



Cross-institutional MOOC Data Analysis and Visualisation: A call for collaboration

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FLAN – Glasgow, 19 April 2016

Outline

- Who are we?
- What do we do?
- What do we want?
- Will you join us?



Who are we?



Su White,
Adriana Wilde (ECS)

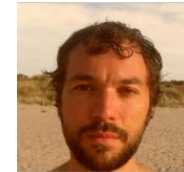


MOOC Observatory

<http://blog.soton.ac.uk/mobs/>



Graeme Earl,
Lisa Harris (WSI)



Manuel León-Urrutia
(ILIAAD)



What do we do

- MOOC production
- MOOC data management
- MOOC data analysis



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... and more soon!



MOOC data management

An integrated toolset and data infrastructure:
the **MOOC Observatory** and the **UoS Web Observatory**

MOOC Datasets
in .csv



Converted to SQL



Stored & Hosted
in UoS Web
Observatory.

Queried & Analysed by MOBS

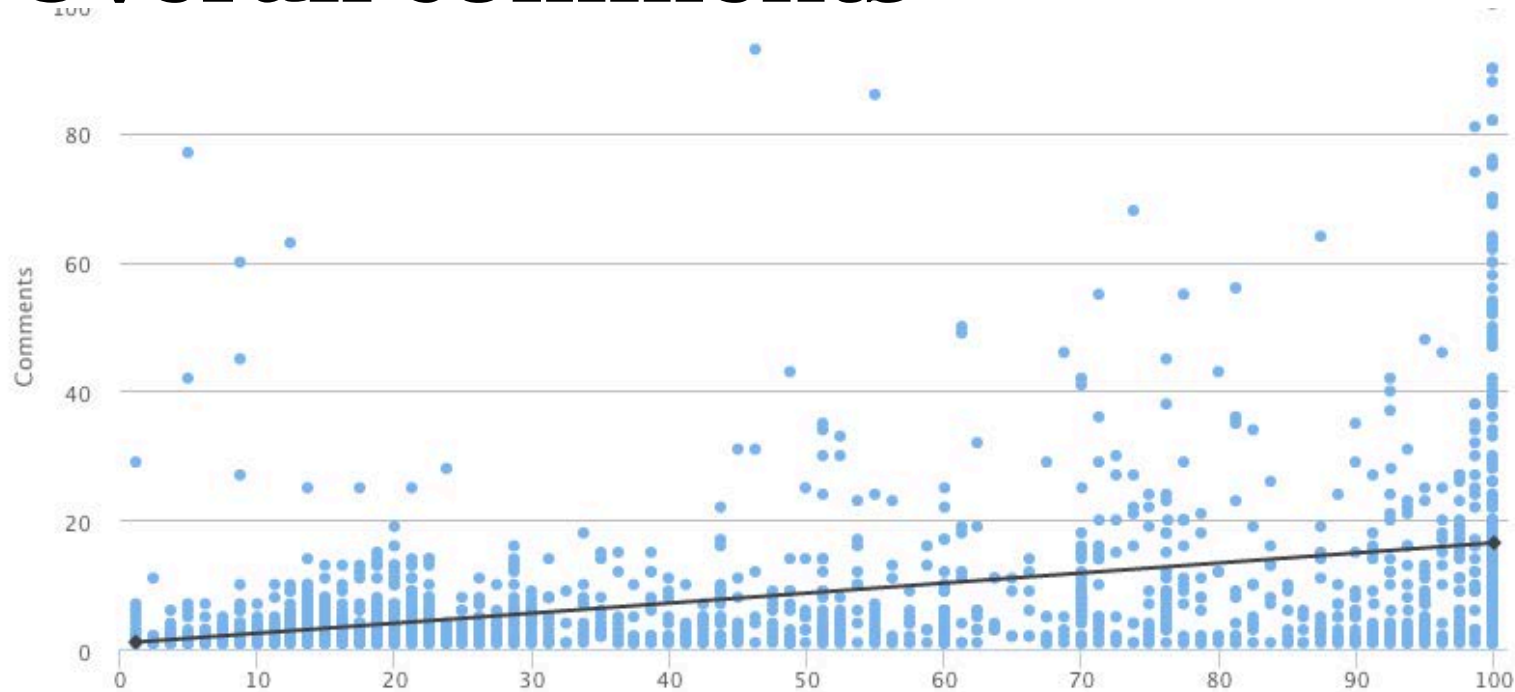


MOOC Data Analysis (some examples)

- Learner activity patterns
- Text Mining
- Social Network Analysis
- Real time visualisations
- ...



