Big-Data Analytics on Blended e-Learning

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Agenda

1. What is Blended Learning
2. Context of Study
3. Investigation
4. Findings
5. Conclusion

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“Googling” Blended Learning

- 5,360,000 hits
- The newest consult-driven x-hype, the next big thing replacing e-learning, outstanding pedagogical innovation, etc.
- "hybrid," "technology-mediated instruction," "web-enhanced instruction," and "mixed-mode instruction" are often used interchangeably with “blended”
- Lack of consensus on its definition

What is Blended Learning?

Table 1: An Overview of On-Line Learning Environment. (Allen & Seaman, 2010).

% on-line	Type of Course (Module)	Typical Description
0%	Traditional	Course with *no online technology* used – content is delivered in writing/orally
1-29%	Web Facilitated	Course that uses *web-based technology to facilitate F2F course*. May use VLE or web pages to post curriculum & assignments
30-79%	Hybrid	Course that *blends online & F2F delivery*. Substantial proportion of content is delivered online, *typically uses online discussion & typically has a reduced number of F2F sessions.*
80+%	Online	A course where *most/all of the content is delivered online*. Typically no F2F meetings.

Context of the Study

- UniSIM is the largest adult university in Singapore, serving 13,369 part-time and full-time students. Average age of students is 30.
- It has approx. 500 or more undergraduate courses from 4 Schools (SBZ, HDSS, SASS & SST)
- It has been implementing online learning since 2012, with support of Blacbkboard LMS and other digital media tools (e.g. interactive iSG).
- The target is to transit all courses to blended learning eventually with 50% by end of 2015. Currently, 46.2% of the courses are blended.
- The revised structure of all courses will have 3 face-to-face sessions with the remaining of the learning to be done online.

Before and After

Students meet tutors *6 times* face-to-face for lessons (6 weeks).

Students meet tutors *3 times* face-to-face for lessons, with the *remaining of the learning done online* (6 weeks):

- **iSG (interactive textbooks)**
- **Blackboard LMS**
- **Chunked lessons (excerpts of 5-10 min digital content with audio commentary)**
- **Online formative quiz**

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UniSIM 'blends' classroom interactions with online learning. Students taking e-Courses access learning materials via electronic means anytime, anywhere, without the hassle of rushing to attend classes in the evening. The online or e-Learning materials complement the face-to-face learning experience. e-Courses are also designed to encourage collaborative learning where students contribute to meaningful discussions via instructor-facilitated online forums and virtual classroom systems.

Blended Learning: F2F Instruction + Online Learning (through Blackboard LMS)

Online Learning (Blackboard LMS): Pre-class quiz, Chunked Recorded Lectures, Digital Content, Virtual Classrooms & Discussion forums.

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UniSIM's Learning Management System

Demo Sharing Mr Stephen Low

Overview Video
Collaborate
Chunked Audio Lectures

T-tests for the Two Groups

Investigation: To find out if there is a significant difference between the mean scores of these two groups of students.

12 Courses (4 Schools)
1420 Students
Means Scores

- **Overall Continuous Assessment Score**
- **Overall Exam Scores**
- **Final Rank Scores**

