



The image shows the exterior of the Temasek Polytechnic building, a large, modern, curved structure with multiple levels and balconies. The building is white with green accents on the balconies. In the foreground, there is a large sign that reads "Temasek POLYTECHNIC" in red and blue letters. The sign is mounted on a dark structure. The building is surrounded by a paved area and some greenery.

Implementation of Blue Text Analytics at Temasek Polytechnic (Singapore)

Presented by: Rita Woo & Michael Yap

Agenda

Temasek Polytechnic (TP)

Institution's Overview

Text Analytics Project

Blue Text Analytics (BTA)

Key Advantages

Implementation Approach

TP's Teacher Effectiveness Questionnaire

Quantitative Analysis

Qualitative Analysis

Hidden Insights

Key Demographics

BTA - Lecturer Level Report

Proposed Methodology

Project Summary

Q&A



Institution's Overview

TP Overview

- Established in April 1990
- For AY2018, TP offers 52 full-time diploma courses in the areas of Applied Science, Business, Design, Engineering, Humanities & Social Sciences and Informatics & IT, to close to 14,500 students.
- TP also offers programmes to facilitate adult learners acquiring relevant knowledge and skills to meet the challenges of a technology-driven economy.
 - Diploma and Post-Diploma courses, Earn and Learn Programmes, Skills Based Modular Units, Enhanced Post Diploma Certificates, public run short courses, Workforce Skills Qualifications and customised training programmes for organisations



Text Analytics Project

Project Background

- **TP conducts various surveys**
 - Teaching Effectiveness, Subject Review, Course Review
- **Extensive analysis of quantitative data**
- **Eyeball qualitative data**
 - E.g. Online Student Evaluation of Teaching (OnSET) collects about 100,000 free-text comments annually

Objective

Leverage on technology to analyse free-text comments, so as to gain insights on themes and sentiments

Blue Text Analytics

Key Advantages

Why Blue Text Analytics ?

- Convert open-ended comments into meaningful themes and quantifiable results
- Automate comment processing, saving time and resources
- Leverage on the purpose-built 'Teaching and Learning Dictionary'
- Obtain a more complete picture of what students are saying

Key Advantage: Dictionary of Themes

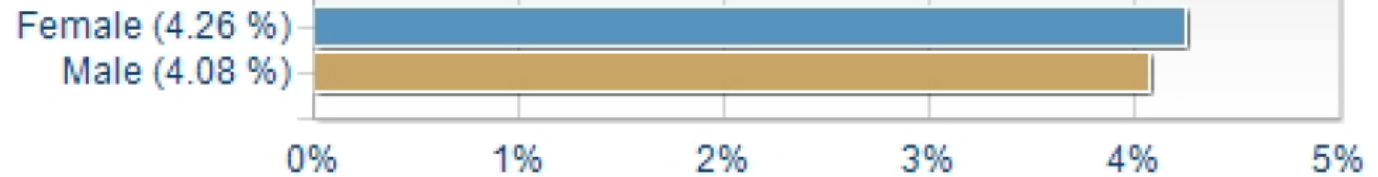
- **Helpful/Supportive** – Student feedback that is focused on the instructor’s willingness to support them through the learning process. All feedback that refers to the instructor being accommodating, or providing constructive feedback, or encouraging success are captured in this attribute.
- **Engaging** – Feedback where students describe being captivated, or where students refer to the appeal of the course, or where students discuss how communicative the instructor was, are all considered to be part of the ‘Engaging’ attribute.
- **Interesting** – Student feedback mentioning fascination with material, attentiveness, excitement about the course, and similar ideas, is reflected in the ‘Interesting’ attribute.
- **Difficult** – Student feedback that discusses challenges throughout the course, or how complex the material is, or refers to instructions as being complicated, are reflected in this attribute.
- **Important/Relevant** – Student feedback that refers to a course as essential or which notes how the material is applicable to their lives, are captured as part of this attribute.

Key Advantage: Categorization



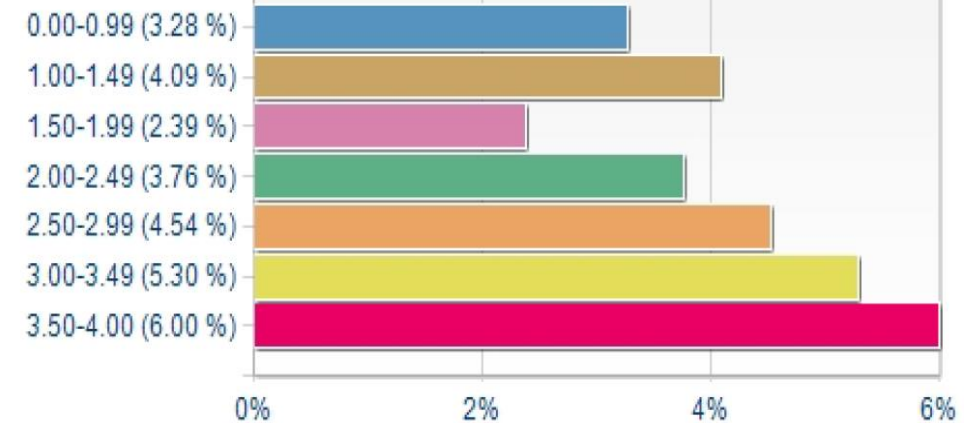
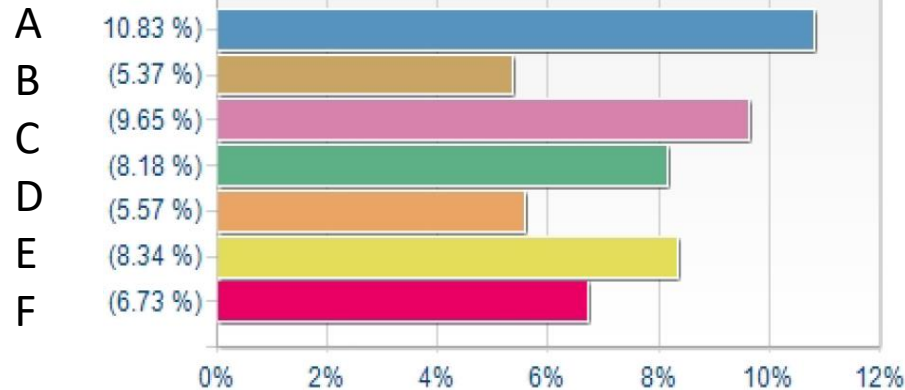
Key Advantage: Cross Tabulation (Demographics)

FUNNY / ENTERTAINING

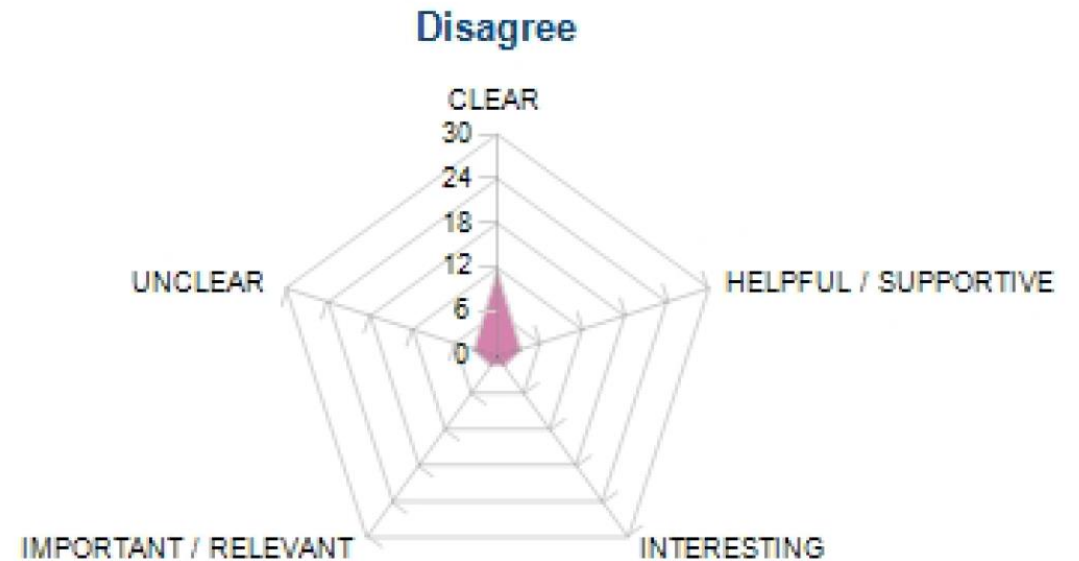
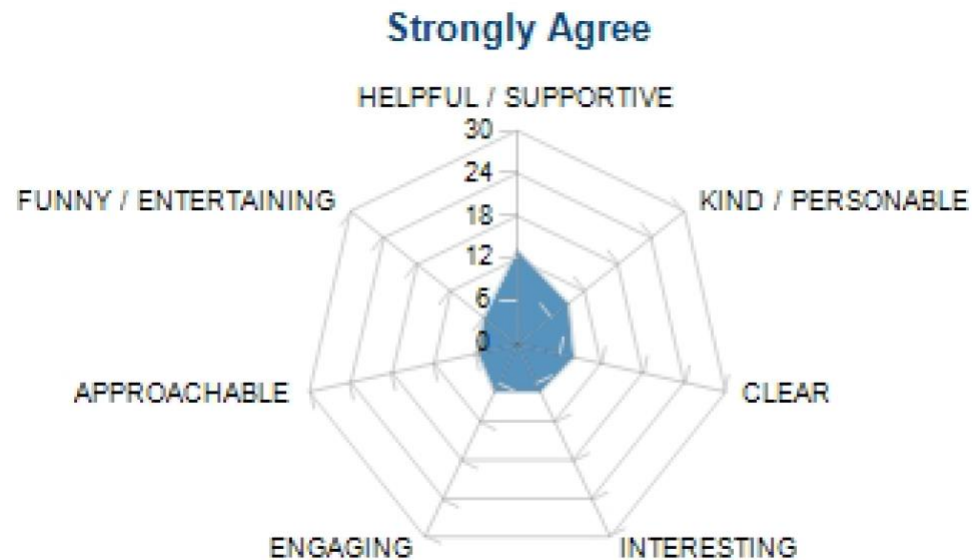