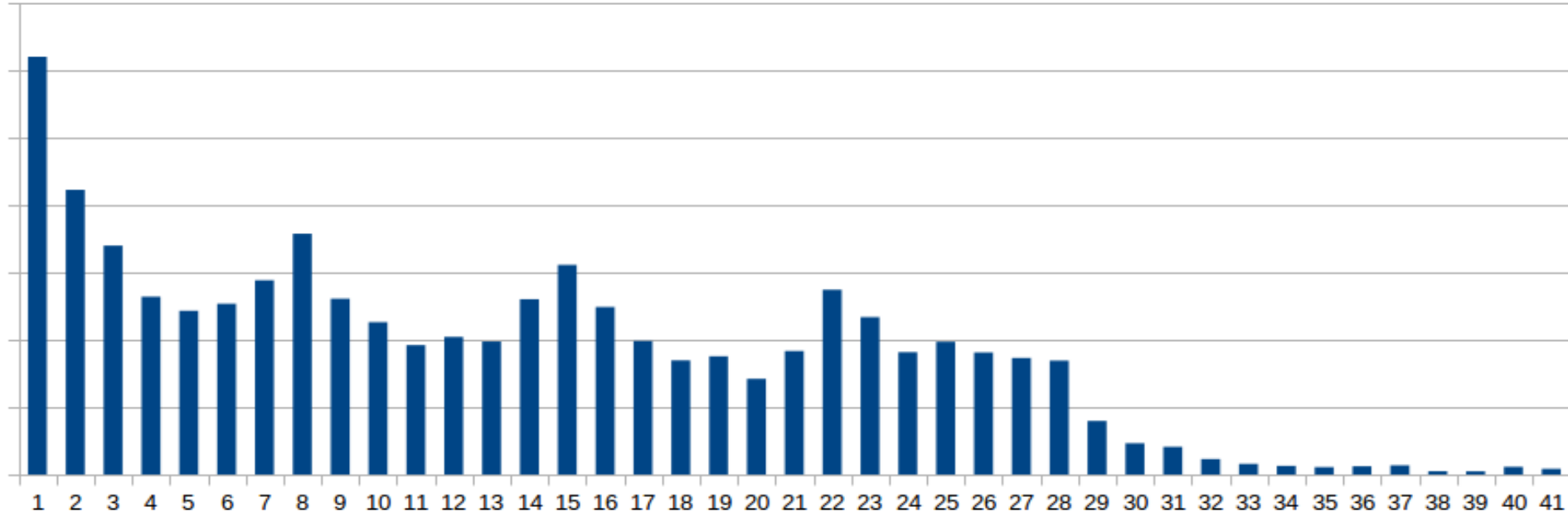
Learner Activity Patterns: Overall comments



(Number of comments in a MOOC against completion %)



