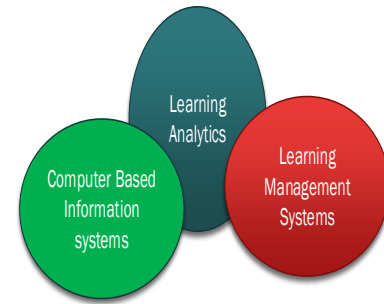# Learning Analytics in Computer Education Design

Australasian Computer Science Week

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# Student's behaviour captured by LMS

- The quantity and diversity of data available regarding student's online learning behaviour, interactions with peers and teaching staff, and access to other institutional ICT systems (Student services, library, Studiosity, etc..) for example, affords an opportunity for integrating automated student learning and support services (Jinan Fiaidhi, 2014).

 The information on student's behaviour captured by LMS has been very rarely interrogated and adopted beyond basic load and tool usage (Mohammed Ouadoud et. al, 2018).

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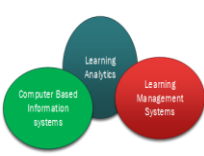
Learning Management Systems and Learning Analytics: Purpose

- This research has interrogated data captured by LMS and has identified issues and concerns of assessments offered.
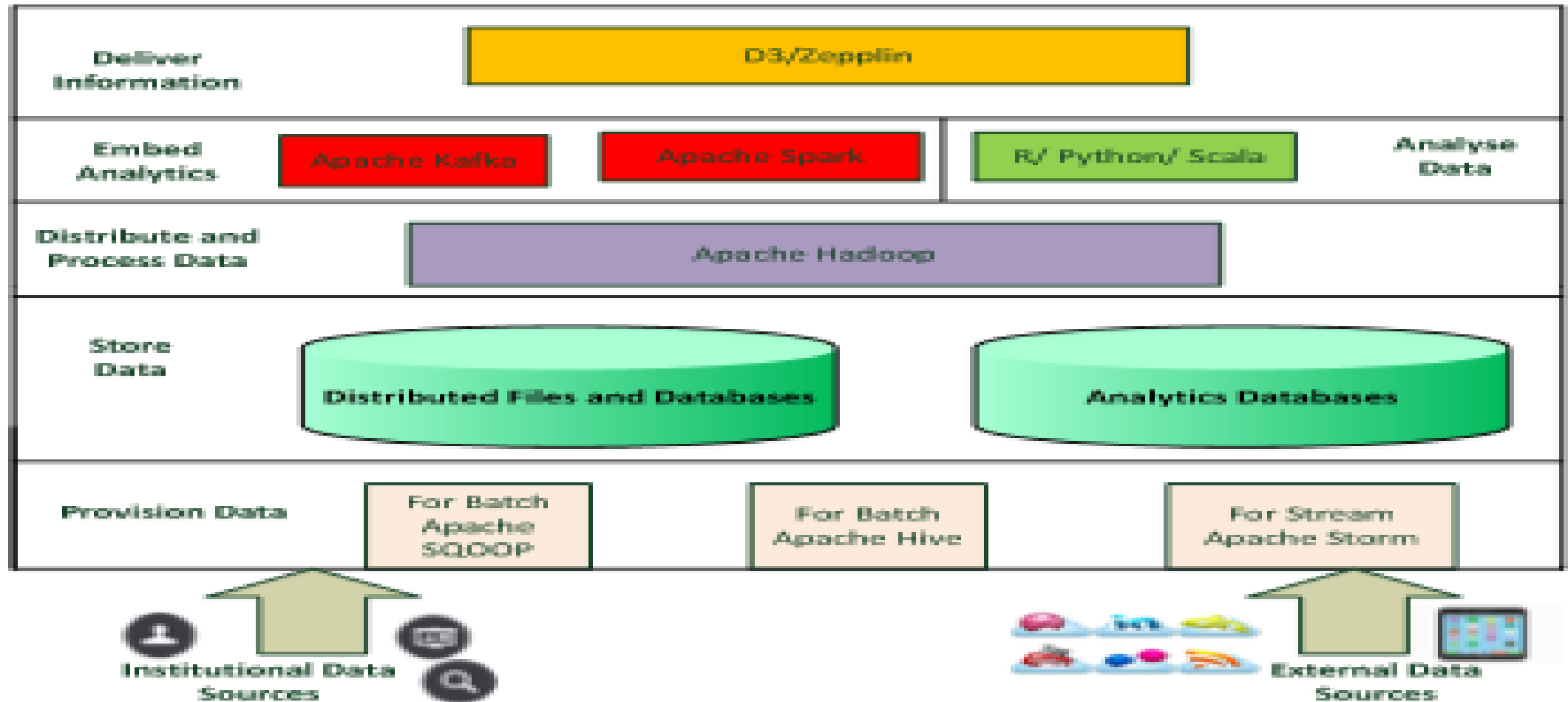
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Open Source Technology Framework

