Data Collection and Analytics Workshop

SOL PLAATJE UNIVERSITY

Lerato Sekonyela
Eli Nimy

Content

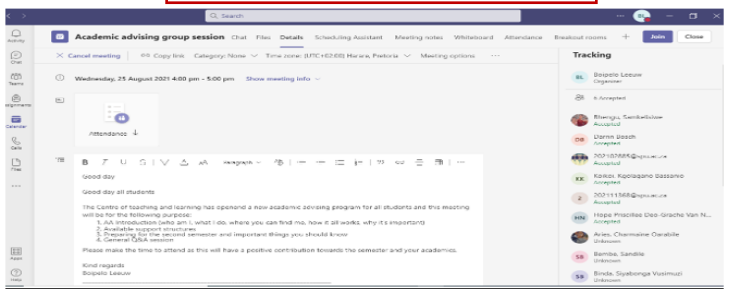
- Learning Analytics Objectives
- Clarify the problem/Formulate the Research Question
- Understand data and its value
- Explore how data can drive better decisions
- Explore common data challenges and mitigation strategies

SAS Background

Descriptive- what?

Session Notes

1.1 Invitation

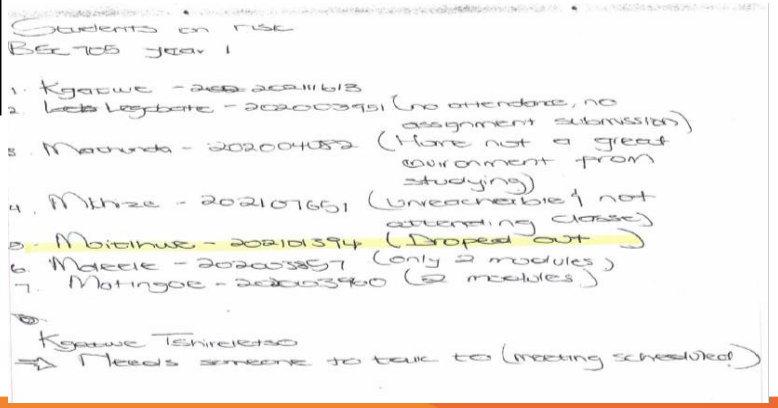


1.2 Attendance registers

Day 1 RBM Group Session.txt
Day 5.txt
Day 5 RBM Group Session.txt
Day 4 RBM Group Session.txt
Day 3 RBM Group Session.txt
Day 2 RBM Group Sessions.txt

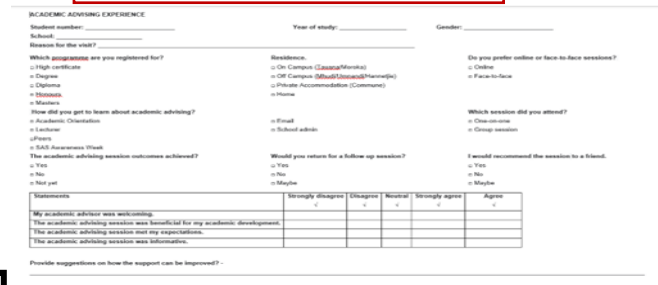
1.3 Agenda

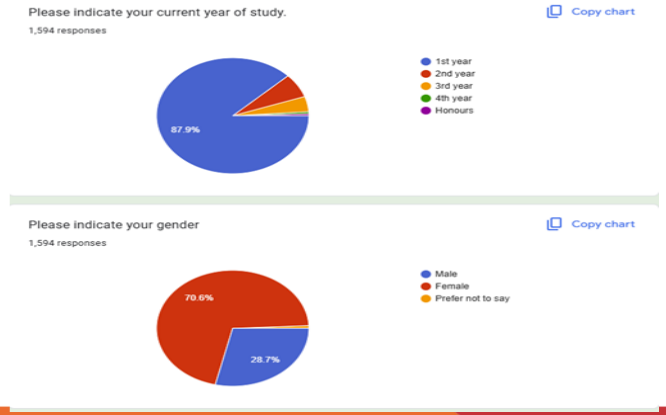
1. AA Introduction (who am I, what I do, where you can find me, how it all works, why it's important)
2. Available support structures
3. Preparing for the second semester and important things you should know
4. General Q&A session



Diagnostic- Why?