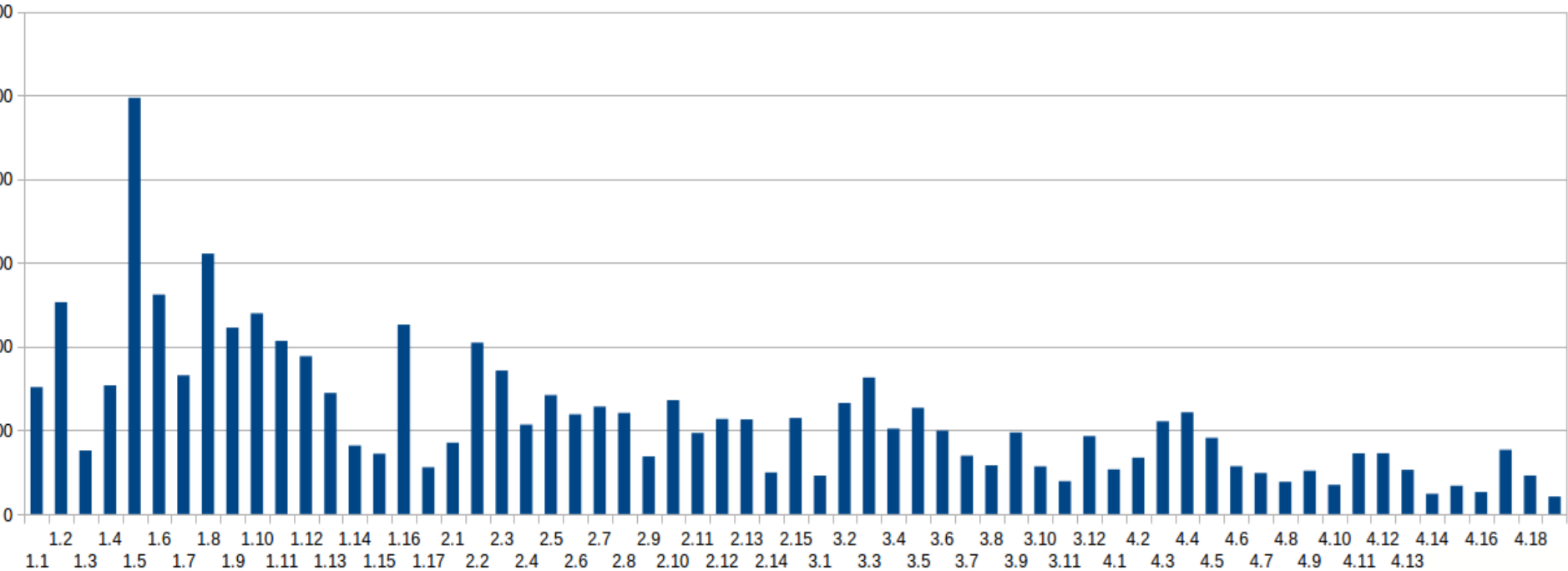
Learner Activity Patterns: Comments per day



(Comments in a MOOC generated over time)



Learner Activity Patterns: Discussion generation analysis

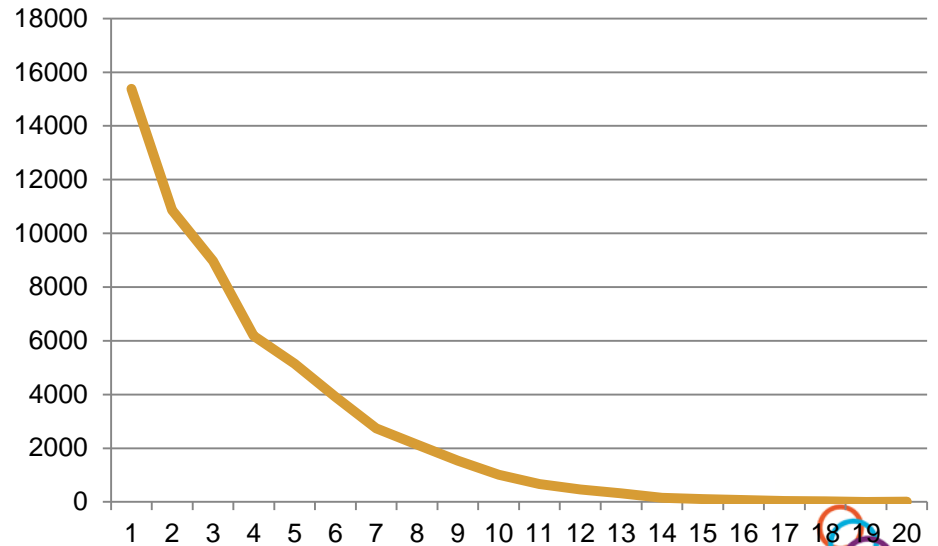
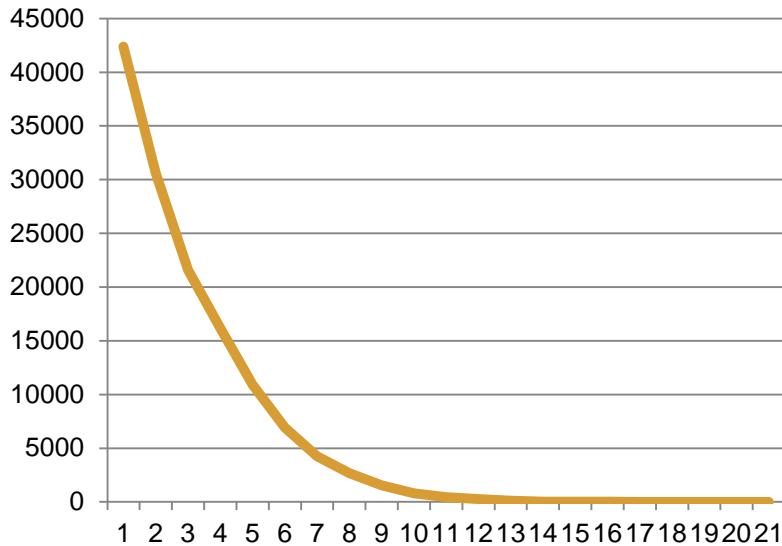


