



Assessment Analytics

Adam Cooper, Cetis
EUNIS E-Learning Task Force Workshop,
Abertay University, Dundee, June 9th 2015

#laceproject



Agenda for this Session

Brief outline of LACE Project

Perspectives on Learning Analytics

A critical eye

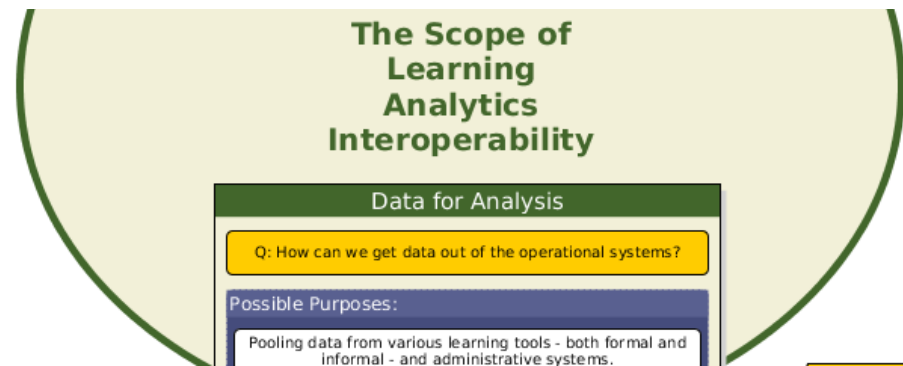
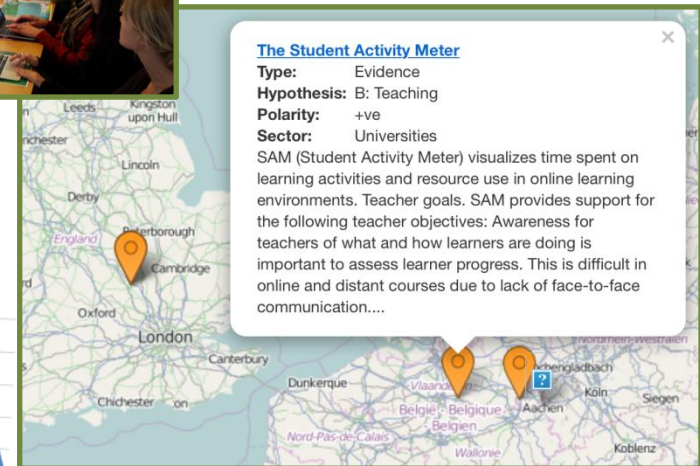
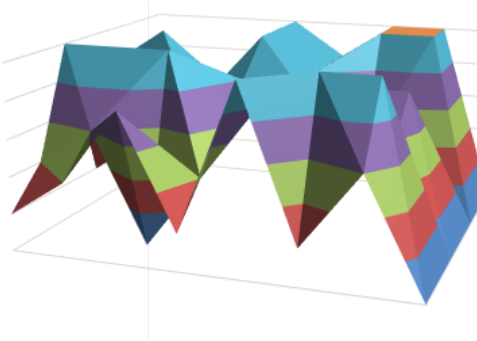
Some ideas about Assessment Analytics

Group discussion and feedback

Quick Overview of LACE

LACE Goals and objectives

- Objective 1 – Promote knowledge creation and exchange
- Objective 2 – Increase the evidence base
- Objective 3 – Contribute to the definition of future directions
- Objective 4 – Build consensus on inter-operability and data sharing



