



Centre for Change and
Complexity in Learning

Shane.dawson@unisa.edu.au



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South Australia



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Learning Analytics: Informing Student Progress and Course Quality

Professor Shane Dawson



Overview:



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- LA 101
 - 2 Sigma problem
 - Feedback
- Current trends
 - LA dashboards
- Emergent LA work
 - Integrated systems
 - Learning design

Learning Analytics:



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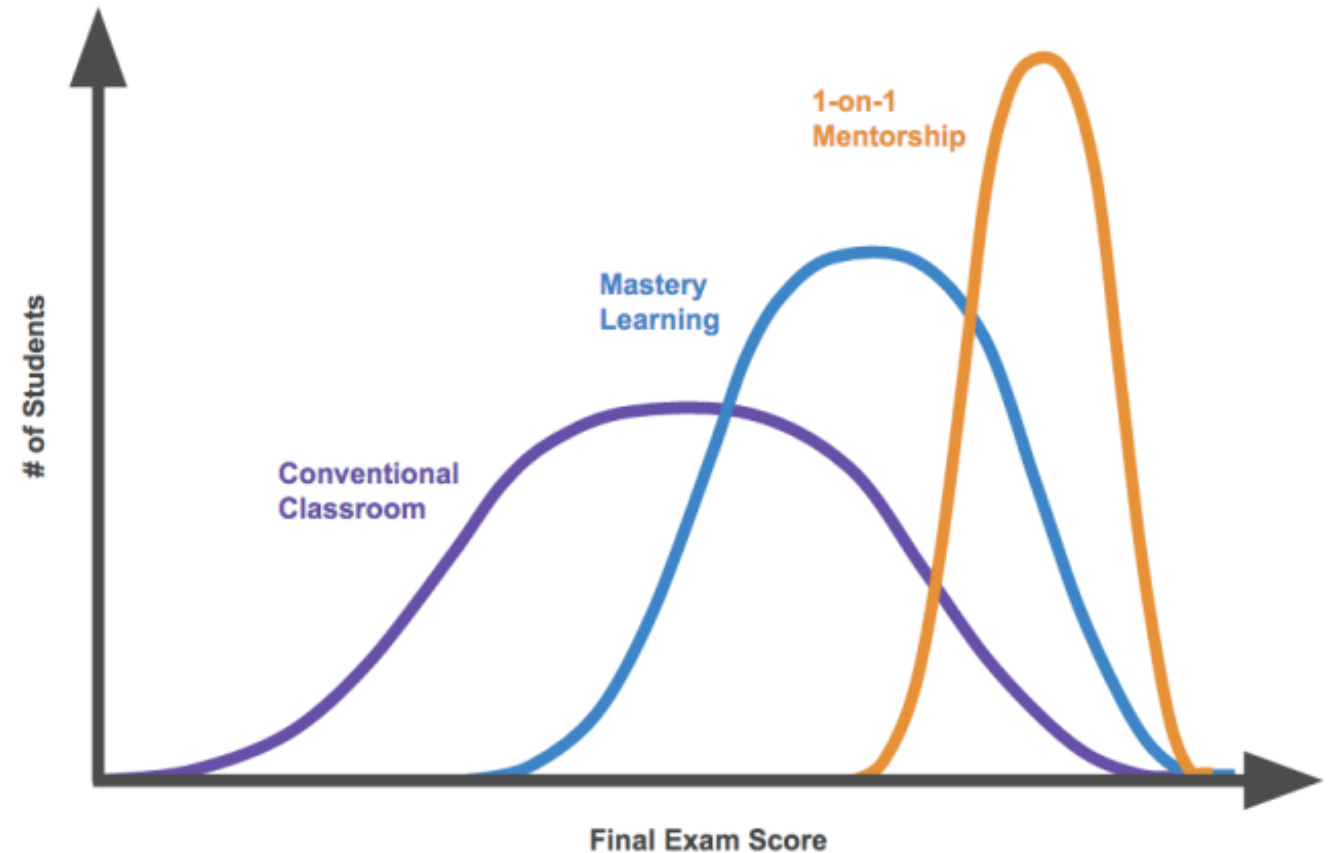
...is the *collection, collation, analysis and reporting* of data about learners and their contexts, for the purposes of **understanding** and **optimizing** learning

LA Drivers:

Pursuit of personalised and adaptive learning

2 sigma problem

- Conventional
- Mastery
- Tutoring





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Why are human tutors so effective?