APPROACHABLE

KIND / PERSONABLE



Key Advantage: Cross Tabulation (Qualitative vs. Quantitative Analysis)

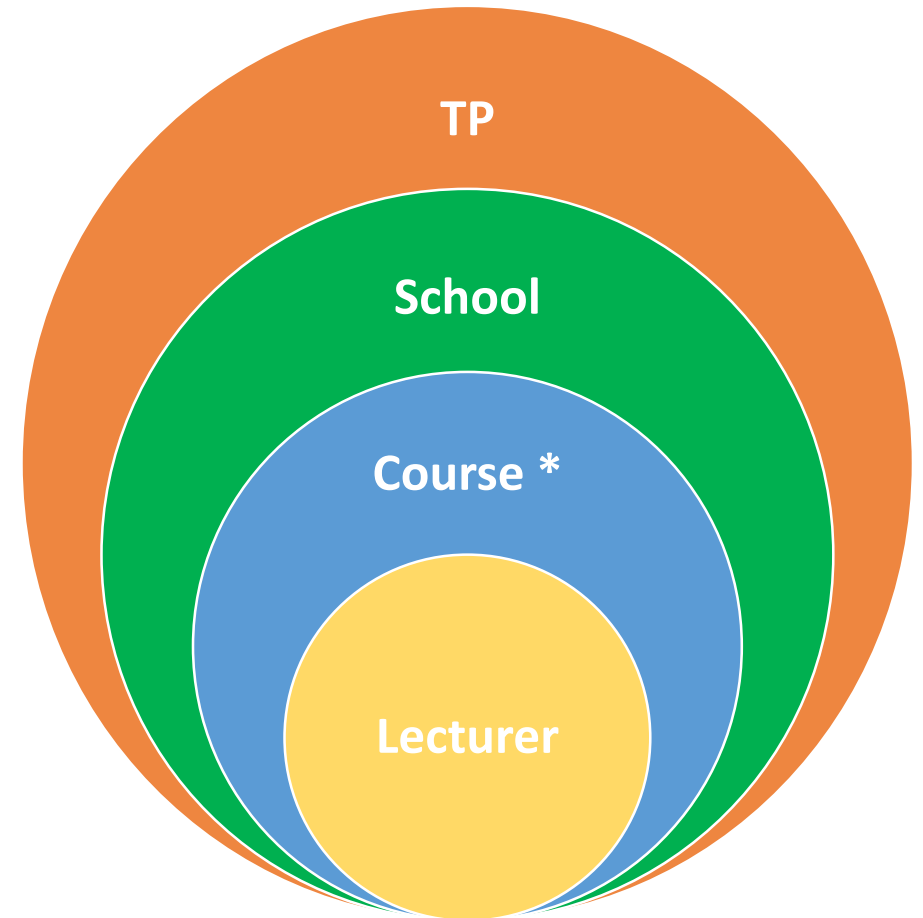


Blue Text Analytics Implementation Approach

Implementation Approach

- Top-down approach
- Utilizing all possible demographics
- Analyzing overall report before cascading into various levels
- Identifying relevant demographics
- Optional coverage/accuracy test at an overall level

** Course is a higher level terminology at TP (similar to a program)*



Lecturer's Teaching Effectiveness

Teaching Effectiveness: Quantitative Questions

Q1. The lecturer plans and organises the lesson/subject well.

Q2. The lecturer demonstrates good knowledge of the subject.

Q3. The lecturer stimulates my thinking in this subject.

Q4. The lecturer facilitates my understanding of the subject; e.g. explaining the subject clearly or providing guidance during the learning process.

Q5. The lecturer is enthusiastic and shows interest in promoting student learning.

Q6. The lecturer is encouraging and approachable.

Q7. The lecturer manages the class well; e.g. by explaining clearly what is expected in terms of performance, quality of work, behavior, etc.

Q8. The lecturer provides feedback to students in this subject, where applicable.

Q9. The lecturer encourages students to learn independently; e.g. searching for relevant information beyond what is provided.

Q10. Overall, the lecturer has been effective in facilitating student learning.

Q11. Write down something that your lecturer has done especially well.

Q12. Suggest something that might be of benefit to your lecturer in helping you to learn.

Planning
&
Execution

Attitude
towards
Students

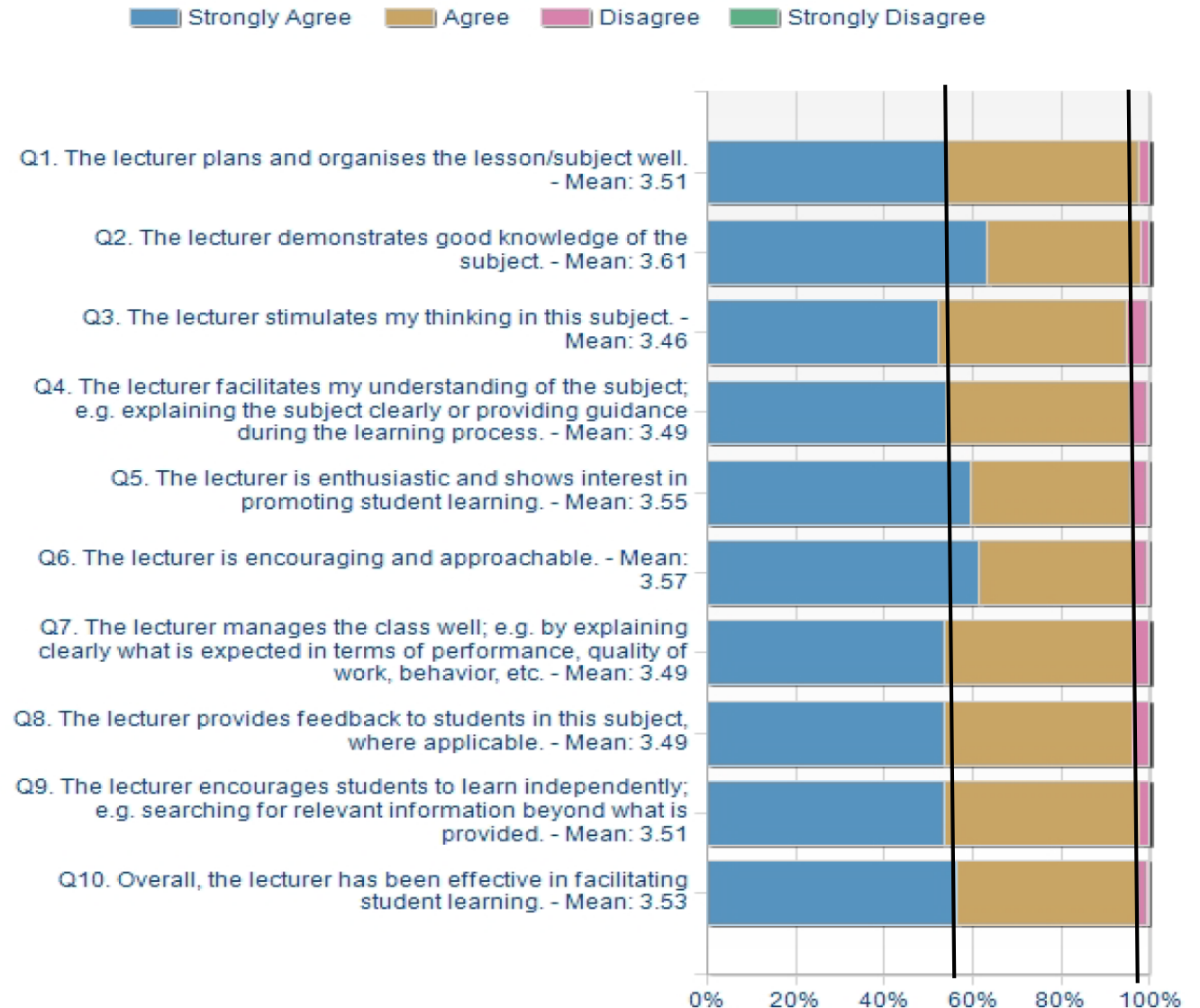
Class
Management

TP's Survey Methodology

- Each quantitative statement addresses a separate performance skill of the lecturer
- 9 quantitative questions and 1 overall lecturer rating
- 2 qualitative questions at the end to measure the positive aspects and the suggested improvements from a student's perspective.
- TP is cautious of over-surveying, and survey fatigue
- Students sampling
 - Students are selected randomly every semester
 - The system tries to assign each student to a subset of the overall surveys they have to complete
- Separate Teacher from Subject Evaluations (the latter is decentralized)