The correlation between online activities and student's grades were analysed

| 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

Data Sources used in this case study
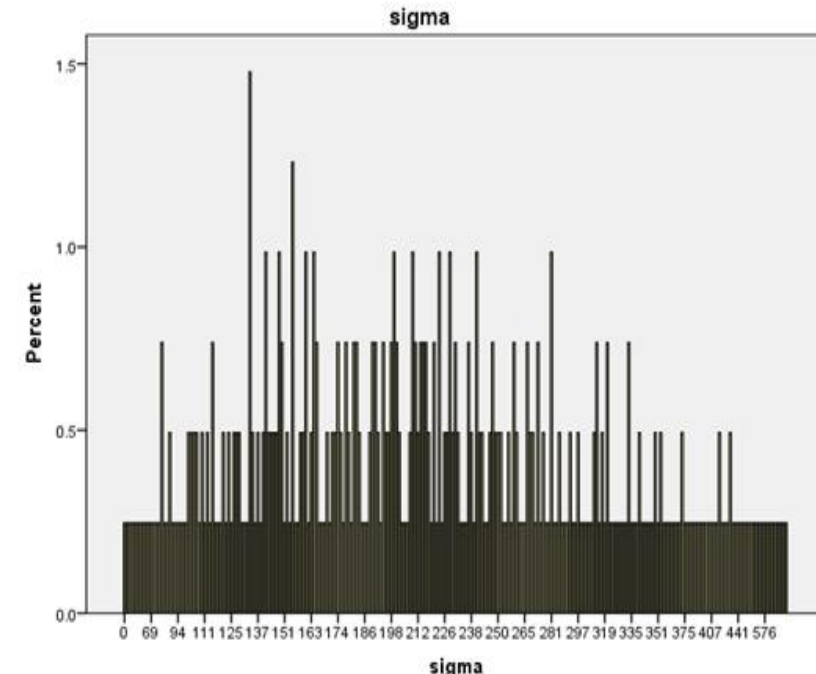
Distribution of students to online activity

Correlation between online activities and student's grades

- Student's online activity decreased towards the end of the term
- This resulted in a poorer exam outcome.
- However, their grades remain good.
- To pass the course it was not necessary to pass the exam.