Suppliers

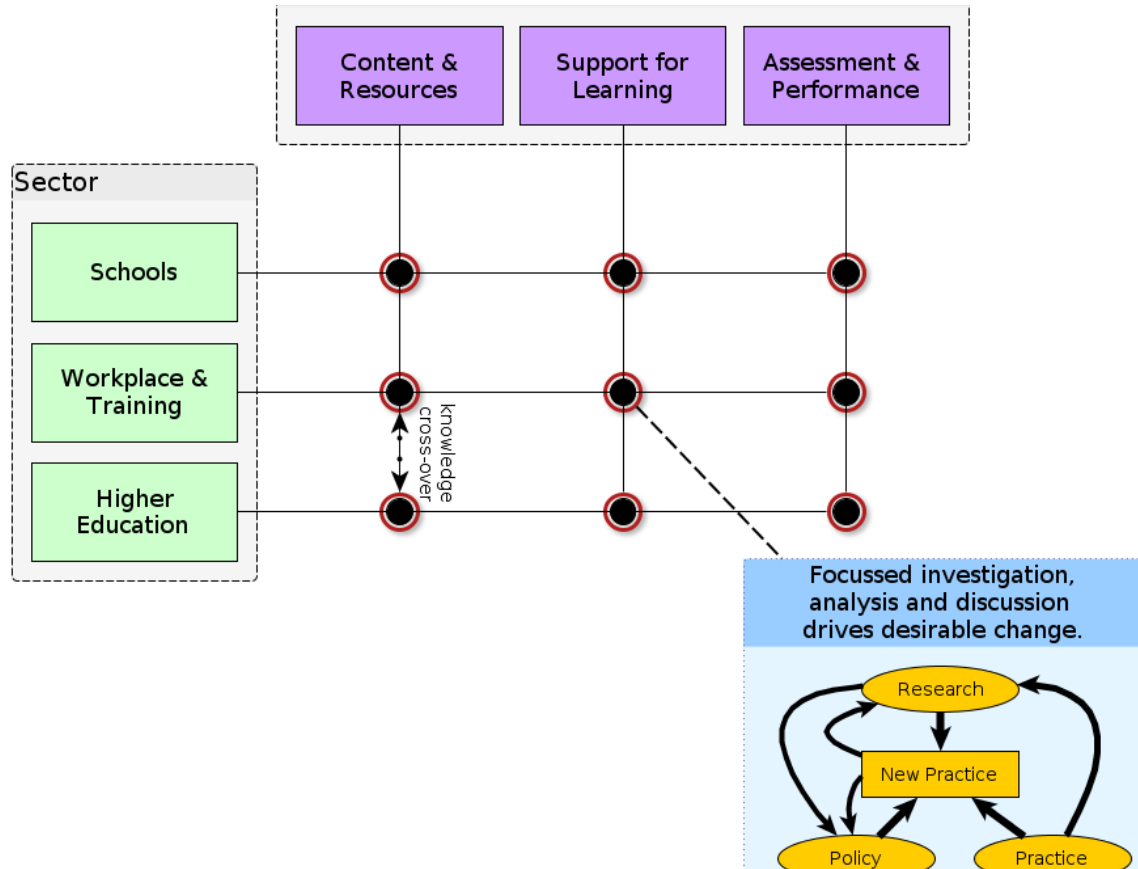
Entrepreneurs

Teachers

Learners

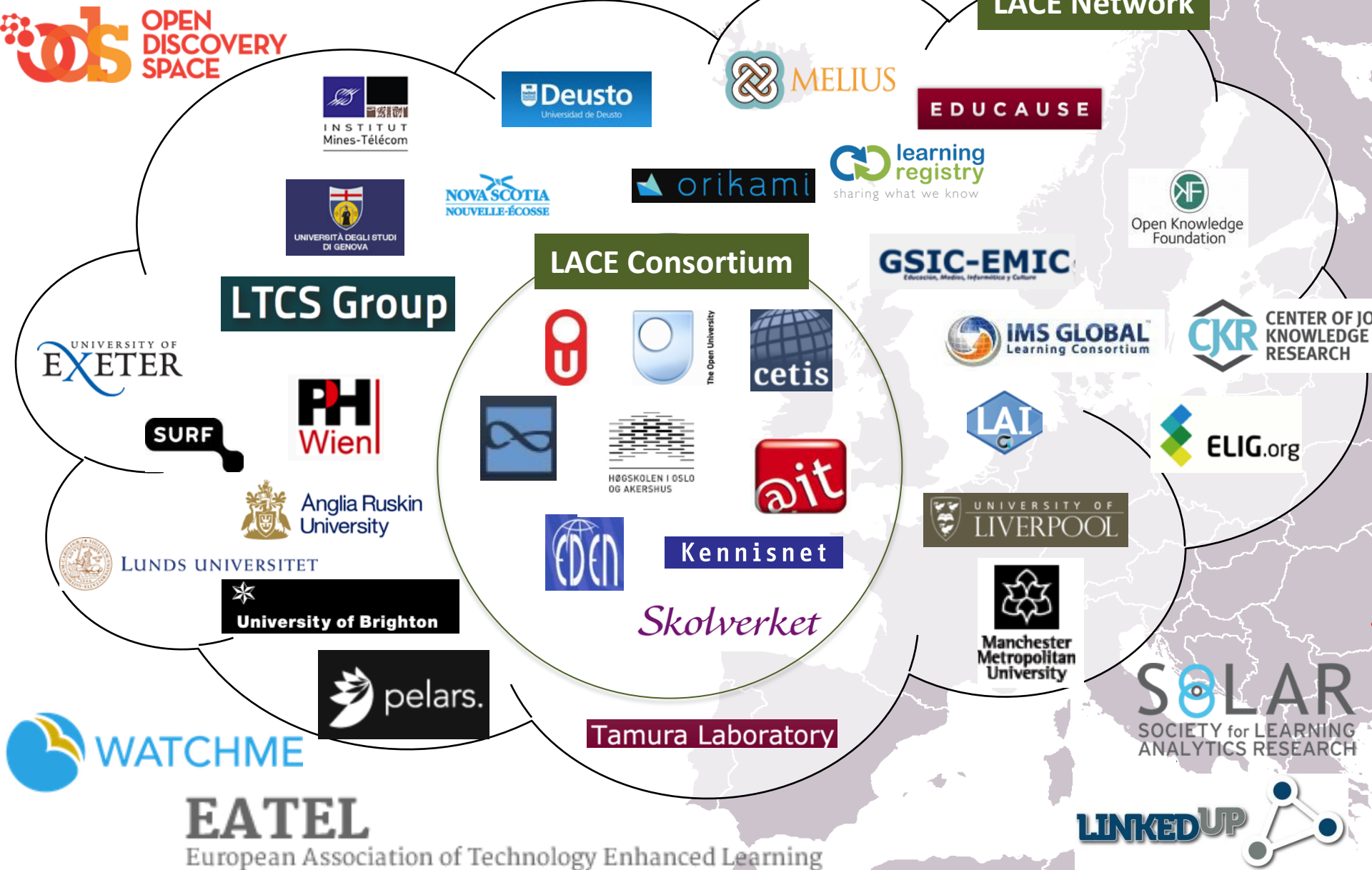
Researchers

Policy-makers



Learning Analytics Community Exchange Project

Who we are (47 Ass. Partners)



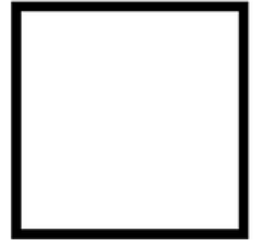
A Critical View of Dominant Themes

(in Learning Analytics)

Dear EUNIS,

The data here is lovely and we've had such an adventure with the analytics. We have a new data warehouse and a cool dashboard and can now predict which students will fail with 80% accuracy.

