motivates registered users to learn in socio-collaborative ways on OpenLearn? 9/6/10

3. How to build a socio-technical infrastructure to serve as a collective evolving intelligence for the community? 7/6/10

2. How to make the associated design processes and products more easily shareable and debateable? 7/6/10

How can we build a robust evidence base to support and enhance the design, evaluation and use of OERs? 7/6/10

Details\* - | URLs (1)+ | Groups (1)+ | Tags (3)-

Clip: How can we build a robust evidence base to support and enhance the design, evaluation and use of OER? [http://people.kmi.open.ac.uk/anna/OLnet\\_Proposal\\_OU\\_and\\_CMU-public.htm](http://people.kmi.open.ac.uk/anna/OLnet_Proposal_OU_and_CMU-public.htm) visit site

Tags:

- OLnet
- Project Proposal
- research question

Create date: 7/6/10  
Modification date: 7/6/10  
Visibility: Public  
Start Date: 1/4/09  
End Date: 1/4/12  
Location: Milton Keynes, United Kingdom  
Connectedness: 36

Description:  
This is the main research question for OLnet

Connect Tweet Get Snippet Get URL

is an example of

supports

supports

relates to

is consistent with

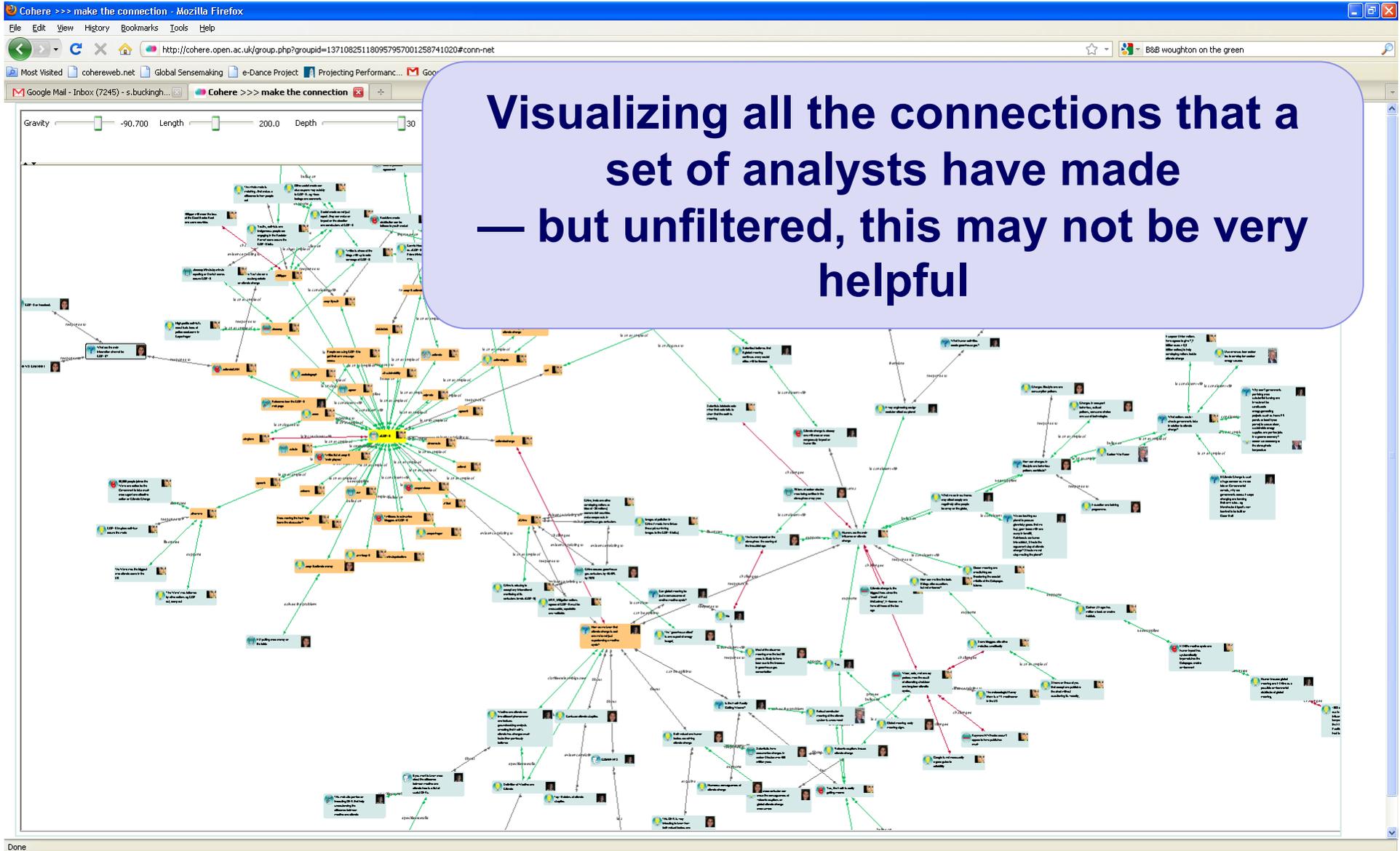
is refined into

is refined into

is refined into



# seeing the connections people make as they annotate the web using Cohere



# cohere — semantic filtering of connections

Cohere >>> make the connection | Google Mail - Inbox (7149) - s.buckingham...

Search connection networks following links of type: Choose Link Types... or Consistency for

Starting from idea "Humans are the main influence on climate change"

Gravity: -300.0 | Length: 200.0 | Depth:

Consistency dropdown menu:  
 select  
 Analogy  
 Consistency  
 Contrast  
 Causality  
 Lineage  
 Problems  
 Proof  
 Similarity

**Visualizing multiple learners' interpretations of global warming sources**

**Connections have been filtered by a set of semantic relationships grouped as Consistency**

De Liddo, A. and Buckingham Shum, S. (2010). Cohere: A prototype for contested collective intelligence. In: *ACM Computer Supported Cooperative Work (CSCW 2010) - Workshop: Collective Intelligence In Organizations*, February 6-10, 2010, Savannah, Georgia, USA. <http://oro.open.ac.uk/19554>

# cohere — an agent reports a connection of interest



## Network Search Agent on: Top ten claims of climate sceptic dep 1

Search connection network on my data starting from **What are the top ten claims of climate sceptics?**

Following links of type: responds to  
In both directions, to a depth of 1

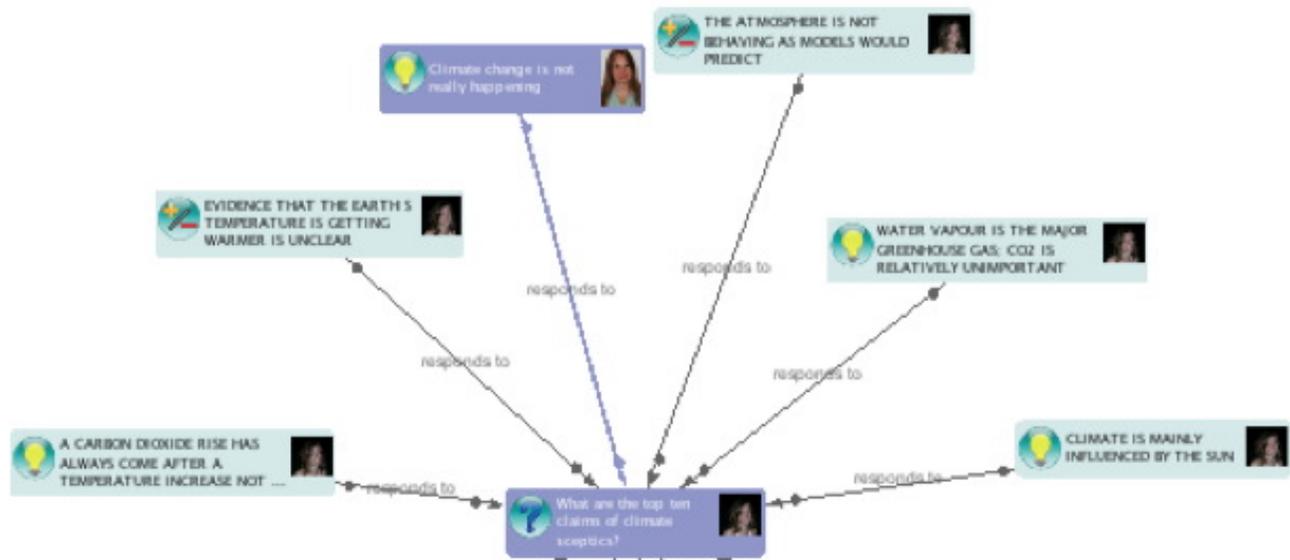
Looking for new connections added after: 08 Sep 2010 - 14:11