Feedback

Guided scaffolding / affect response



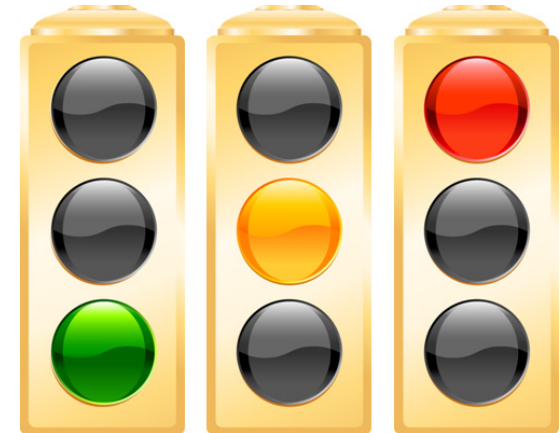
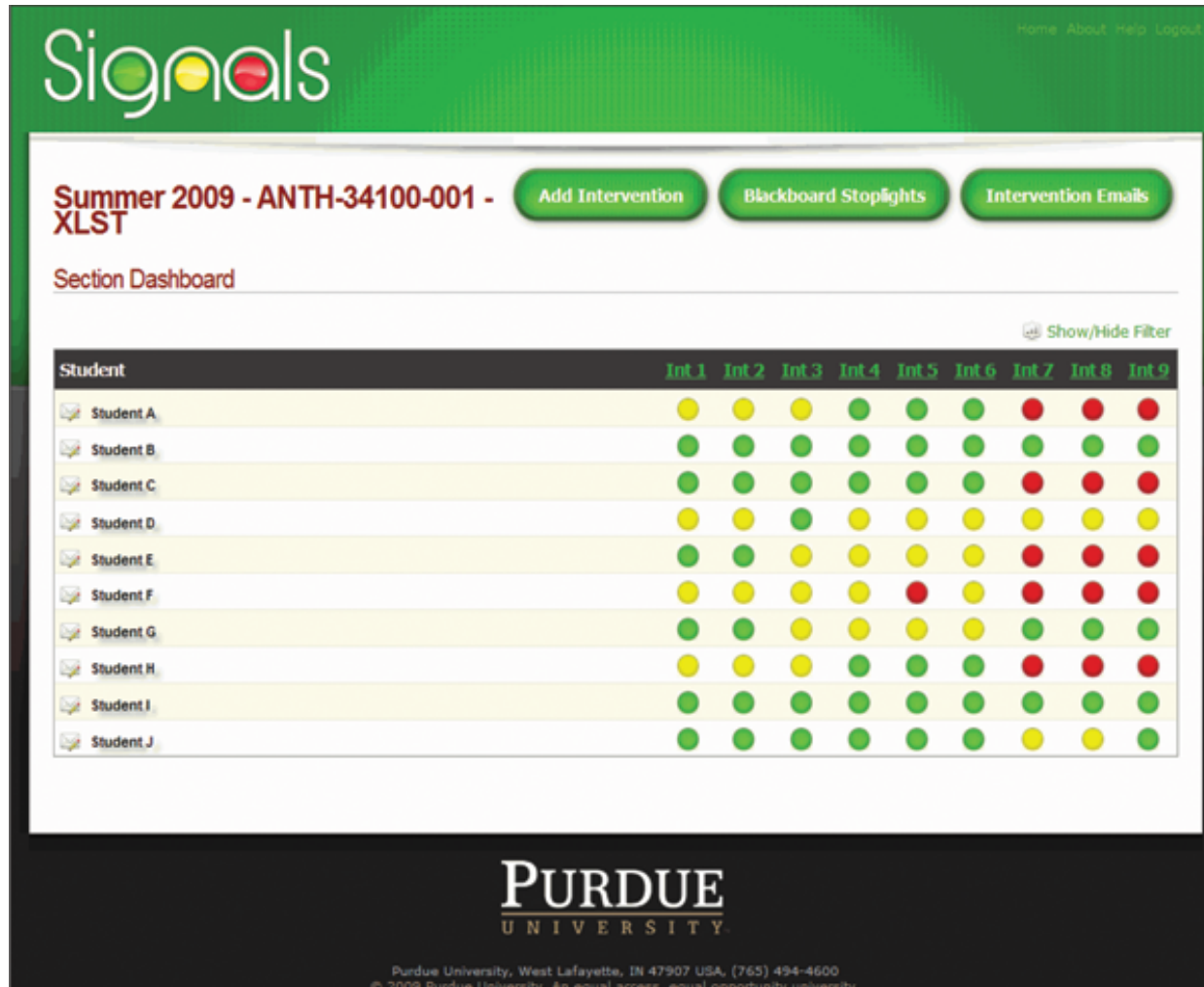
Learning analytics generates increased feedback opportunities

- LA dashboards
- Predictive models/Recommender systems
- Feedback tools

LA Dashboards:



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LA Dashboards:



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Courses (current)

[+ show previous courses](#)

Study Period 5 - 2015

ACCT Accounting Internal, City West	Current Grade C Course Average: P1	Last Site Login 5 days ago (12 Sep 2015) Course Average: 2 days ago	Risk Level Low Course Average: Low	Late Assessment Submissions 0 Course Average: 0	Number of Site Logins 29 Course Average: 36	Forum Contributions 3 Course Average: 12	Lecture Recording Views 10 Course Average: 4	
MARK Market Internal, City West	Current Grade P2 Course Average: C	Last Site Login 1 days ago (15 Sep 2015) Course Average: 1 days ago	Risk Level Medium Course Average: Medium	Late Assessment Submissions 1 Course Average: 0	Number of Site Logins 10 Course Average: 11	Forum Contributions 0 Course Average: 12	Lecture Recording Views 4 Course Average: 4	
COMP Business External, City West	Current Grade C Course Average: C	Last Site Login 1 days ago (15 Sep 2015) Course Average: 2 days ago	Risk Level Low Course Average: Low	Late Assessment Submissions 0 Course Average: 0	Number of Site Logins 10 Course Average: 36	Forum Contributions 0 Course Average: 0	Lecture Recording Views 10 Course Average: 4	
INFS Business Internal, City West	Current Grade HD Course Average: P2	Last Site Login 0 days ago (16 Sep 2015) Course Average: 4 days ago	Risk Level Lowest Course Average: Lowest	Late Assessment Submissions 0 Course Average: 0	Number of Site Logins 46 Course Average: 11	Forum Contributions 20 Course Average: 5	Lecture Recording Views 10 Course Average: 8	

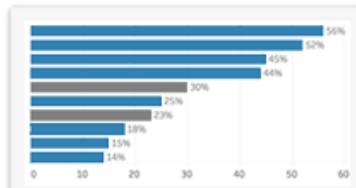
LA Dashboards:



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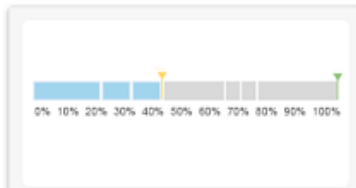
My Learning Analytics : HMP 654 001 FA 2018

Help Logout



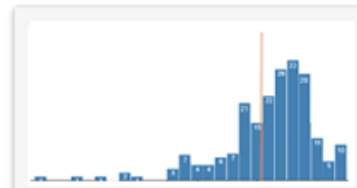
Files Accessed

See what files you and your peers are reading.



Assignment Planning

See what assignments have the greatest impact on your grade.



Grade Distribution

See where your grade sits within the course grade distribution.

My Learning Analytics: CLASS 101 001 WN 2019

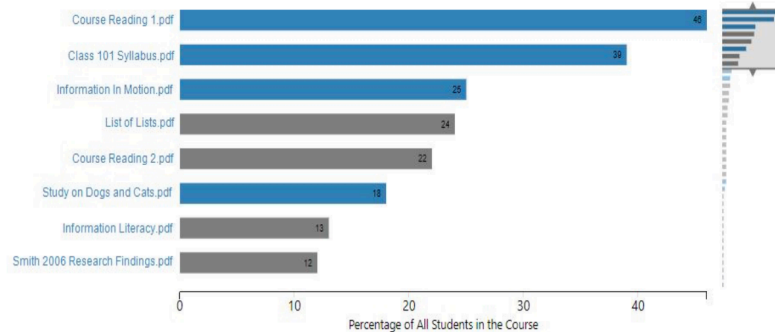
Files Accessed

Help Logout (myname)



Files accessed from week 1 to 3 (Now) by students with these grades: All My current setting

Files I haven't viewed
Files I've viewed



Percentage of All Students in the Course

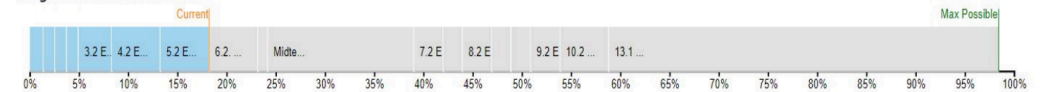
Copyright © 2018 The Regents of the University of Michigan