Key Finding: Quantitative

There is very small variation between the rating of the overall teaching effectiveness (Q10), and the rating of each of the individual performance skills (Q1-Q9)



TP's Teaching Effectiveness

Qualitative Analysis

Teaching Effectiveness: Qualitative Questions

Students' comments about positive attributes

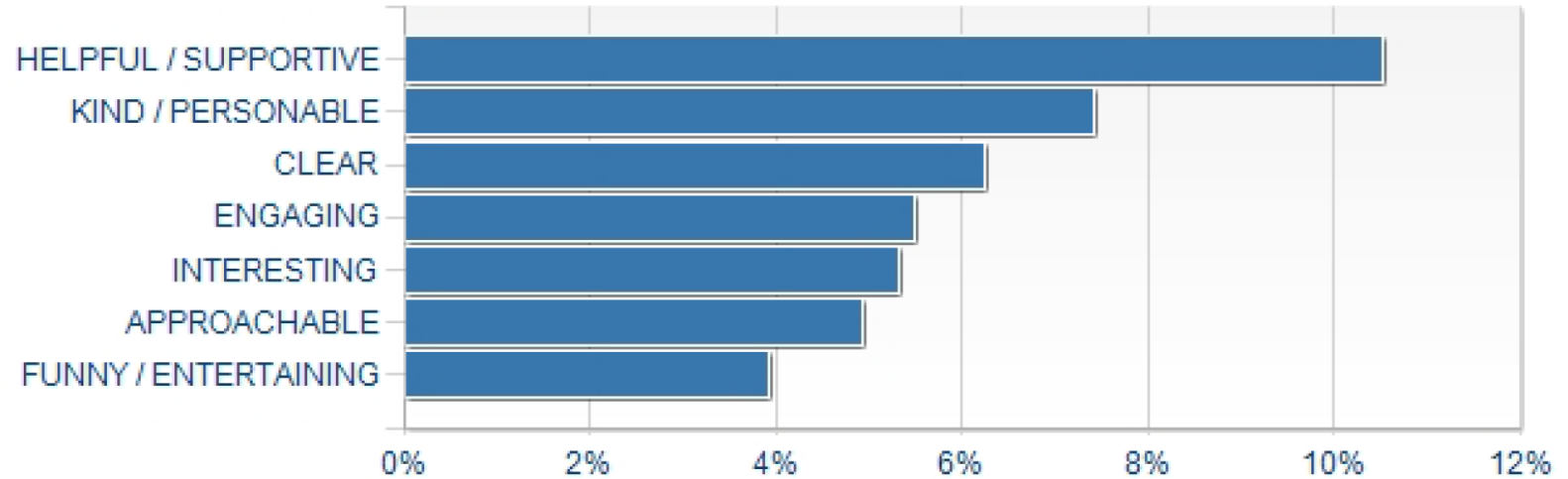
Q11. Write down something that your lecturer has done especially well.

Seeking comments about improvements

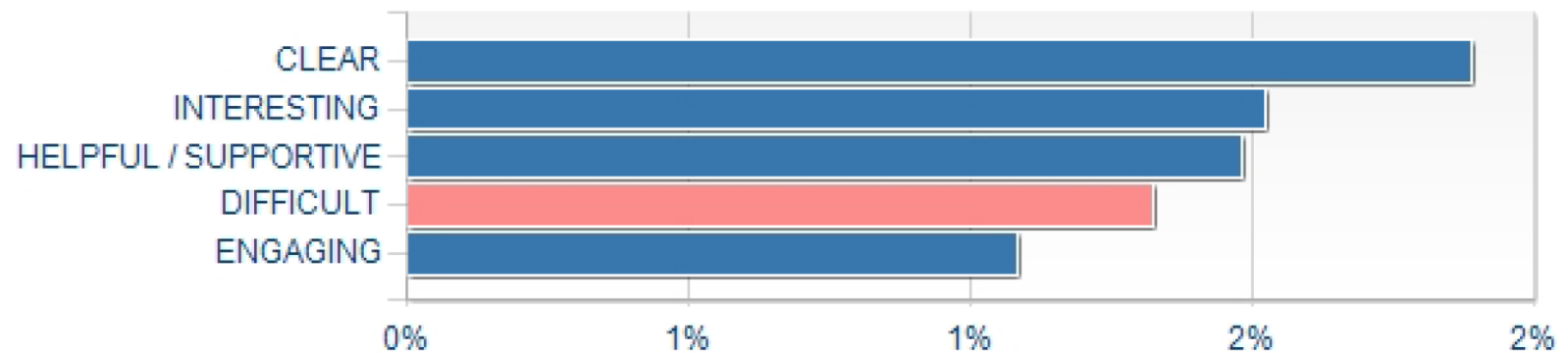
Q12. Suggest something that might be of benefit to your lecturer in helping you to learn.

Key Findings: Qualitative Analysis

Q11. Write down something that your lecturer has done especially well.



Q12. Suggest something that might be of benefit to your lecturer in helping you to learn.



Key Findings: Qualitative vs. Quantitative

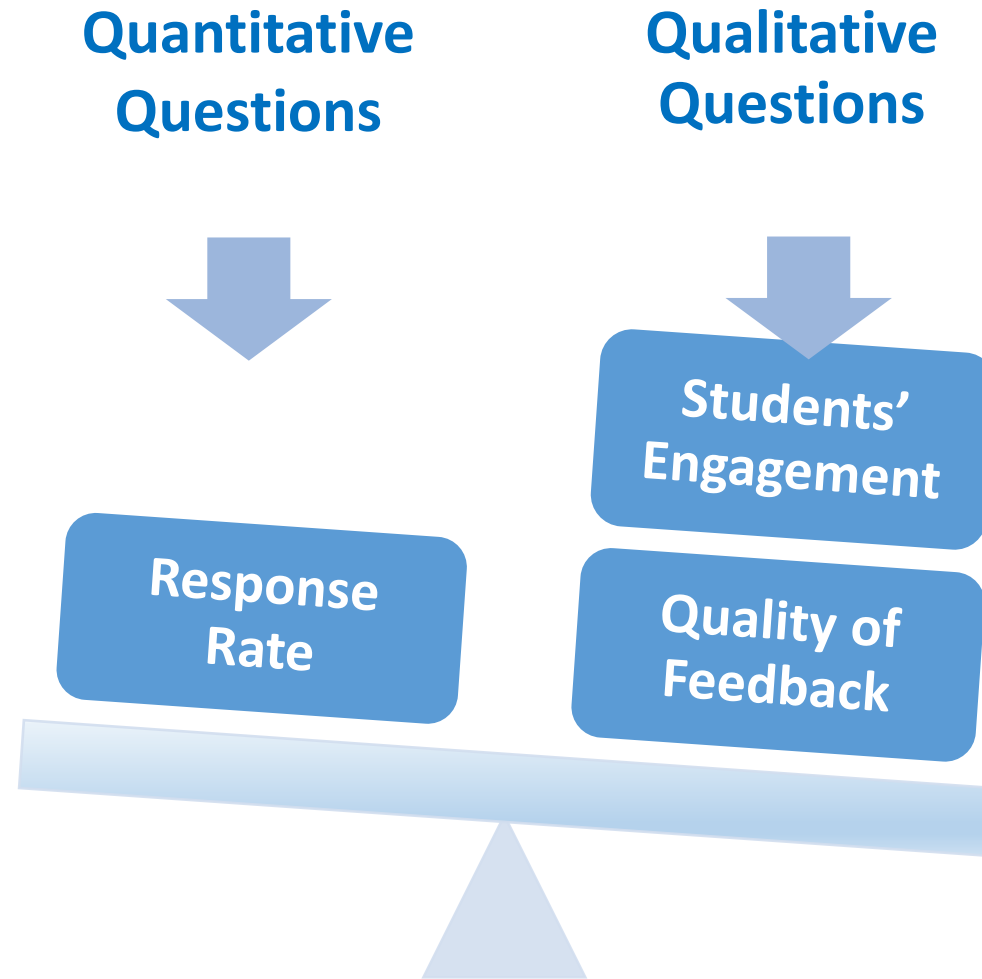
- Q1. The lecturer **plans and organises** the lesson/subject well.
- Q2. The lecturer **demonstrates good knowledge** of the subject.
- Q3. The lecturer **stimulates my thinking** in this subject.
- Q4. The lecturer **facilitates** my understanding of the subject; e.g. **explaining the subject clearly** or providing guidance during the learning process.
- Q5. The lecturer is **enthusiastic** and shows interest in promoting student learning.
- Q6. The lecturer is **encouraging** and **approachable**.
- Q7. The lecturer **manages the class well**; e.g. by **explaining clearly** what is expected in terms of performance, quality of work, behavior, etc.
- Q8. The lecturer **provides feedback** to students in this subject, where applicable.
- Q9. The lecturer **encourages** students to learn independently; e.g. searching for relevant information beyond what is provided.
- Q10. Overall, the lecturer has been effective in facilitating student learning.