(Number of comments that steps in a MOOC generate)



Learner Activity Patterns: Comparing course runs

Two consecutive runs of the same MOOC exhibit **similar behaviour** (example: Sum of Steps Visited) when scaling over total steps



Around week 7 there is an inflexion point



Text mining: Portus MOOC comments

- Undertaking primary research about development and communication of archaeological knowledge (see next slide)
- Using concordance (AntConc), topic maps and other approaches to mine comments
- e.g. undertaking specific research such as examining the multisensory nature of creative writing on the course through co-occurrence of words (in this case “smell”)



word	count
fish	35
spices	29
sea	28
Sweat	18
Food	10
Cooking	8
animals	7
sewage	7
oil	5
fruit	4
smoke	4
wood	4
herbs	3
tar	3
awful	2
bread	2
damp	2
grass	2
baths	1
caulking	1
frankincense	1
garlic	1
grain	1
mud	1
olives	1
painting	1
Pitch	1
Plants	1
rubbish	1
sawdust	1
seaweed	1
wine	1



Prof. Graeme Earl



Text mining: use of pronouns vs pedagogical value

Variable	Adj. R ²	P-value	Corr. with PV	Citations
2nd person pronoun	0.721	<0.001	Negative	[12]
+ve emotion	0.601	0.002	Negative	[12, 11]
Preps	0.463	0.009	Positive	[12]
Graph Density	0.068	0.21	Negative	[13]