My Learning Analytics : CLASS 101 001 WN 2019

Assignment Planning

Help Logout (myname)

Progress toward Final Grade



Assignments Due By Date

Show assignments that weigh at least

0% (all) Remember my setting

Assignment Status:

Graded

Not Yet Graded

Week	Due	Title	Percent of final grade
Week 7	10/15	6.2. Exercise	4.95%
Week 8	10/22	Assignment 3	0.99%
	10/23	Midterm	14.85%
Week 9	10/30	7.0 Readings	0%
		7.2 Readings	0%
Week 10	11/05	7.2 Exercise	2.97%
		7.3 Final project: draft proposal	1.98%
11/06		8.0 Readings	0%

Kia, F. S., et al (2020). How patterns of students dashboard use are related to their achievement and self-regulatory engagement. In *Proceedings of the Tenth International Conference on Learning Analytics & Knowledge* (pp. 340-349).



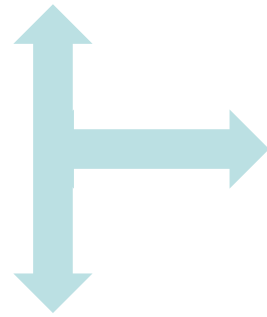
LA Dashboards:

- LA – Dashboards failing to support Student Self Regulated Learning (SRL)
- LA – Dashboards are at present diagnostic not developmental

Learning Analytics :

Pursuit of personalised and adaptive learning

Predictive models



LA Dashboard of engagement activity

Assessment and feedback



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Where to next?



LA Integrated:



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SRL – learning
behaviour

Learning behaviour +
predictive modelling

Learner Profiles

Computed
curriculum

Personalised
Feedback

Integrated data

Employability

SRL Learning
behaviour

Learning behaviour +
predictive modelling

Learner Profiles

Computed
curriculum

Personalised
Feedback



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LA Future:

Emerging LA:

- Establish **timely** and integrated feedback
 - Personalised and precise
 - Sensitive to user motivations and cognitive processes

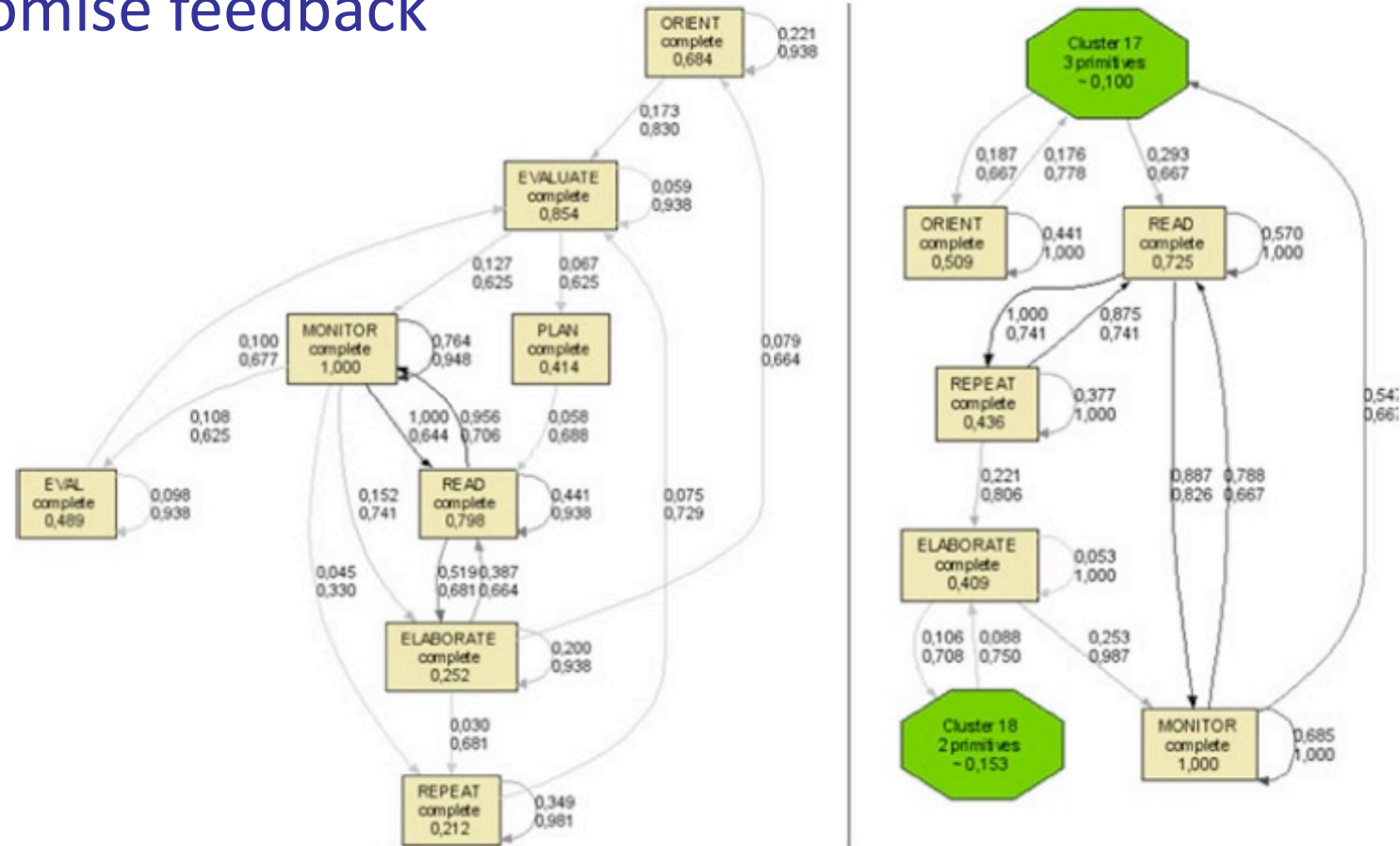
LA Future: Models

1st Yr Engineering

Cluster analyses and transitions states

- Comprehensive use (all activities)
- Strategic use (assessment activities)
- Regular use (videos and assessment)
- Disengaged

Identify learning strategies and pathways to customise feedback



Different learning pathways – high performing vs Low performing



Understanding learning behaviour

Provision of timely and PERSONALISED feedback

WORKLOAD

OnTask version 0.9.3

2. Condition Name: Connect2 Delete This Condition

AND OR + ADD RULE + ADD GROUP

Connect equal 2 DELETE

3. Condition Name: Tutorial Delete This Condition

AND OR + ADD RULE + ADD GROUP

Tutorial less or equal 2 DELETE

4. Condition Name: Workshop Delete This Condition

AND OR + ADD RULE + ADD GROUP

Workshop less 2 DELETE

+ Add Condition + Verify Condition

Insert Conditions to Email Template

StudentID Insert Data Field

Condition1 : Connect Insert Condition

True Insert Custom Attributes

Create Email Template

File Edit View Format

Format B I U Text Color Background Color Align Indent Outdent Link Unlink Image Table Table of Contents

Hello {{StudentFirstName}},

I trust you have settled into uni life and are becoming familiar with how to study at university. I've been keeping an eye on how you've been tracking over the past 4 weeks and would like to chat about a couple of things.

