

# Learning Analytics for Enhancing Student Learning Experience

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*Universities process and churn out voluminous amounts of data each year*

...

*How can we engage students through the use of learning analytics to provide them with feedback to enhance their learning?*



“Learning Analytics involves computer-aided analysis and transformation of large-scale data to provide meaningful insights in order to design appropriate interventions for improved teaching practices and learning processes “ (Dietz-Uhler & Hurn, 2013)

Learning Analytics



Personalized Learning

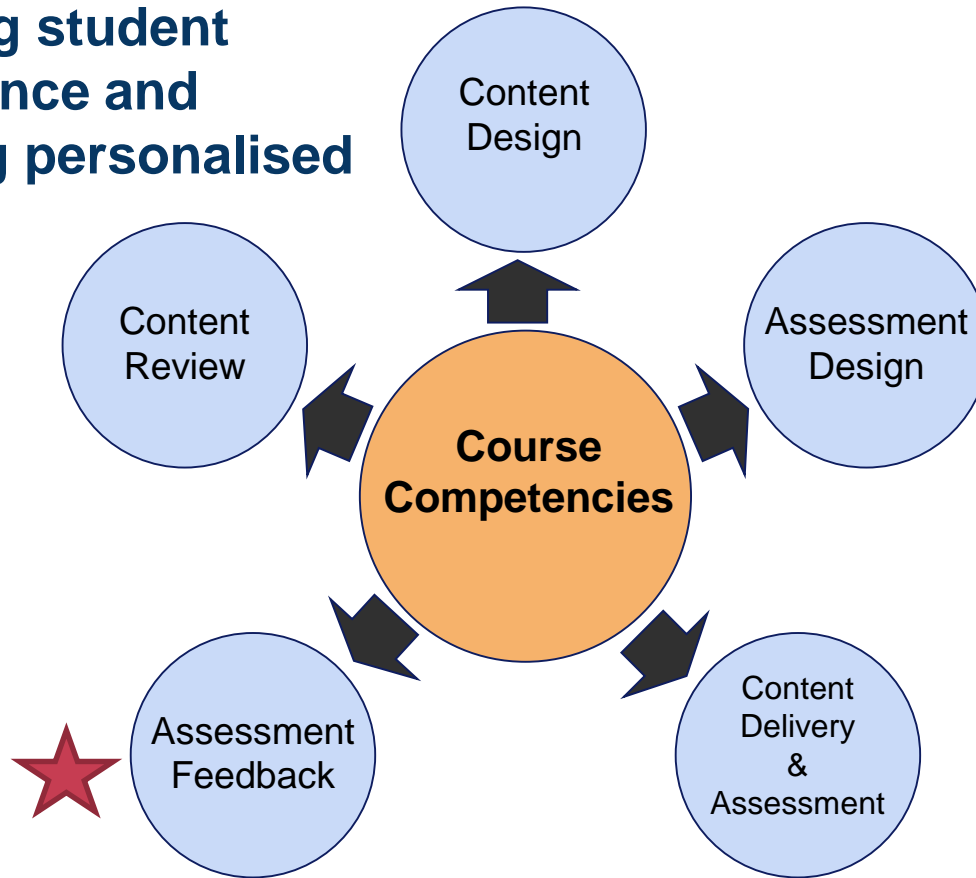
### 3 Areas of Application of Learning Analytics

- Analysing **student performance** and providing personalised feedback
- Analysing **student feedback** in order to adapt content and delivery
- Analysing **live presentations and discussions** to provide personalised feedback



# Student Performance (GLO System)

# 1. Analysing student performance and providing personalised feedback



**Figure: Course lifecycle and competency framework**

Using a Course Life Cycle and Competency (CLCC) framework

(Ducrot & Shankararaman, 2014 December).