■ Attribute present in comments
 ■ Attribute not present in comments

Qualitative Attributes

HELPFUL / SUPPORTIVE	
KIND / PERSONABLE	
CLEAR	
ENGAGING	
INTERESTING	
APPROACHABLE	
FUNNY / ENTERTAINING	
CLEAR	
INTERESTING	
HELPFUL / SUPPORTIVE	
DIFFICULT	
ENGAGING	

Understanding the Students' Learning Experience



What if we start with open ended questions?

Q11. Write down something that your lecturer has done especially well.

Q12. Suggest something that might be of benefit to your lecturer in helping you to learn.

Q1. The lecturer plans and organises the lesson/subject well.

Q2. The lecturer demonstrates good knowledge of the subject.

Q3. The lecturer stimulates my thinking in this subject.

Q4. The lecturer facilitates my understanding of the subject; e.g. explaining the subject clearly or providing guidance during the learning process.

Q5. The lecturer is enthusiastic and shows interest in promoting student learning.

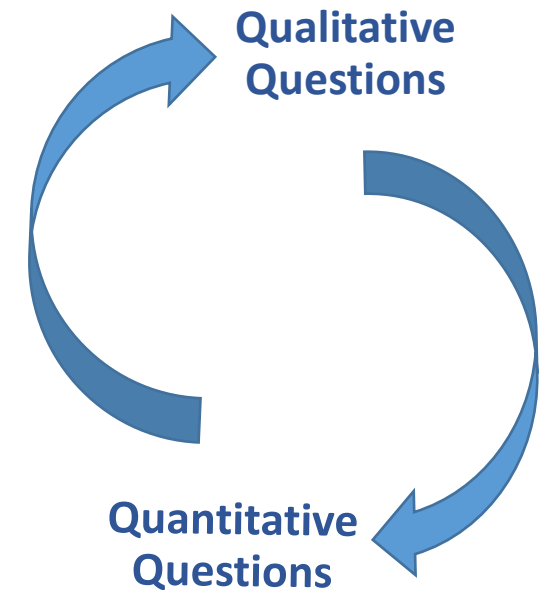
Q6. The lecturer is encouraging and approachable.

Q7. The lecturer manages the class well; e.g. by explaining clearly what is expected in terms of performance, quality of work, behavior, etc.

Q8. The lecturer provides feedback to students in this subject, where applicable.

Q9. The lecturer encourages students to learn independently; e.g. searching for relevant information beyond what is provided.

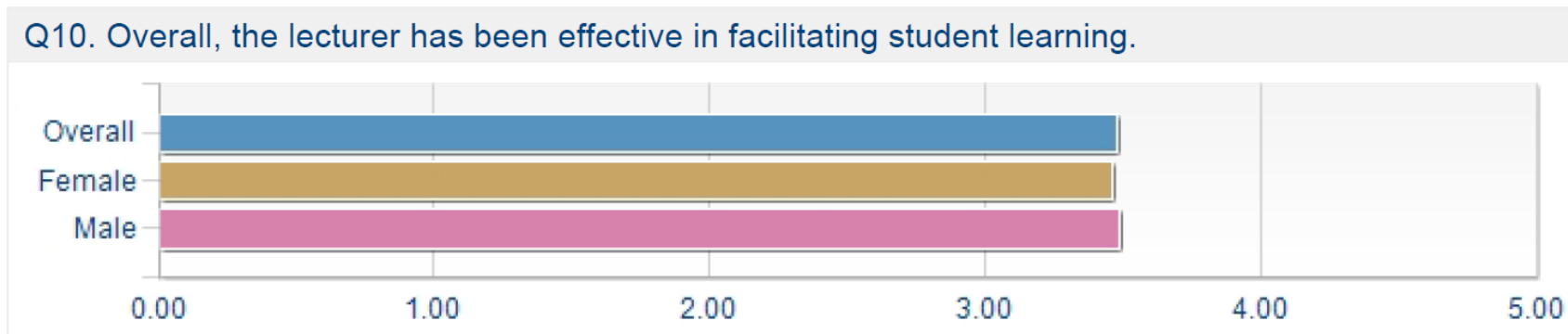
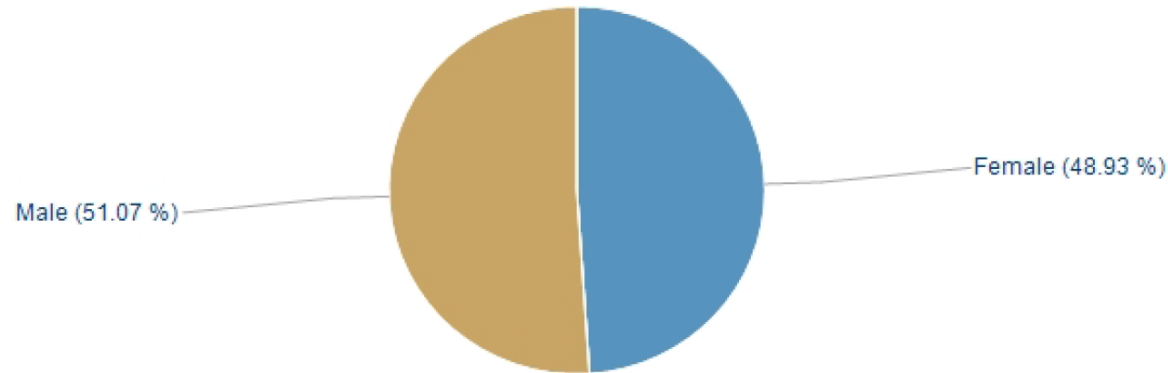
Q10. Overall, the lecturer has been effective in facilitating student learning.



Hidden Insights

Key Demographics

Gender: Quantitative Analysis



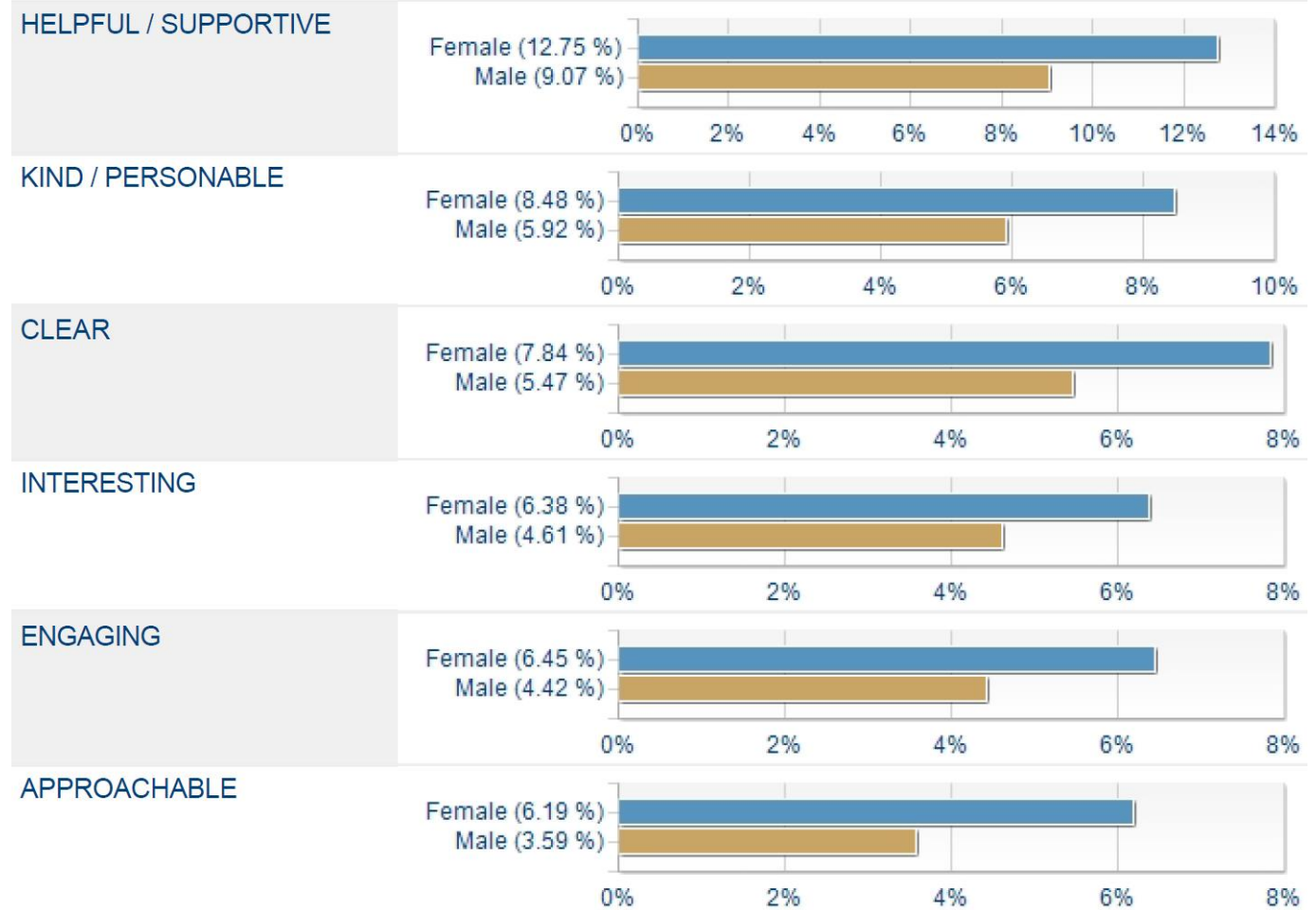
No significant outlier between Males & Females on all Teaching Effectiveness Quantitative Questions (Q1 – Q10)