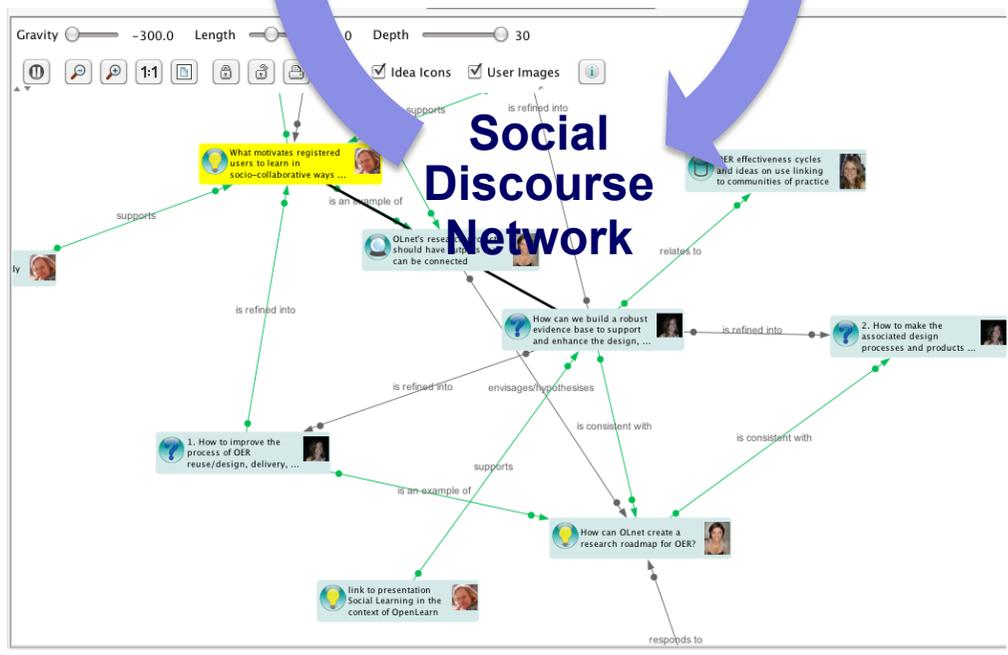
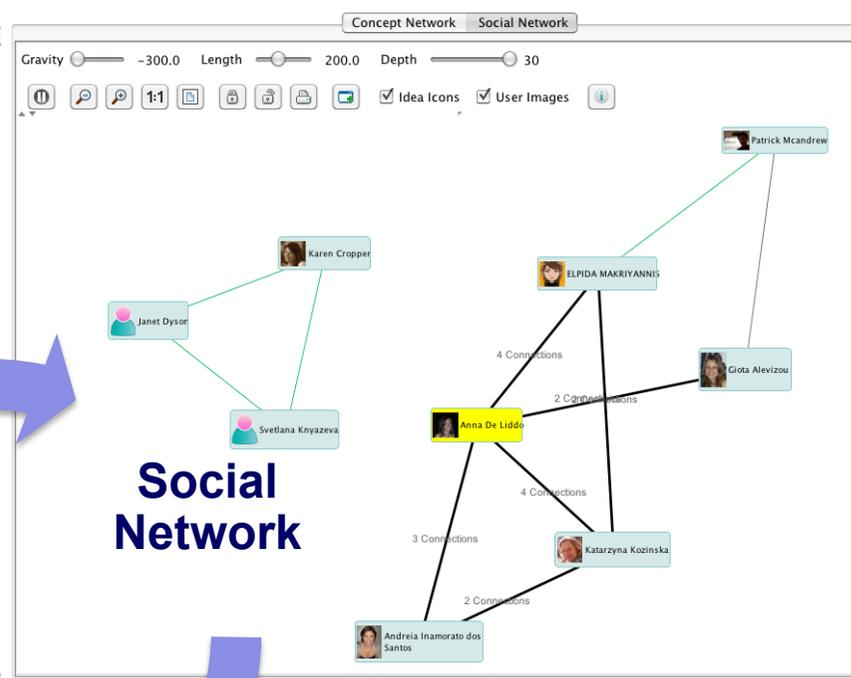
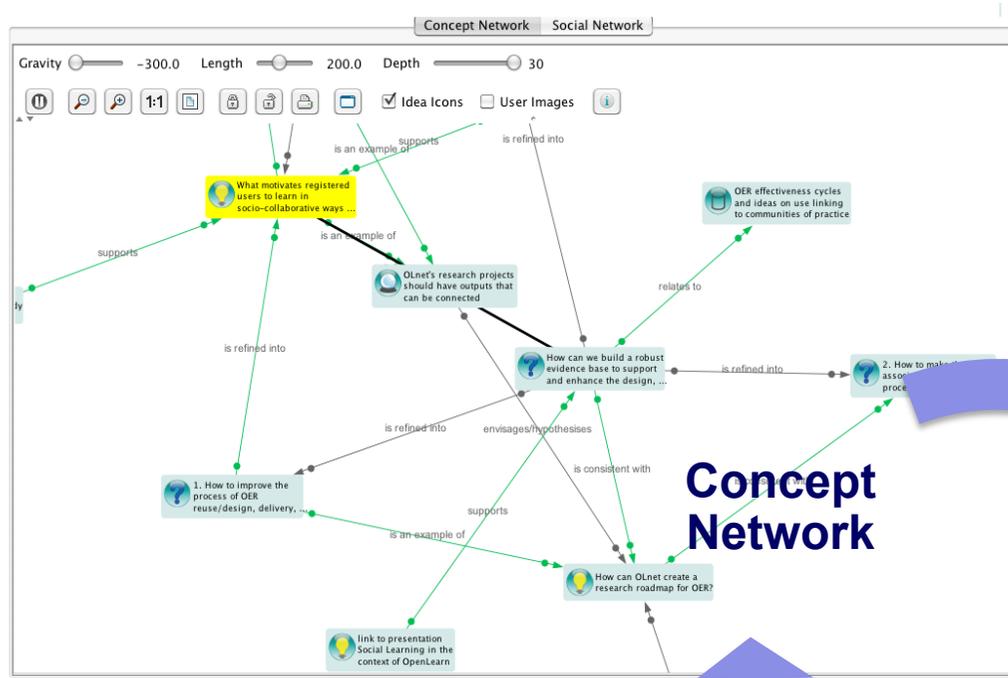
### Network