12 Courses (4 Schools)
1455 Students
Mean Scores

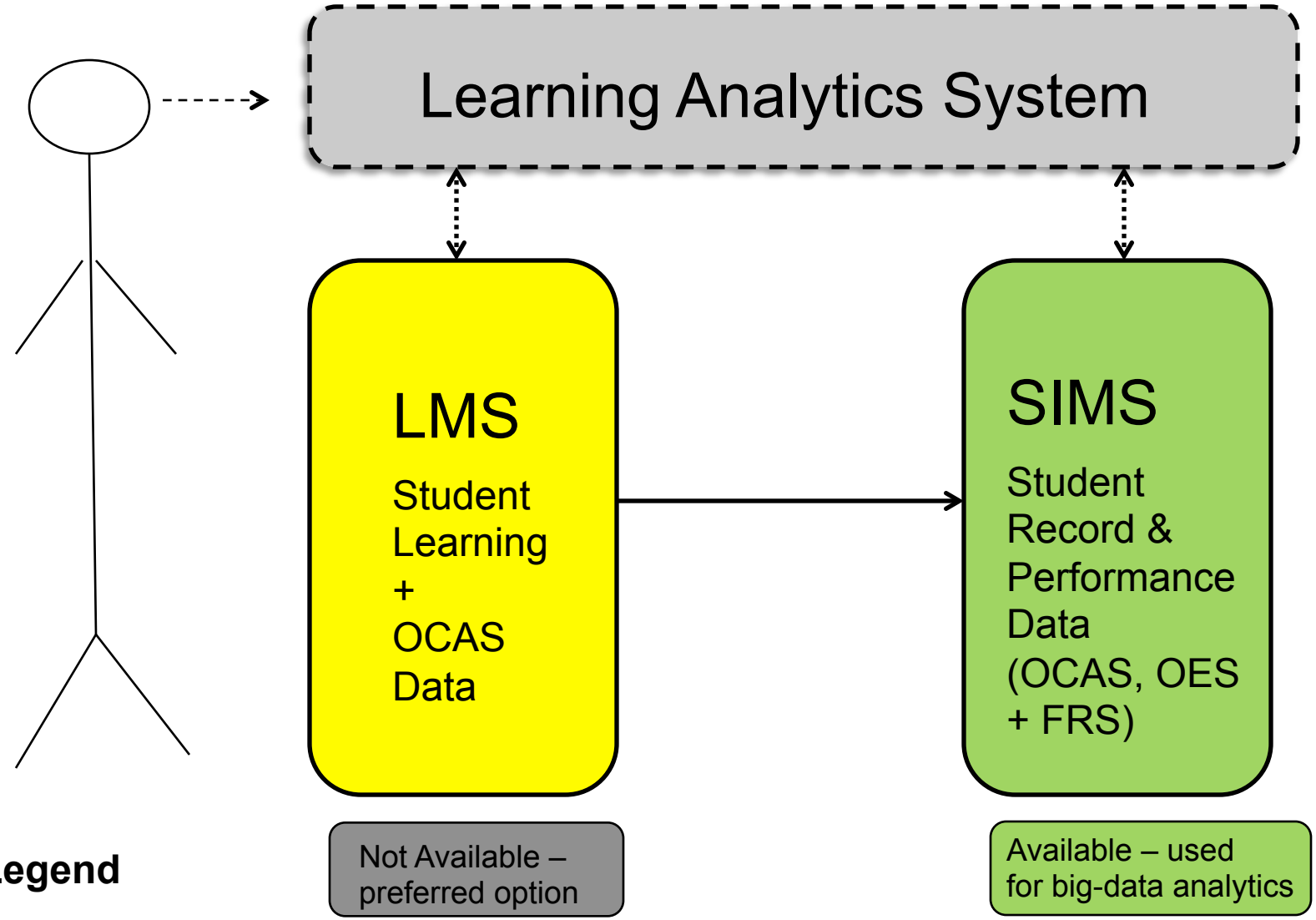
- **Overall Continuous Assessment Score**
- **Overall Exam Scores**
- **Final Rank Scores**