Gender: Qualitative Analysis

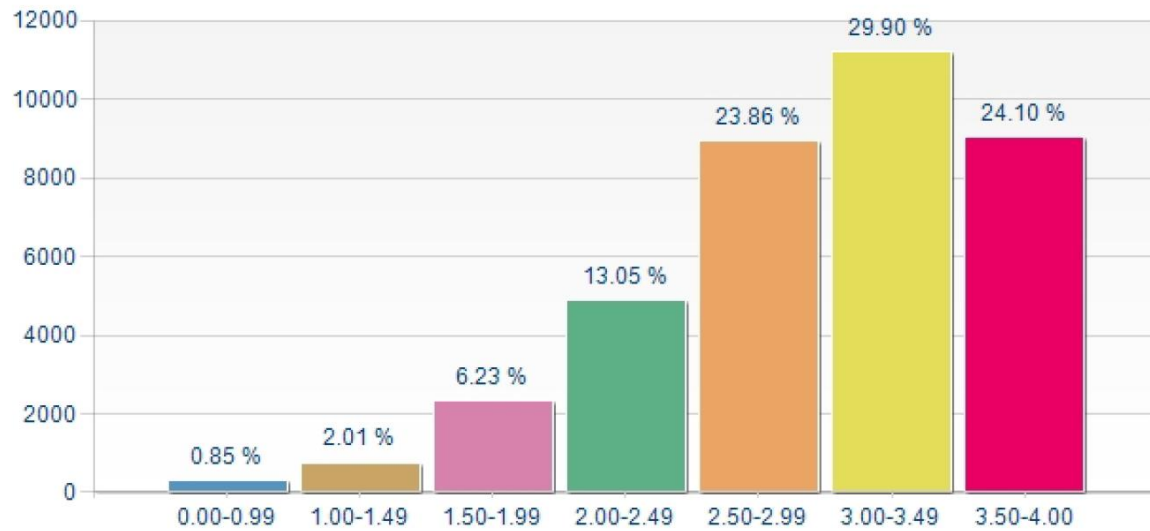
Q11: Write down something that your lecturer has done especially well

Female students reflect more positively on the learning experience. Key insights for further research:

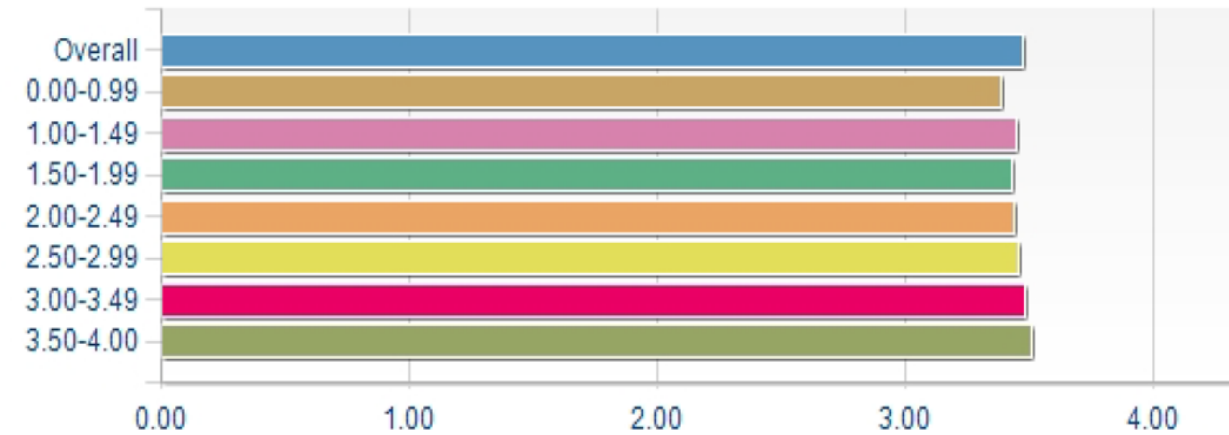
- *Are there more female faculty?*
- *Are there more female students?*
- *What is the graduation rate for females?*
- *What is the employability rate for females?*



Cumulative Grade Point Average (cGPA) Range: Quantitative Analysis



Q10. Overall, the lecturer has been effective in facilitating student learning.



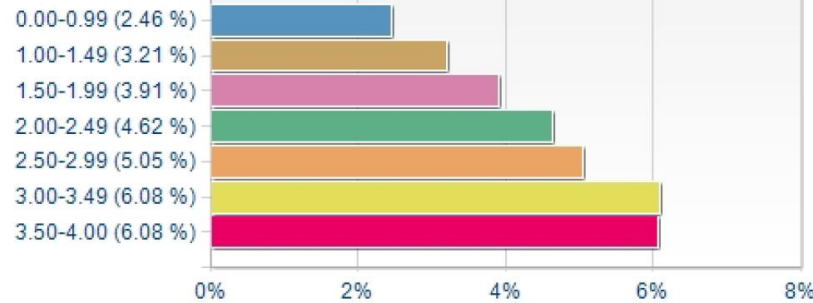
No significant outlier between students' academic performance, and feedback on Teaching Effectiveness Quantitative Questions (Q1 – Q10)

cGPA Range: Qualitative Analysis

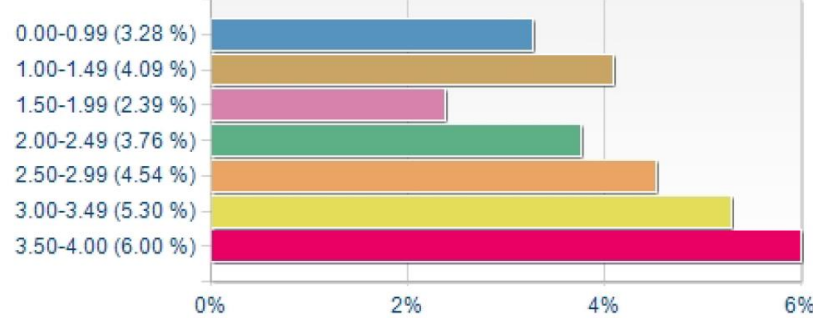
Students with higher cGPA identify the attributes that contribute to positive perception



