



Knowledge Media Institute

A close-up photograph of a person's eye with a striking blue iris, looking slightly to the left. The background is a soft, out-of-focus yellowish-brown.

## OU Analyse

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<http://analyse.kmi.open.ac.uk>

<http://kmi.open.ac.uk/>

# Retention – others & OU

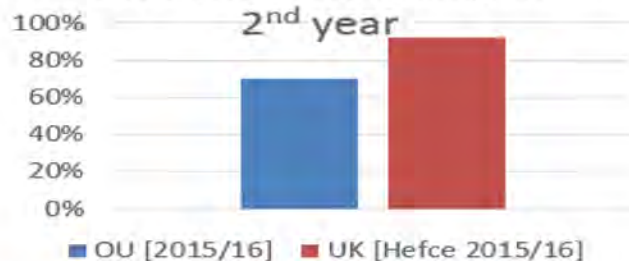
### Students that finish the degree



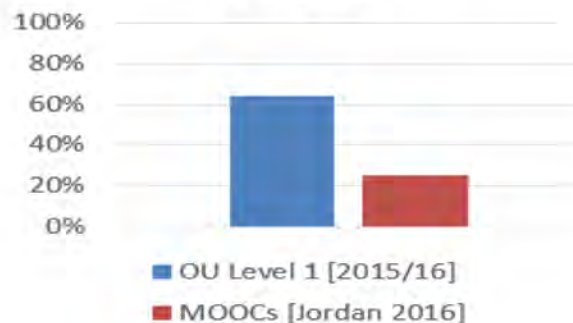
### On-Track at OU [%]



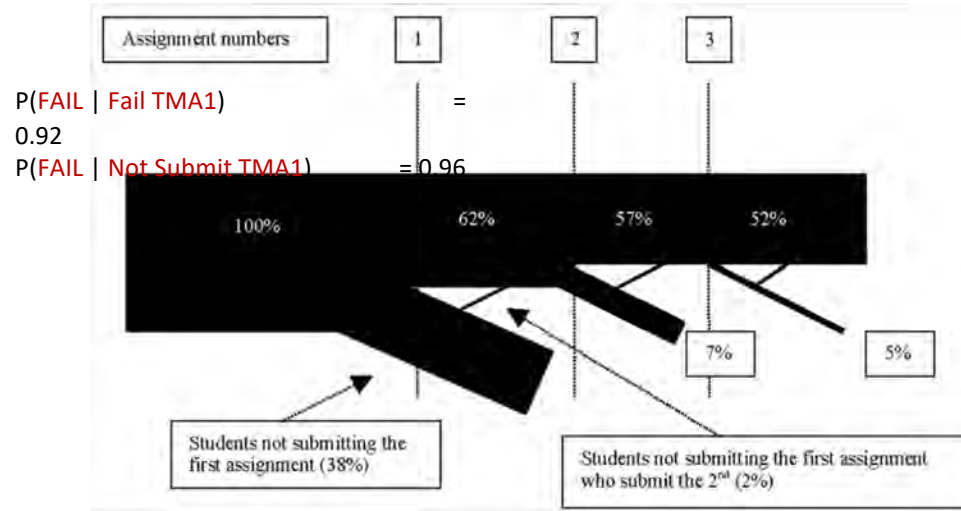
### Students continuing in 2<sup>nd</sup> year



### Course retention OU vs MOOCs



# TMA Funnel - predicting TMAs submission

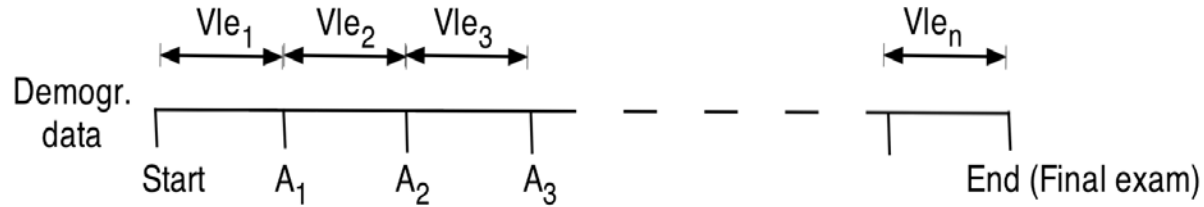


Simpson O.: The impact on retention of interventions to support distance learning student, 2005

