11/16/23

Using Topic Modeling to Improve the Institutional Academic Assessment Review Process (A Meta-Assessment Approach)

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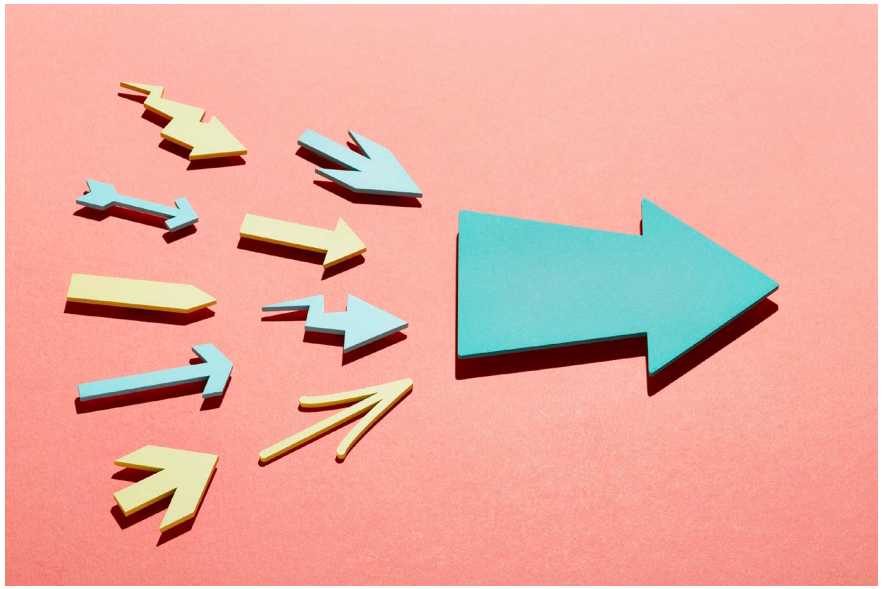
Office of the Provost

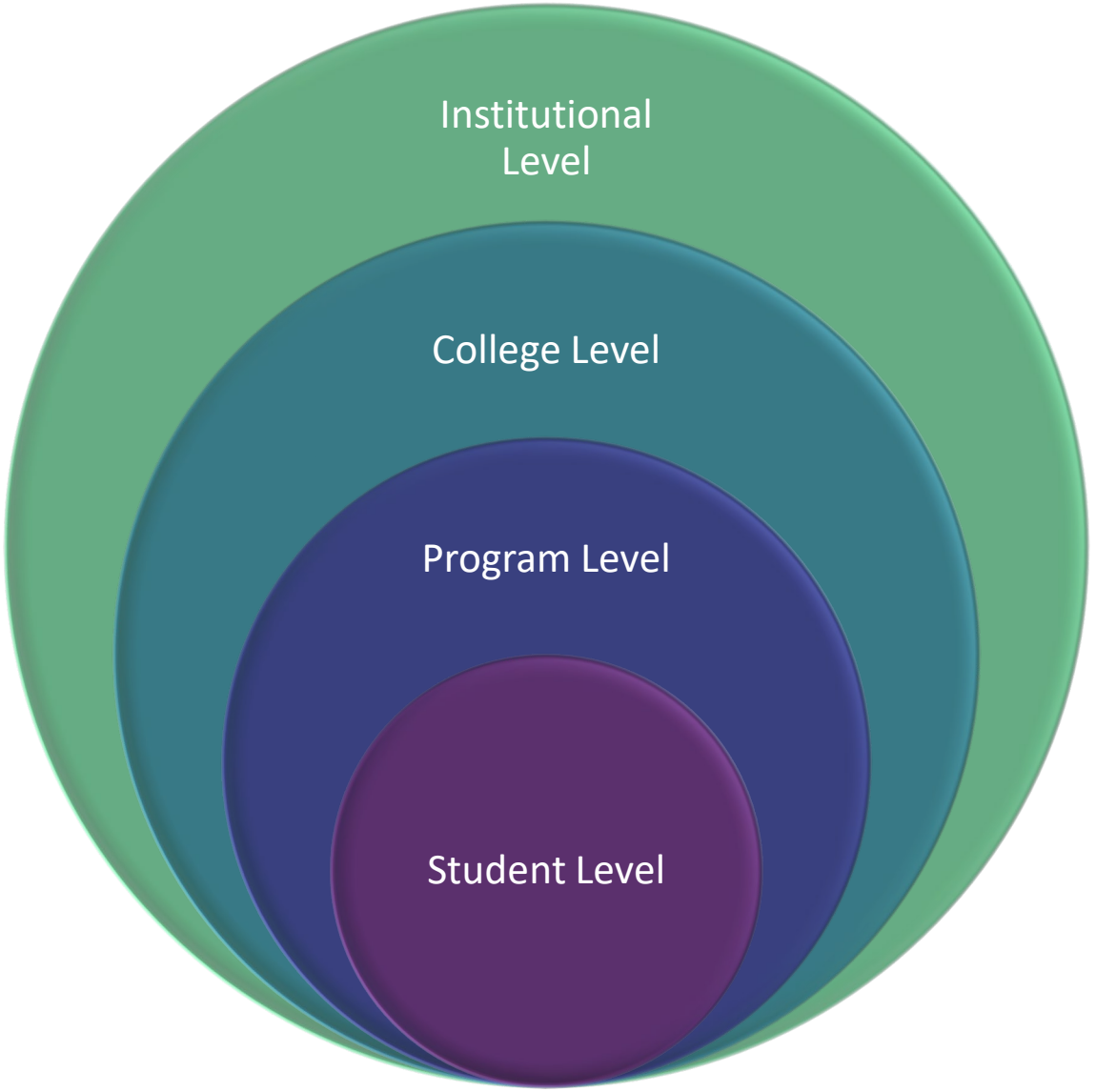
Introduction

Introduction

A major purpose of learning in higher education is concerned with student learning outcomes (SLOs)

Student Learning Outcomes Influence All Levels





Introduction

UF | Institutional Assessment
UNIVERSITY of FLORIDA

OFFICE OF INSTITUTIONAL ASSESSMENT SLO DASHBOARD RESOURCES AND INFORMATION

WHO WE ARE...