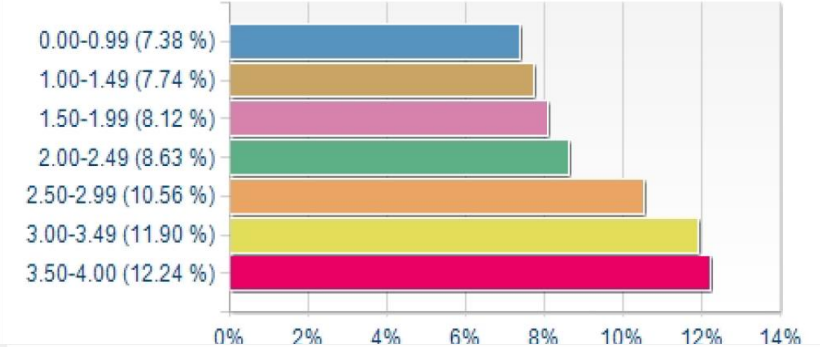
ENGAGING



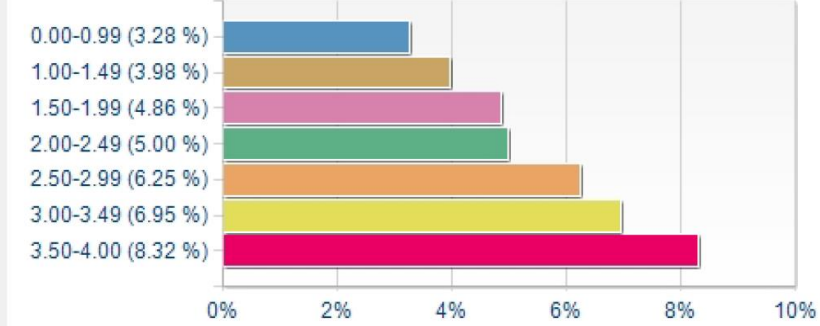
APPROACHABLE



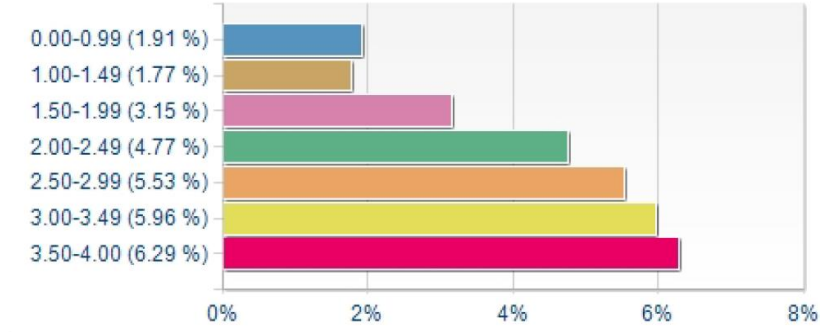
HELPFUL / SUPPORTIVE



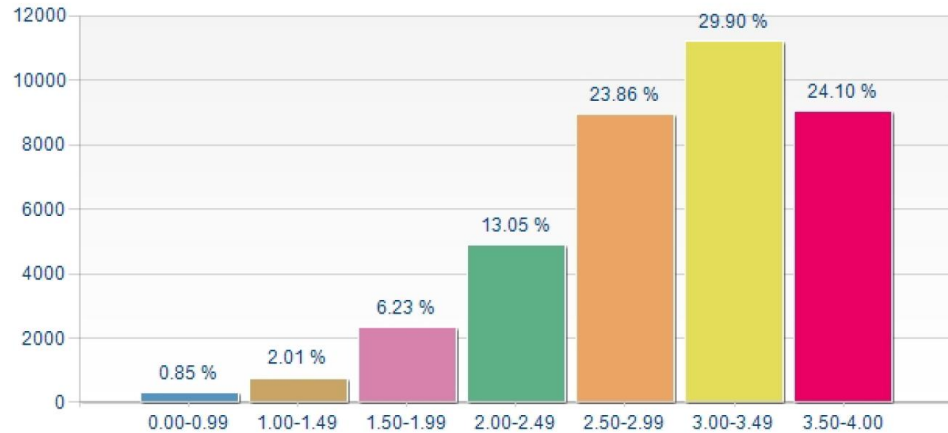
CLEAR



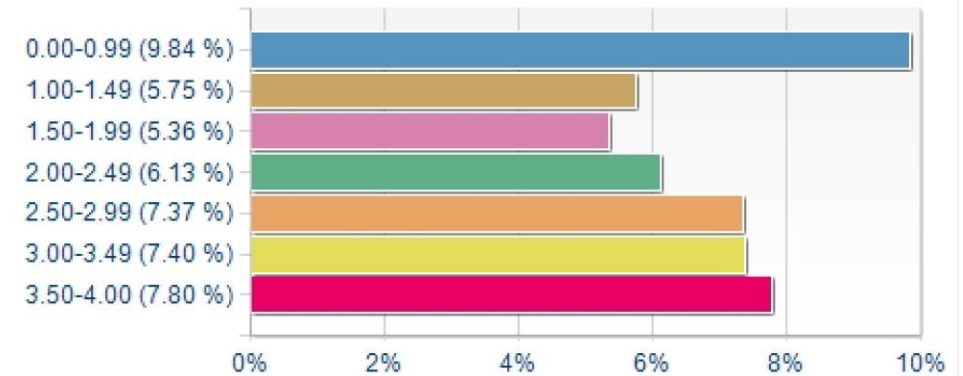
INTERESTING



cGPA Range: Qualitative Analysis



KIND / PERSONABLE

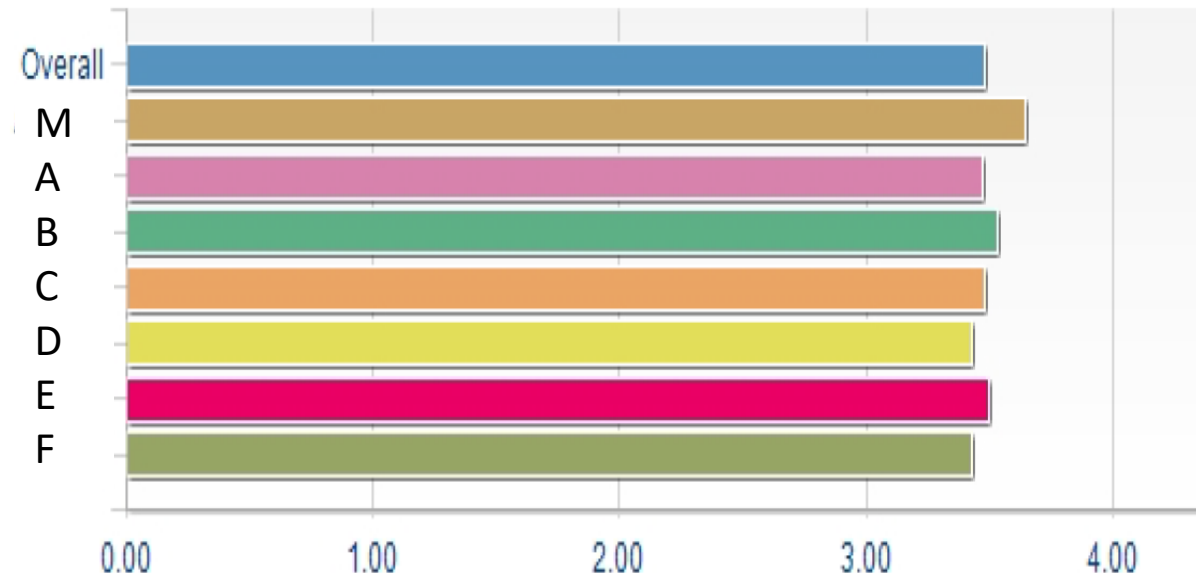


The fact that the lecturer is Kind/Personable can be a misleading indicator for the lecturer. While the students reflect positively on their experience, it does not indicate that they achieve better grades.

School: Quantitative Analysis

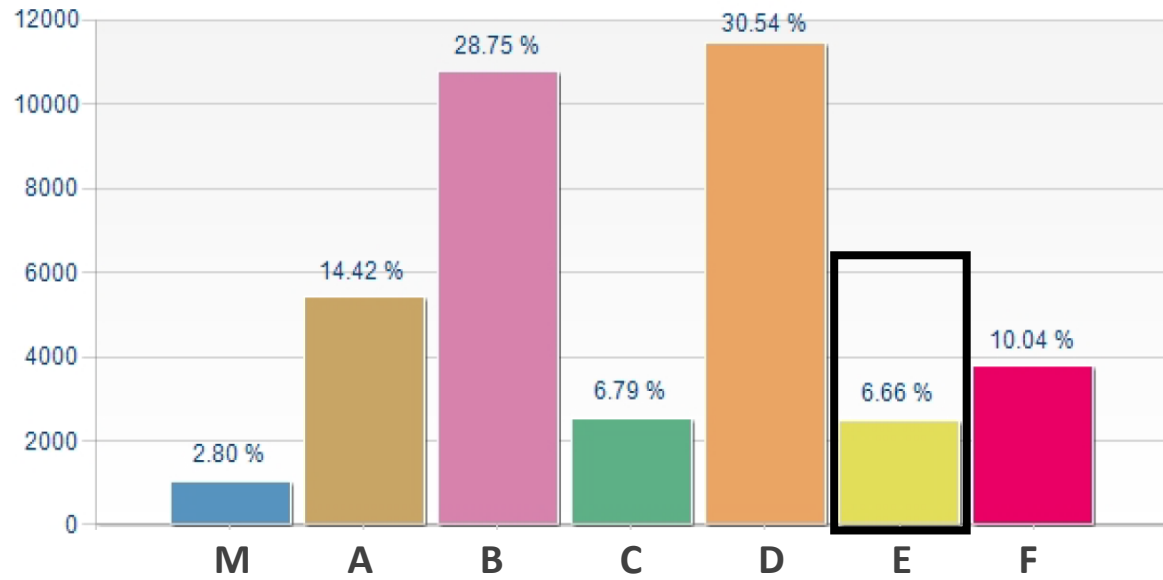


Q10. Overall, the lecturer has been effective in facilitating student learning.

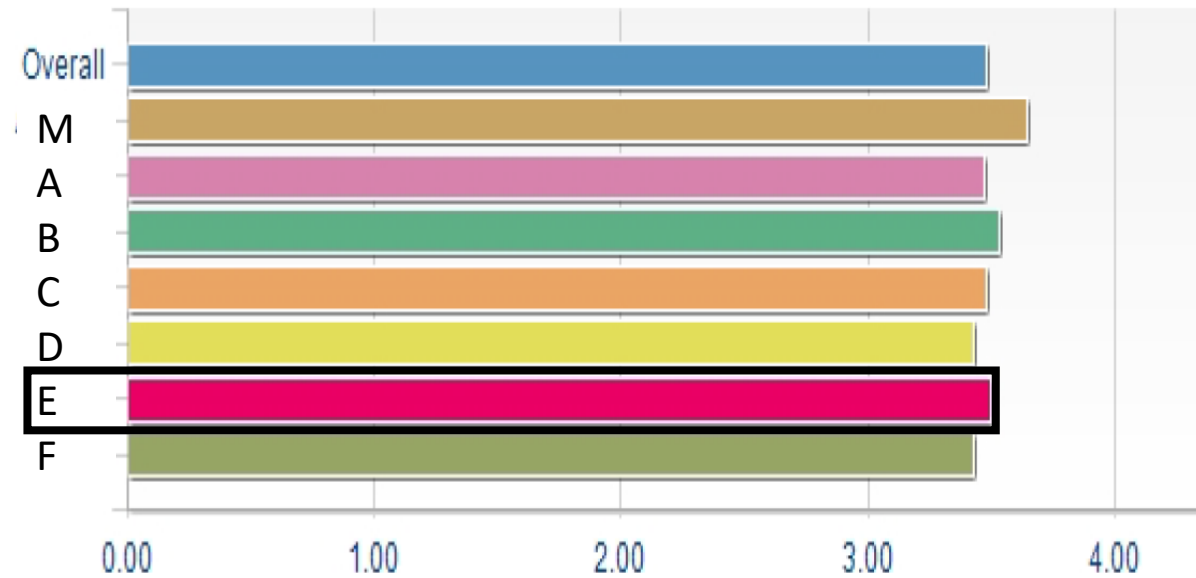


No significant outlier between students from various schools, and feedback on Teaching Effectiveness Quantitative Questions (Q1 – Q10)