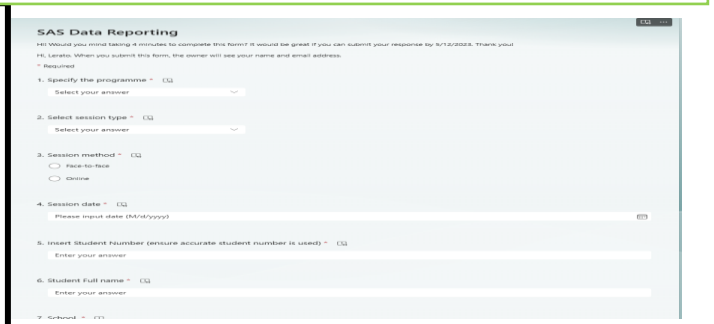
Student Feedback

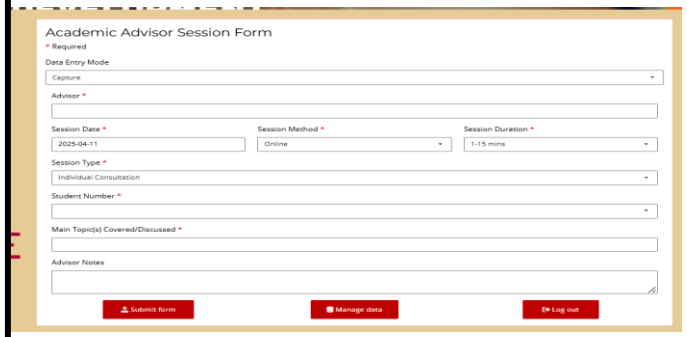




Predictive/Prescriptive – who and what works

Session notes & Student Feedback





Learning Analytics Objective

Learning Analytics

Learning analytics (LA) is a multidisciplinary field with the overall aim of analysing data to better understand and so improve the learning experience for each student.

The measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs.

Our Aim

Create Learning Support Pathways- these are ideal sequences of learning activities that support students to complete their studies in the shortest possible time.

How

- Build- purposeful design that leads to data that provides deeper educational insights
- Develop education/student data using a sound theoretical framework for what we are trying to measure.
- Developing first the professional support & academic staff (end-users) to ensure that the right data is being created in the first place.
- Create tools in the system that make use of common data format and vocabulary:
  - Maintain costs
  - Improve research outputs
- Ensure strong documentation and implementation guidance.

Early identification of students at risk

Data-driven student and staff advising

Measure intervention impact

https://siyaphumelela.org.za/definitions.php

Clarify the problem/Formulate the Research Question

Use existing data:

- **Quantitative** (25% of students fail Stats 1 and 60% never retake it)
- **Qualitative** (advisors report that students often seek help late)

Descriptive – Identify patterns & trends
Diagnostic- understand reasons for the outcome
Predictive- forecast future trends/outcomes using past & current data
Prescriptive- historical, current & predicated data to recommend action
Exploratory- helps understand data's characteristics, patterns and potential relationships

Identify the problem → Use Data to refine the Problem → Translate the problem into a research question → Align with learning analytics methods → Ethical considerations

Start Broad and narrow it down

- Low retention in 1st-year courses.
- Late identification of mental health challenges