# OU Analyse History

| Pres.      | Scope                                                                                                                | Delivery                                                          |
|------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 2014B      | <b>2 modules</b> , selected course members                                                                           | Excel spreadsheet, sent by email, manually generated              |
| 2014J      | 12 modules, selected course members                                                                                  | Automated pred., excel spreadsheet                                |
| 2015J      | Made available to tutors in selected modules                                                                         | Dashboard, within OU network                                      |
| 2016J      | ~1000 users (338 accessed) , 785 tutors (305 accessed)                                                               | Dashboard on Internet, no VPN needed, grade predictions           |
| 2017J, 18B | 37 modules, 375 users (240 accessed), 323 tutors (204 accessed)                                                      | Mostly STEM pilots, user acceptance                               |
| 2018J      | <b>250 modules</b> in OUA, ~3500 users, including mostly tutors, module chairs, staff tutors, cluster managers, SSTs | Dashboard combining OUA predictions and SIO Student Probabilities |

# Problem specification – the OU model



- Given:
  - Demographic (static) data at the Start (may include information about student's previous modules studied at the OU and his/her objectives)
  - Assessments (TMAs) as they are available during the module
  - Fluid data: VLE activities between TMAs
  - Conditions student must satisfy to pass the module
- Goal:
  - Identify students at risk of failing the module as early as possible so that OU **intervention is efficient and meaningful**.

# Available data

- Demographic data: age, gender, new/cont. student, education, IMD, post code, occupation category, motivation, ...
- Presentation-related (fluid) data: VLE logs, TMA (score, submission date), CMA, payment dates, TMA/CMA weights, End of module assessment.
- Aggregated VLE data available daily.

# Labels of educational resources

Activity type (semantic labels of VLE resources):

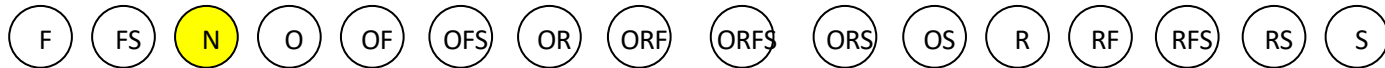
- home\_page
- forum
- glossary
- OU\_content (web pages)
- OU\_wiki
- URL (external)
- resource (pdf)
- subpage
- ...



Select subset with maximum relevance and minimum redundancy

# Selected important VLE activities

- Forum (F), Subpage (S), Resource (R), OU\_content (O), No activity (N)
- Possible activity combinations in a week: F, FS, N, O, OF, OFS, OR, ORF, ORFS, ORS, OS, R, RF, RFS, RS, S