Gravity  -300.0 Length  200.0 Depth  30

   1:1       Idea Icons  User Images 



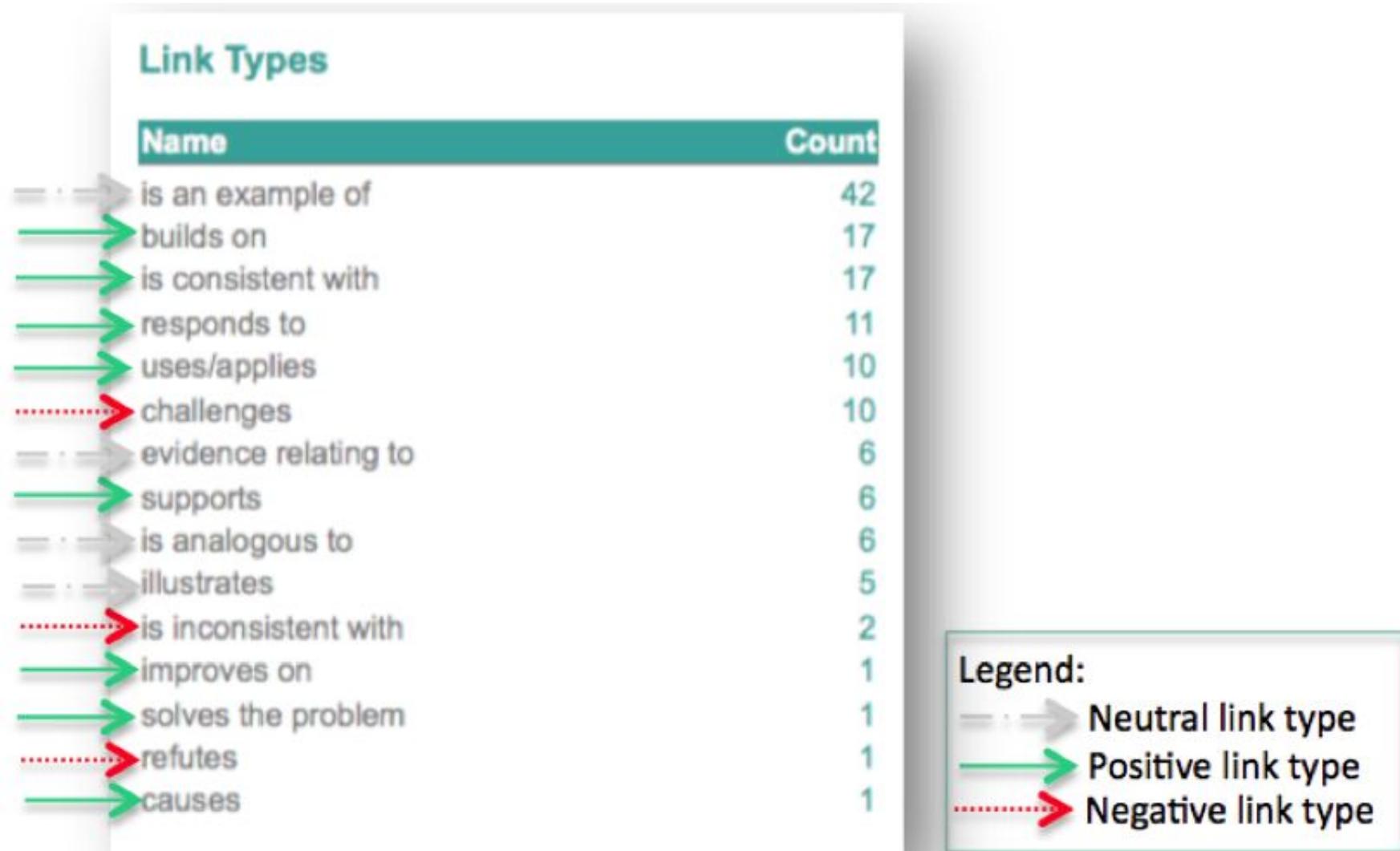


# cohere — discourse-centric analytics

## Node Types

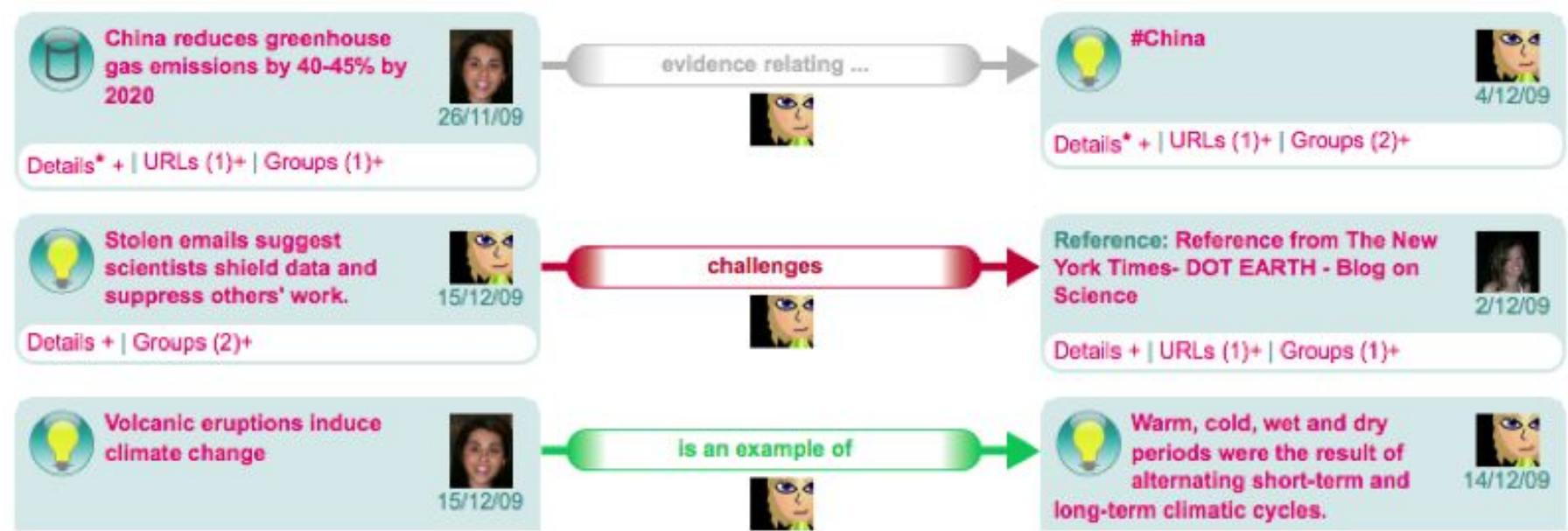
Name	Count
Idea	31
Opinion	11
International perspective	9
Action	8
Data	6
Con	4
Utilisation	4
Illustration	3
Response	3
Extension	3
Question	3
Theory	2
Scenario	1
Note	1
Assumption	1