# Graduate Learning Outcomes

## DISCIPLINARY AND MULTIDISCIPLINARY KNOWLEDGE

### INTELLECTUAL AND CREATIVE SKILLS

- a. Critical thinking and problem solving
- b. Innovative and entrepreneurial skills

### INTERPERSONAL SKILLS

- a. Collaboration and leadership
- b. Communication

### GLOBAL CITIZENSHIP

- a. Intercultural understanding and sensitivity
- b. Sensitivity towards developments in Asia
- c. Ethics and social responsibility

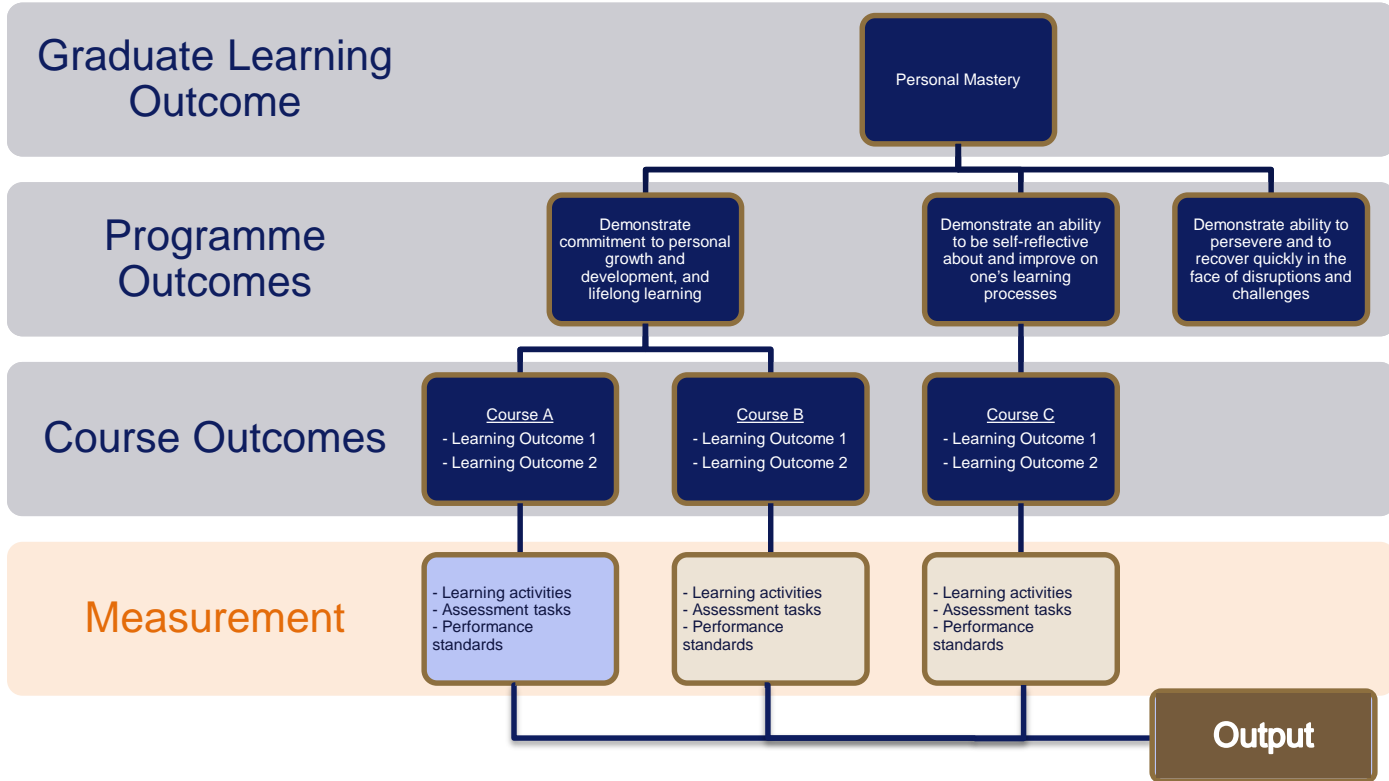
### PERSONAL MASTERY

- a. Self-directedness and meta-learning
- b. Resilience and positivity

Achieved through:

- ❖ Core Curriculum
- ❖ Disciplinary curriculum
- ❖ Co-curriculum

# Establishing an SMU Learning Outcomes Framework



# Example: Graduate Learning Outcomes (GLO) System

- (i) Improve assessment-based feedback to guide students in the **attainment of learning outcomes**, including prescriptive **recommendations** on how to improve;
- (ii) Measure and manage relevant learning outcomes to **assure** achievement of **SMU's Graduate Learning Outcomes** and;
- (iii) Facilitate coordination to achieve **efficient** and **effective** assessment of learning outcomes within courses and across the curriculum.



**Aiza Doss** is a Year 2 SMU student taking the IDIS001-Analytics Skills course. She typically gets **B+ grades** for her assignments and, because she is interested in becoming a **consultant**, she is actively looking at how she can **improve** in areas such as **Intellectual & Creative skills** and **Interpersonal skills**.

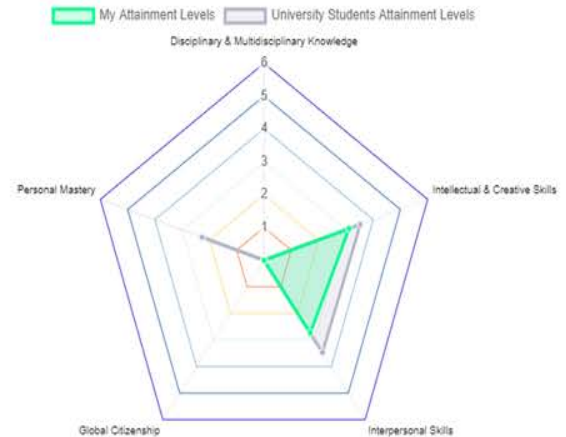
***“How would Aiza leverage the GLO system to improve her creative and interpersonal skills and increase her chances of landing her dream job?”***

# GLO System

## Learning Outcome Report



Graduate Learning Outcome	My Current Level	University Level
Disciplinary & Multidisciplinary Knowledge	N.A.	N.A.
Intellectual & Creative Skills	3.12 / 6 Journeyman	3.53 / 6 Journeyman
Interpersonal Skills	2.74 / 6 Apprentice	3.47 / 6 Journeyman
Global Citizenship	N.A.	N.A.
Personal Mastery	N.A.	N.A.



### Radar Chart (5 GLOs)

# Student Feedback (SUFAT)

# Example Qualitative Feedback on Instructor

Question 18 : Please give responsible feedback regarding what you liked/disliked about the instructor.

He recaps with you every lesson and make sure you understand what is going on before moving on to the next topic. He is approachable when you need help.

The revision that is carried out at the start of the class to help us understand the previous topic is very good

As usual, Prof \_\_\_\_\_ is a dedicated professor, often leading the class to deepen the understanding of the module.

Clear understanding of all subject matters

alright

The instructor is engaging.

Nil

instructor explanation about course is pretty good

Prof \_\_\_\_\_ has vast knowledge in the study area and provide us with great advice relating to the course outline.

Prof \_\_\_\_\_ does not restrict us on our creativity

Instructor is overall fine. Nothing exceptionally bad to comment.

patient in ensuring students understand concept very well

Liked the instructor's ability to engage the class.

I like that the instructor allows us to have a lot of class activities in order to make us learnt more. Rather than sitting down to listen to the lecture for 3 hours.

# Example Qualitative Feedback on the Course

Question 19 : Please give responsible feedback regarding what you liked/disliked about the course.

Assignment 1 was a very good application of the tasks taught in class. However, assignment 2 is rather challenging and completion of the requirements of this assignment is tough due to the nature of time, being the last weeks of the semester.

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Very technical

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ok

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Maybe more time for the projects

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Nil

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Managed to understand SAP concept

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It is a relevant software skill which we can use in our future work

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I like that this course exposes me to a whole new technology & I was given the chance to explore it.