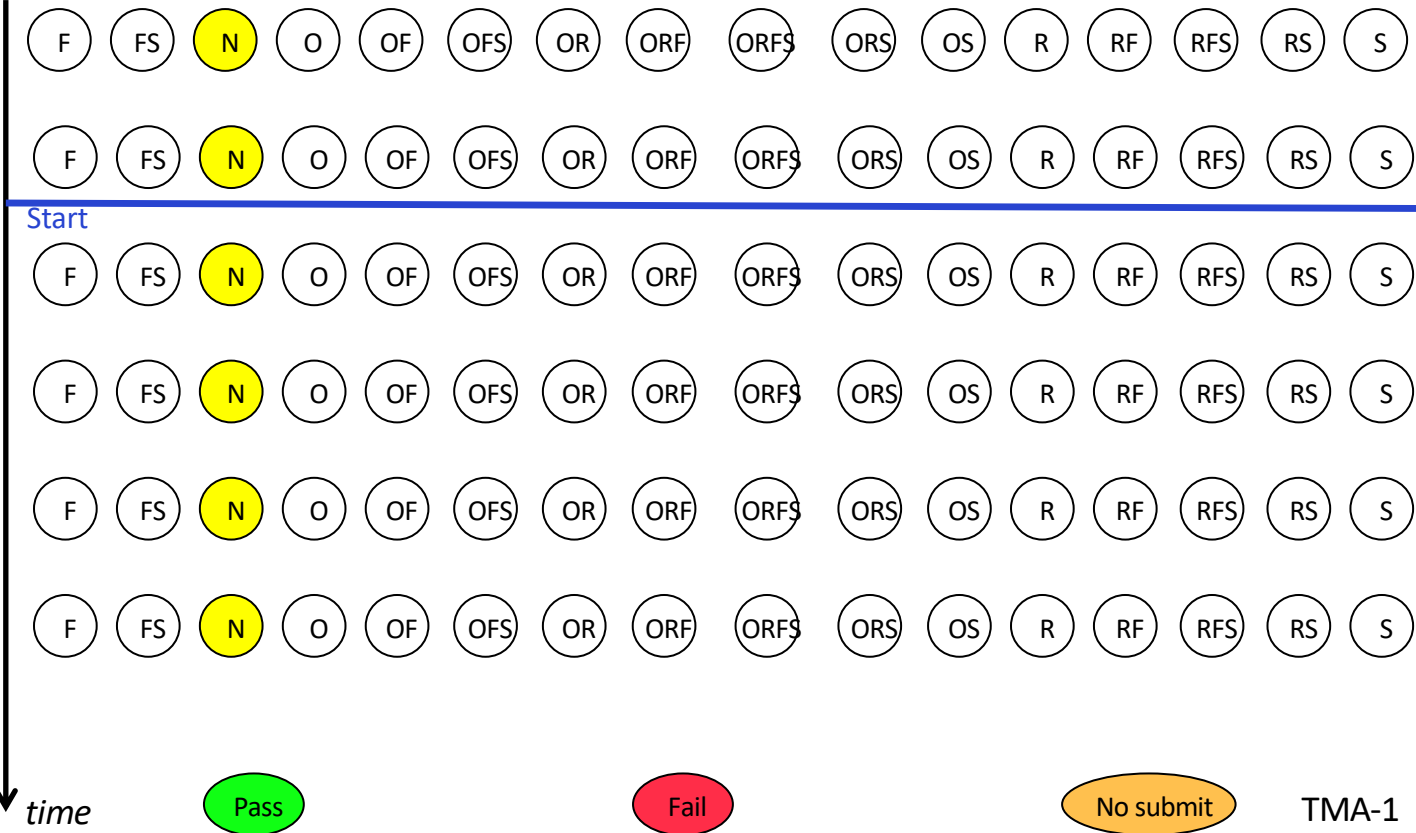




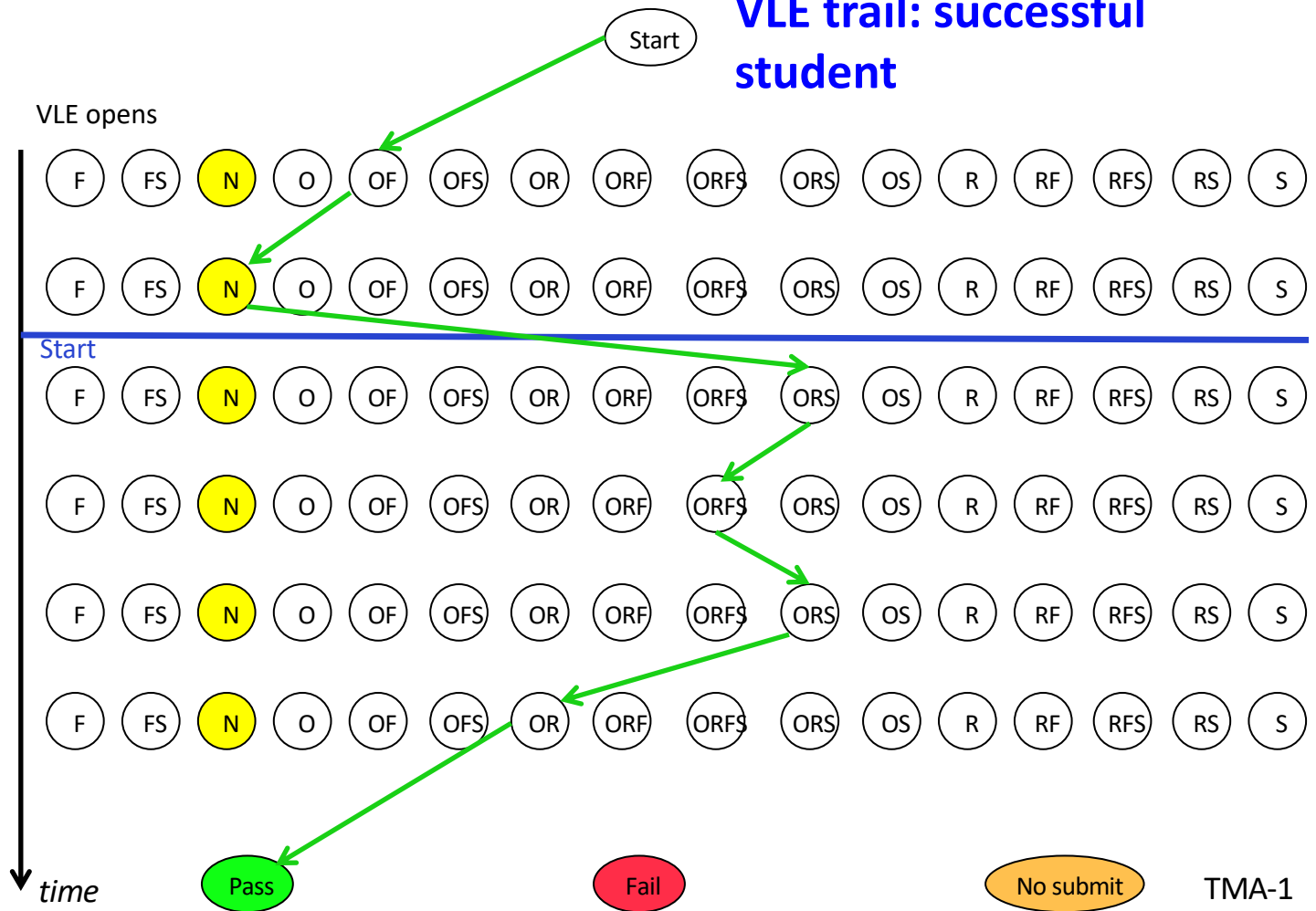
# Activity space

Start

VLE opens