# cohere — discourse-centric analytics

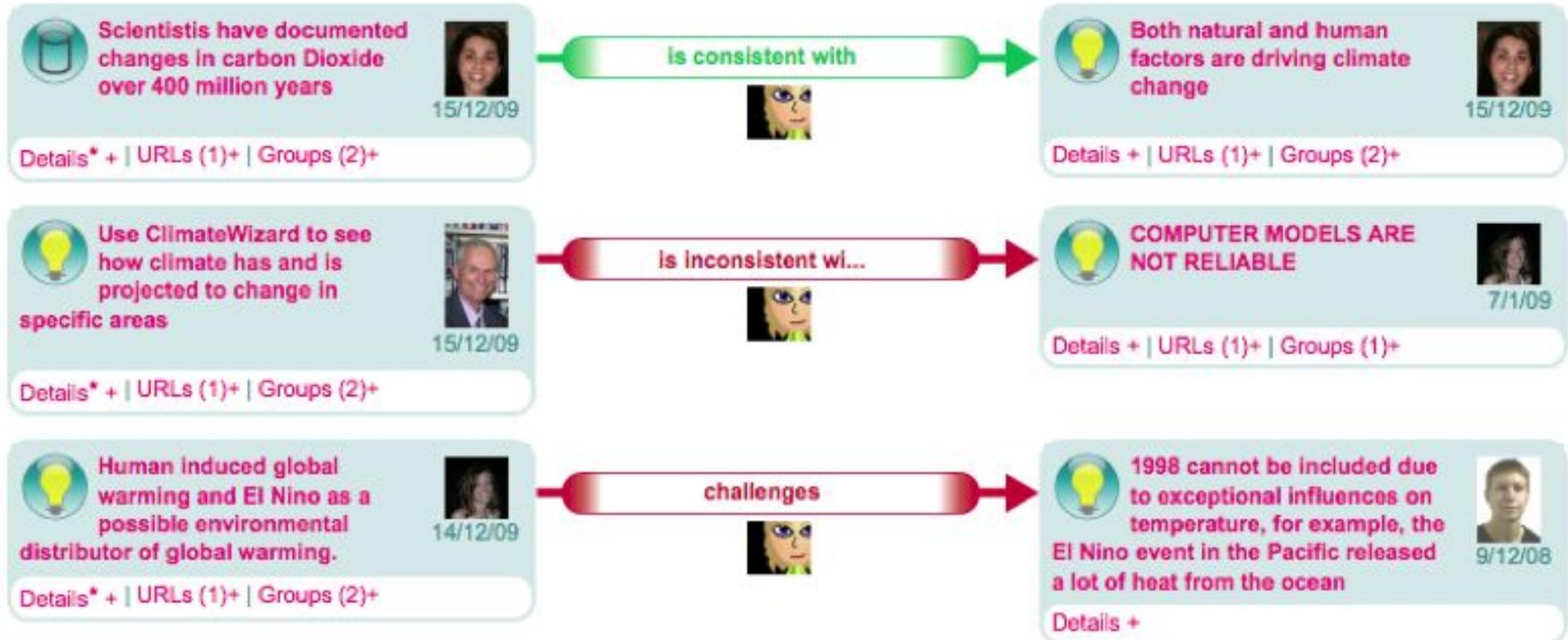


# cohere — discourse-centric analytics

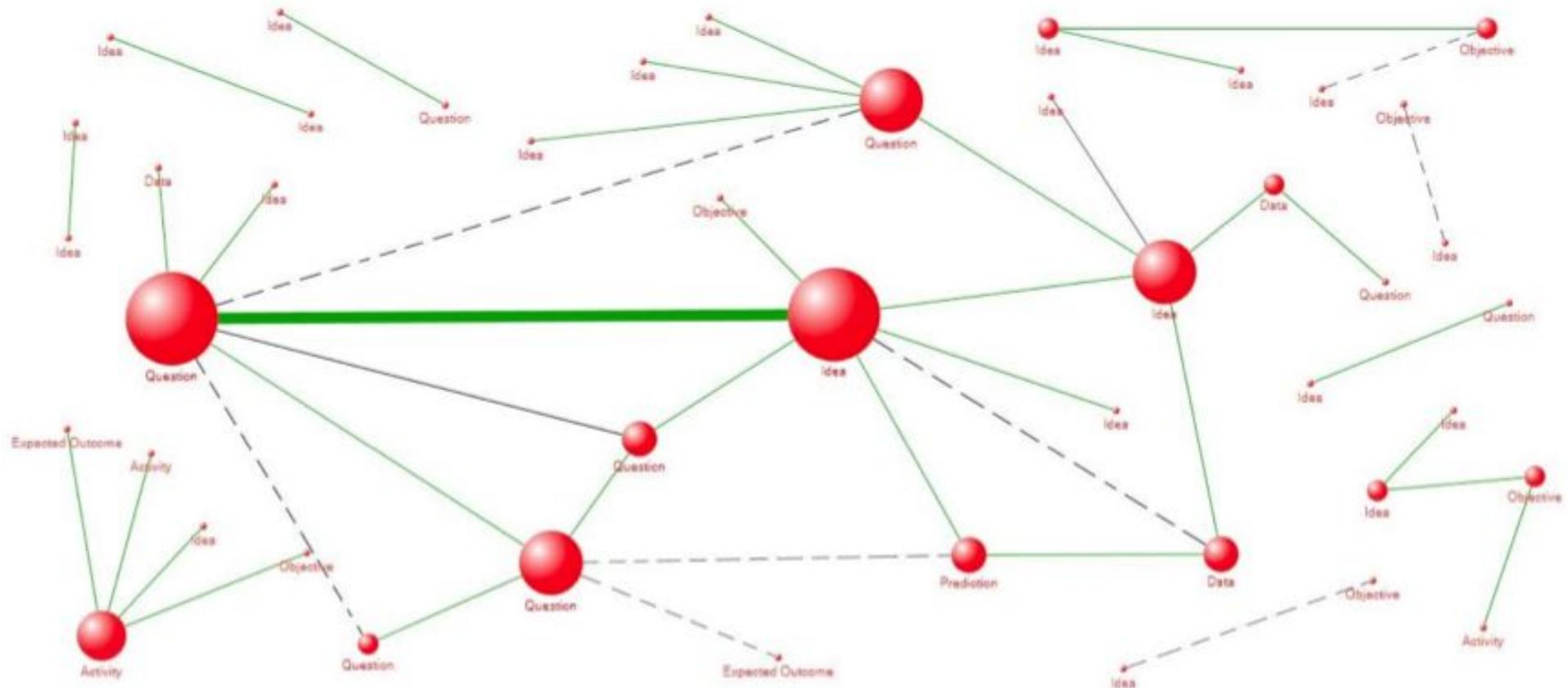
## Compared Thinking (privacy included)



# cohere — discourse-centric analytics



# cohere — discourse-centric analytics



De Liddo, A. and Buckingham Shum, S. (2011). Discourse-Centric Learning Analytics. *Proc. 1<sup>st</sup> Int. Conf. Learning Analytics & Knowledge*. Feb. 27-Mar 1, 2011, Banff

***Next step...***

***introducing automated analysis of discourse  
moves which may signify deep/shallow learning  
and knowledge construction***

# Analytics for identifying Exploratory talk

Illuminate sessions can be very long – lasting for hours or even covering days of a conference

It would be useful if we could identify where learning seems to be taking place, so we can recommend those sessions, and not have to sit through online chat about virtual biscuits

The screenshot shows a virtual meeting interface. On the left, a 'Participants' list includes names like Nayy, Nick Freear (Away), Nigel Pigott, Non, Olga\_Semenova, Pat Grace, Paul Munding (Away), Paul Richardson, Peter Wilson, Richenda Power, RJI, RoughBounds, russell gurbutt, S Sparrus, santy 1, Steve B 1, Steve Swithenby, svyukn, Teemum, Teresa Connolly, Thanh Le, Tim Hunt, Tina, Tony Hirst, TULLmann, vjkh, Walter Patterson, Wendy Maples, Will laptop, and Will Stewart. The central chat window shows a discussion about semantic web ideas, with a red circle highlighting a message from Michelle "Eingang" Hoyle. To the right, a 'Useful Links' panel lists several resources:

- The Course Wiki  
<http://climatechangecourse.wetpaint.com>
- sideCAP wiki (with resources)  
<http://sidecap.wetpaint.com>
- The course on OpenLearn  
<http://openlearn.open.ac.uk>
- The sideCAP report  
<http://www.blurb.com/bookstore/detail/1267854>

At the bottom, there is an 'Audio - Frank Rennie' section with a 'Talk' button and a volume slider. The bottom status bar shows a timer at 2:21:50 and a note 'In session for 4 hours, 2 minutes.'

# Analytics for identifying Exploratory talk

Category	Indicator
Challenge	But if, have to respond, my view
Critique	However, I'm not sure, maybe
Discussion of resources	Have you read, more links
Evaluation	Good example, good point
Explanation	Means that, our goals
Explicit reasoning	Next step, relates to, that's why
Justification	I mean, we learned, we observed
Reflections of perspectives of others	Agree, here is another, makes the point, take your point, your view

# Discourse analysis with Xerox Incremental Parser (XIP)

## *Detection of salient sentences based on rhetorical markers:*

### **BACKGROUND KNOWLEDGE:**

Recent studies indicate ...  
... the previously proposed ...  
... is universally accepted ...

### **CONTRASTING IDEAS:**

... unorthodox view resolves ...  
paradoxes ...  
In contrast with previous  
hypotheses ...  
... inconsistent with past  
findings ...

### **GENERALIZING:**

... emerging as a promising  
approach  
Our understanding ... has grown  
exponentially ...  
... growing recognition of the  
importance ...

### **NOVELTY:**

... new insights provide direct  
evidence ...  
... we suggest a new ... approach ...  
... results define a novel role ...

### **SIGNIFICANCE:**

studies ... have provided  
important advances  
Knowledge ... is crucial for ...  
understanding  
valuable information ... from  
studies

### **SURPRISE:**

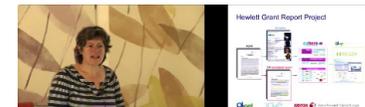
We have recently observed ...  
surprisingly  
We have identified ... unusual  
The recent discovery ... suggests  
intriguing roles

### **OPEN QUESTION:**

... little is known ...  
... role ... has been elusive  
Current data is insufficient ...

### **SUMMARIZING:**

The goal of this study ...  
Here, we show ...  
Altogether, our results ...  
indicate



Ágnes Sándor & OLnet Project:  
<http://olnet.org/node/512>



Xerox Research Centre Europe

# Human and machine annotation of literature

The primary goal of this project was to conduct an exploratory research study to determine if providing a professional development program using open education resources (OER) would help teachers begin to transform their curriculum and teaching through the use of technology. Our eight-year Maine Learning Technology Initiative (MLTI) experience had shown us that while providing laptops to all middle school teachers and students has had many positive impacts on schools, classrooms and learning, many mathematics teachers still had not fully integrated the laptop technology into their teaching. Accordingly, this research study was designed to determine the impacts of helping a group of middle school and high school mathematics teachers, through professional development with mathematics OER, to teach targeted algebra topics using technology.