Regular, repetitive study has been shown to help consolidate learning. Connect has been used in Mol to Tissues A for a few years now, and we know that students who regularly engage with the Connect learning platform do better in the course overall. {{Connect:True}} : I have noticed that you haven't registered for Connect. It's important that you do this ASAP! The weekly learning modules will help you develop a good foundation knowledge in this course, furthermore the Connect platform will be used to complete our summative assessment, Quiz 1 in a few weeks time. If you haven't registered for Connect you will be unable to complete the quiz. {{Connect:False}} : I can see that you have registered for Connect, which is fantastic. {{Connect2:True}} : I can see you that you have registered for Connect using a trial membership. It is important that you upgrade to a full access account ASAP! The weekly learning modules will help you develop a good foundation knowledge in this course, furthermore the Connect platform will be used to complete our summative assessment, Quiz 1 in a few weeks time. If you haven't registered for Connect you will be unable to complete the quiz. {{Connect2:False}} : I can see you have registered for Connect using a trial membership. It is important that you upgrade to a full access account ASAP! The weekly learning modules will help you develop a good foundation knowledge in this course, furthermore the Connect platform will be used to complete our summative assessment, Quiz 1 in a few weeks time. If you haven't registered for Connect you will be unable to complete the quiz.

{{Tutorial:True}} : I have also noted that you haven't attended all of the Mol to Tissues A tutorials this year. I know it's tempting to skip classes, but regular class attendance is key to success. {{Tutorial:False}} : I can see you have attended all your tutorials, which is a fantastic effort. Keep up the good work!

{{Workshop:True}} : Lastly, Dr Bresland has told me that you have missed at least 1 workshop. Workshop attendance is important to practical class success. {{Workshop:False}} : I can see you have attended all your workshops, which is a fantastic effort. Keep up the good work!

Please remember some of the key dates for study in 2017. They can be found at <http://www.unisa.edu.au/Student-Life/Support-services/Student-administration/Academic-calendars/Academic-calendar-2017/>

If at any stage you'd like to chat about your studies further, please touch base with either myself or Dr John Bresland.

Kind regards,
Shendan

Schedule Your Rule

09:30 🕒

Repeat ➤

☒ ON Email ☐ OFF Notification

Leverage :



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- Leverage key aspects of current processes in the system
- Uptake of video as learning resources

Mind wandering:



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- Mind wandering 20-40% time during learning tasks
 - 30% when reading
 - 40% during lectures
 - 20% interactive sessions

Mind wandering:

- Lecture recordings – 40%
- Shorter videos – 40%
- Videos with set engagement tasks – 20%
 - Note taking
 - Quizzes



Inclusion of short quizzes – Effective yet simplistic

Development of social learning and SRL skills



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Hi Negin Mirriahi Online Video Annotation for Learning OVAL

Course UNSW Group UNSW EMR Advisory Board Video Giuseppe Carabetta

Search By Content Author Tag Auto Search

PRINCIPLES AND PRACTICE OF TEACHING: GUISEPPE CARABETTA

Common Course Proof of Concept Intro 1

online Assessment Resources Connect

Courses > UOO136 > Course information

This course is currently unavailable to students

Course information

Welcome to this course page, but I'll discuss them in a bit more detail in each of the weekly videos.

GENERAL COMMENTS

Peter Pan Jan 24, 2015

Quibus nist aut vid modiorepro dolupta dictiantis dolorero quae sae prem fuga. On pa dolesci se venimi, quam aspis aut laborate non corum errunt, odit quiducia saperum...

Negin Mirriahi Feb 22, 2015

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John Doe March 12, 2015

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Negin Mirriahi May 21, 2015

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Dwayne Johnson July 13, 2015

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Mary Mantel July 22, 2015

Unt ad ictiantis dolorero quae sae prem fuga. On pa dolesci se venimi, quam aspis aut laborate non corum errunt, odit quiducia saperum...

ANNOTATIONS (WITH TRENDS BARS)

0:00 0:30 1:00 1:30 2:00 2:30 3:00

All Mine Students Instructor & TA

Embedded video

General summary

Point-based annotations





Video annotations and feedback to promote:

- Development of meta-cognitive proficiency
- Creative capacity
- Social skills
- Critical thinking

307 Secondary Schools Singapore



Using a Collaborative Video Annotation and Analytics Environment(CoVAA) to Enhance Flipped Classroom Pedagogical Practice and Foster Students' Conceptual Understanding, Social Knowledge Construction and Self-Regulated Learning

Research Investigators

Principal Investigator:

Tan Puay Leng Jennifer

Co-principal Investigator:

Koh Ruilin Elizabeth

Caleon Imelda Santos

Koh, E., Jonathan, C., & Tan, J. P. L. (2019). Exploring conditions for enhancing critical thinking in networked learning: Findings from a secondary school learning analytics environment. *Education Sciences*, 9(4), 287.

Gašević, D., et al. (2017). Effects of instructional conditions and experience on the adoption of a learning tool. *Computers in Human Behavior*, 67, 207-220.



- Engagement; models; feedback processes
- Recommendations for computed curriculum?



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file:///G:/Spec.../VideoList.html

file:///G:/Speech Recognition/VideoList.html

Speech Recognition University of South Australia

Video List Search Diagram

Choose video to display and show all analyse results. audio-vga (8).m4v

Show analyse result: Keywords

- Keywords
- Concepts
- Taxonomy
- Entities
- RelatedConcepts

- deviant behavior
- debut deviant b
- chances likely c
- norm normal be
- South Australia tranks
- times negative sanctions
- that an indicator water
- deviant person

UniSA

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and the copyright owners.

0:00 50:07

Hi Minnie Mouse

Online Video Annotation for Learning

Course Test Course 1 Group Test Course 1 - Default Gro... Video Study with the best - Univ...