# VLE trail: successful student

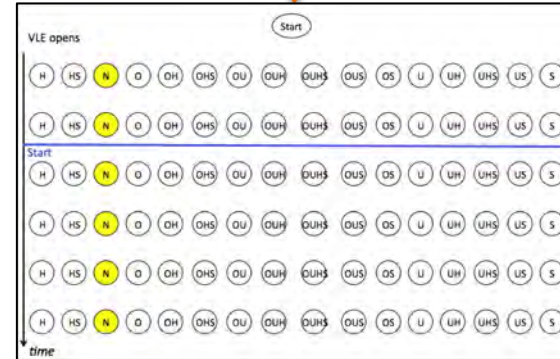
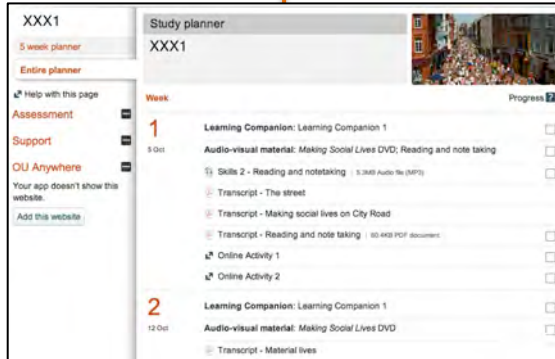