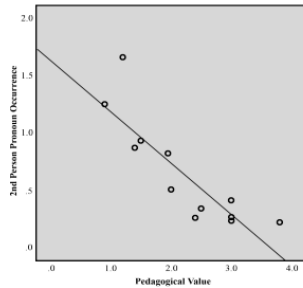


Figure 1: Correlation between 2nd person pronoun and PV

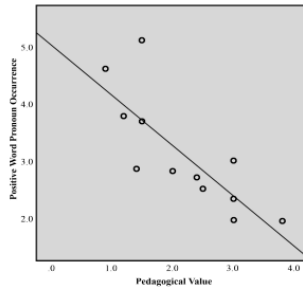


Figure 2: Correlation between positive emotion words and PV

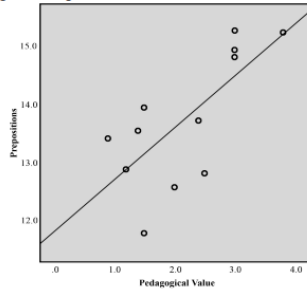


Figure 3: Correlation between prepositions and PV

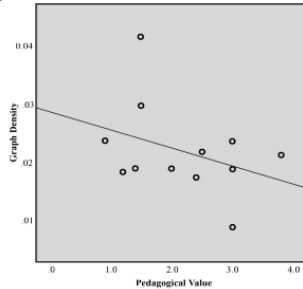


Figure 4: Correlation between graph density and PV

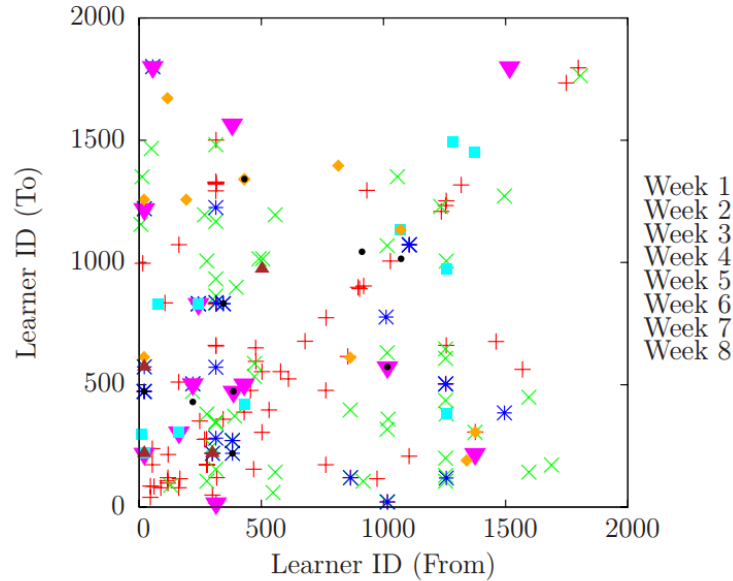


Tim O'Riordan

O'Riordan, Tim, Millard, David and Schulz, John (2015) Can you tell if they're learning? Using a pedagogical framework to measure pedagogical activity. In, *ICALT 2015: 15th IEEE International Conference on Advanced Learning Technologies, Hualien, TW, 06 - 09 Jul 2015*. 3pp.



Social Network Analysis: interactions between learners



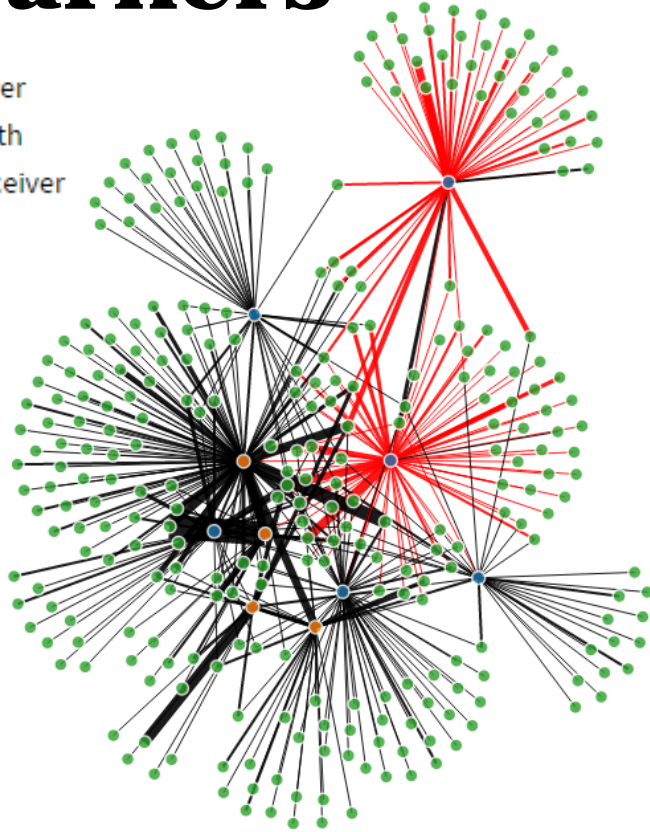
Ayse Saliha Sunar

Sunar, Ayse Saliha, Abdullah, Nor Aniza, White, Susan and Davis, Hugh C. (2015) Analysing and predicting recurrent interactions among learners during online discussions in a MOOC. In, *11th International Conference on Knowledge Management ICKM 2015, Osaka, JP, 04 - 06 Nov 2015*.