Study with the best - University of South Australia

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STUDY WITH THE BEST

RELATED VIDEOS

Related by Keyword

- Link to Video 1
- Link to Video 2
- Link to Video 3
- Link to Video 4

GENERAL COMMENTS

Minnie Mouse
Mar 22, 2017
woof woof woof woofwoof!!!!

Minnie Mouse
Mar 22, 2017
Nunc condimentum, arcu vitae commodo f...

ANNOTATIONS



Shane:
5 tasks due today

Upcoming

English
Mr. Dickens
S1A
Lessons P1

Maths
Do Sheet
Check Answers with teacher
Then do Extension Activity
Homework Due: 04 October 2012

Monday

Physics
Mr. Einstein S3

Tech
Mr. Jobs S23

English
Mr. Dickens S1A

Geography
Mr. Polo T16

Maths
Mr. Newton T1

Study Progress

Desired grade

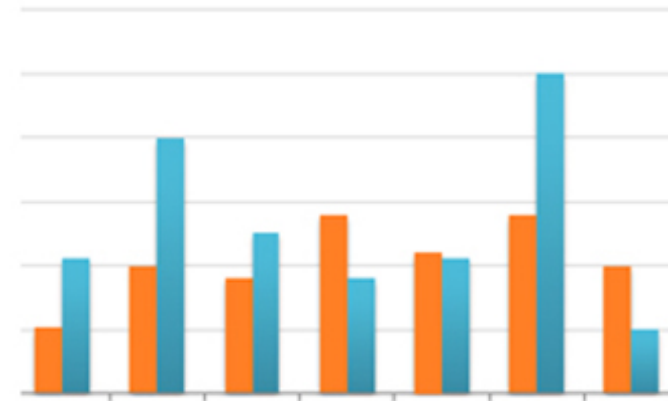
Credit

Motivation for study

Career

Target

2hrs/ day



Planned study 

Actual study 

Employability:

Master of Teaching (MMET)

Overview

Jobs

Skill matching analysis summary

Assessment Profile

The number of courses in the program : 69

All Courses

FILTER

COURSE DETAILS

Course Level	Course Name	AQF
4.5	Arts Education M	
4.5	Arts for Secondary Teaching 1	9
4.5	Contemporary Practice in Education Research	
4.5	Critical Perspectives of Education	9
4.5	Critical Perspectives on Curriculum, Pedagogy and Assessment	9

Analysis of curriculum:
Course aims, objectives,
descriptions, and
assessment



Skill matching analysis summary

The following analytics were performed based on the public available data.

Match against skills gained from Course & Assessments FILTER

MATCHED HARD SKILLS (OVERALL: 24) +

UNMATCHED HARD SKILLS (OVERALL: 8) +

MATCHED SOFT SKILLS (OVERALL: 10) -

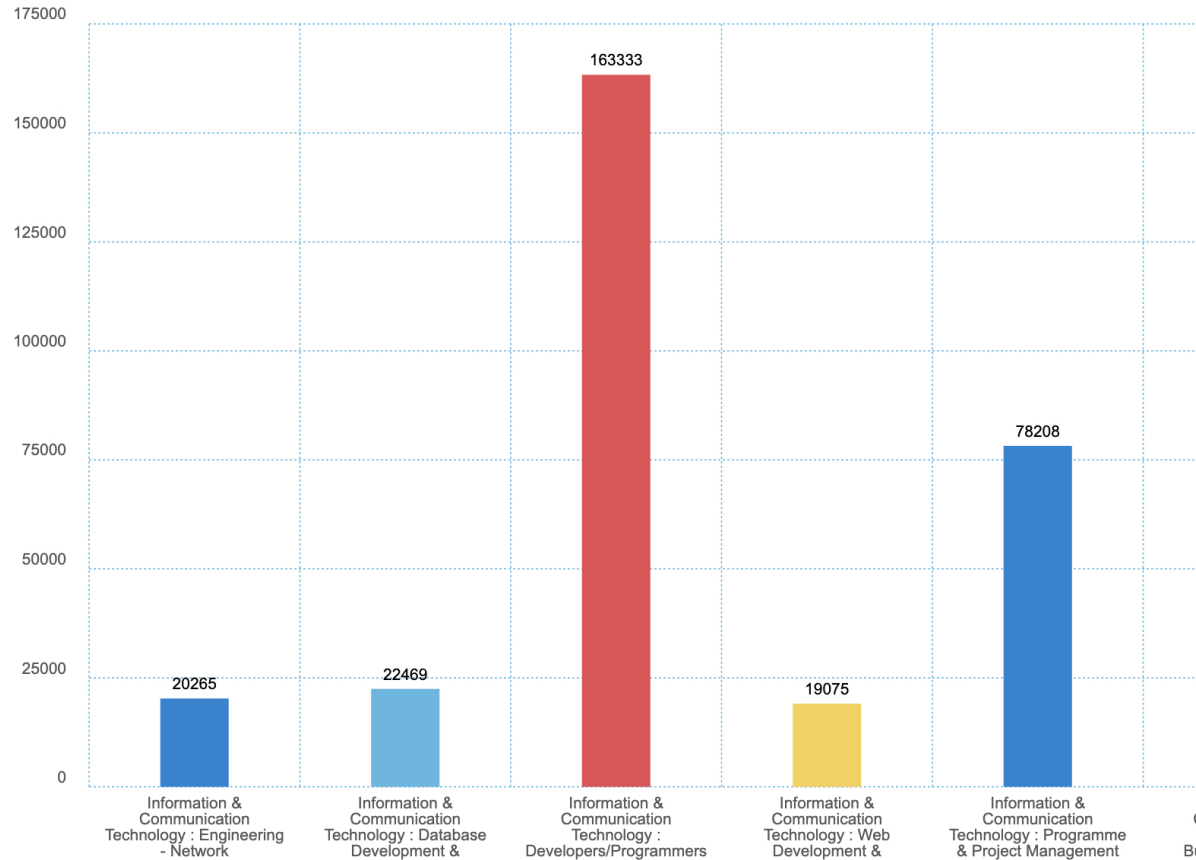
Show 10 entries Search:

TITLE	SKILL IN COURSE FREQUENCY	SKILL IN JOB FREQUENCY
problem solving	251 (51.02%)	54225 (22.91%)
communication	219 (44.51%)	55259 (23.34%)
experience	210 (42.68%)	77351 (32.68%)
professionalism	203 (41.26%)	71837 (30.35%)
self-management	149 (30.28%)	66136 (27.94%)
teamwork	129 (26.22%)	68425 (28.91%)
leadership	92 (18.70%)	44734 (18.90%)
responsibility	26 (5.28%)	42277 (17.86%)
courtesy	25 (5.08%)	29689 (12.54%)
flexibility	9 (1.83%)	13568 (5.73%)

