Is there value of learning analytics in MOOCs?

Data Science & Social Research International Conference
Naples, 19 February 2016
Francis Brouns, Olga Firsova, Marco Kalz
Learning analytics: hype?

• Big data, learning analytics: HYPE
• Correlations between data without meaning, cause or relation
Patterns and correlations

- Green, stem, leaf: tree, plant, cocktail, book?
Ethical concerns

• Participant might not be aware that data is being used, nor how and to what purpose

• Ownership
What is learning analytics?

Learning analytics is 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.

https://solaresearch.org/about/

Welten Institute
Research Centre for Learning, Teaching and Technology

DSSR conference, Naples, 19 February 2016
Page 5
Need context

• Stakeholders
• Objectives: Prediction, Reflection
• Norms and procedures
• Protection of data

**Welten Institute**
Research Centre for Learning, Teaching and Technology

DSSR conference, Naples, 19 February 2016
Page 7
MOOC

WHAT IS MASSIVE?
100? 10,000? 100,000?

OPEN REGISTRATION?
SELF-PACED?

START/END DATES?

FOR CREDIT?

ROLE OF THE TEACHER?

SCRIPTED ASSESSMENT?

SCRIPTED FEEDBACK?

FREE?

ROLE OF THE CONORT?

EVERY LETTER IS NEGOTIABLE!!!
ECO MOOC

• Online courses designed for large numbers of participants,
• That can be accessed by anyone
• Anywhere as long as they have an internet connection,
• Are open to everyone without entry qualifications,
• And offer a full/complete course experience online for free
ECO sMOOC

• Social, networked learning
• Seamless, ubiquitous learning
• Inclusiveness
Learner is central

• Takes an active role
• Responsible for their own learning
• Support learning community
• Knowledge through reflection and practice (creation, production) and dialogue in a social collaborative context
• Success by learners’ goals and intentions
EMMA Learning analytics model

• Progress and performance
• Types of users
• Learning by engaging with product and/or with others
MOOC success

- Drop-out? → NO
- Individual learning goals
- Interaction, conversations, community

Exploring learners  Auditing learners  Completing learners

Welten Institute
Research Centre for Learning, Teaching and Technology

DSSR conference, Naples, 19 February 2016
Page 13
Learning analytics purpose

Reflection

Prediction
Define

- *Progress*: movement towards the achievement of a goal
- *Performance*: the degree of understanding and mastery of course material
- *Mastery*: degree of improvements
Define

• *Participation*: process during which participants are consulted about or have the opportunity to become actively involved in a course or activity of the course

• *At risk of drop-out* are those participants with a remarkable low participation, progress and performance with relation to those who have got the same goals
Academic goals and metrics

- Define and describe academic and learner goals
- Indicate learning design components
- Define metrics
Example

• Performance: variety of indicators measuring ability
e.g. compulsory activities and assignments passed successfully

• Metrics
  – Number of assignments passed
  – Grade achieved in each assignment
Algorithms

• Personal grade in module $P_i = w_i G_i$

• The final grade will be calculated as $P = \sum_j P_j$
Indicators

• Performance
• Mastery
• Progress
• Engagement
• Effort
• Satisfaction
• Social affiliation
• Social recognition
• Social responsibility
Learner dashboard

[Bar chart showing attempts and module completion]

Welten Institute
Research Centre for Learning, Teaching and Technology

DSSR conference, Naples, 19 February 2016
Page 21
Teacher dashboard

![Chart showing number of students over time](chart.png)

Welten Institute
Research Centre for Learning, Teaching and Technology

DSSR conference, Naples, 19 February 2016
Page 22
Teacher’s view

Resources viewed

No of learners accessed

Welten Institute
Research Centre for Learning, Teaching and Technology
DSSR conference, Naples, 19 February 2016
Page 23
Learner’s view

Activity per day

Performance compared to others
Number and duration of interactions
Accessing learning content and assignments
Conclusion

• Value when carefully designed and used
• Define model first: what do you want to know and why
• Ensure privacy
• Ethical concerns
• Legal aspects
Further information

- Francis Brouns, Open Universiteit, Welten Institute, http://welteninstitute.org
- Welten Institute digital repository: http://dspace.ou.nl
- ECO project: http://ecolearning.eu
- EMMA project: http://platform.europeanmoocs.eu