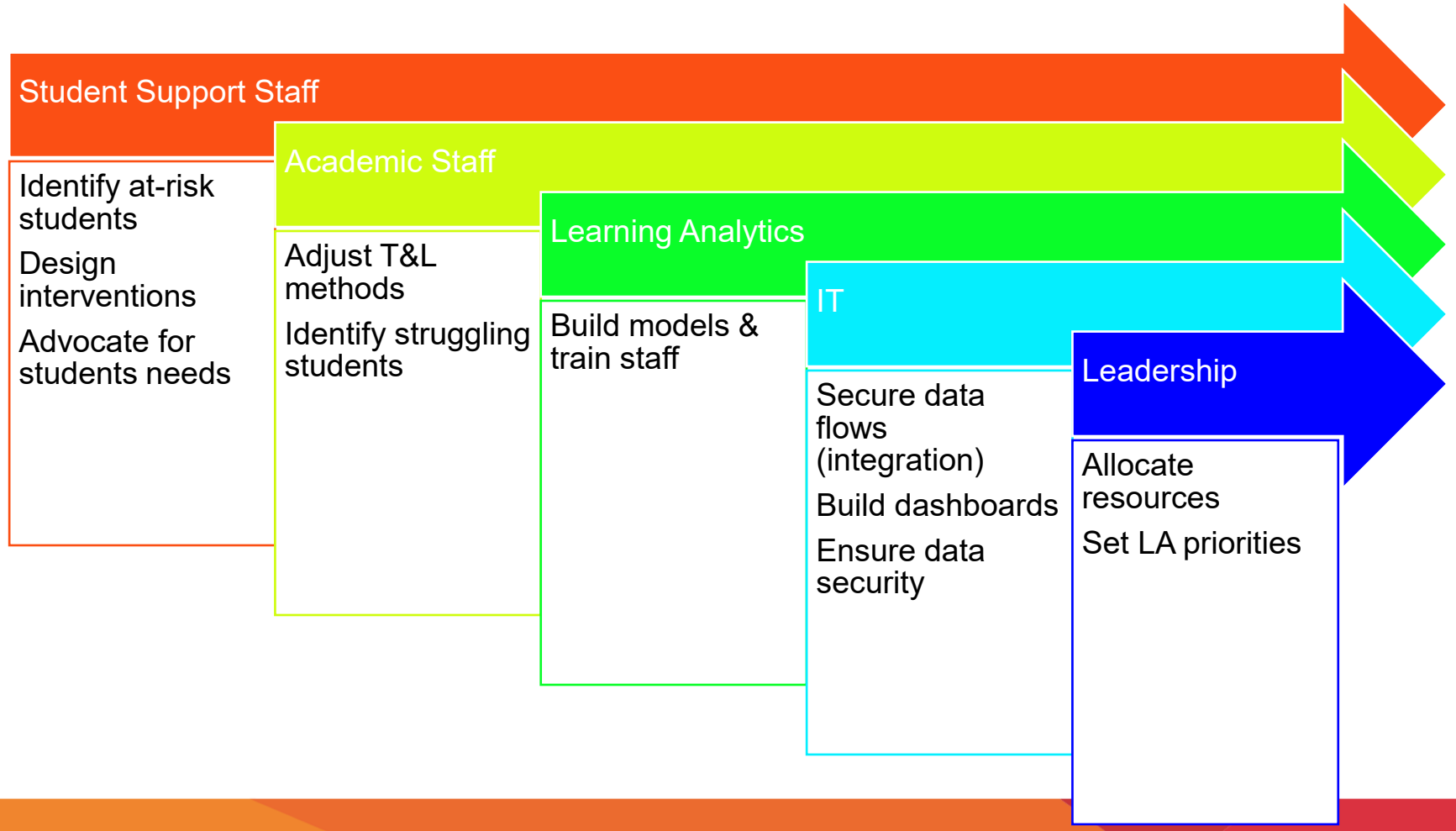
The research question should be **actionable**, **measurable** and **context-specific**.

- How does lecture attendance (predictor) in weeks 1-4 predict final grades (outcome) in stats 1 to target early support (action)?

Clarify the problem/Formulate the Research Question

Question Type	Example	Method
Descriptive	What % of students consult AA in weekly?	Frequency distributions/counts/ Dashboards analytics
Predictive	Who/which student is at risk of failing?	Regressions/machine learning
Prescriptive	Which interventions work best for commuter students?	Simulation modelling/scenario planning
Exploratory	Are there hidden patterns of engagement?	Data mining/cluster analysis