Mapping curriculum with job descriptions

1. Discrete “hard” skills
2. Enterprise skills

JOB DISTRIBUTION BY JOB CLASSIFICATION



Job trends

- Time
- Locality
- Classification



AS Student

Overview

Jobs

Skill matching analysis summary

Assessment Profile

The number of courses in the program : 22

All Courses

▼

COURSE DETAILS

—

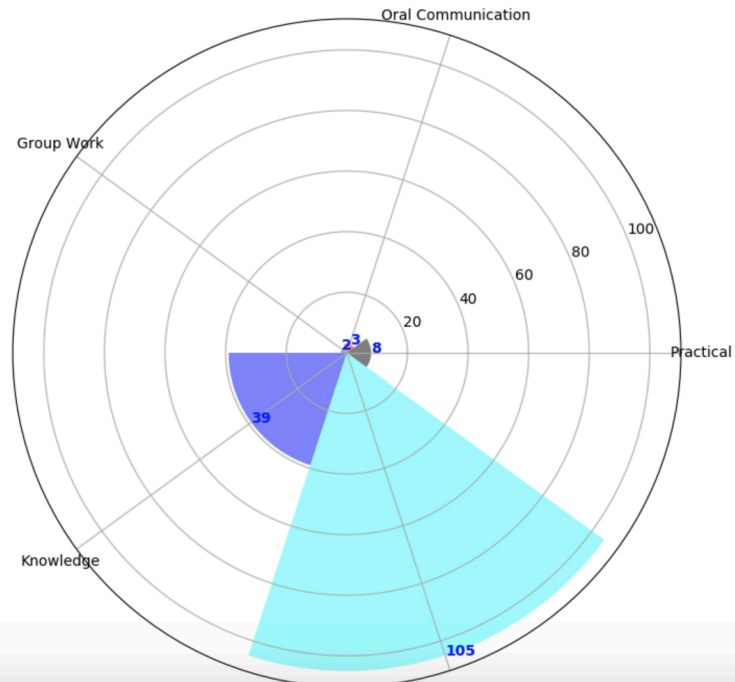
Course Level	Course Name	AQF
4.5	Advanced Research Methods	
4.5	Applications for Social Media Data	7C
4.5	Applying Social Research Methods	7C
4.5	Colonial Experiment: Australian History 1788 - 1918	7B
4.5	Foundations of Law	7A

Student lens

- Progress towards career goals and skills
- Identify gaps
- Recommend alternatives

Assessment Profile

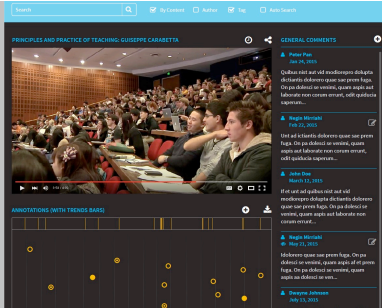
RAW COUNT DIAGRAM (ONLY SHOW CORE COURSE OR COMPLETE COURSE RESULTS)



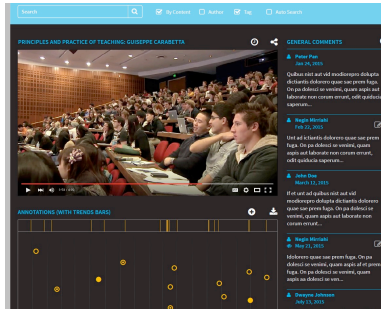
Assessment

- Current course and program view
- External and accredited options?

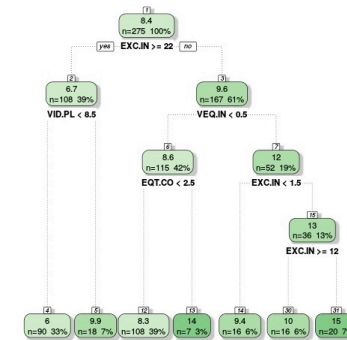
SRL – learning behaviour



SRL – learning behaviour

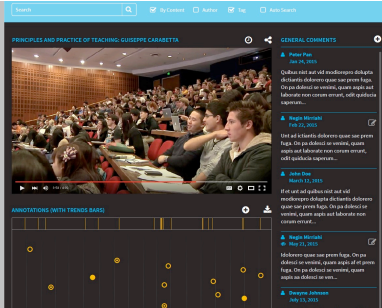


Learning
behaviour +
predictive
modelling

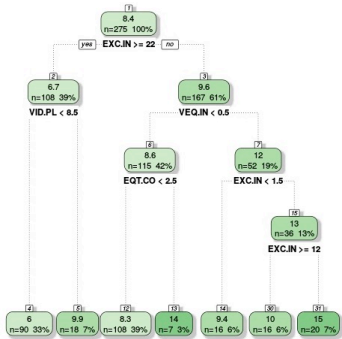


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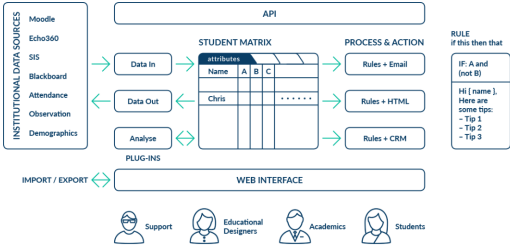
SRL – learning behaviour



Learning behaviour + predictive modelling



Personalised Feedback



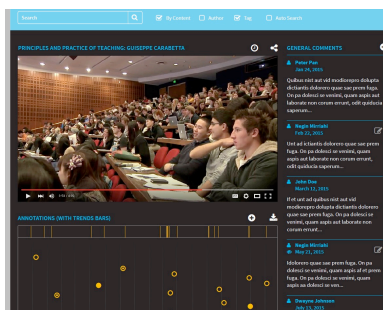
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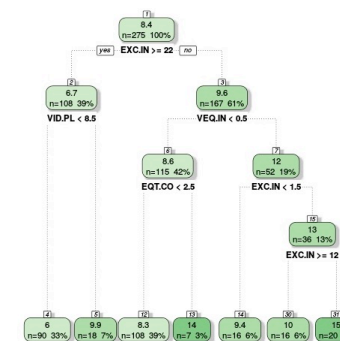


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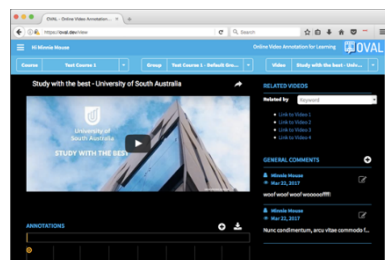
SRL – learning behaviour