SNA: networks of selected learners

■ giver
■ both
■ receiver

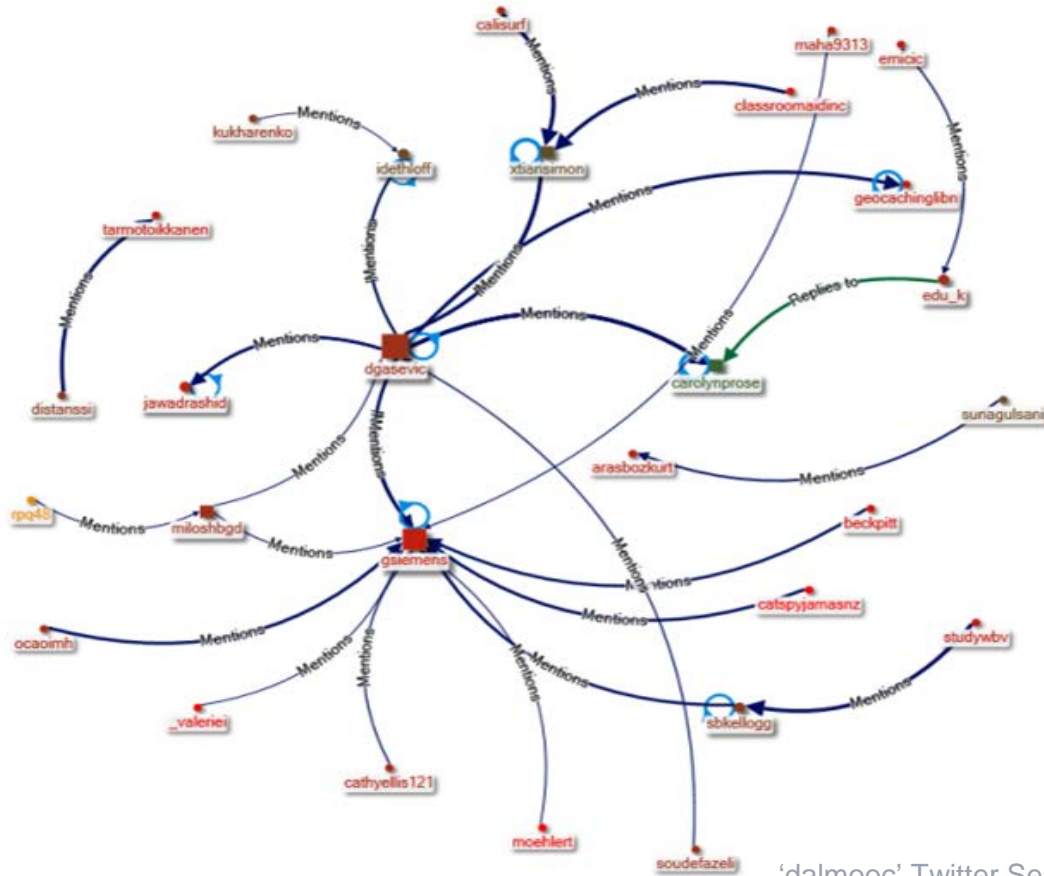


Identification of highly connected individuals, divided into:

- those whose comments are replied to (*receivers*);
- And those who reply (*givers*)