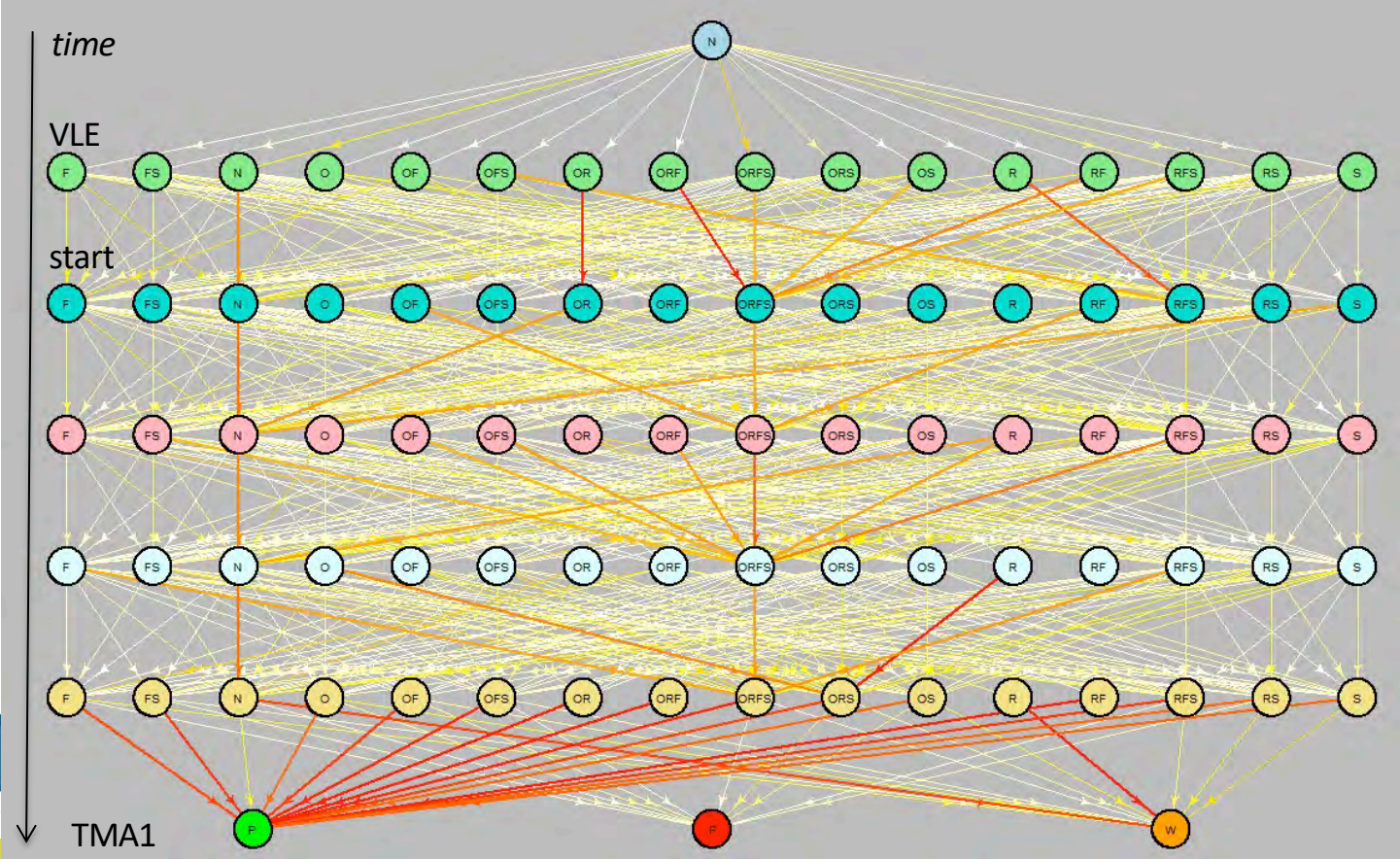
# Mapping student engagement with module materials to the activity space

Action/activity type:

- Forum
- Ou\_content
- Ou\_wiki
- URL
- Homepage
- Subpage
- ...



# Probabilistic model: all students



# OU Analyse demo


<http://analyse.kmi.open.ac.uk>



# Dashboard: Student View

Nearest neighbours, Predictions with TMA scores, Personalised recommender

### Nearest students



Demographic 50% VLE 50%

### Scores

| Assignment | Prediction | REAL       | Justification                                                                                                    |
|------------|------------|------------|------------------------------------------------------------------------------------------------------------------|
| TMA 01     | Submit     | 88         | Resource VLE activity in week 4 >=0<br>Resource VLE activity in week 3 >=0<br>quiz VLE activity in week 3 >=0    |
| TMA 02     | Submit     | 74         | quiz VLE activity in week 7 >=0<br>oucollaborate VLE activity in week 7 >=0<br>quiz VLE activity in week 8 >=0   |
| TMA 03     | Submit     | Not submit | Forum VLE activity in week 10 >=0<br>Homepage VLE activity in week 12 >=0<br>summary VLE activity in week 12 >=0 |
| TMA 04     | NA         | NA         | NA                                                                                                               |
| TMA 05     | NA         | NA         | NA                                                                                                               |

### Activity recommender

- Visit Block 2 Part 2 (online version).
- Visit Activity 28.
- Visit Introduction to spreadsheets.
- Visit Activity 18.
- Visit The Penalty Kick (story for Activity 37).
- Visit TMA questions and guidance.

