Introducing Learning Analytics in High School Education for Adults

Pedro J. Muñoz-Merino

Twitter: @pedmume
Email: pedmume@it.uc3m.es
Universidad Carlos III de Madrid
Learning Analytics for MOOCs

● The need of Learning Analytics is increased in MOOCs
  ➢ MOOCs enable rich user interactions with educational activities
  ➢ Big amount of users increases the need of self-reflection and augmented vision for teachers

● Open edX MOOC platform
  ➢ Many learning analytics functionality to be developed
ANALYSE: Our proposed learning analytics solution for Open edX

- Several new indicators and 12 new visualizations for teachers and students, based on:
  - Visualizations encountered in other systems, e.g. Khan Academy
  - Our previous work -> ALAS-KA
  - Self reflection learning
  - New ideas

- Evaluation with users already done
  - Usability -> SUS
  - Effectiveness
  - Usefulness
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Demo of ANALYSE

● General information
  ➢ http://www.it.uc3m.es/pedmume/ANALYSE/

● Github
  ➢ https://github.com/jruiperezv/ANALYSE

● Demos
  ➢ https://www.youtube.com/watch?v=3L5R7BvwlDM&feature=youtu.be
  ➢ https://www.youtube.com/watch?v=N3HmSW4jbiU&feature=youtu.be

● Authors
  ➢ José Antonio Ruipérez Valiente, Pedro Jose Muñoz Merino, Héctor Javier Pijeira Díaz, Javier Santofimia Ruiz, Carlos Delgado Kloos
MOOC of maths

- MOOC of maths:
  - Available at: http://ela.gast.it.uc3m.es
  - Topics: Units of measurement, algebra, geometry
  - High school education for adults
  - Generation of educational materials: CEPA Sierra Norte de Torrelaguna: Diego Redondo Martínez
  - 28 videos, 32 exercises
  - Configuration, support and personalization of the MOOC platform at Univ. Carlos III de Madrid
  - Open for everyone
  - Flipped the classroom methodology
ANALYSE in the MOOC of maths

- Uses of ANALYSE in the experience
  - Self-reflection for students
  - Support for the flipped classroom
  - Evaluation of educational materials
  - Evaluation of students
  - Evaluation of the course
Example I: Self-reflection
Example II: Evaluation of students

**Students Grades**
This visualization shows the average grade in each category of resource in the course. You can filter by all the students, each student individually or by students’ groups (by grades). Click on a bar in order to see the results decomposed in each item within the category.

**Course Accesses**
This visualization shows the number of accesses in each chapter of the course. Click in one chapter in order to decompose these accesses into their respective subsections. You can filter by all the students, each student individually or by students’ groups (by grades).

**Chapters accesses**
- Introducción
- Unidades de Medida
- Álgebra
- Geometría

**Chapter Time**
This visualization shows the time elapsed in each chapter of the course. Click in one section in order to divide it in graded, ungraded and chapter time. You can filter by all the students, each student individually or by students’ groups (by grades).

**Grade categories**
- Proficiency
- OK
- Fail
Example III: Flipped classroom, evaluation of materials
Example IV: Evaluation of the course

Video Time Watched

This visualization shows in dark blue the percentage of different video watched (it does not count if the same parts are watched several times, the max. is the 100% of the video) and in light blue the percentage of total video watched (total amount of time spent compared to the length of the video in percentage). You can filter by all the students or each student individually.

Options
All students

Videos which belong to the "Area calculation" sub-section
Present and future work in ANALYSE

- Design and implementation of higher level learning indicators and their correspondent visualizations
- Scalability. Work with a big amount of users
- Recommender based on previous data analysis we have performed on other experiences -> clustering, prediction, relationship mining
- Integration with Insights
Design and Implementation of Higher Level Indicators

- Effectiveness, efficiency, interest
- Learning profiles
- Behaviour
- Emotions
- Skills
Previous data analysis: Selection


- Pedro J. Muñoz-Merino, José A. Ruipérez-Valiente, Carlos Alario-Hoyos, Mar Pérez-Sanagustín, Carlos Delgado Kloos, "Precise effectiveness strategy for analyzing the effectiveness of students with educational resources and activities in MOOCs", Computers in Human Behavior (2015)
Previous data analysis: Selection


ANALYSE in the Spanish TV

● Part of the mapaTIC project:
  ➢ ANALYSE and the MOOC of maths: 5:30-7:11
V eMadrid workshop

- Topic: Digital Education
  - MOOCs, learning analytics, adaptation, user modeling, computational thinking, REAS, entrepreneurship
- Dates: Tuesday 30 June, Wednesday 1 July
- Place: UNED
- Free registration
- More information
WAPLA@EC-TEL

- Workshop on Applied and Practical Learning Analytics

- Topics:
  - Hands on Tutorial on exploratory data analysis using Python and Spark, discussions about LA tools, oral presentations

- Dates: Friday 18 September

- Place: Toledo (EC-TEL conference)

- More information
  - http://educate.gast.it.uc3m.es/wapla/
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