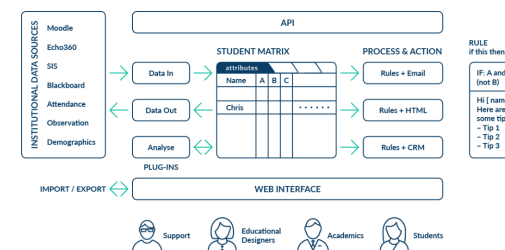
Learning behaviour + predictive modelling



Personalised Resources



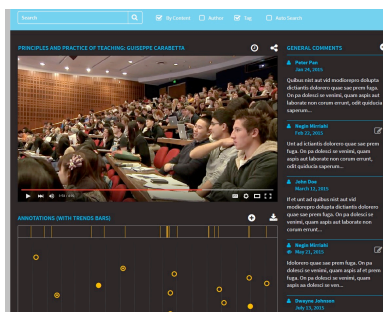
Personalised Feedback



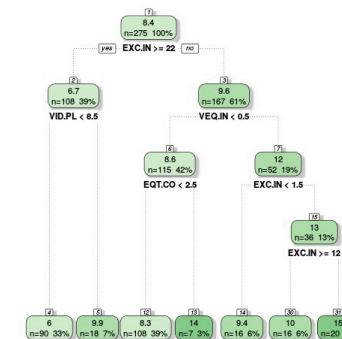


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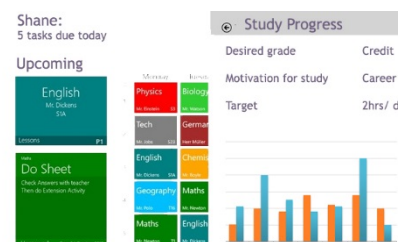
SRL – learning behaviour



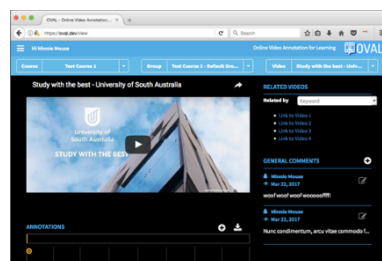
Learning behaviour + predictive modelling



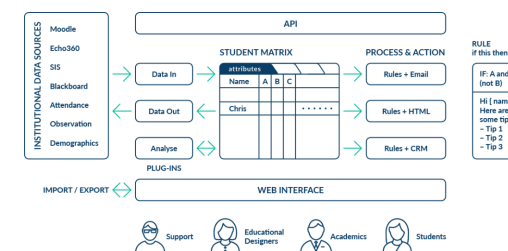
Learner Profile



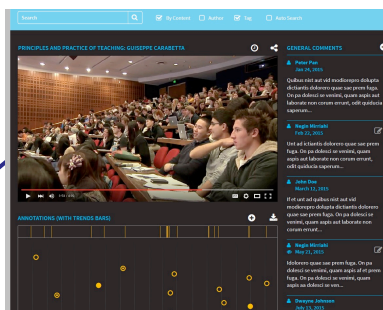
Personalised Resources



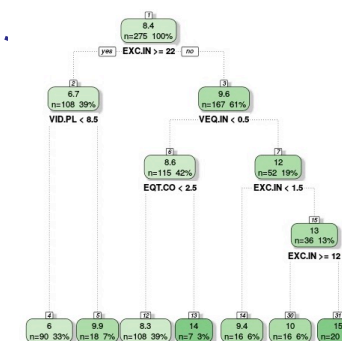
Personalised Feedback



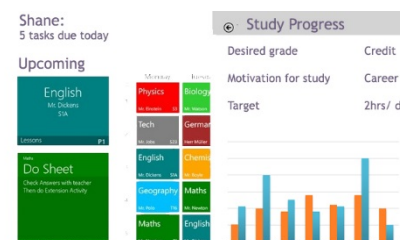
SRL – learning behaviour



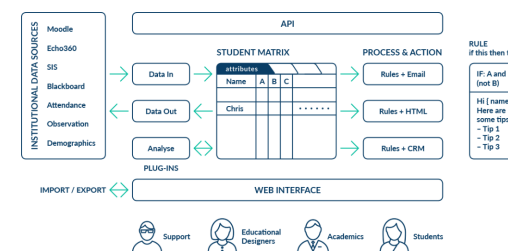
Learning behaviour + predictive modelling