School E: Quantitative Analysis

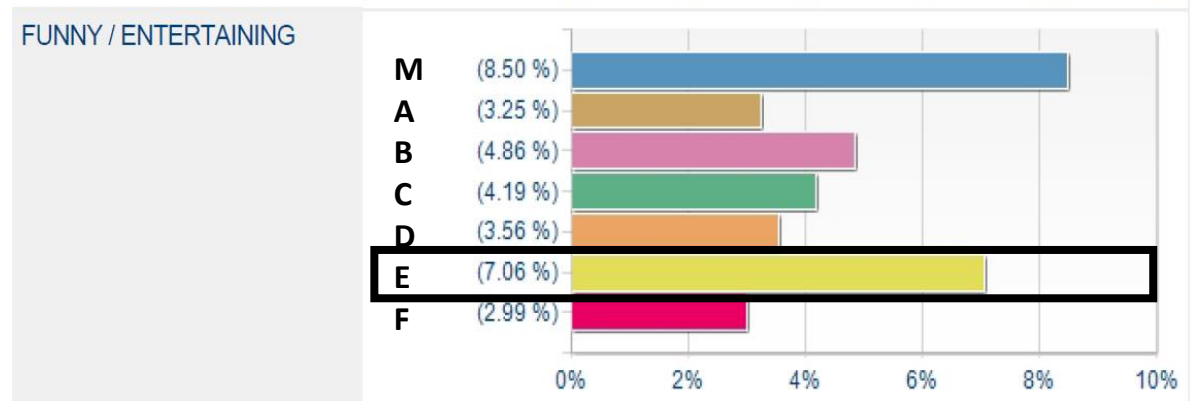
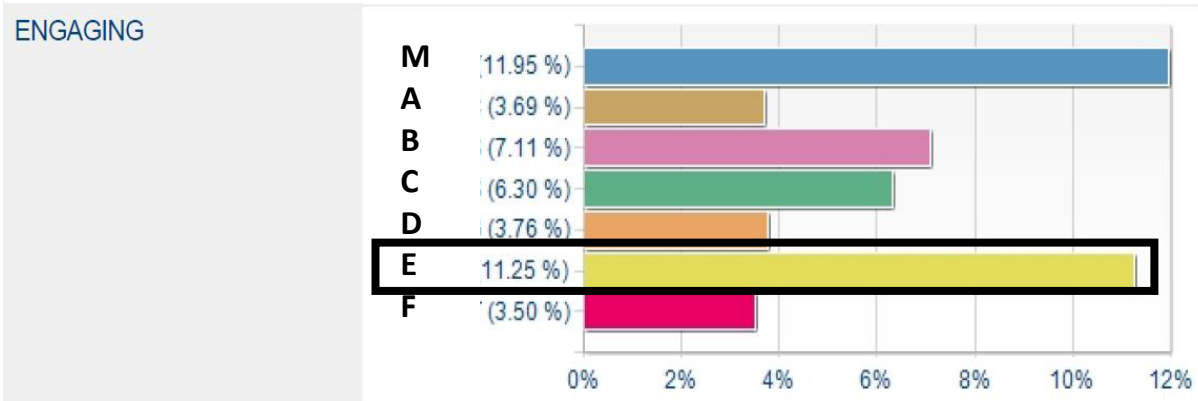
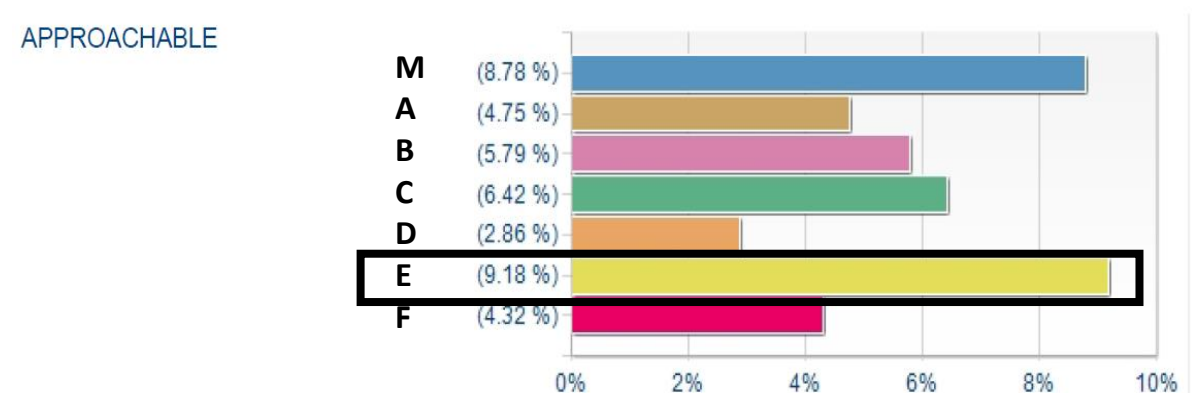
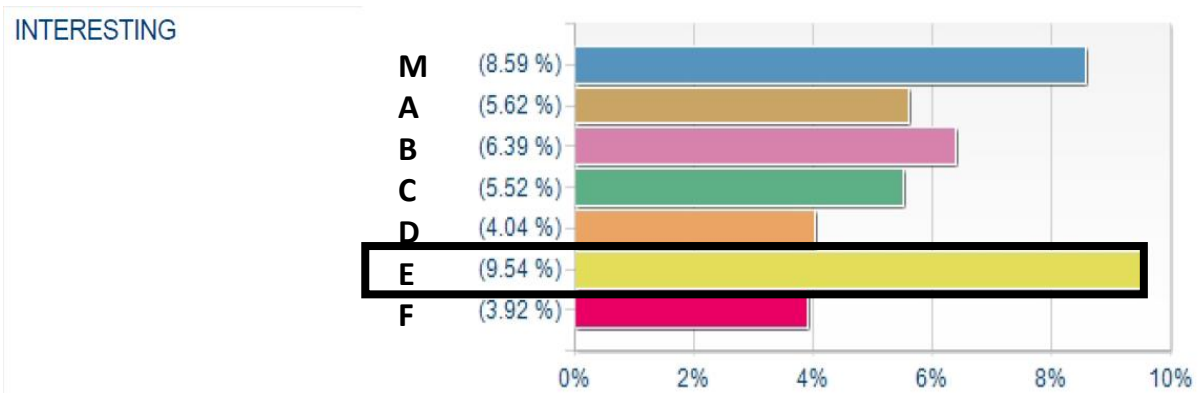


Q10. Overall, the lecturer has been effective in facilitating student learning.



School E: Qualitative Analysis

Q11. Write down something that your lecturer has done especially well.

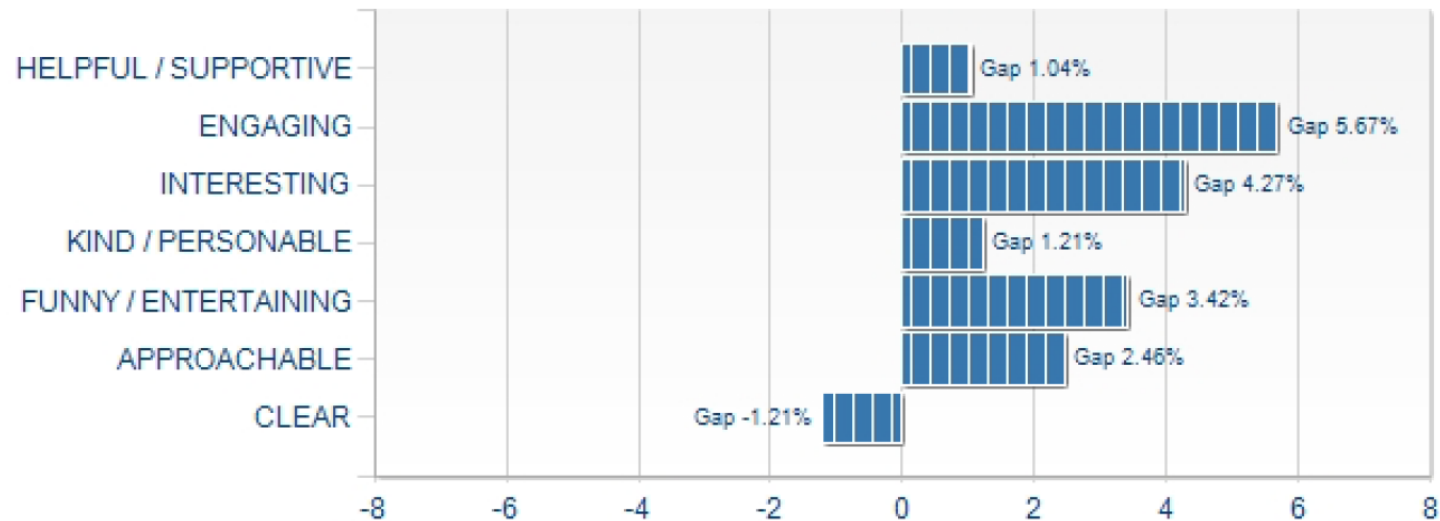


While School E represents a smaller percentage of the survey population, they are comparatively more outspoken and more engaged.