Wish you were here,
love Big D



EUNIS,

Abertay University.

Dundee,

Scotland

What do I Mean “Learning Analytics”?

Analytics is the process of developing actionable insights through problem definition and the application of statistical models and analysis against existing and/or simulated future data.

Adam Cooper, Cetus Analytics Series

Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs.

Society for Learning Analytics Research

I put primarily management matters out of scope. e.g. efficiency

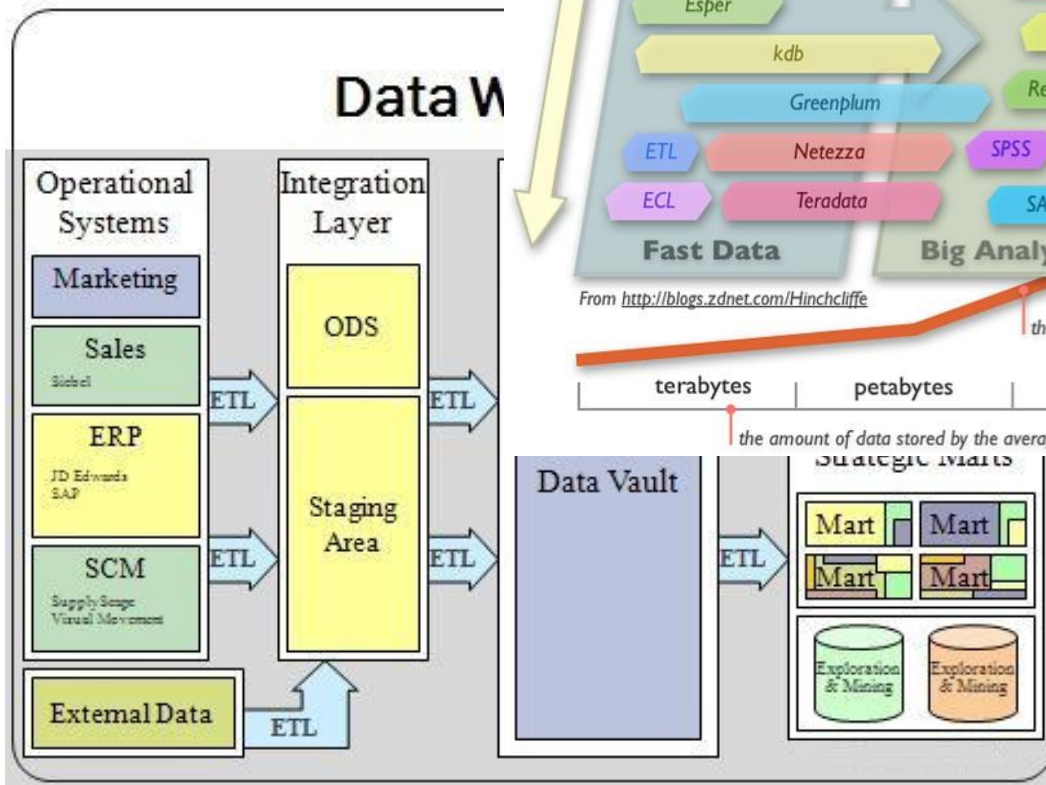
The Three Themes Are:

- Data Warehouses and Big Data
- Dashboards and Fancy Visualisations
- Predictive Analytics for Retention and “Intervention” Systems

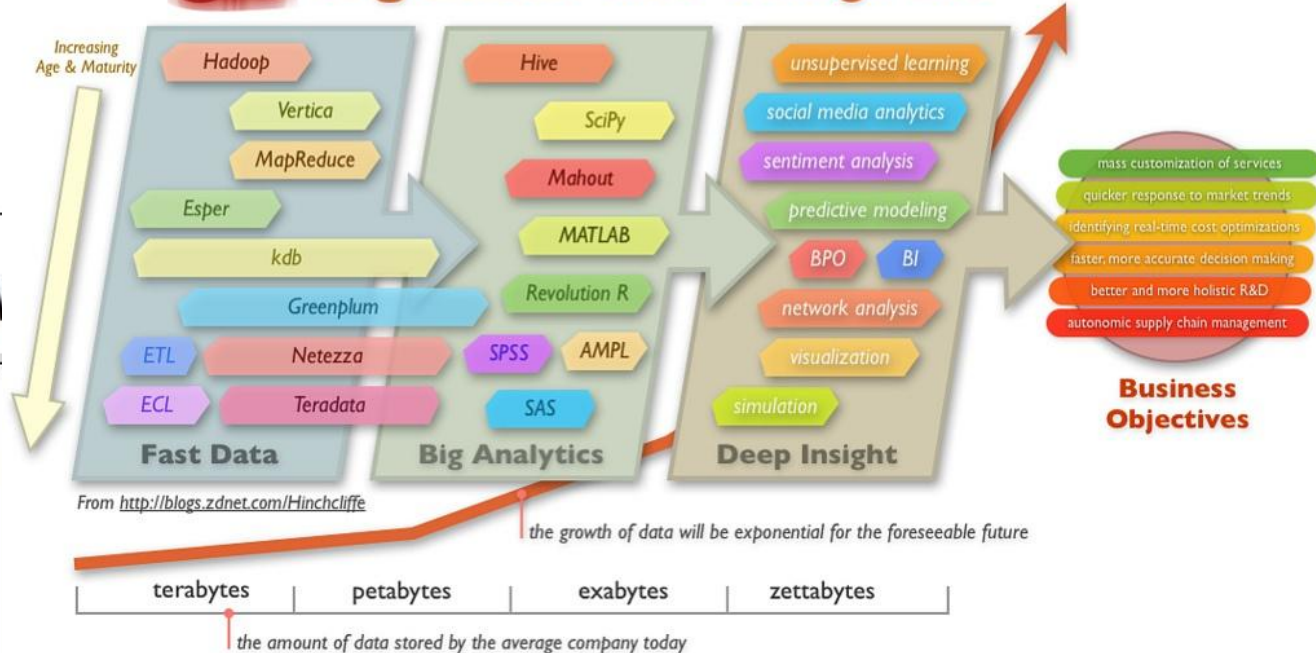
A Critical View!