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Course slides could be made better rather than throwing in 3 thick booklets and asking us to read.. Technical booklets should be included in the lecture rather than having the lecture for labs. The labs given to us is very much suited for homework without much issues.

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real world examples is good training for students

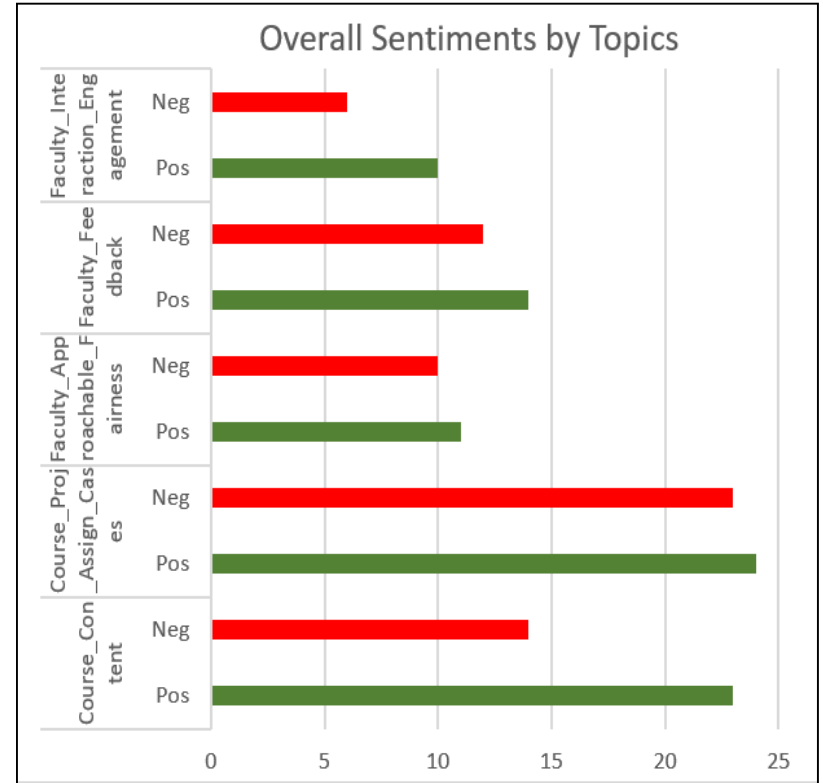
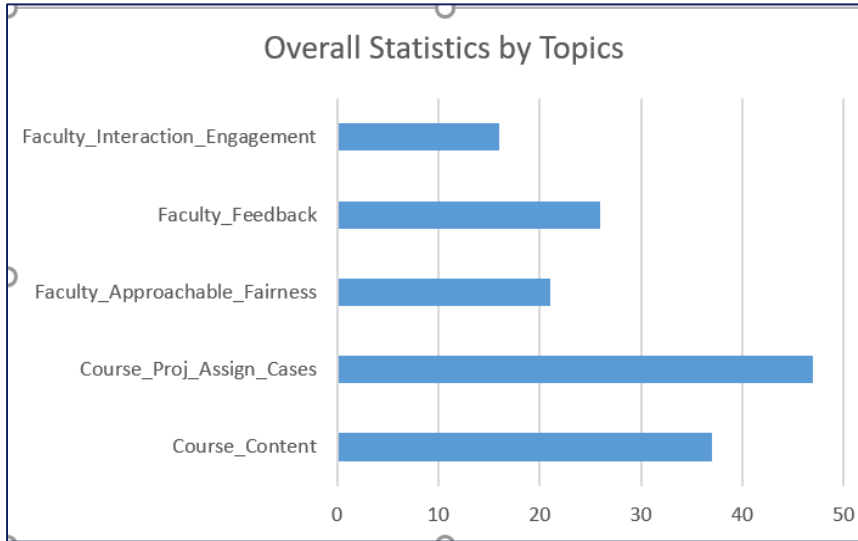
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Workload level is just right.