# Dashboard: Tutor View

## Feedback from tutors

### ⊕ Predictions Feedback

**Have you tried to make contact with the student?**

Yes  No  N/A

**Were you successful making contact with the student?**

Yes  No  N/A

**What did you discuss with the student?**

--- select option ---

**Did you feel the OU analyse flag / vote was appropriate?**

Yes  No  N/A

**Have you referred the student to the SST by raising an e-srf?**

Yes  No  N/A

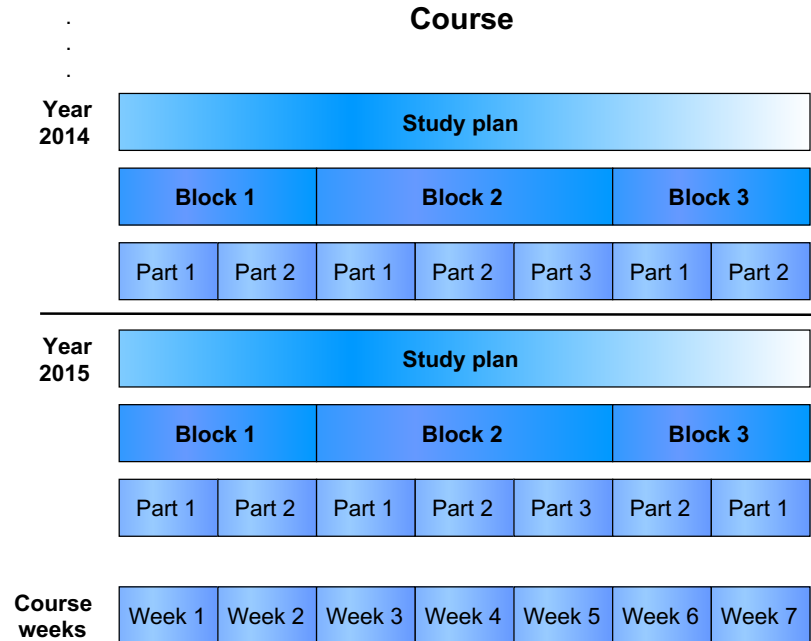
**Last updated:**No submission so far

You can edit this form up until **13/1/2016 11:59pm**. Only one submission of this data can be made per week. You are able to change the details in this week but only the latest entry will be recorded.



# Introduction – OU study plan

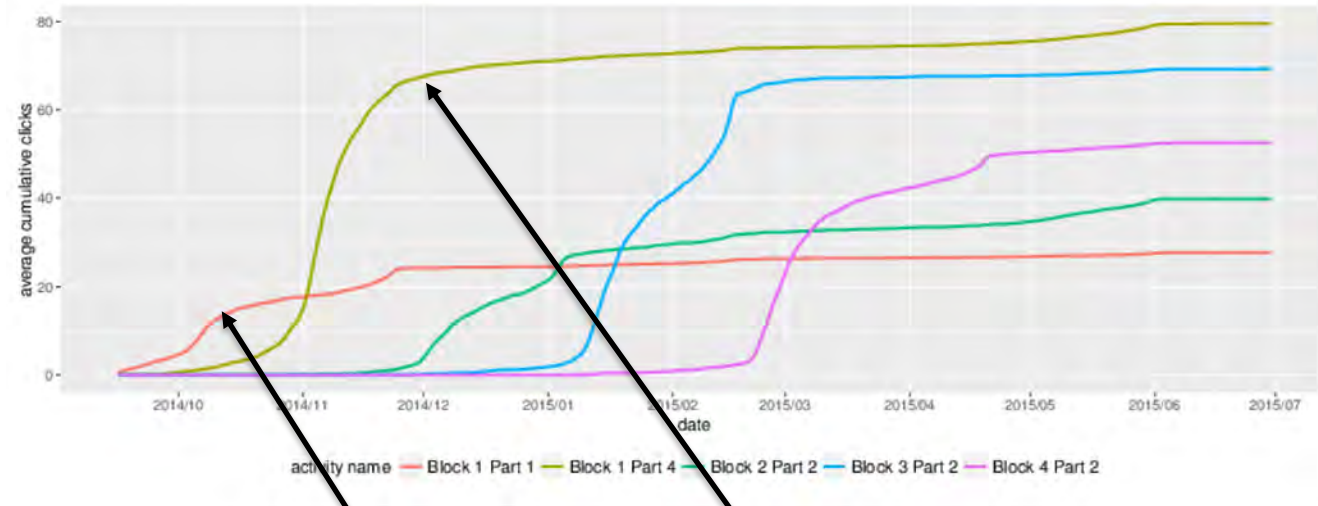
At the Open University (OU)