Data Warehouses and Big Data

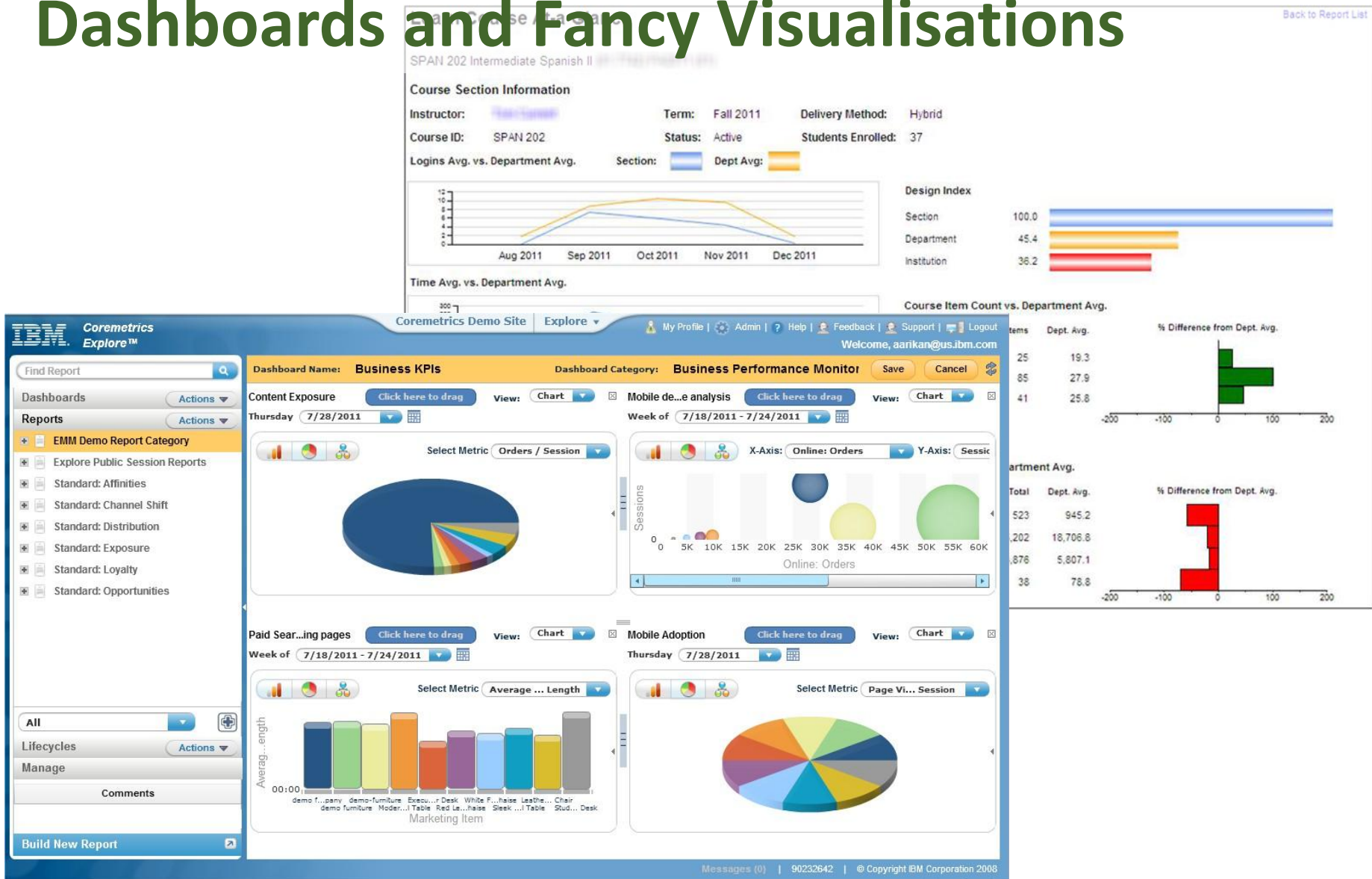
OK, we need to manage data, but...



Big Data: The Moving Parts



Dashboards and Fancy Visualisations



Predictive Analytics, Retention & “Intervention”

Technically sophisticated...
but sometimes opaque



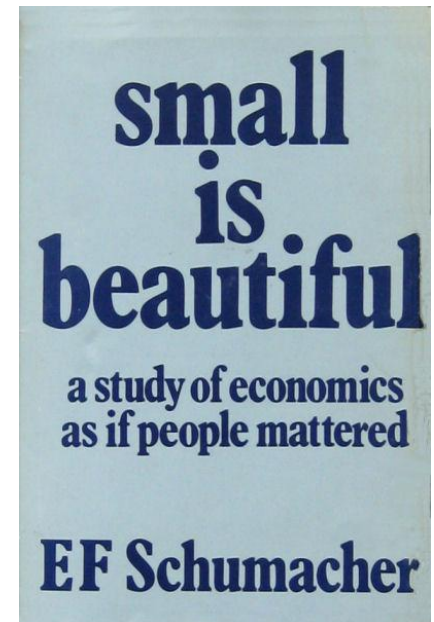
"Your recent Amazon purchases, Tweet score and location history makes you 23.5% welcome here."



