Education Analytics – How to benefit from educational data?

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Intelligent, Adaptive and Analytics Systems in Education

How can we make learning systems more adaptive, intelligent and personalized

- Intelligent Systems
- Adaptivity and Personalization
- Education Analytics
Benefits of Education Analytics

- Provide access to data
- Extract/Identify relevant information from data
- Visualize relevant information for teachers and learners
- Provide personalized education for learners
- Provide individual recommendations for learners and teachers
- Help teachers understand what is going on in their courses
- Help teachers understand (un)successful teaching strategies
- Support collaborative learning
- Motivate students through providing information
- Identify at-risk students
- Help teachers understand when and in which context students are learning
- Intelligent Systems
  - Artificial / Computational Intelligence
  - Context Awareness
- Adaptive Learning Systems
- Algorithms
  - Student Modelling
  - Context Modelling
  - Visualization Techniques
  - Personalization
  - Recommender Systems
- Extract/Identify relevant information from data
  - Data Mining
- Help teachers understand when and in which context students are learning
- Help teachers understand what is going on in their courses
- Support collaborative learning
- Motivate students through providing information
- Identify at-risk students
- Help teachers understand (un)successful teaching strategies
Providing Access to Data

- We have a lot of data but it is difficult to access/read them

- Academic Analytics Tool (AAT)
  - Provide users with easy access to complex educational log data
  - Allow users to ask “questions” to the data
  - Allow users to start with easy queries and then build upon them
  - Provide possibilities to see/analyse data across courses and departments
  - Help to get better understanding on what students are actually doing in a course
  - Facilitate learning about teaching strategies and learning designs

[Tamra Ross, Jason Bernard]
Extract/Identify relevant information from data

- Learning Style Identification
  - Automatically identifying learning styles from behaviour of students in a course
  - Presenting students and teachers with information about a student’s learning styles
  - Providing students/teachers with explanation on what such learning styles mean, how students with particular learning styles can improve their learning and where they have difficulties

- Working Memory Capacity (WMC) Identification
  - Automatically identifying WMC from behaviour of students in a course
  - Presenting students and teachers with information about a student’s WMC
  - Providing students/teachers with explanation on what such WMC level means, how students with particular WMC levels can improve their learning and where they have difficulties

[Jason Bernard, Ting-Wen Chang]
Support Collaborative Learning

- Working in groups on projects is very important but difficult in an online environment
- ACS – a plugin for learning management systems
  - Monitors students’ communications and
    - encourages students to participate in meetings
    - encourages students to actively take part in conversations
    - encourages students who talk a lot to encourage other students to actively take part in conversations
  - Monitors workloads and highlights significant differences
  - Monitors progress and provides feedback on whether tasks are on time
  - Monitors progress and provides feedback on whether the whole project is on time or at risk of failing
  - Visualizes how a group’s progress compares to other groups

[Jeff Kurcz]
Questions

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