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I like the course structure where we have the chance to stimulate real-life scenario to understand more able the course.

# SUFAT Visualizations



# Example: Student Feedback Analysis Tool

- Text mining and visualization techniques
- Aggregates the textual comments into sentiments
- Suggestions categorised by salient topics

(Pyasi, Gottipati, & Shankararaman, 2018, October)

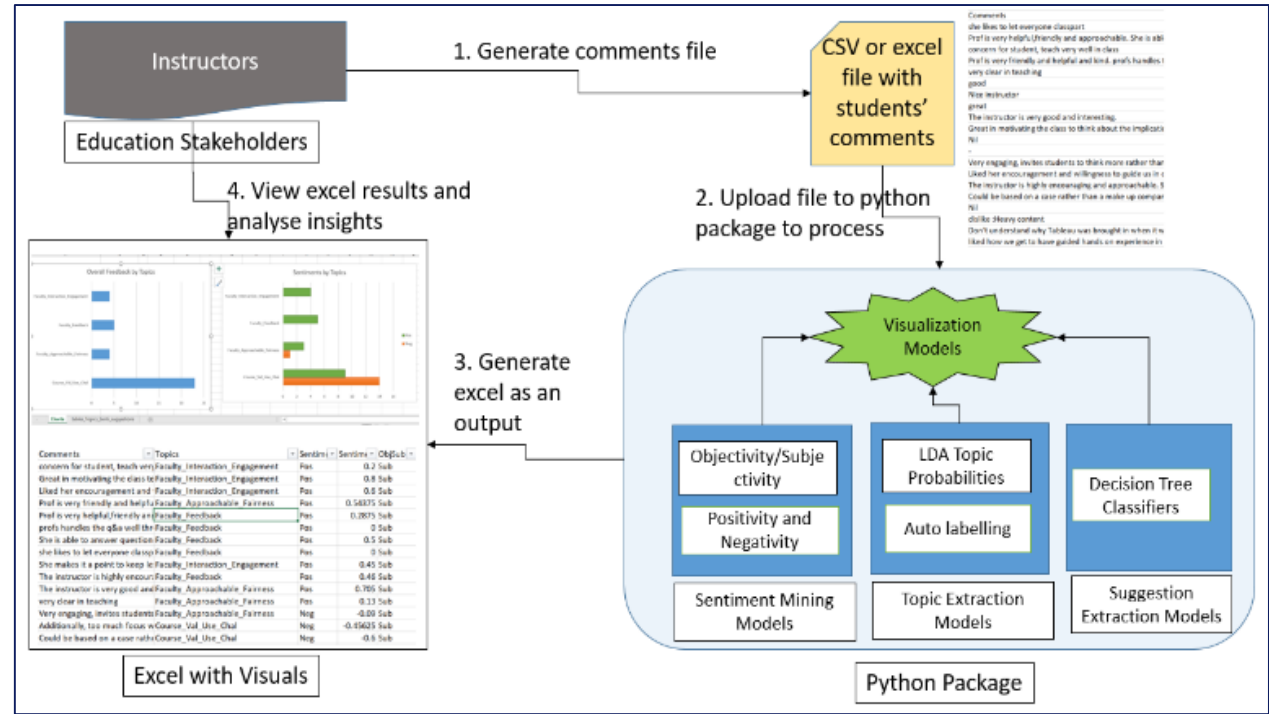


Figure: Solution Implementation (SUFAT)

# Analysing live presentations and discussions (J.A.R.V.I.S)

Developed by School of Information Systems Students

NG Pei Qi

Gabriel KOH Zhe Ming

Gabriel KWAN Seng Whye

Samuel FOO Jiaquan

WAI Jia Jie

### 3. Analysing live presentations and discussions (J.A.R.V.I.S)



## Herman Lee

### Primary Persona

Herman is a 21 year old undergraduate studying at the Singapore Management University. Hardworking and studious, he would spend hours after school revising his work every day.



