



EMERGING TECHNOLOGIES: LEARNING ANALYTICS

New Jersey City University

CROSS-DISCIPLINE STUDIES IN TECHNOLOGY

Assessment 1: Group Members

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LEARNING ANALYTICS

- Overview
- Benefits and Limitations
- Educational Applications



OVERVIEW OF LEARNING ANALYTICS

- Learning Analytics is considered an emerging technology
- Originally designed to track and analyze consumer spending trends
- Data analysis and research are now being utilized to inform decision making in educational systems



OVERVIEW OF LEARNING ANALYTICS

- Adaptive learning data provides insights about student interactions with online texts and courseware.
- Analysis of education-related data can provide policymakers and administrators with indicators of educational progress to improve instruction.



ADAPTIVE LEARNING SYSTEMS

- Adaptive Learning Systems can be categorized into three distinct models (Esichaikul, Unknown).
- Domain Model
- Student Model
- Adaptive Model



ADAPTIVE LEARNING MODELS

- The Domain Model can be viewed as a data repository that consists of topics, content or nodes related to the design structure of the represented data.
- The Student Model stores all of the student information related to their domain knowledge, behavior and learning level.
- The Adaptive Model incorporates adaptive theory by combining the domain model and the student model. The learning objectives and student levels are matched for student use.



BENEFITS OF LEARNING ANALYTICS

- There are three groups that can benefit from Learning Analytics (Greller, & Drachsler, 2012)
 - Students
 - Teachers
 - Educational Institutions



STUDENT BENEFITS

- Through the use of Learning Analytics, students can be supported by learning processes geared to their own abilities
- Students will be able to reflect on their performance and compare it to the performance of others
- Recommendations can be made for each student which will allow them personalized learning experiences



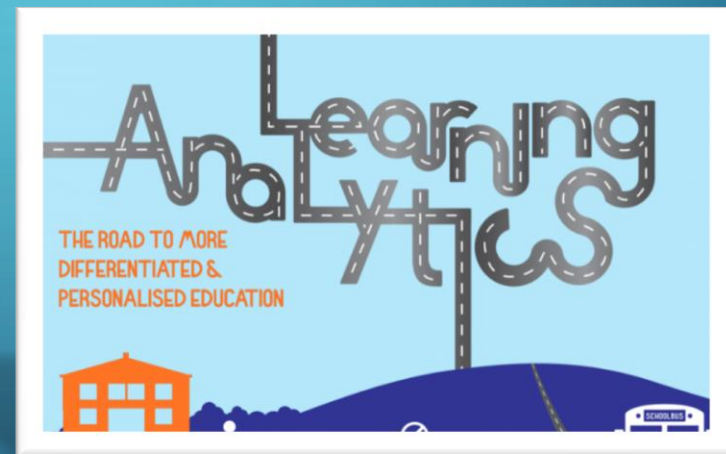
TEACHER BENEFITS

- Learning Analytics will help improve curriculum design and delivery
- Teachers can be provided with real-time knowledge gap analysis for each student via course monitoring systems (CMS)
- Teachers will be able to focus on students that are not understanding the material, while allowing others to work ahead when applicable



EDUCATIONAL INSTITUTION BENEFITS

- By developing student-centered learning environments, schools may see a decrease in drop-out rates
- Schools will be able to gather and analyze large amounts of data about each student's learning strengths and weaknesses
- Allow for better pedagogy
- Learner ownership
- Improved professional development



LIMITATIONS TO LEARNING ANALYTICS

- Dependent upon large amounts of data for each student
 - Tests
 - Assessments
 - Online environments
- Currently there is not one common method for mining the data
 - District to District inconsistencies
 - State to State inconsistencies
- The systematic use of data to increase teacher effectiveness is relatively new to the educational system
 - This type of intentional data-mining is relatively new
 - Additional training must take place for all educators to be on a level playing field



APPLICATION OF LEARNING ANALYTICS

- Better understanding of student learning
- Immediate feedback
- Real-time relevant information
- Helps set goals



Application of Learning Analytics

- Everyone doesn't learn the same way.
- Learning Analytics allows us to measure skills, knowledge, attitudes, personality traits and educational achievement.
- This measurement is known as Psychometrics.
- Individualized curriculum can then be tailored to the student's specific needs.



APPLICATIONS OF LEARNING ANALYTICS

- Focused on improving learning and teaching
- **Content analysis** – uses data captured from a student's essay and to provide remediation if necessary
- **Discourse analysis** – reviews statistics on how a person interacts with others
 - Can be used to evaluate a member's contributions to a project then recommend correction
- **Social Learning** – data from interactions on social media is used to find the interests of a student enabling a designer to create a learning system that might be more motivating to the student
- **Disposition analysis** – applies data on a student's character
 - For example if a student asks a lot of questions it is in their nature to be curious



APPLICATION OF LEARNING ANALYTICS

- Automated essay scoring analyzes both the coverage of content information, text complexity and the quality of student expression.



APPLICATION OF LEARNING ANALYTICS

- What is significant is that modifications in curriculum can now be implemented instantly as a child uses new virtual learning environments because the software can immediately redirect a student's learning based on their responses. I call this real time curriculum.



CONCLUSION

- Adaptive Learning is an emerging field, by realizing its potential benefits we will be able to improve student performance and allocate resources adequately.
- As the body of knowledge around Learning Analytics continues to grow, leaders will be much more informed about how to use it to guide learning outcomes and educational policy (NMC Horizon Report, 2014).
- It appears as though we are still at the very early stages of seeing the research findings combined with commercially viable solutions that have achieved traction in academic settings (Newman, 2013).



THE END



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