Courses Selected for Study

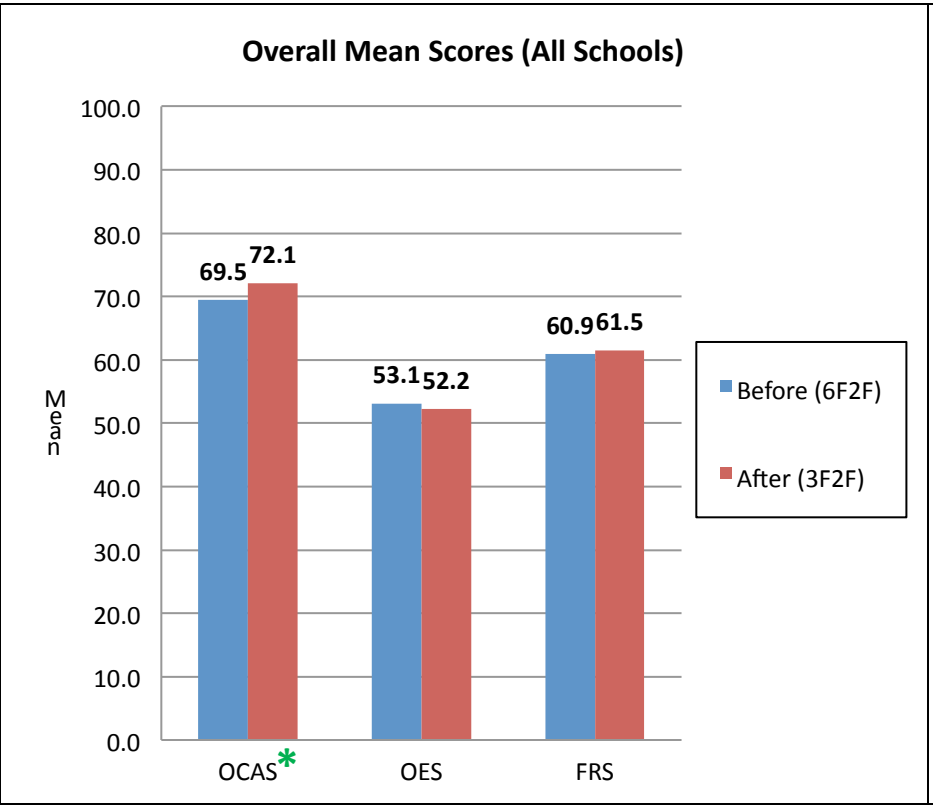
School	Course	Semester 1 Non-blended	Semester 2 Blended
School of Business	SBIZ BUS103	Jul13	Jan14
	MKT202	Jul13	Jan14
	FIN305	Jul13	Jan14
School of Arts and Social Sciences	SASS SSC113	Jan14	Jul14
	CTI203	Jul13	Jul14
	PSY361	Jul13	Jul14
School of Science and Technology	SST BME101	Jan14	Jul14
	ICT220	Jan14	Jul14
	EAS301	Jul13	Jul14
School of Human Development and Social Services	HDSS SWK104	Jul13	Jan14
	ECE207	Jan14	Jul14
	HRM351	Jan13	Jan14

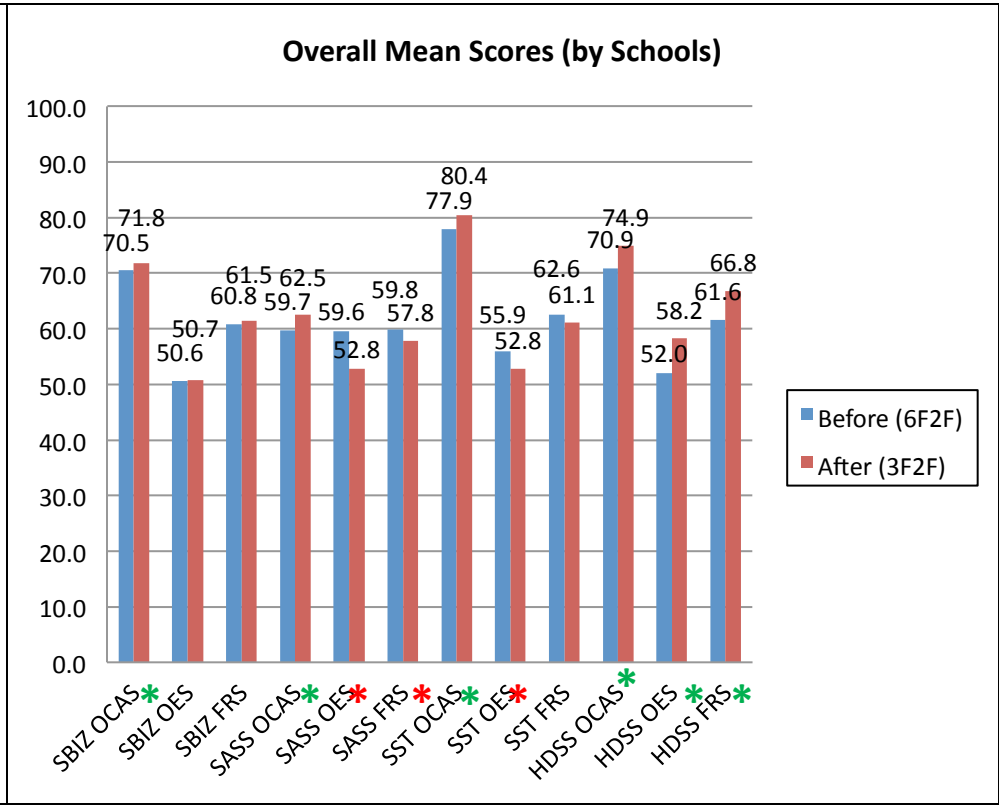
Data Analytics on Blended e-Learning

Data Mining



Overall Mean Scores (By Schools)