I Think These Are Marginalised:

- What we can get from Small Data
- What can be achieved with “intermediate technology”
- Simple visualisations in a context
- Understanding without prediction
- Relevance to all learners
- **A strong foundation in [pedagogic] practice**

Assessment Analytics can be all of these!



What do I Mean “Assessment Analytics”?

- Almost a subset of Learning Analytics

Analytics is the process of developing actionable insights through problem definition and the application of statistical models and analysis against existing and/or simulated future data.

Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs.

- In which the data derives from assessment
or

- The “environment” is assessment

PLUS

- Extending the forms of assessment (including summative-only)

Time to Un-pack!

Data about...

- Learner activity
- Learner performance
- Assessment quality
- Teacher activity
- Demographic and situational facts

Analytics used by...

- Learner
- Teacher

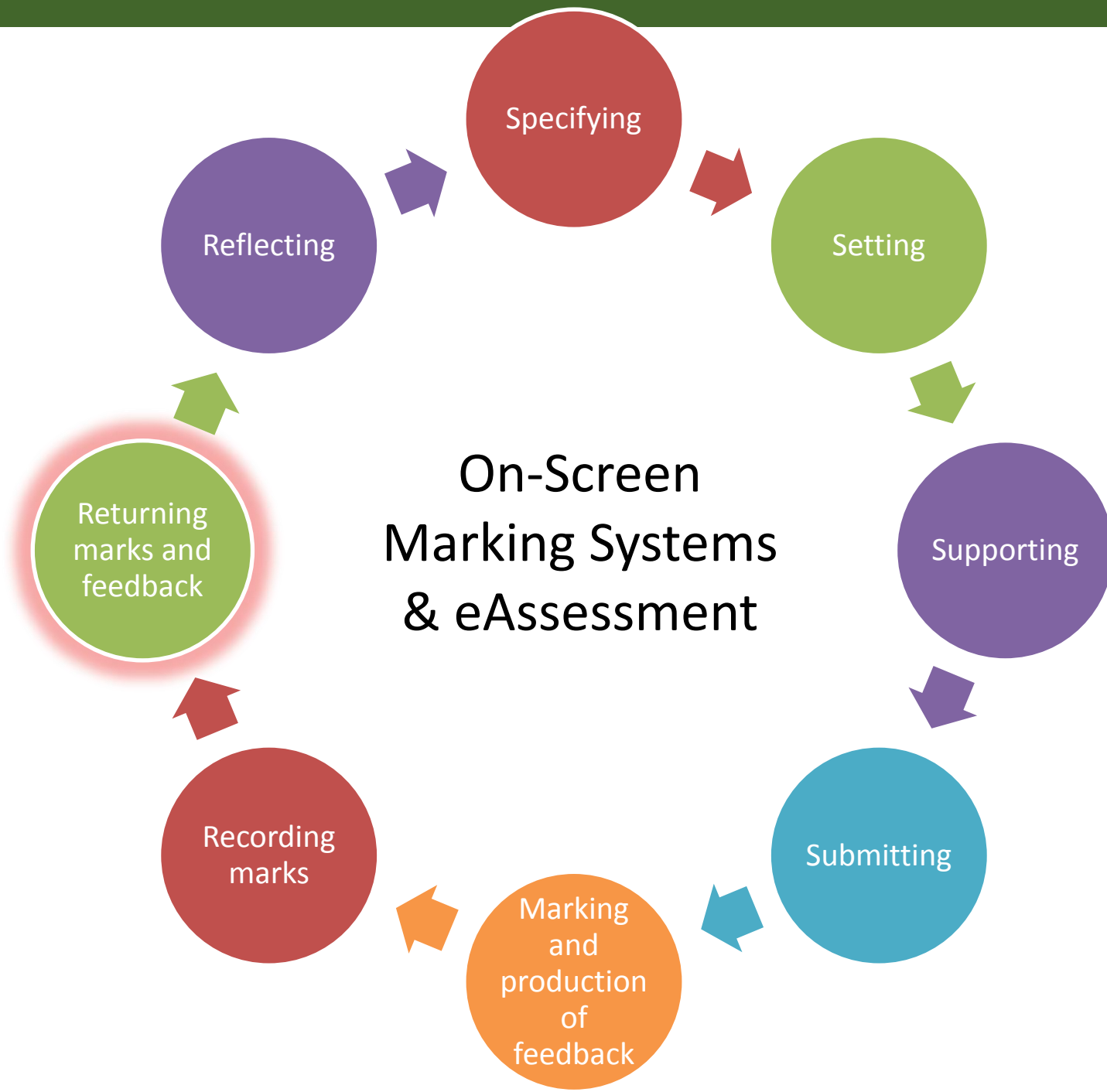
To guide...

- Learner
- Curriculum design
 - “content”/instruction
 - Structure/sequencing
 - Assessment
 - Pedagogic style
- Reflective practice
- ...