# VLE activity

## Cumulative form

- The input for our analyze are clicks of learners to particular study materials



Block 1 Part 1

Block 1 Part 4

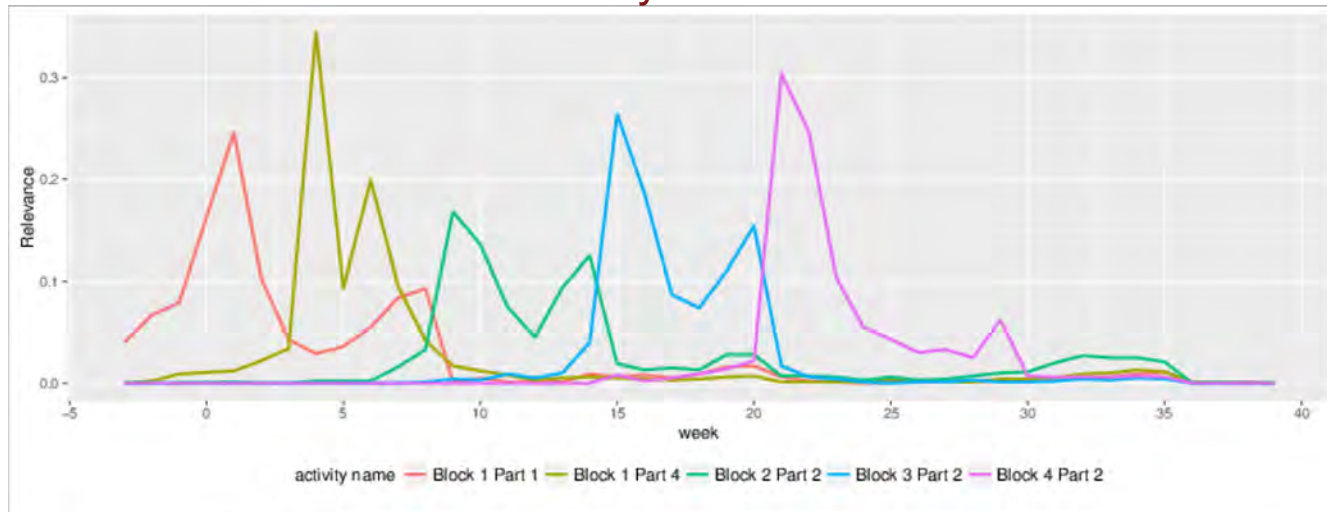
# Cohorts of students

- We divided the students into three groups
  - Excellent students
    - $\geq 75$  % of the TMA scores
  - Pass students
    - $< 75$  % &  $\geq 40$  % of the TMA scores
  - Fail students
    - $< 40$  % of the TMA scores