Role Players

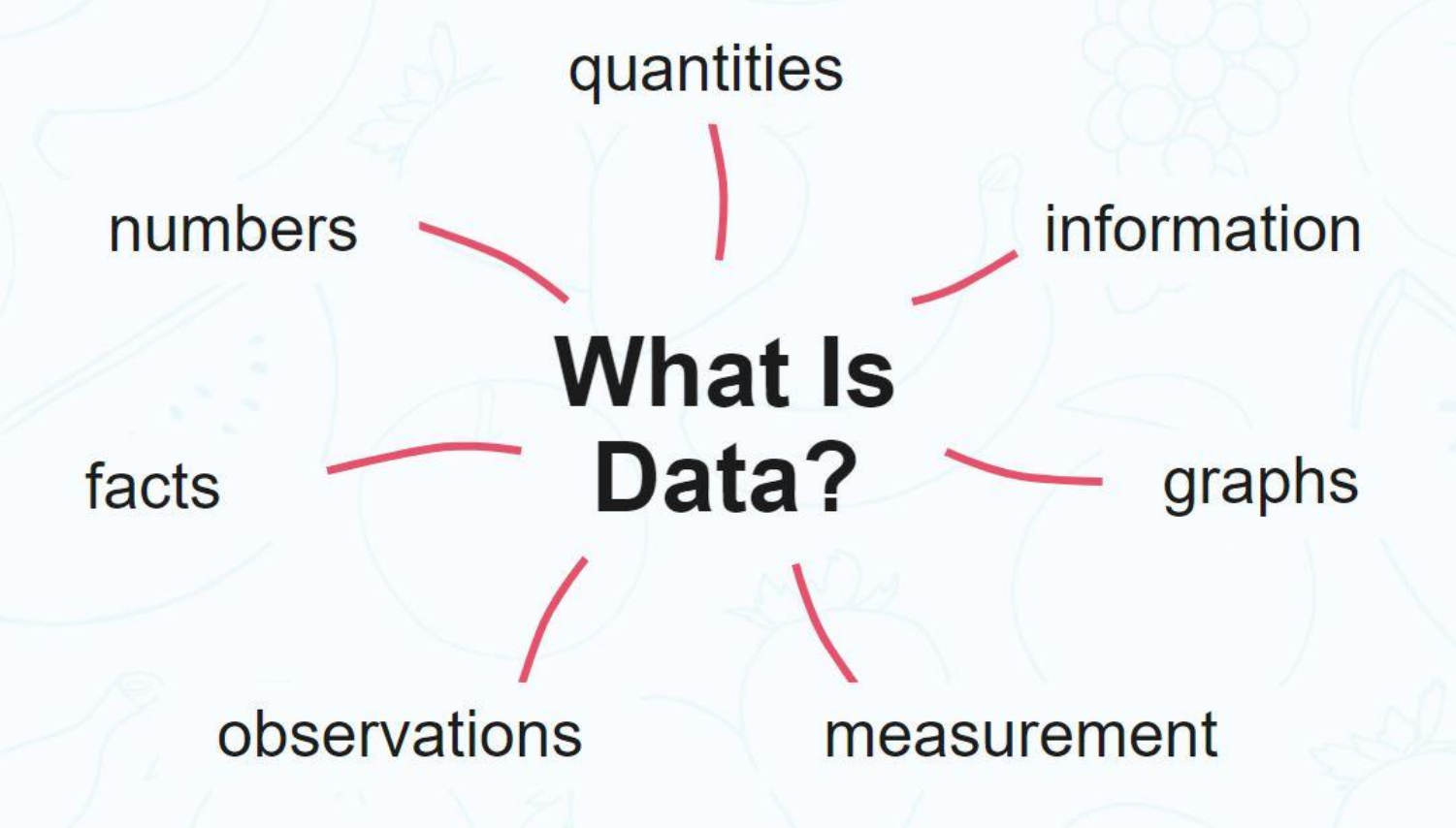


Students- Consent & participate

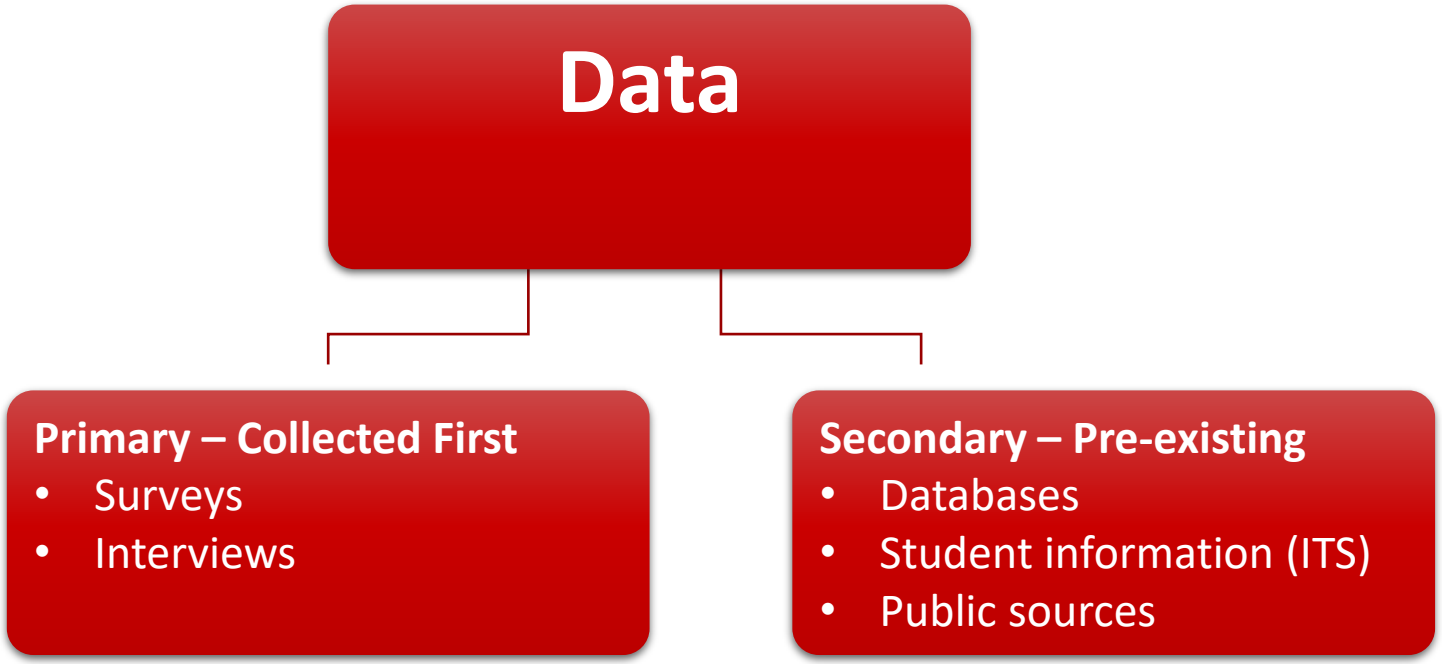
Unit Breakout – Mapping Data Landscape

- Discuss and document:
  - What data do we currently collect?
  - How is it collected, stored and accessed?
  - Who uses it?
  - What challenges do we face?

What is Data?


What Is Data?
quantities
numbers
information
facts
graphs
observations
measurement

Data Sources – University-based



Data-Driven Decision Making

value

Data - In its raw form, data often has very little meaning or value

Info - Once data is processed, organized and stored, it can be analyzed to produce useful information which adds context and clarity

Insight - Data-driven insights are meaningful findings which can help inform or influence decisions and recommendations