Broad Areas for Assessment Analytics

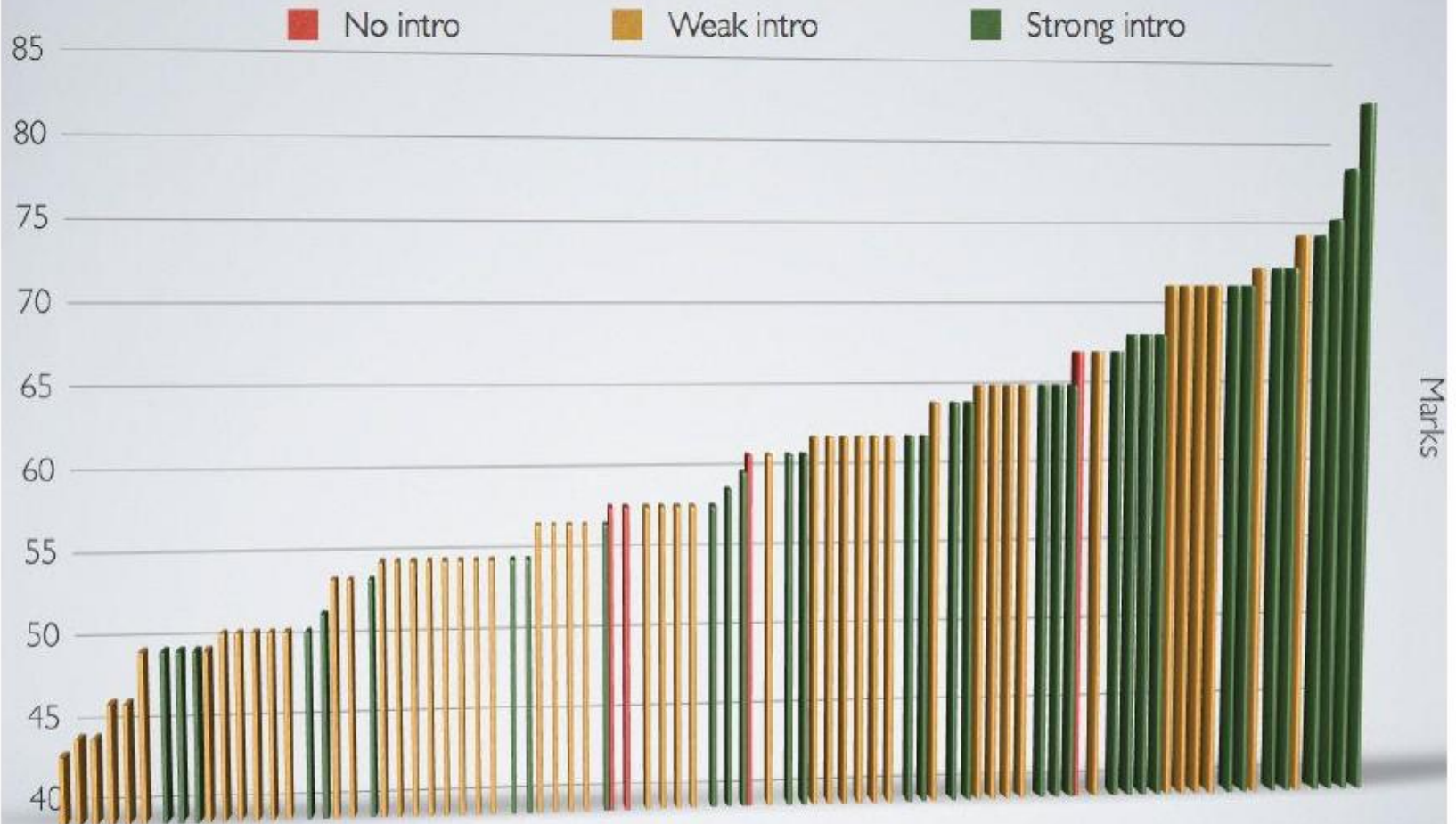
(Some Ideas)





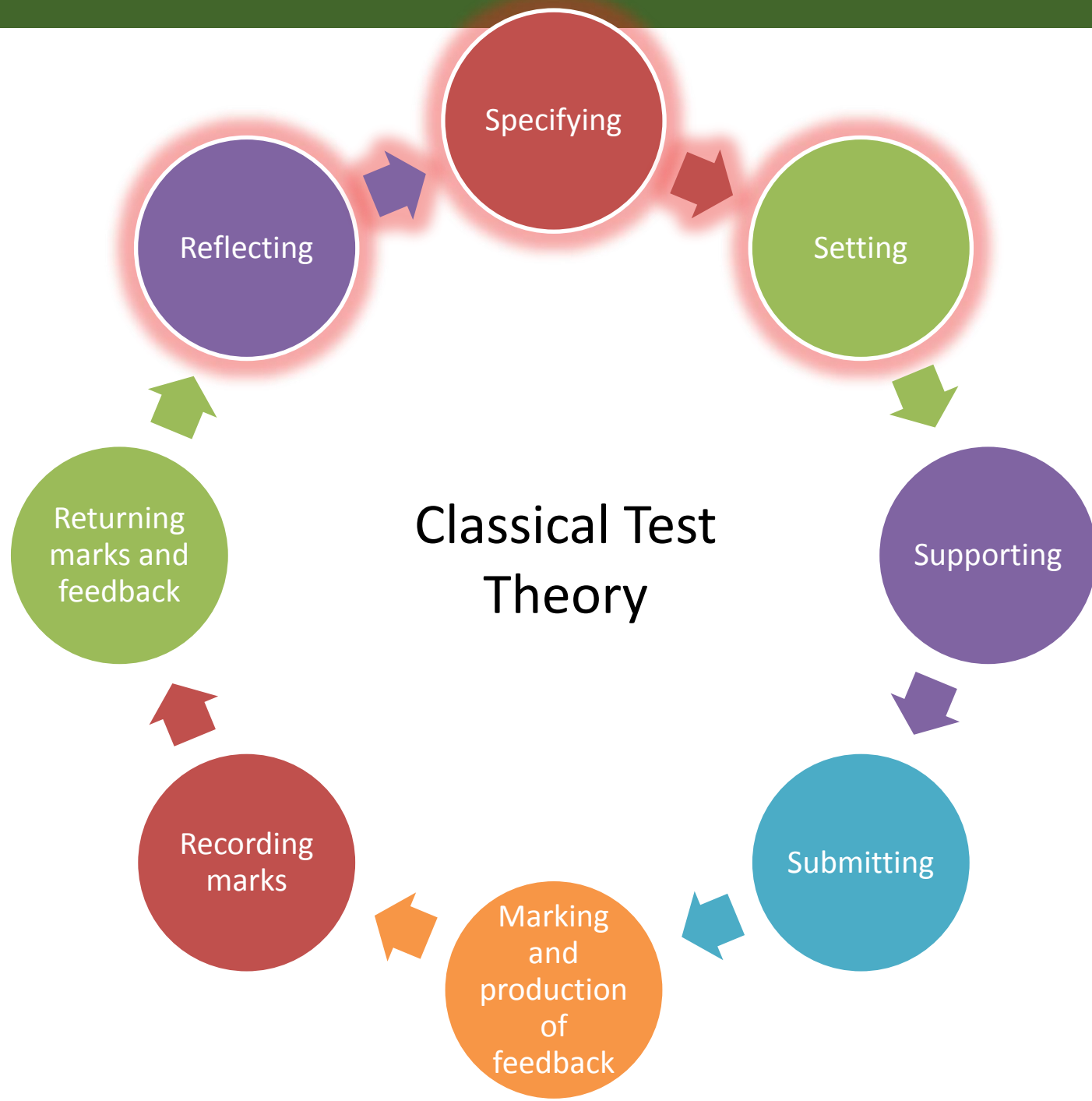
SOME COMMON PROBLEMS.....