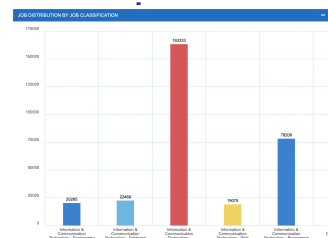
Learner Profile



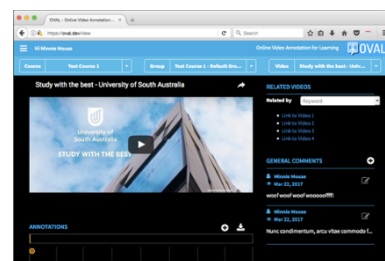
Personalised Feedback



Career orientations



Personalised Resources



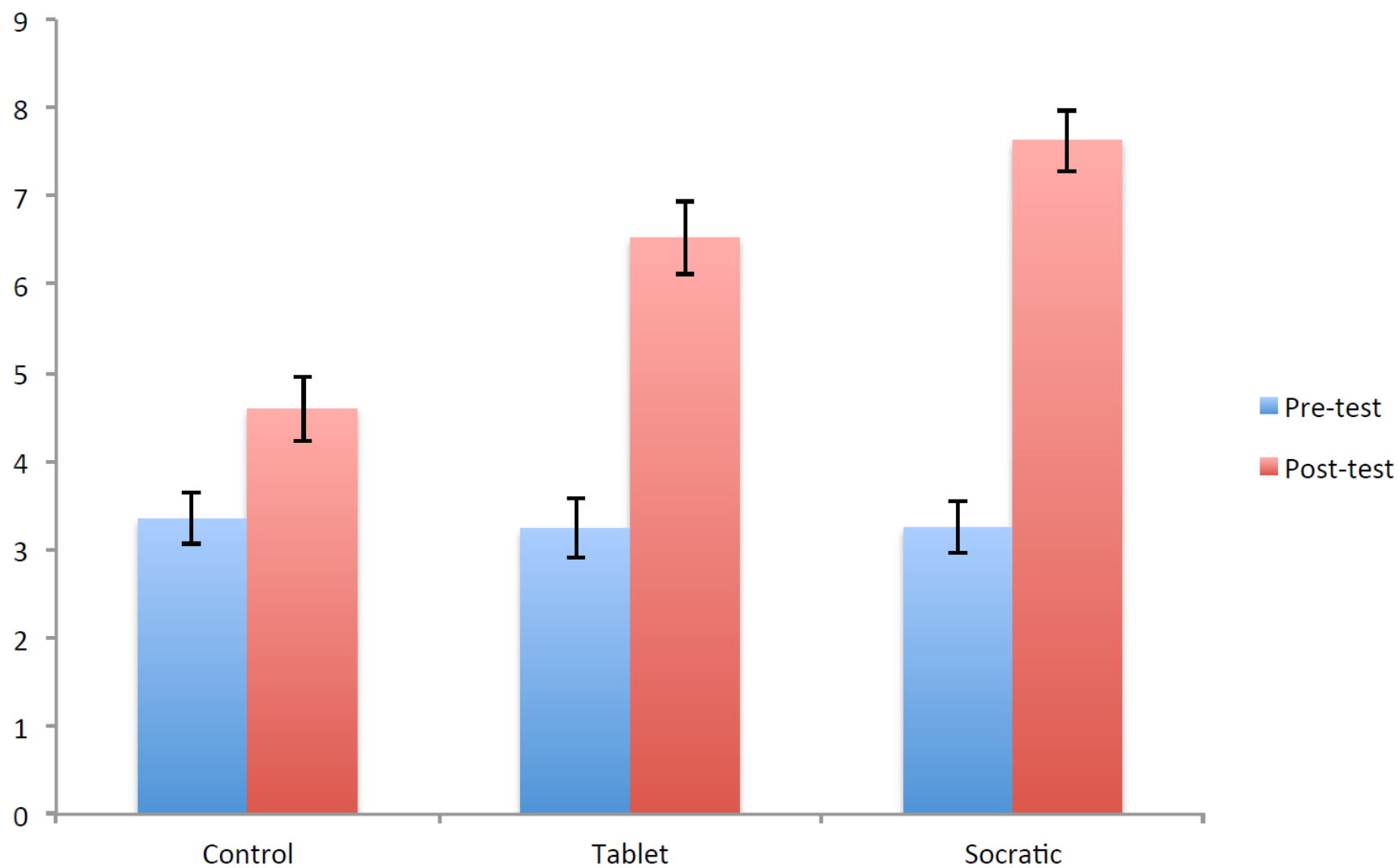


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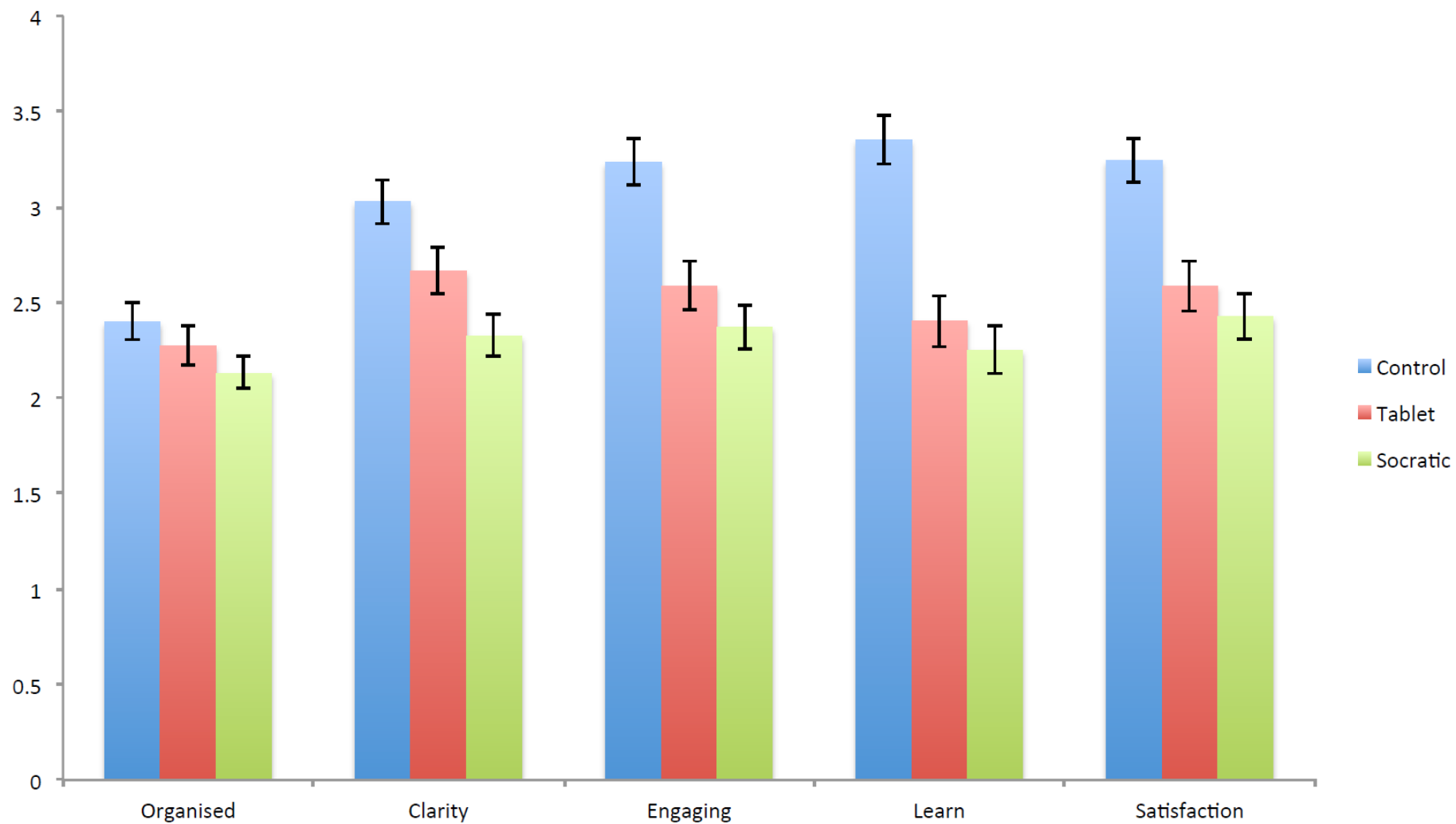
To muddy the waters

How do we design for learning?





Thanks to and in collaboration with Dr. Jason Lodge Centre for Studies in Higher Education, University of Melbourne





What data are you using to assess progress and quality?

Course evaluations and student satisfaction?



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Thank you...

Email: Shane.dawson@unisa.edu.au

Twitter: [shaned07](https://twitter.com/shaned07)

