Learning Analytics in Computer Education Design

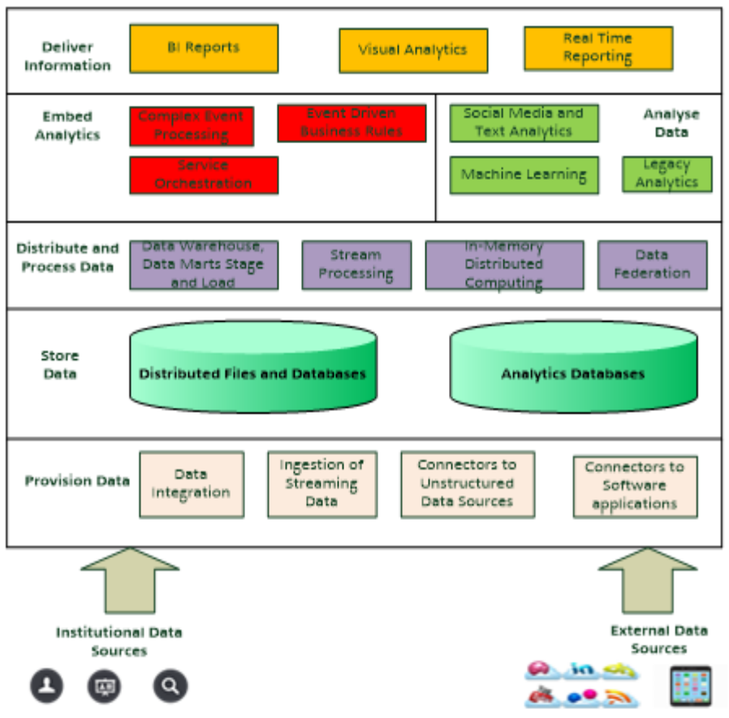
Meena Jha & Sanjay Jha

m.jha; s.jha@cqu.edu.au

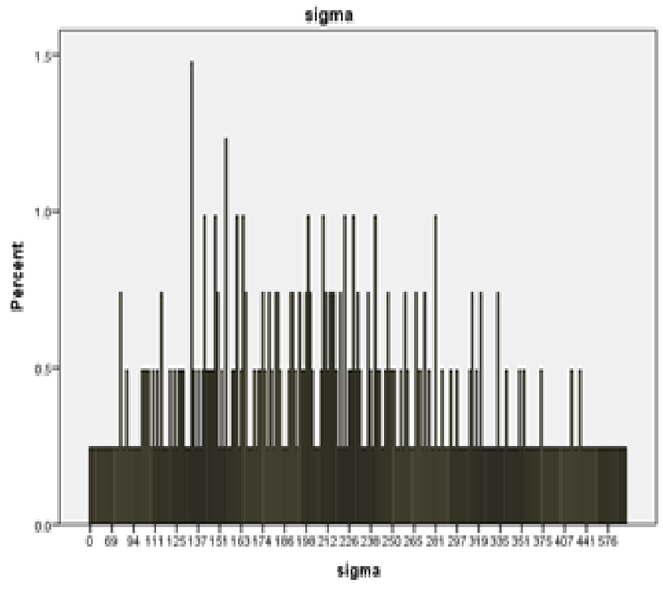
ABSTRACT

Learning analytics is an emerging field in which sophisticated analytic tools are used to improve learning and education. It draws from, and is closely tied to, a series of other fields of study including business intelligence, web analytics, academic analytics, educational data mining, and action analytics. The field of learning analytics has great potential to inform and enhance teaching and learning practices in higher education. Learning Management System (LMS) collects all log details. Students and teachers interact with each other via online forums, threaded discussions, and videoconferencing, as well as emails and chats services provided by LMS. These data sets can be analysed to provide answers to: What are the most used resources in computing courses? Who are the most active user in computing courses?. The retention rate of students can be improved if an early alert system based on Big Data analysis is set up and intervention is appropriately deployed. Through an iterative, user-centered, design approach, a learning dashboard using Big Data Architecture can be designed specifically for computing courses that can address the important questions relating to learning interventions are: (1) When should the intervention be performed? (2) Whom should the intervention be directed at? (3) What is an effective instructional intervention? According to our study, students appreciate interventions. Interventions encourage them to get started with the course material, help them prepare for assignments and increase their learning experience. As an educator need to address (1) How to enable efficient and effective use of teaching resources in computing education; (2) How to identify the need to change and redesign of the

Technology used for Learning Analytics



Contents of data used in our case study



Data Sources	Indicator Count
Online access to Assignment 1	21010 clicks
Online access to Assignment 2	9440 clicks
News Forum	753 clicks
General Discussion	658 clicks
Question and Answers	245 clicks
Exam Information	169 clicks
Presentation Guideline	400 clicks
Assignment 2 Sample Files	1162 clicks
Social media Facebook Clicks	881 Clicks

Conclusions

We have proposed a model for academic success using Big Data architecture for Higher Education institutions to gain some critical insight from the data collected. The tools and technologies used are scalable to fit any size and any structure of data to fit in the category of Big Data. Different data sources need to be integrated to get the entire view of a students' academic success.