As a student who needs to present on a regular basis, he is currently actively working on improving his presentation skills.

He wishes to receive more guidance and support in his presentation skills so that he can improve and become an eloquent speaker.

Speech-to-Text

Presentation Pace

Personalised Report

Filler Words

Presentation Pace Comparison

Word Cloud Generation

***“Designed by students, for students.”***

# Example: IS480 Project J.A.R.V.I.S.

Record your presentation

**Recorder**

**03:00**



Ready to record.

**Speaker for today: khleong@smu.edu.sg**

Email  
khleong@smu.edu.sg

Course  
Select Course

Section  
Select Section

Assignment  
Select Assignment

**SUBMIT**



Analysis

**Text Transcript**

Show Grammatical Errors

well, **right**. Okay, folks. Okay. As we slowly make our way back to our next, uh, we're **gonna** have a very quick emphasis. And what Quick round off string to fast back overdrive in us. It is maybe we had taken away from each group for the benefit of these present in the topic for your group, but understandable, not there. Alright, discussed elsewhere. So how are we **gonna** do this? It is just say a **300-30** about each topic first, such as managing students with diverse prior knowledge will be this have seen there. Let me go up like, okay, so **right** in a class, you can readily expect students to have different prior knowledge, not just in terms off this uh, so I'm finding it seems not having it in superlatives. Somebody might actually have wrong prior knowledge, they might have set the impression that they leave have the power college part correctly, but in their mind, they get it wrong. They were wrong, understanding things like that might necessarily have to be corrected before you can move on there. So though that's what you might have to correct with in any classroom, not just **right** you classroom. And in **the** **right**. I think that's a means that discussed some strategies on how to go about it. Can I make someone to just maybe pick the most one that can then share with the rest of us? This group? Oh, okay. Okay, they say well, I will answer the diagnostic first then. Oh, way. Thank me way. The need to know what kind of prior **right** some whether they have misconceptions. They have the right knowledge of what we might want to have. Diagnostic, maybe right at the beginning of the class. So that's what Wait. Thank you very much for a whole host of other strategies will take a snapshot of this and share this amongst the rest of you. Okay. Thank you. We wouldn't know if we go into the next one. Pagaritas. We live it once again in this digital era. Right? So very easy to plagiarize right now. Everything's just out there from the internet. So how will you attempt to maybe get **right** each incidents are managed And when they arrived, important **because**

**19**

Filler words used.

**132**

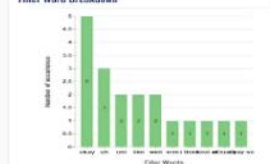
words per minute

**11**

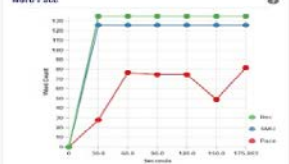
grammatical errors.

**Gauge 4**


**Filler Word Breakdown**



**Word Pace**



**Word Cloud**



**Inappropriate Words**

No inappropriate words were spoken.

**Text Summarisation**

- As we slowly make our way back to our next, uh, we're gonna have a very quick emphasis.
- To just say a little bit about each topic first, such as managing students with diverse prior knowledge will be this have seen there.
- Let me go up like, okay, so yeah in a class, you can readily expect students to have different prior knowledge, not just in terms off
- Somebody might actually have wrong prior knowledge.
- They have the right knowledge of what we might want to have.
- Diagnostic, maybe right at the beginning of the class.
- Thank you very much for a whole host of other strategies will take a snapshot of this and share this amongst the rest of you.

# Opportunities for collaboration

- SMU-X Overseas (SMU-XO) projects
- Providing students with multiple sources of feedback through Peer evaluation / 360-degree evaluation
- Empowering students to choose their own learning goals within each course



**Thank you!**

Park your questions at  
[www.wooclap.com/aunqna](http://www.wooclap.com/aunqna)



**Q & A**

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