School E: Qualitative Gap Analysis

Q11. Write down something that your lecturer has done especially well.

Gap Analysis comparison for School to TP



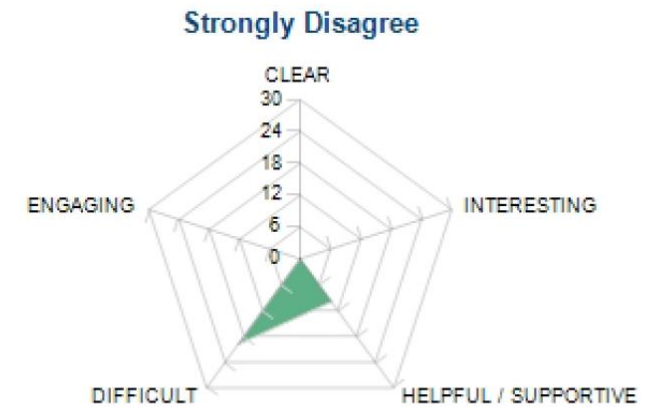
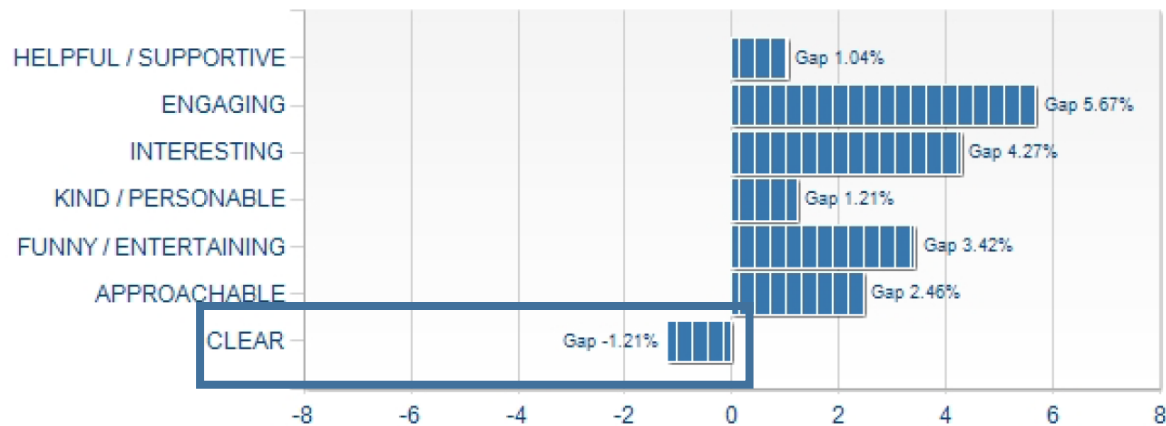
Overall School E's students commented more positive attributes of their lecturers, than TP's average

School E: Qualitative Gap Analysis

Q11. Write down something that your lecturer has done especially well.

Q12. Suggest something that might be of benefit to your lecturer in helping you to learn.

Gap Analysis comparison for School to TP



School E's only lagging positive indicator as compared to TP's average, is the Clarity of Lecturer/Subject.

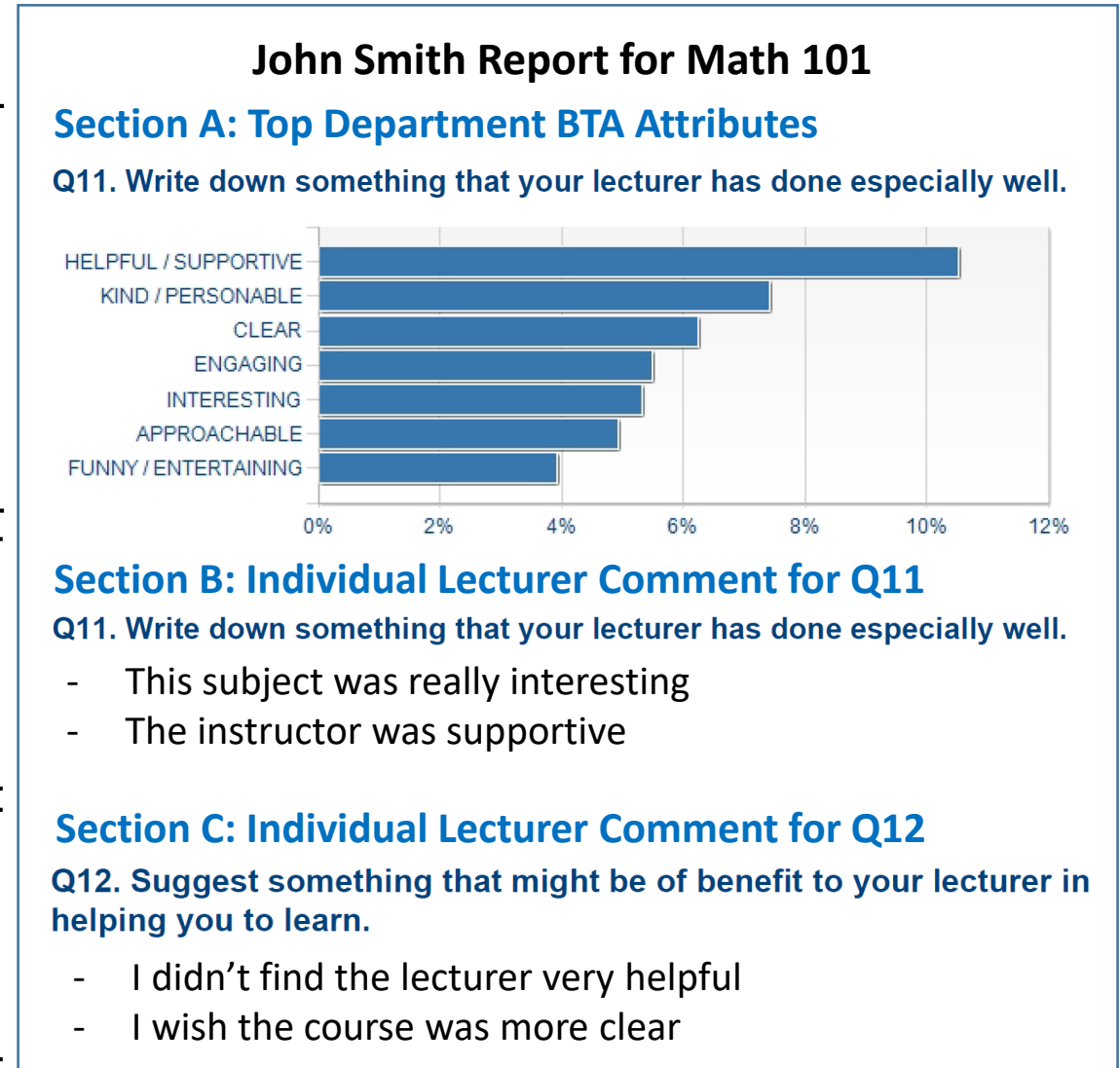
Cross tabulating Q10 for those students that provided the lowest rating indicate that Difficulty of the Lecturer/Subject is their top criteria for improvement

BTA – Lecturer Level Report

Proposed Methodology

BTA in Lecturer Report

- Section A:** Include the top department or school BTA attributes to show what students value as the key aspect in teaching effectiveness that contribute to a positive learning experience.
- Section B:** Include the individual comments for Q11 where the instructor can see that his students recognise what he has done really well (e.g. interesting and support) and that it aligns with the top attributes in Section A.
- Section C:** Include the individual comments for Q12 where the instructor can see that the suggestions for improvements (e.g. helpful and clear) are top attributes that should not be ignored because they can help him in improving the students perception.



Project Summary

Project Summary

- The analysis was done on 2 semesters and a full academic year which combined the two semesters i.e. a total of 3 projects.
- There were over 40,000 responses from each semester.
- The analysis and insights provided in this presentation do not represent all the conclusions.
- It is suggested to include all possible demographics at the start of the project and then filter down to the relevant demographics.
- A small percentage of students Disagree or Strongly Disagree to Q10 on overall teaching effectiveness. This validates why an attribute such as Clear and Engaging can appear in both Q11 (positive aspects) and Q12 (improvements). It indicates that dissatisfied students didn't share the same feelings as satisfied students regarding their lecturers' teaching effectiveness, but still identified these attributes as top criteria for improvement.
- TP uses Blue for reporting only. A purpose-built in-house system is used for data collection.

Thank you