INTRODUCTIONS



From "Case Study: Acting on Assessment Analytics" by Sheila MacNeill and Dr Cath Ellis
(Cetis Analytics Series Vol. 2, No. 2)





Classical Test Theory

Mostly useful for objective testing.

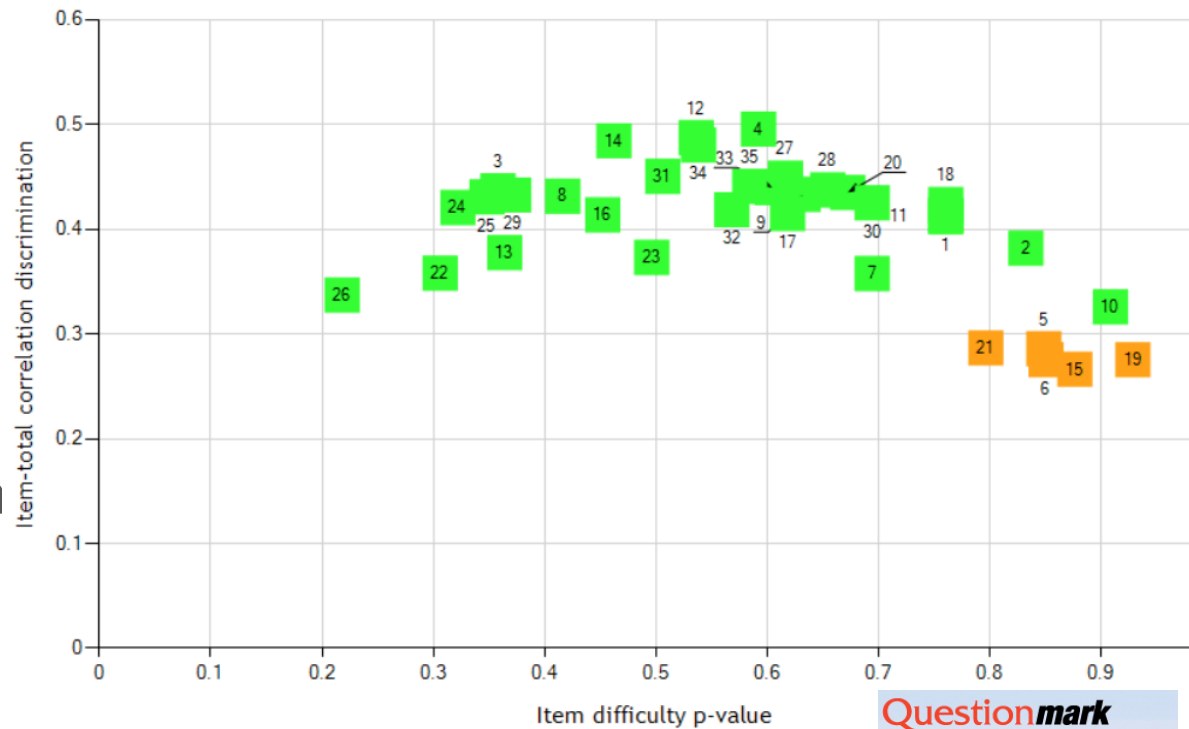
Well-established and relatively simple.

Can quantify:

- Test reliability*
- Inter-rater consistency
- Item difficulty
- Discriminating power
- Learner misconception