# Relevance

## Description of the Past

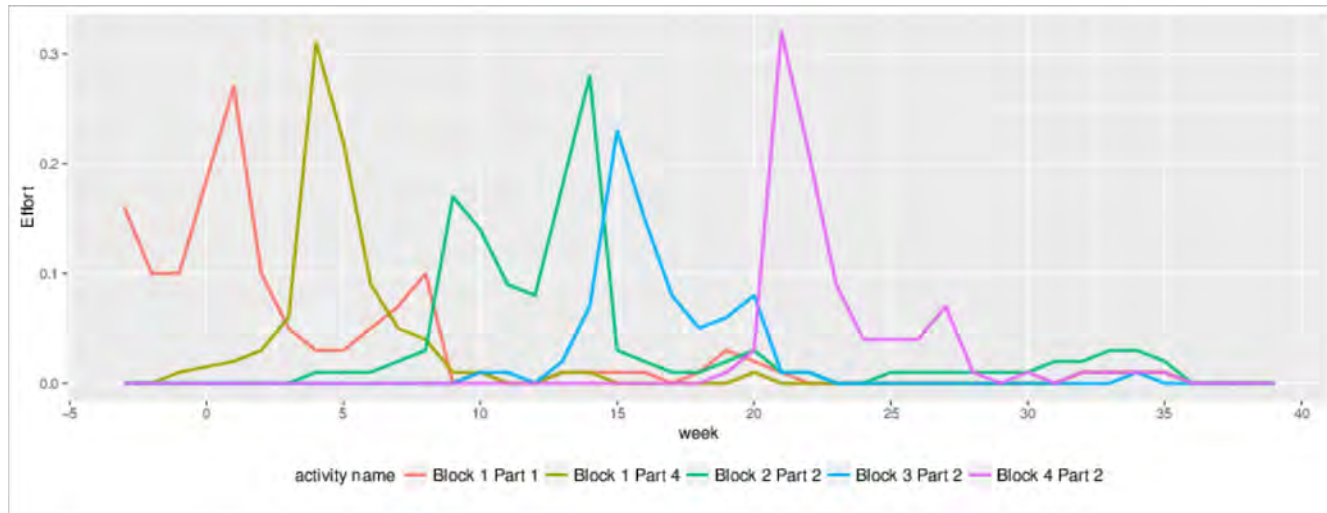
- describes aggregate information about activities of students in some cohort (i.e. excellent) in the past
- is calculated for each study material



# Effort

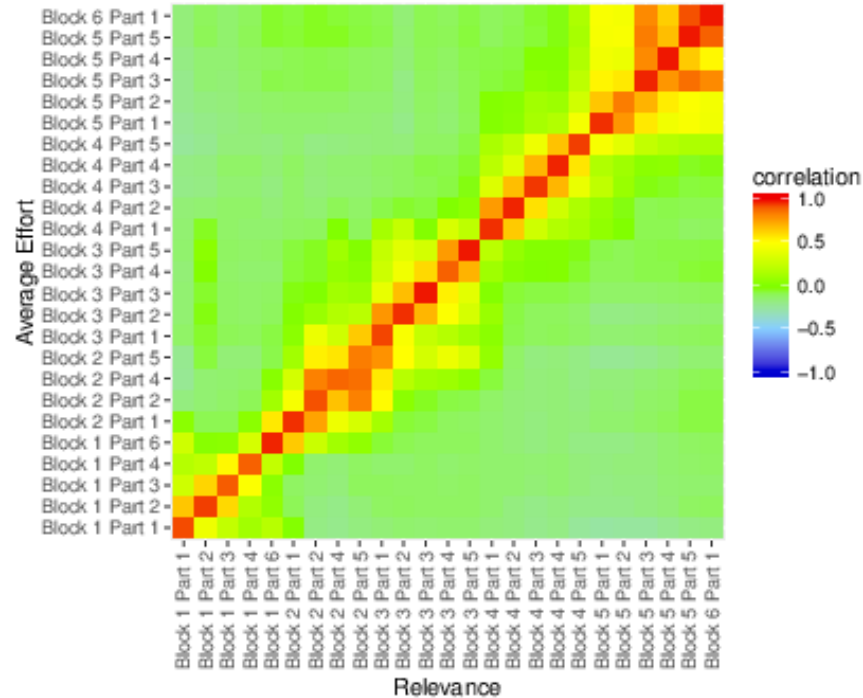
## Description of the Present

- describes student's activity in the current presentation
- is intended for individual students



# Comparison of excellent students behavior

2015J  
Effort



2014J - Relevance

# Student Facing Analytics