Several key activities were undertaken in this project over an 18-month time period. First, we attempted to conduct an environmental scan to determine the challenges teachers encounter in using OER. Although the use of OER has grown quite extensively in higher education and K-12 settings in developing countries, OER use by K-12 teachers in the United States appears to be limited. The purpose of this activity was to explore why this was the case, to identify challenges teachers encounter in using OER, and to develop strategies for overcoming these challenges through our professional development program and research. This environmental scan consisted of several activities, including interviews with leading OER experts and proponents, surveys of teachers, and a limited number of focus groups. Through these activities we began to draw conclusions about the use of OER in K-12 school settings, and these conclusions are discussed below under Lessons Learned.

Comment [Panglota 1]: brief summary

Comment [Panglota 2]: summary

Comment [Panglota 3]: good arguments, rigorous methodology

Comment [Panglota 4]: multiple methods

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**Document 1**    **19 sentences annotated**

**22 sentences annotated**  
**11 sentences = human annotation**

**Document 2**    **71 sentences annotated**

**59 sentences annotated**  
**42 sentences = human annotation**



Ágnes Sándor & OLnet Project:  
<http://olnet.org/node/512>

# Raising our game

**Lower level events**



**Higher level patterns**

**People like you who  
watched “Roman  
Britain” also  
viewed these  
videos...**

**People like you who are  
working on their  
critical thinking rated  
these discussion  
groups as challenging  
but supportive...**

# Raising our game

**Lower level events**



**Higher level patterns**

**Failed 1 assignment**

**Passed 2 with merit**

**Passed 1 with  
distinction**

**Graduated with  
honours**

**Demonstrates  
increased resilience  
when challenged**

**Demonstrates ability to  
apply learning across  
contexts**

**Reports a growing  
sense of herself as a  
learner**

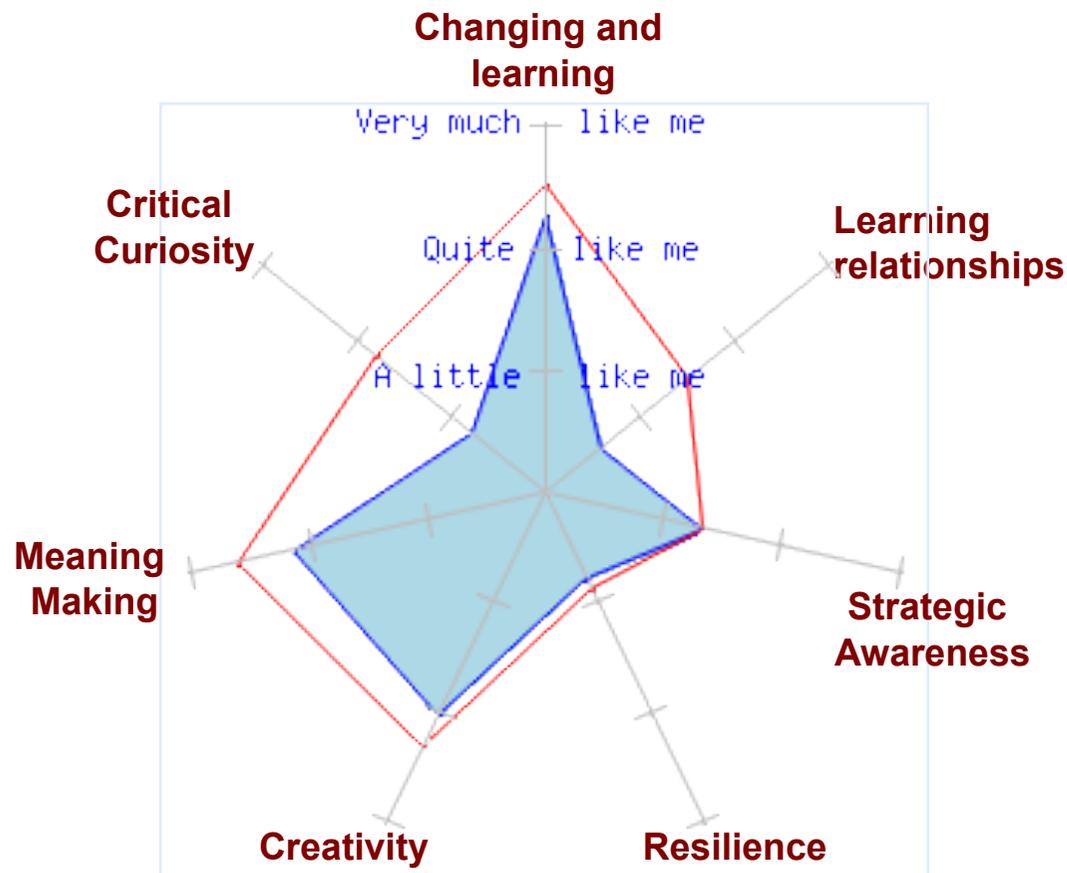
# Learning to Learn: 7 Dimensions of “Learning Power”

Factor analysis of the literature plus expert interviews: identified seven dimensions of effective “learning power”, since validated empirically with learners at many levels. (Deakin Crick, Broadfoot and Claxton, 2004)



# ELLI profile showing pre/post stretch following mentoring and targetted intervention

ELLI: Effective Lifelong Learning Inventory (Ruth Deakin Crick, U. Bristol)  
A web questionnaire generates a spider diagram summarising the learner's self-perception: the basis for a mentored discussion and strategic priorities



# EnquiryBlogger (Learning Futures programme)

## Wordpress multisite plugins tuning it for learning to learn and personalised enquiry

Rebecca Simon's blog
THIS IS MY ENQUIRY PROJECT

Pages Categories

Jan 31 2011
Exploratory mapping

5. Mapping
No Responses »

On Day 2, I (Simon) was using Compendium to sketch ideas in the background as Ruth took the group through the process of searching for the emerging Big Ideas in all the material, in particular, the 'homework' stories that people brought about the object of enquiry: the mincer:

By the end of the workshop, I had mapped the following as a way both to track our own process (the home map)

Inside these maps are prototype map designs I did as I watched the process the group went through with the stickies, asking the question to myself: *How might learners transition from*

Archives Links Meta Recent Comments

January 2011

Enquiry Spiral

ELLI Spider

Mood View

My mood is :-| Feeling challenged

Tag Cloud

<http://people.kmi.open.ac.uk/sbs/2011/01/digital-support-for-authentic-enquiry>

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The blobs on the EnquirySpiral and ELLI Spider plugins will change size and colour when you categorise blog posts, as shown

The diagram illustrates the Enquiry Spiral plugin interface. It features a central image of a nautilus shell with several colored blobs overlaid. A checklist is positioned in the center, listing nine categories: 1. Choosing, 2. Observing, 3. Questioning, 4. Narrating, 5. Mapping, 6. Connecting, 7. Formalising, 8. Validating, and 9. Applying. The 'Choosing' and 'Connecting' categories are checked. Two panels show the state of the blobs: the left panel shows small red blobs with labels 'Choosing' and 'Connecting', and the right panel shows larger green and orange blobs. A large blue arrow points from the left panel to the right panel.