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Students Exam Grade Distribution
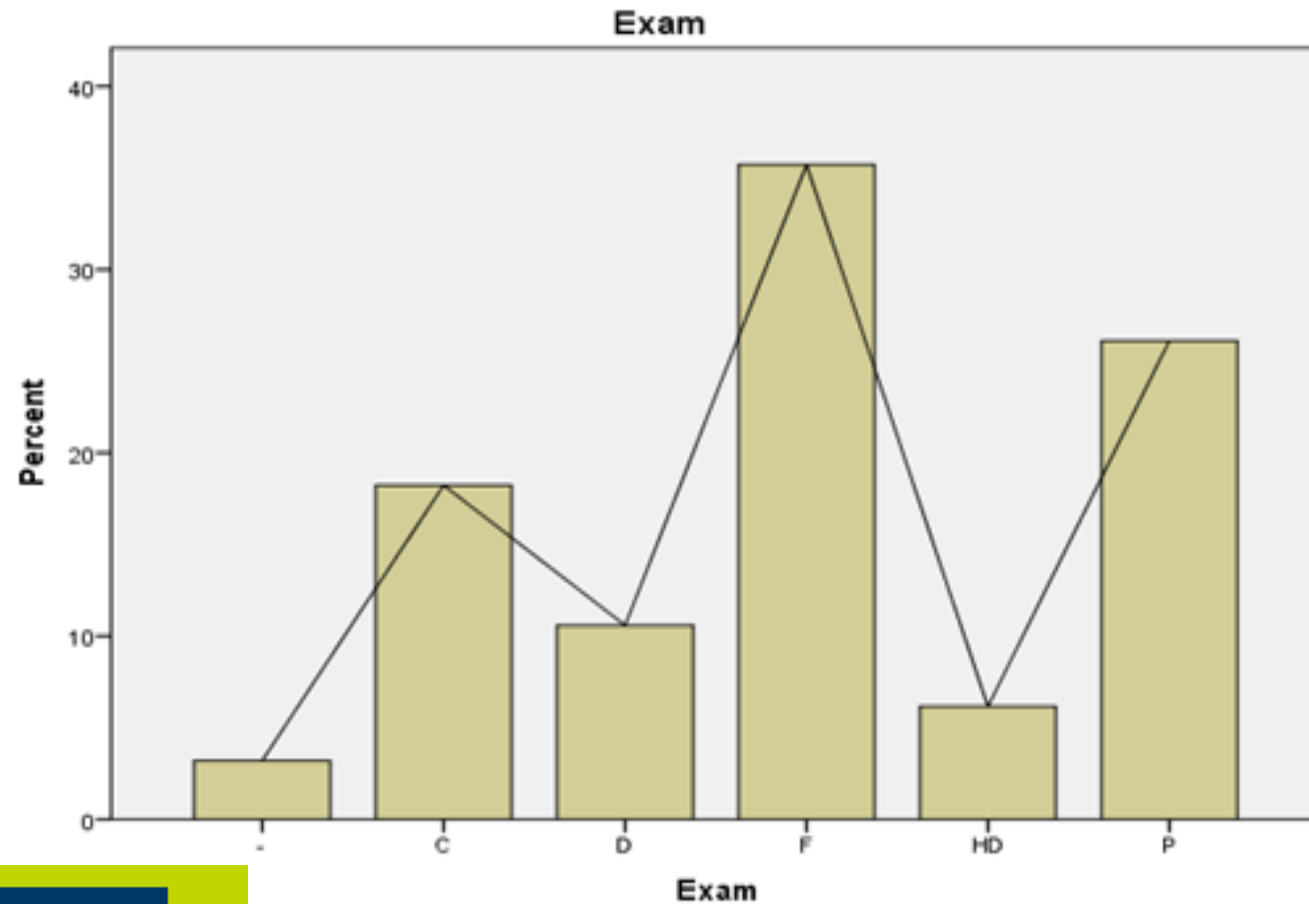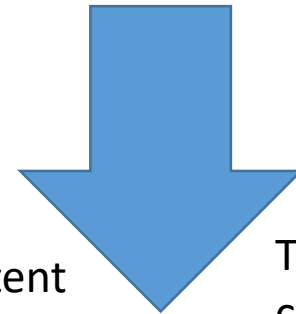
Research Findings

Observations :

- Student's online activity decreased towards the end of the term.
- However, their grades remain good.
- To pass the course it was not necessary to pass the exam.

Outcomes:

Poorer exam outcome.

Increase in the students' academic performance measured on assignments.

Student's academic success is not only affected by the extent of online activities, and experience with LMS, it is also affected by the design and structure of the formative and summative assessments. Student's online activities increase and decrease during the term according to the overall contribution of formative and summative assessment to pass the course.

This throws another challenge to the academic community to meet all learning objectives of the course. Increase in the poorer exam result in our case study throws a light on need to change summative and formative assessments to meet all learning objectives of the course

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Research Findings

- Interrogation of LMS data revealed the need to change and redesign of the assessments regime to ensure all learning objectives are met in the offered unit.

Teachers will fill multiple roles:

INSTRUCTORS

FACILITATORS

TEACHER

ANALYSTS
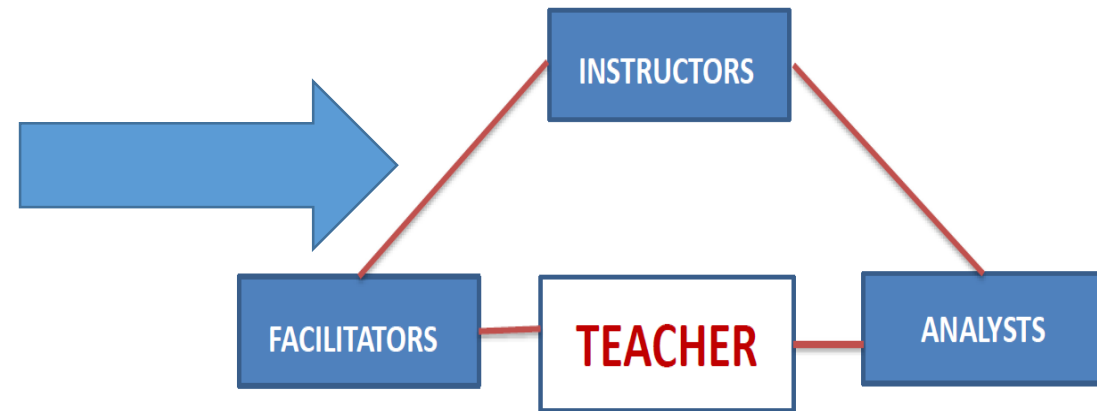
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Conclusion

- 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.