Action - Data is meaningless until it inspires stakeholders to act; no matter how insightful the analysis, it only adds value if it impacts real-world decisions

Maven Analytics Data Literacy Course Example

Data-Driven Decision-Making Example

value

Data - 1,082 students used academic advising in March.

Info – Advising usage increased by 80% over February, with most interactions occurring through webinars and online platforms.

Insight – March consistently sees a peak in student interactions, largely driven by new student intakes and high participation in webinar-based advising.

Action – We recommend offering foundational support resources during this period—such as onboarding webinars, FAQ guides, and early planning tools—to help new students navigate academic requirements and feel confident in their course selections.

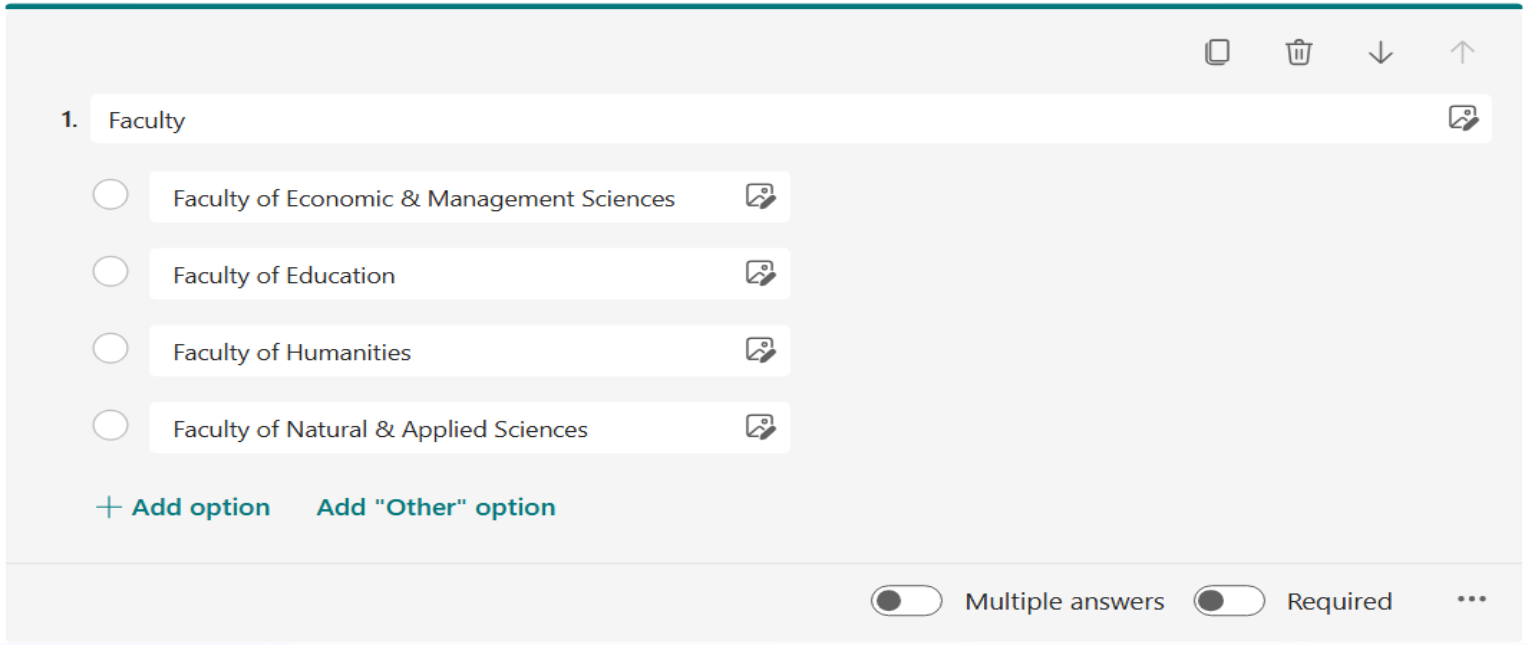
Key Challenges in University Data Collection