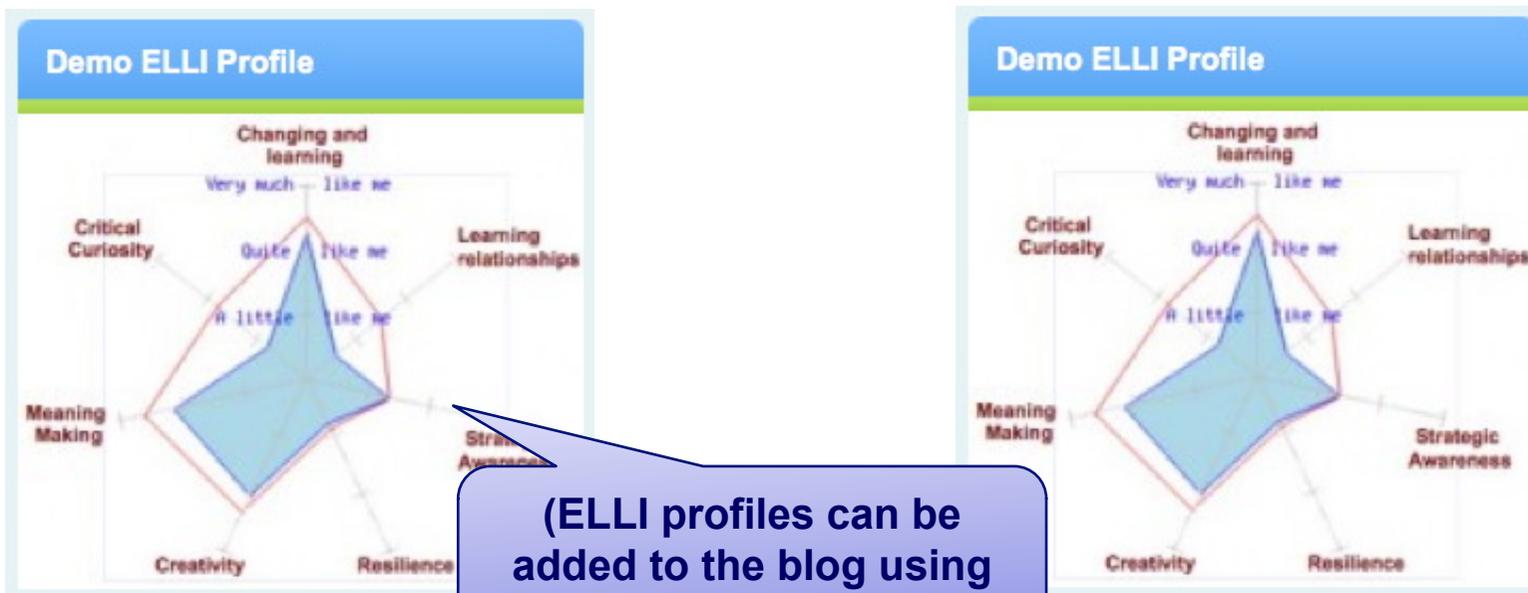
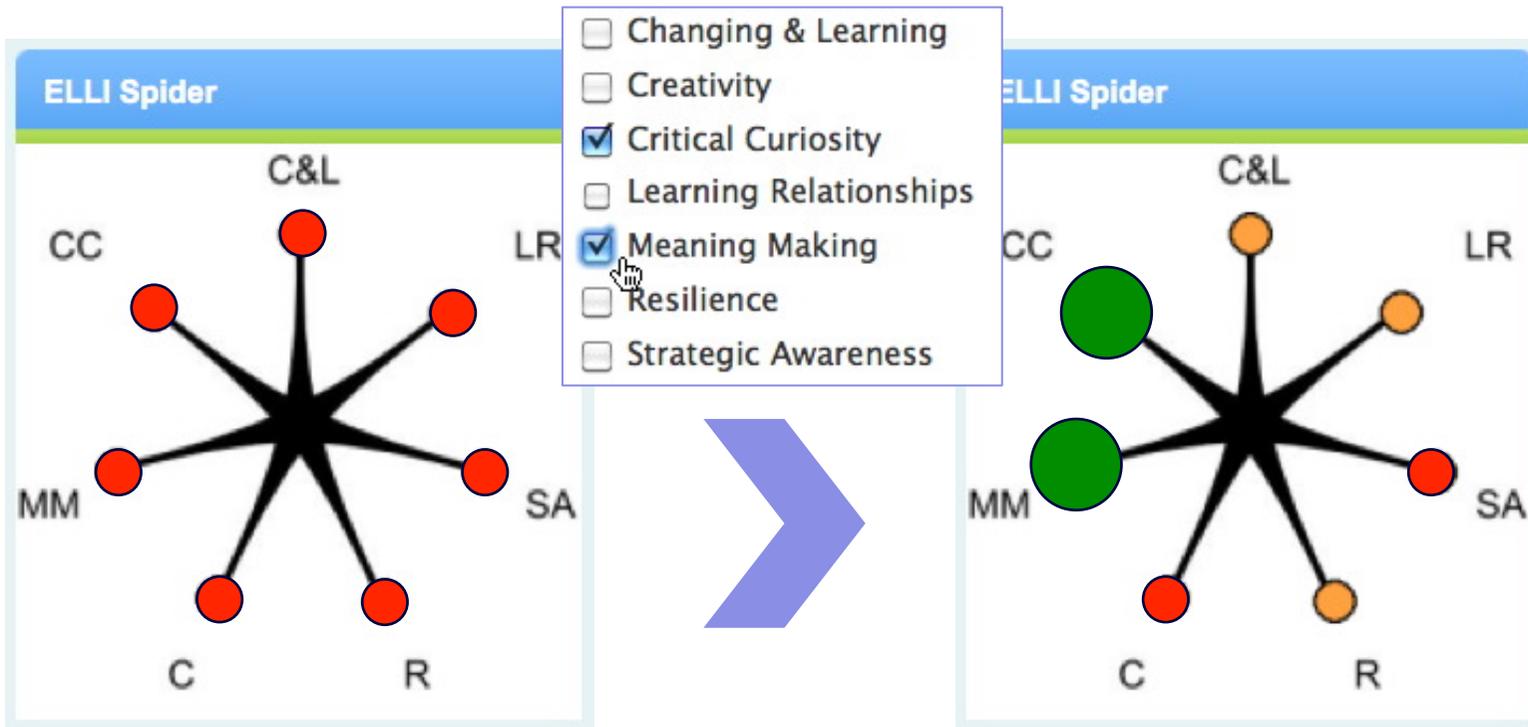
- 1. Choosing
- 2. Observing
- 3. Questioning
- 4. Narrating
- 5. Mapping
- 6. Connecting
- 7. Formalising
- 8. Validating
- 9. Applying