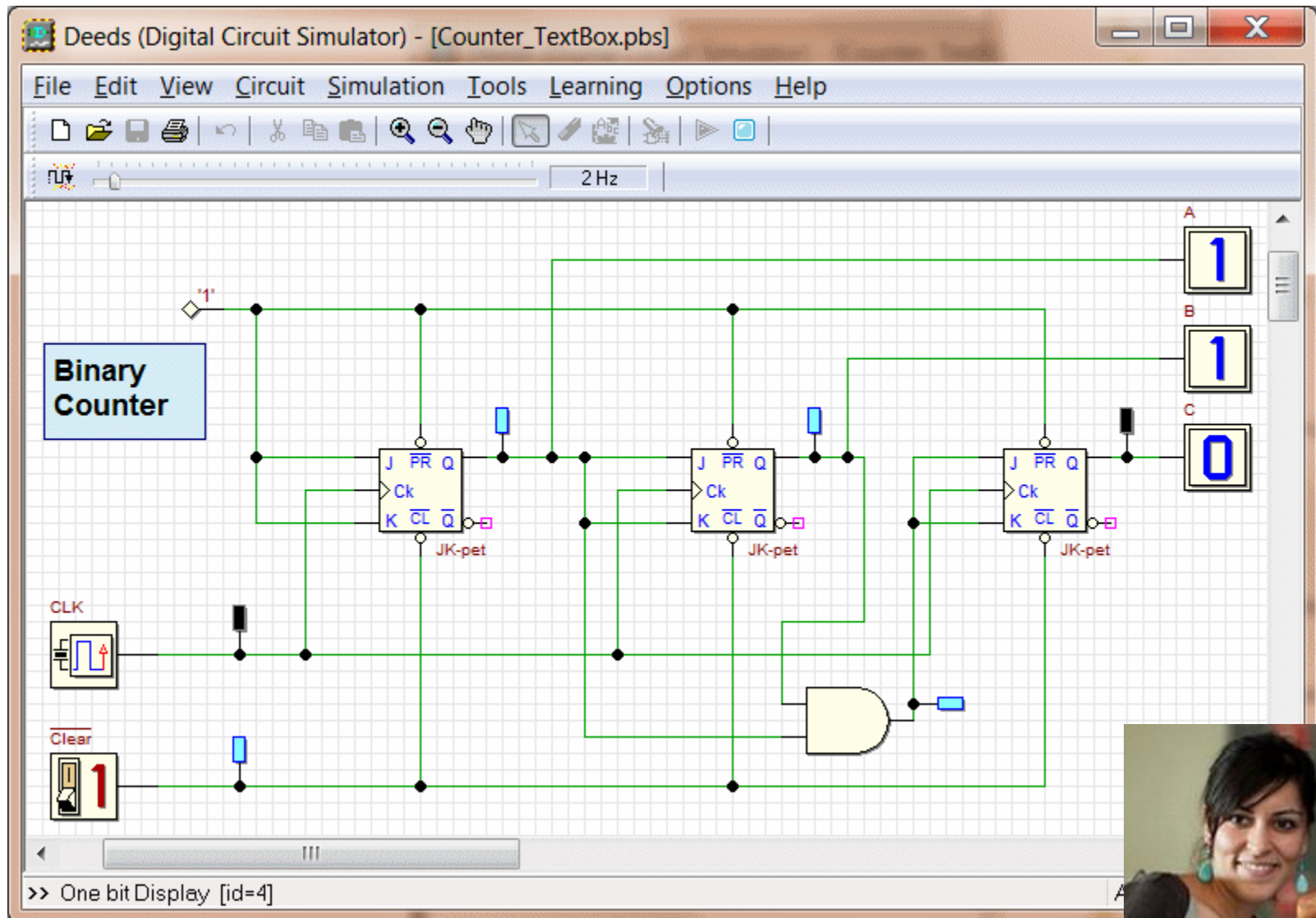
And help to identify:

- Errors and badly-designed items



* - validity is something different (is the measuring what we want to know)

More Authentic Assessment



Mehrnoosh Vahdat

Discussion Questions

- Where do you think data analytics **could** be used to enhance the cycle for conventional assessment?
- From the perspective of teachers and learners, which are the most attractive points in the lifecycle to adopt assessment analytics?
- For which points would fine-grained eAssessment activity data help?
- What new(er) forms of assessment can we introduce with analytics, and what would the lifecycle look like for them?

Discuss in groups. Choose one or more of these questions, or pose your own. Feedback.



Some Resources I Recommend

Watch Cath Ellis!

<https://vimeo.com/85331242>

Cetis Analytics Series

<http://publications.cetis.org.uk/c/analytics>

“Understanding Assessment Results” – Questionmark Analytics, Austin Fossey (2014 Users Conference)

https://www.questionmark.com/us/conference/Documents/2014%20Handouts/2014_bp_results.pdf

“Assessment Analytics” by Adam Cooper, Cetis, was presented at the EUNIS E-Learning Task Force Workshop on Electronic Management of Assessment and Assessment Analytics held at Abertay University in Dundee on June 9th 2015.

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 **cetis**

Come and talk with
me



This work was undertaken as part of the LACE Project, supported by the European Commission Seventh Framework Programme, grant 619424.



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Credits

Data warehouse overview – public domain – Hhultgren

via wikimedia commons http://commons.wikimedia.org/wiki/File:Data_warehouse_overview.JPG

Big Data: Moving Parts – CC BY Dion Hinchcliffe

<https://www.flickr.com/photos/dionh/7550578346>

Learn Course At-a-Glance – Blackboard Analytics for Learn

<http://www.blackboard.com/Platforms/Analytics/Products/Blackboard-Analytics-for-Learn.aspx>

IBM Coremetrics Explore

<http://www-03.ibm.com/software/products/en/digital-analytics>

Arrivals – CC BY T. Gregorius

via wikimedia commons http://commons.wikimedia.org/wiki/File:Big_data_cartoon_t_gregorius.jpg

Special Intervention Unit – CC BY Hexogen

Via wikimedia commons http://commons.wikimedia.org/wiki/File:Special_Intervention_Unit-Kosovo.jpg

Small is Beautiful – (c) Blond and Briggs

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DEEDS screenshot – from DEEDS site

<http://www.esng.dibe.unige.it/deeds/>

Discrimination/Difficulty Chart from “Understanding Assessment Results”