- Data Quality Issues
  - Missing data
  - **Inconsistent data**

Student Number	Faculty	Residence
201000000	NAS	Moroka
201100000		maroka
201200000	EMS	Rathago
201300000	EDU	RATHAGA
201400000	HUM	Rathago
201500000		MOROKA
201600000	Natural and Applied Sciences	I stay at home
201700000	NAS	Off campus
201800000	Education	I stay at Moroka
201900000	HUM	
202000000	EMS	South campus

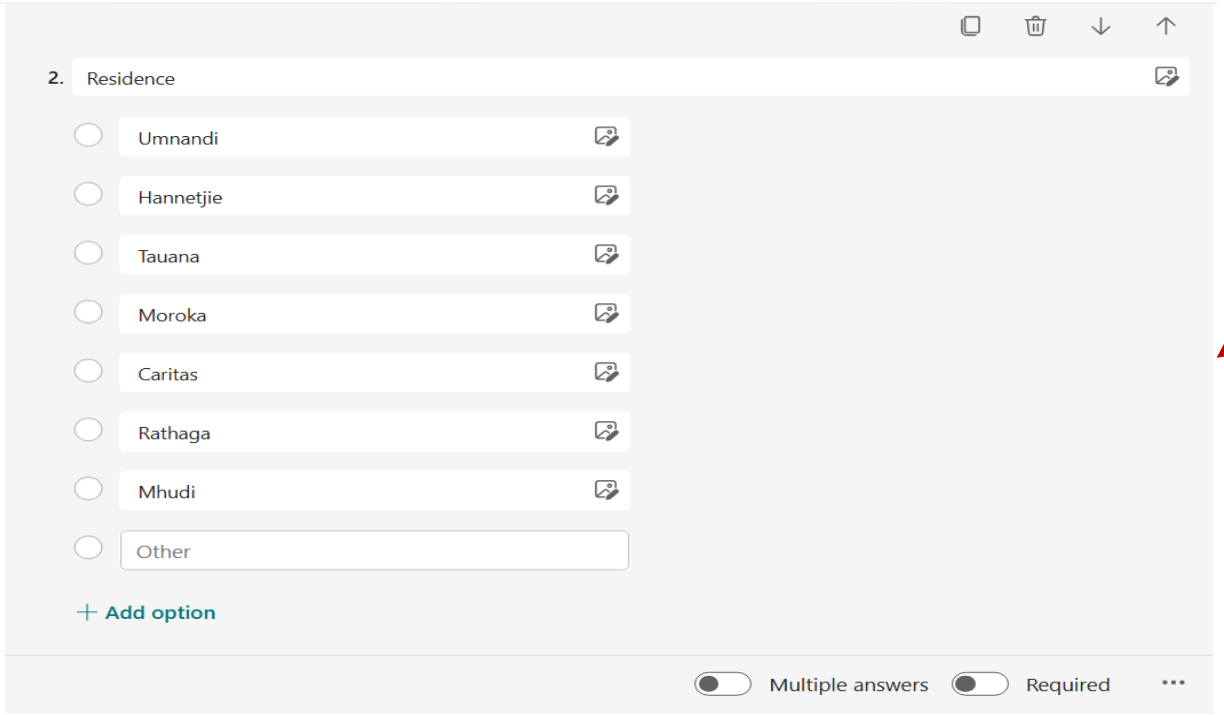
Generated example

Missing Data Example



Ensure all fields/questions that need a response are **required**

Inconsistent Data



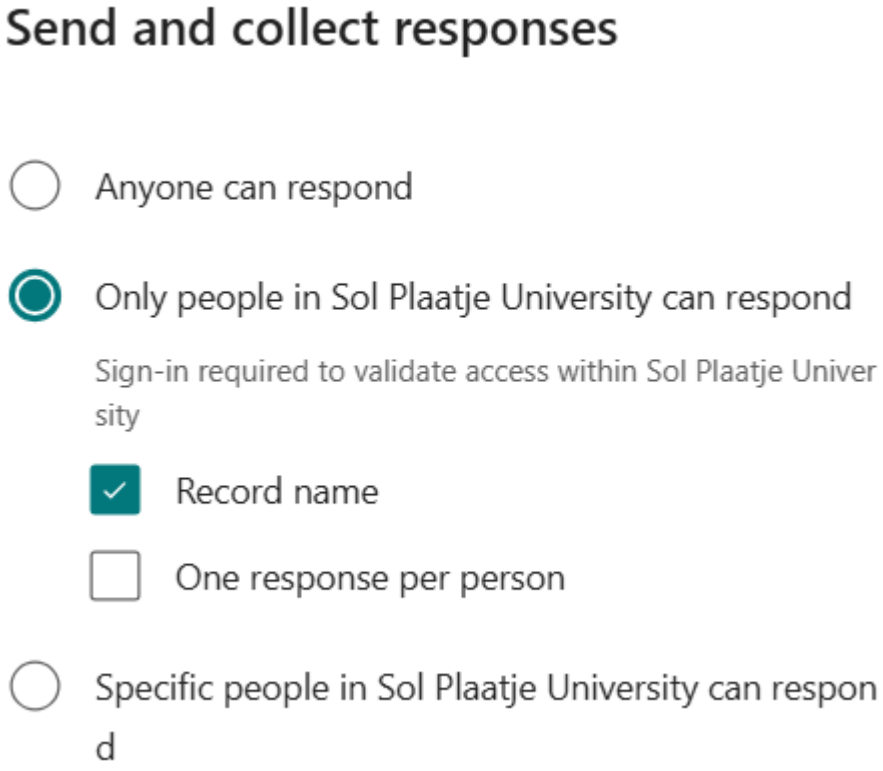
If options are available ensure all the available options are listed or exhausted before providing an “Other” option.

This ensures student selections are consistent

Data Collection - Surveys

MICROSOFT FORMS

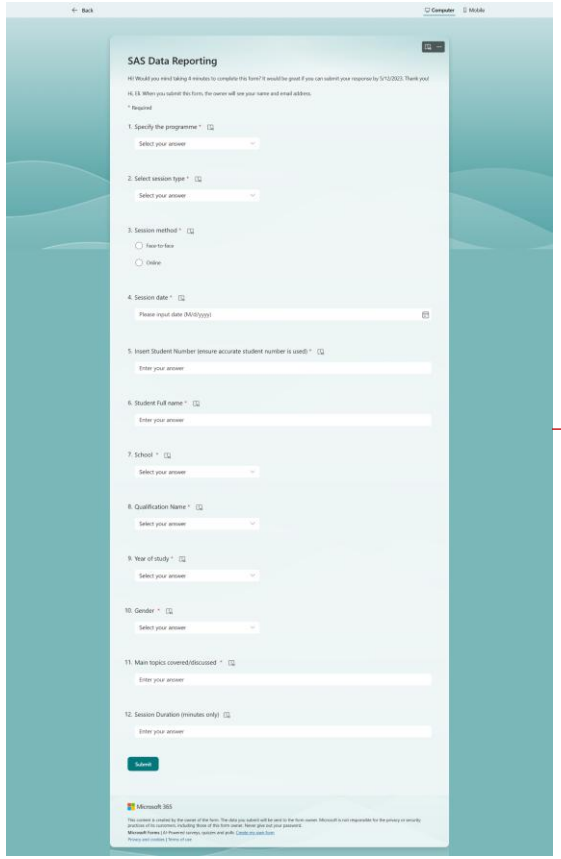
- Seamless integration with Microsoft365
- Only authorise people within SPU to fill the form
- No need to collect student numbers and names



Microsoft Forms vs Custom Application

Feature/Consideration	Microsoft Forms	Your Own Data Collection Application
Ease of Use & Speed	Very easy, quick setup, user-friendly interface	Can be complex and time-consuming to develop
Microsoft Ecosystem	Seamless integration with Microsoft 365 apps	Requires specific development for integrations
External System Integration	Limited direct integrations	Can be built with specific integrations in mind
Data Validation	Basic validation options	Can implement highly specific validation rules
Analytics & Reporting	Real-time basic analytics, export to Excel	Can implement advanced analytics and custom reports
Costs	Often included in Microsoft 365 subscriptions	Can involve significant development and maintenance costs
Technical Expertise	Minimal technical skills required	Requires development and maintenance expertise
Option Search	Does not allow uses to search the question options	Can implement a highly customisable search bar