Enquiry Spiral

Enquiry Spiral

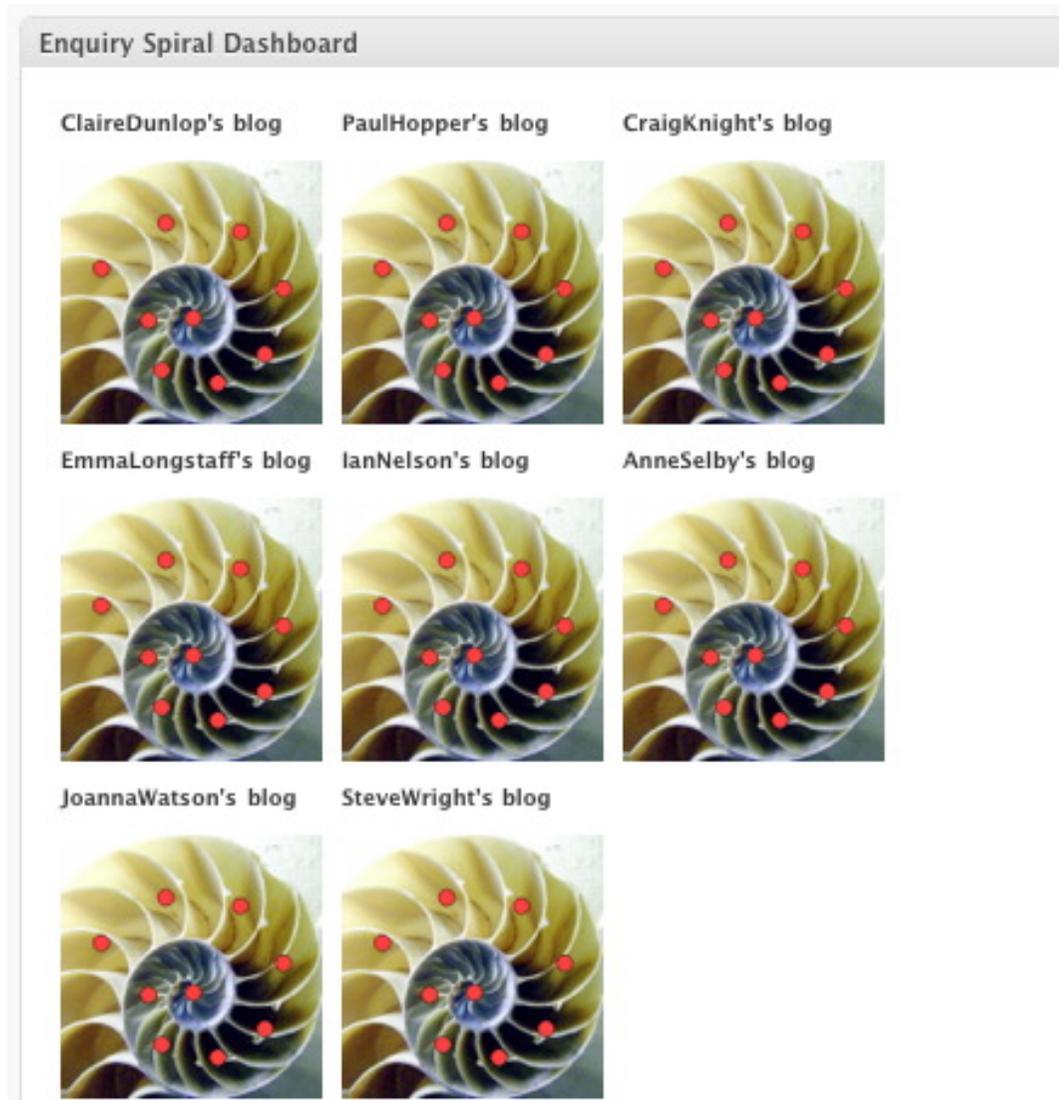
Choosing

Connecting

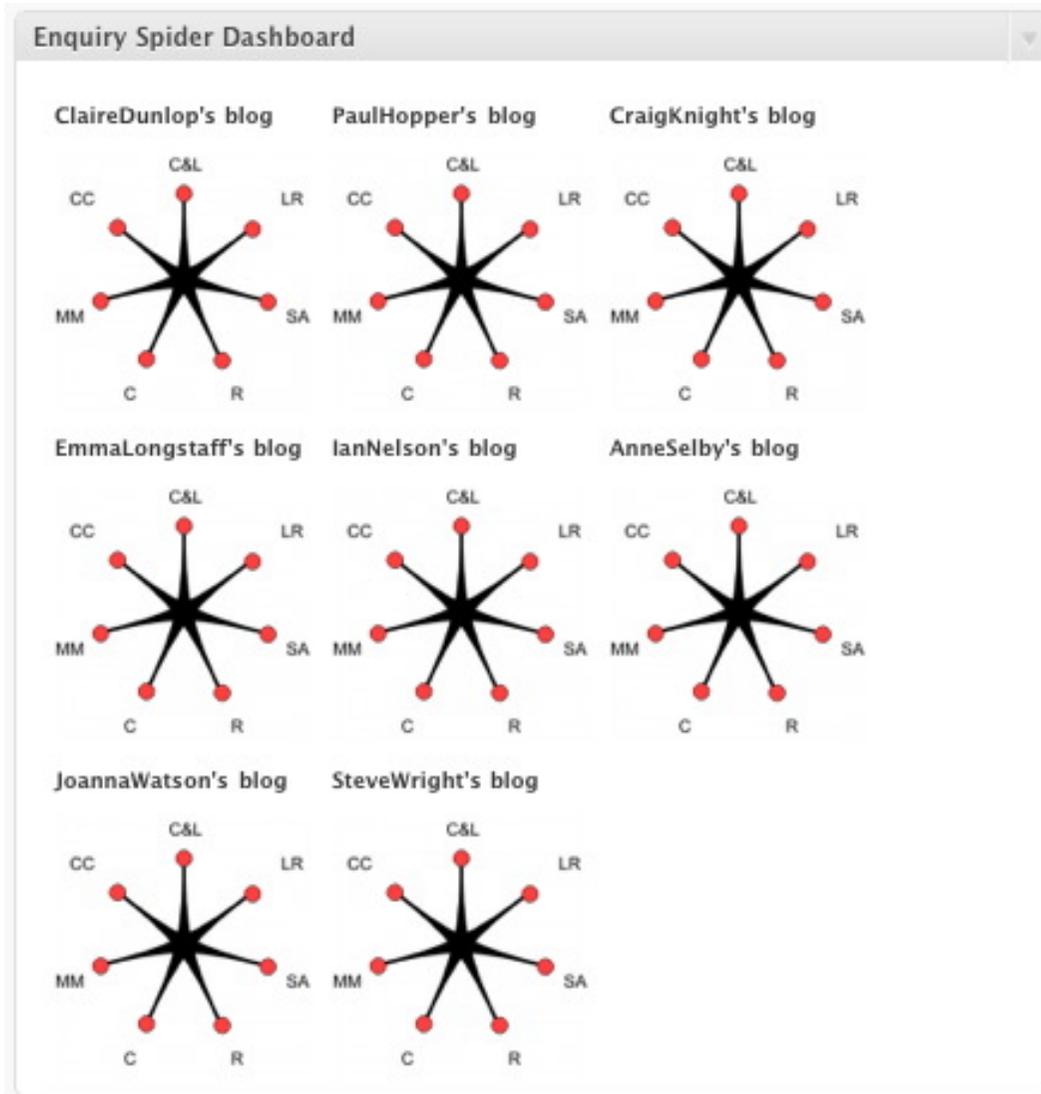


(ELLI profiles can be added to the blog using the images plugin)

# Users with *teacher* status can view the group's EnquiryBlogger plugins in their Dashboard



# Users with *teacher* status can view the group's EnquiryBlogger plugins in their Dashboard



# Raising our game

**Lower level events**



**Higher level patterns**

**Students assigned  
to groups based  
on balancing  
gender and age**

**Students assigned  
based on predicted  
vulnerability, in order  
to balance mentor  
workload, and match  
mentor skillsets**

# Raising our game

**Lower level events**



**Higher level patterns**

**In the week prior to every Assignment, forum posts and Helpdesk calls spike**

**Both successful and failing students showed stressful status updates, but the successful ones engaged in more informal interaction, while the failing students stopped talking to anyone**

# OU Facebook app: My OU Story

Tony Hirst, Liam Green-Hughes, Stuart Brown  
<http://apps.facebook.com/myoustory>

**facebook** 2 4 2 Search

My OU Story Home | My Mood Graph | Invite your friends! | My preferences | Terms of Service