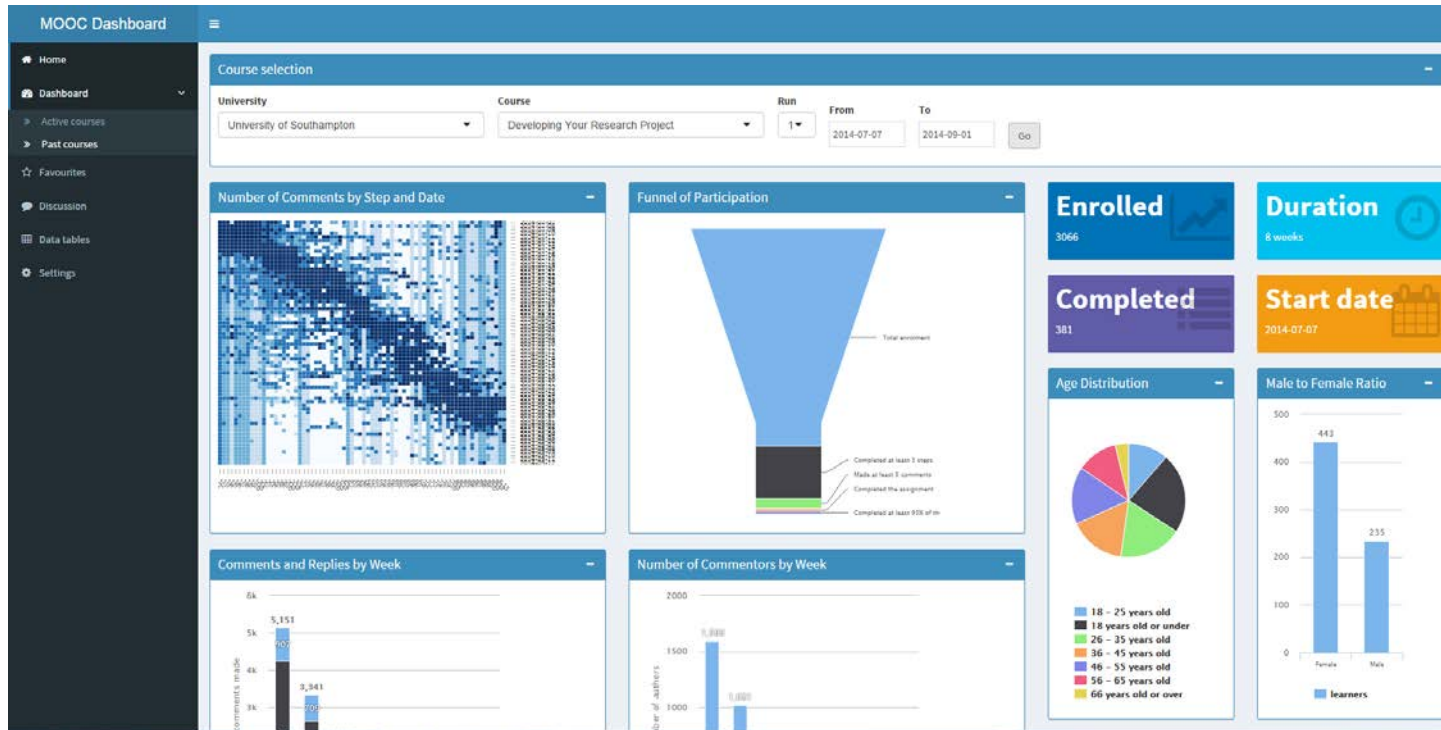
Twitter MOOC Data Analysis



- Our MOOCs also generate data in other social media
- This example is from our Digital Marketing MOOC
- Learners were interacting with each other outside the Futurelearn Platform (Twitter in this case)
- We also have this dataset in our observatory



The MOOC Dashboard



Leon Urrutia, Manuel, Cobos, Ruth, Dickens, Kate, White, Su and Davis, Hugh (2016) [Visualising the MOOC experience: a dynamic MOOC dashboard built through institutional collaboration](#). In, *EMOOCs 2016, Graz, AT, 22 - 24 Feb 2016*.



Persuasive technologies

Fogg (2003) anticipated students in the future being *persuaded* to learn.

Vision: A student runs “StudyBuddy” on a hand-held device. Events:

1. she is congratulated on having met that day her daily study goal
2. she is presented suggestions on short, specific activities to engage with
3. she is presented a **visualisation** in which her peers who are also revising are represented in clusters as an encouragement
4. Her **mentor** can **monitor** her engagement and offers basic feedback.



Dashboards as persuasive technologies

The successful application of persuasive technologies in this context presuppose a very good understanding of the learners behaviour.

But this is challenging!

Data may be incomplete, inaccurate, technically difficult to collect and process in real time.



What do we want

- Share questions
- Test the dashboard
- Share data for cross-institutional analysis
- To (informally) know whether the network would want this



Now your turn!



- Please scan this QR code ...OR
- Go to <http://respond.cc> and enter **381871** as a session key





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