SAS Data Collection Journey



Old SAS Data Form

Change

New SAS Data Form

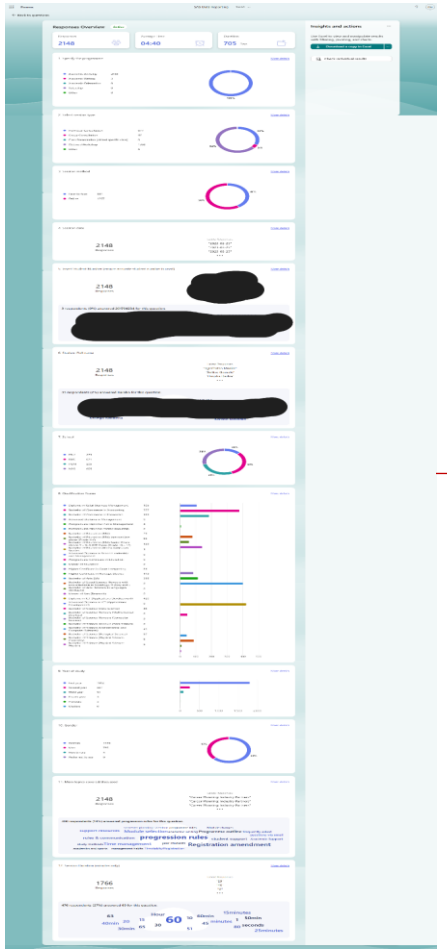
Data Analytics – To more Granular Insights

We wanted to see Academic Advising Trends based on:

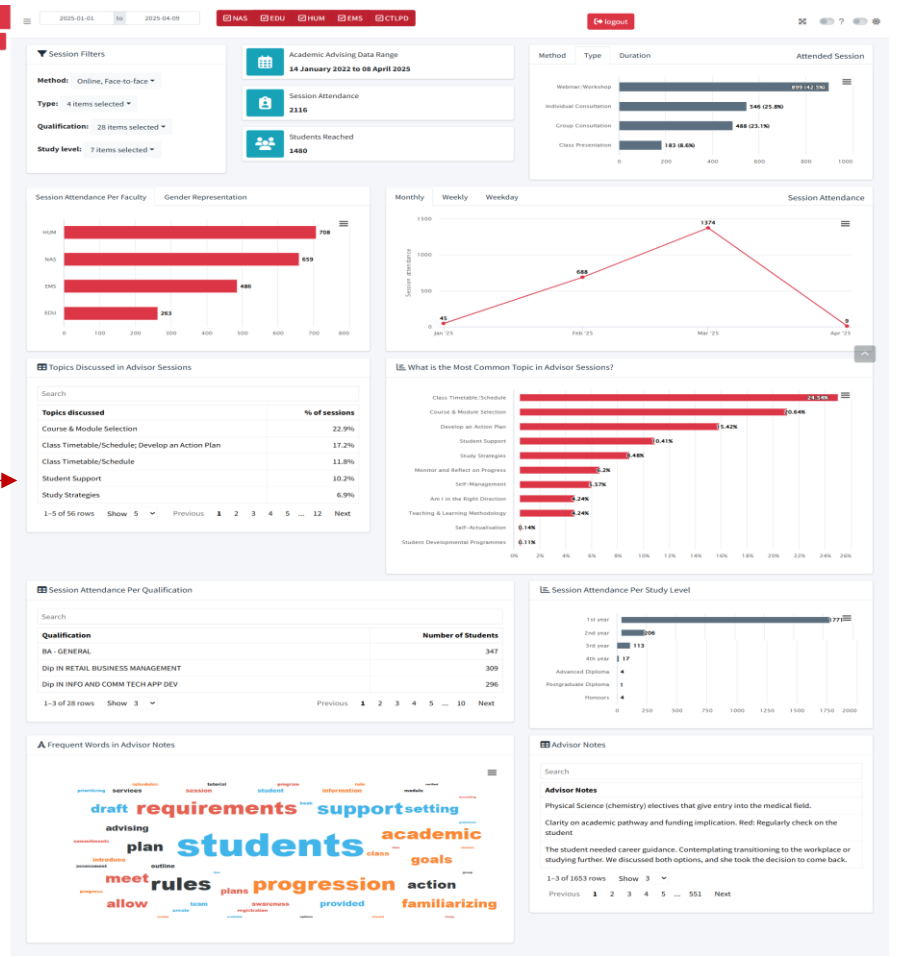
- Usage Period
- Faculty
- Study Level
- Qualification
- Session Method
- Session Type

Generic Analytic Questions

- Who is using services?
- When?
- How often?
- What works?



Shift



Microsoft Forms Analytics

SAS Dashboard

Data to Insights

- Participants define:
  - One key question to answer or problem to solve with data
  - What data is needed to answer the question or solve the problem
  - One actionable step to take based on the answer or solution

Future Engagements

- Revised Data Collection Tools

- PowerBI (Analysis, interpretation and Reporting)

Thank You

www.spu.ac.za

Private Bag X5008
North Campus
Chapel Street
Kimberley
8300