**My OU Story**

Story Mood History

Mood History Graph for

Date	Mood
12 Jan	OK
13 Jan	Feeling really good
14 Jan	Excited and very happy

**Feedback**

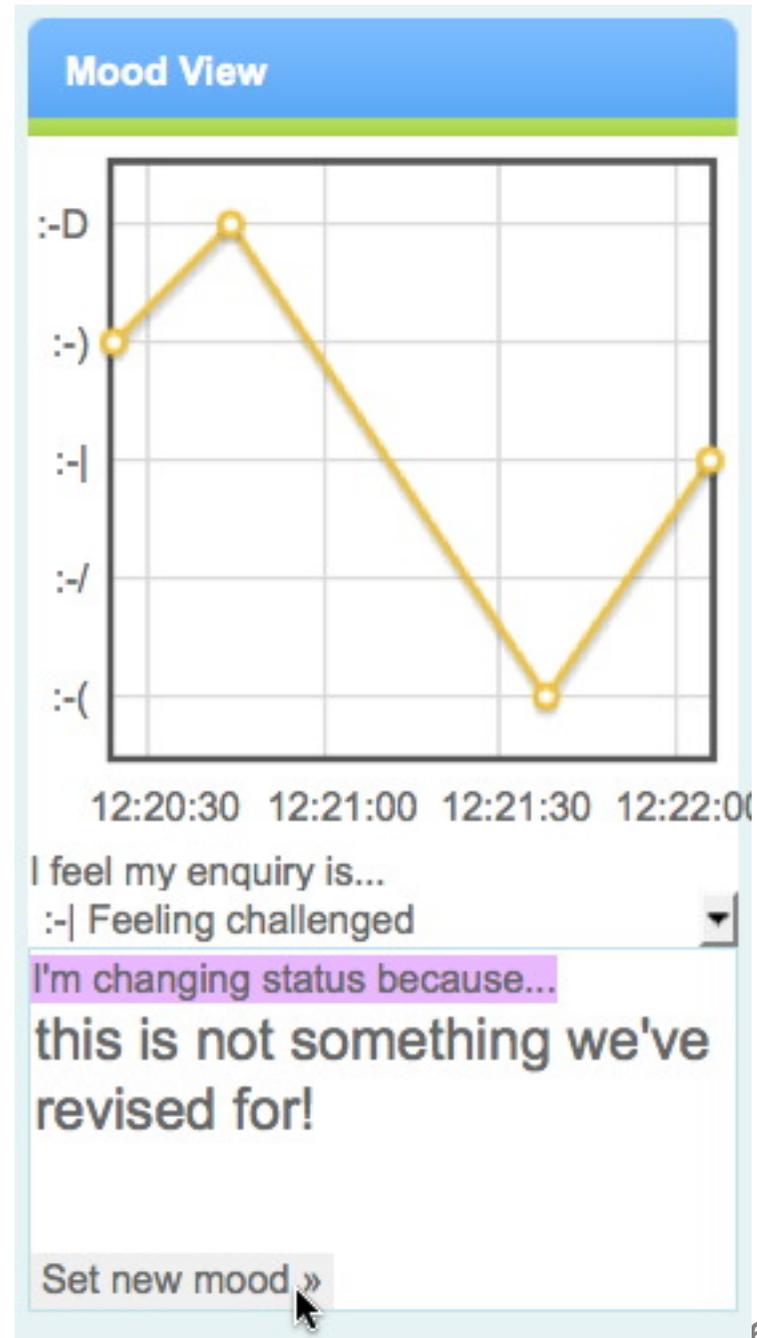
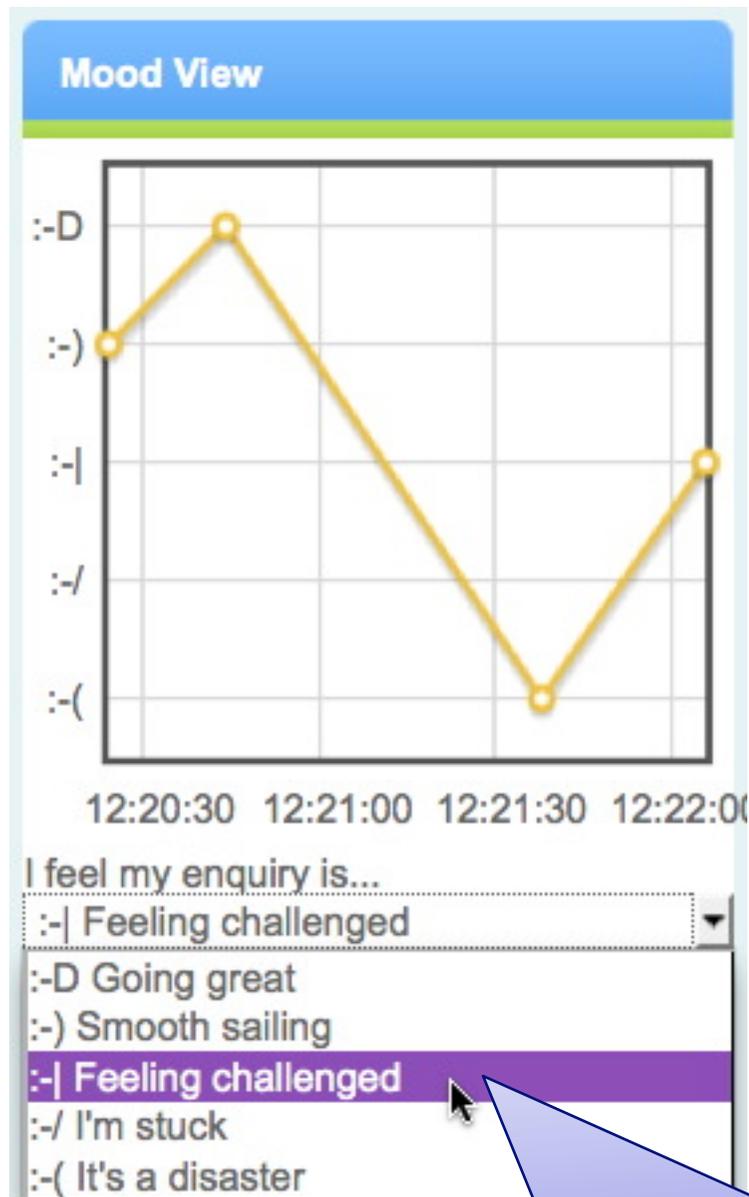
Feedback type: **Be less modest**

Comment (optional):

- Be less modest
- Cheer up
- Comment
- Congratulate
- Empathise
- Encourage
- Hang on in there**
- Happy for
- Pat on back
- Sympathise
- Understand

Dan Clement told Steve the first assi... Posted at 17:21 on ... there!"

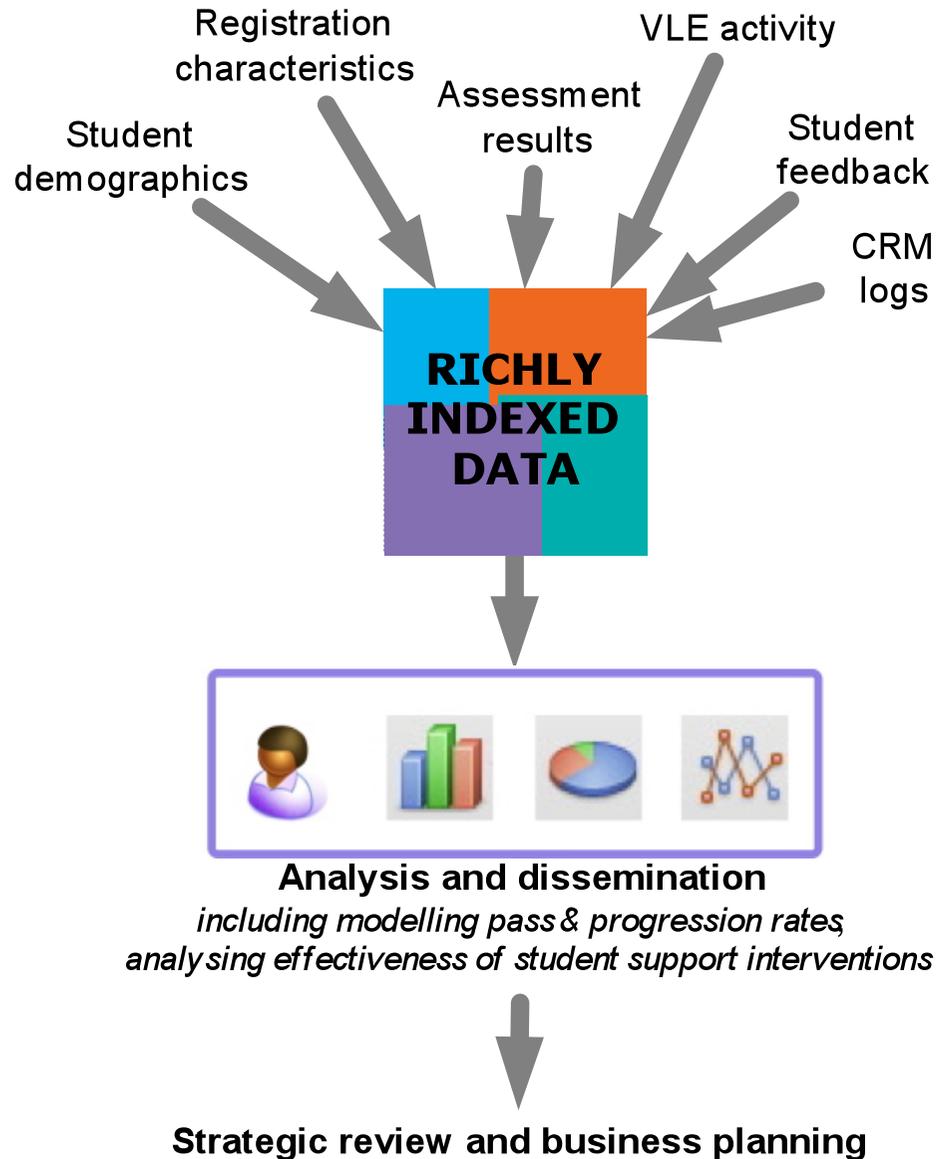
60



**EnquiryBlogger: Changing your “mood” in the Mood View plugin prompts you to explain why, which will then be added as a new blog post**

# **future trajectories**

# Institutional Analytics: the future



# Future trajectories we're working on...

- **Triangulating data sources to enrich context: e.g. staff skills, curriculum design, student profile, real time usage, course feedback, CRM transcript analysis... (→ linked data)**
- **Just in time interventions using analysis of online engagement**
- **Greater personalisation using demographic details and previous study history**
- **Multimedia indexing to detect the use of common images/videos**
- **Merging data from cloud applications to which the user grants access**
- **Data mining and recommendation engines around social learning**

...balanced by the **ethical principles** around data fusion, confidentiality, conflicting interests...

...and the intellectual challenge: **does what we are measuring have integrity** as indicators of authentic learning?