*Significant increase *Significant decrease p=0.05 (Level of Significance)

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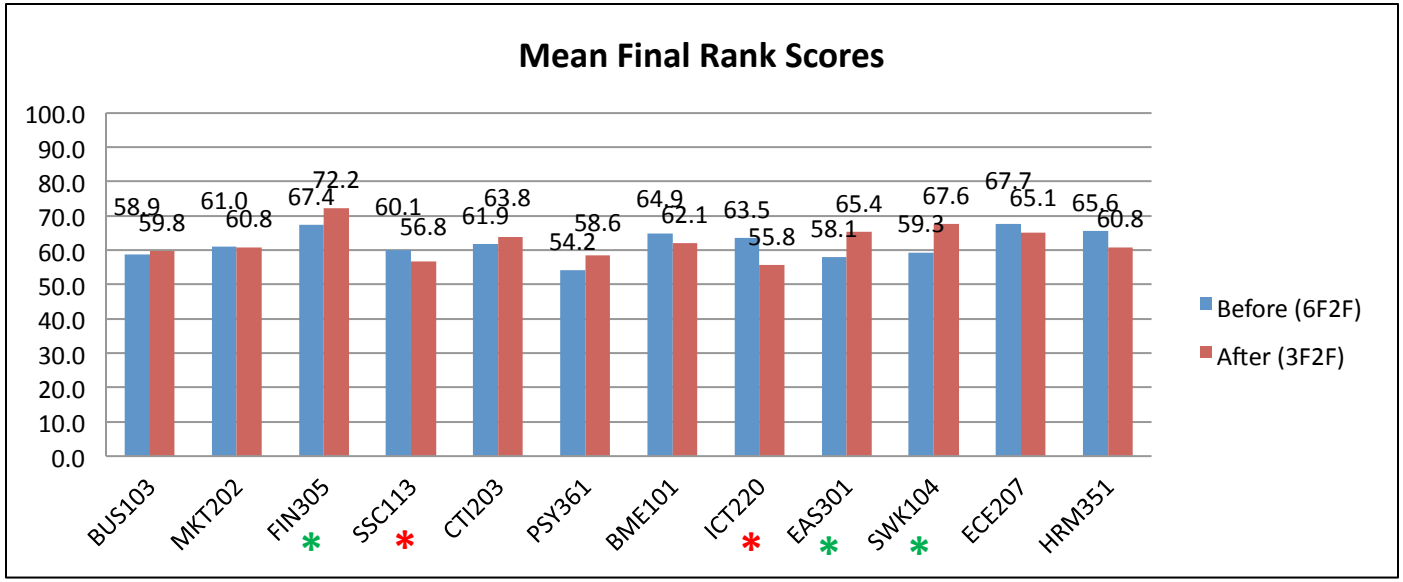
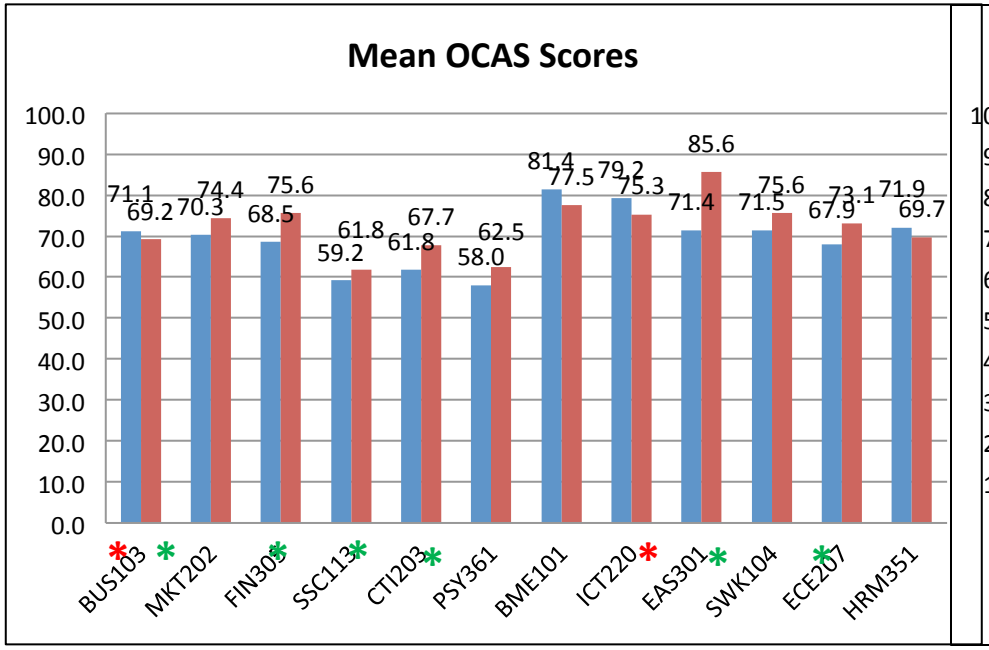
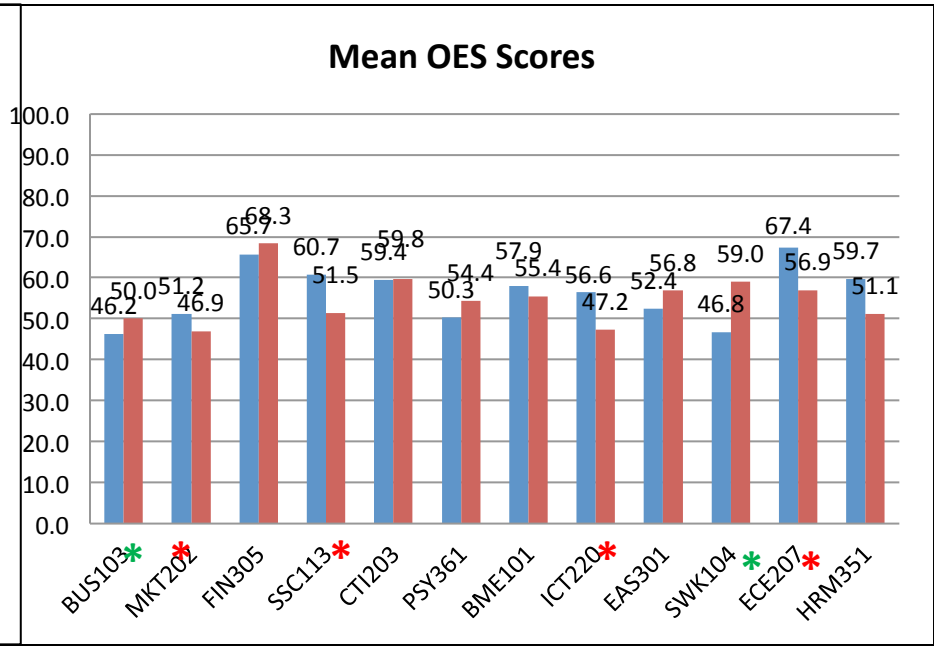
T-Tests Overall

Overall Score	p-Value	Remark
OCAS	0.000	Significant
OES	0.085	Not Significant
FRS	0.110	Not Significant

Overall Mean Scores (By Courses)







*Significant increase *Significant decrease p=0.05 (Level of Significance)

T-tests (by Schools)

School	Score-Type	p-Value	Remark
SBIZ	OCAS	0.001	Significant
	OES	0.910	Not Significant
	FRS	0.129	Not Significant
SASS	OCAS	0.001	Significant
	OES	0.000	Significant
	FRS	0.007	Significant
SST	OCAS	0.021	Significant
	OES	0.021	Significant
	FRS	0.174	Not Significant
HDSS	OCAS	0.000	Significant
	OES	0.000	Significant
	FRS	0.000	Significant

Conclusion

- Findings are inconclusive given the short time frame of the study. Results need to be validated against longitudinal studies with other variables controlled.

- Results suggest that blended learning approach does not adversely affect students' performance

- Results also suggest that students in the blended learning group appear to perform better for OCAS.

Thank You