We are a team of professionals from diverse backgrounds, who collaborate to support institutional effectiveness practices at UF.

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WHAT WE DO...

Our main projects include:
Accreditation
QEP
Annual Reporting
General Education
Quest Assessment
JAHE
Assessment Conference

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Academic Assessment Review: BA/BS in Statistics

Student Learning Outcomes | SLOs

Content

1. Identify, define, and describe concepts and issues in statistics, including those involved in designing a statistical study, in statistical estimation and in tests of hypotheses.

Critical Thinking

2. Identify sources of variability in a given problem setting and formulate an appropriate statistical analysis.

Communication

3. Clearly and effectively present ideas in speech and in writing concerning statistical issues and analyses of data.

ASSESSMENT TYPES

- Exams
- Projects
- Written and oral presentations

Institutional Assessment asks the question: What is the quality of the assessment practices, and is student learning improving?

Keston & Good, 2013

Introduction

Assessment Review Process

- Evaluating and providing feedback to over 400+ reports
- Use a holistic rubric with comments
- In the report, faculty and staff create a narrative that encompasses all components of the rubric

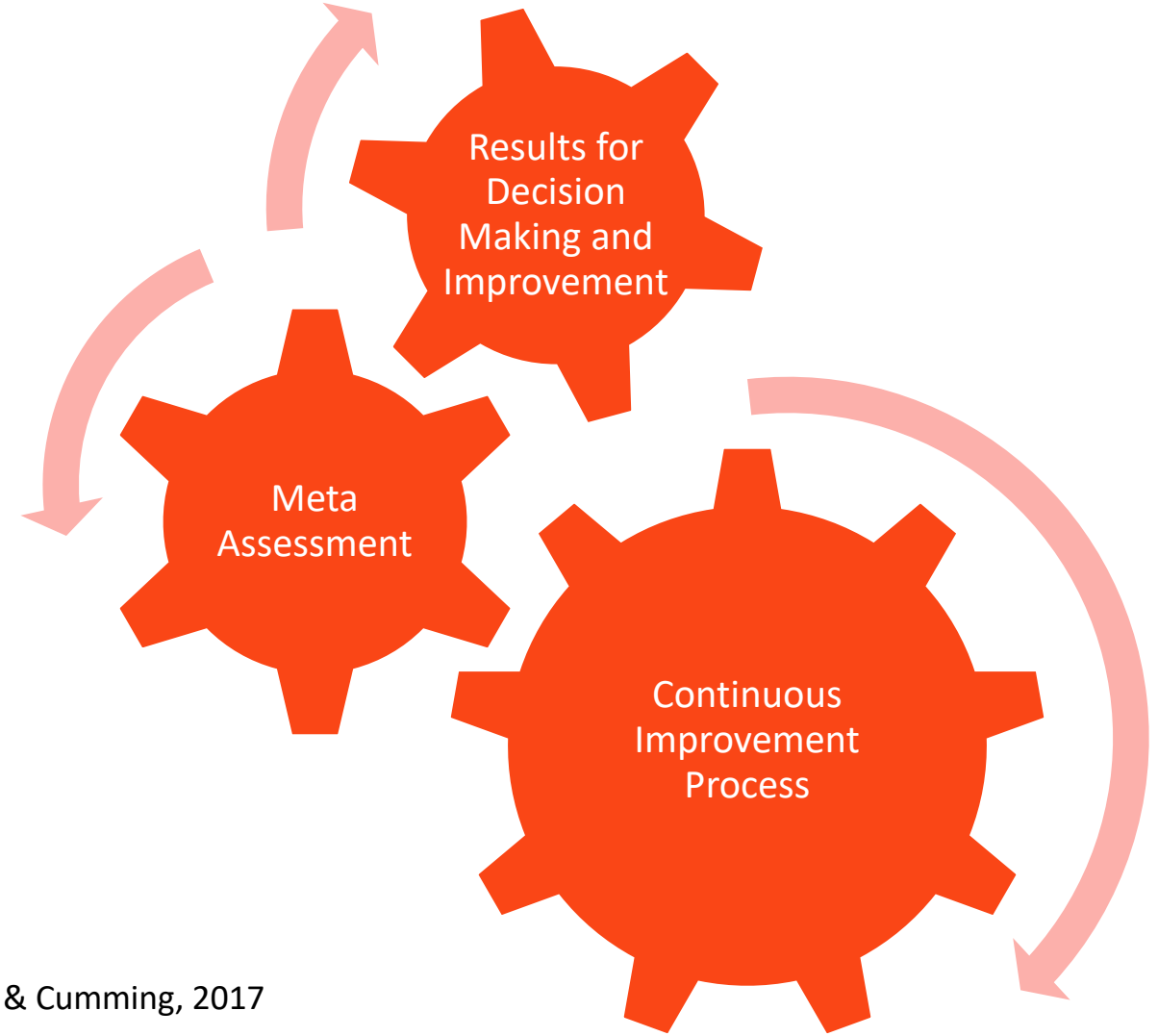
• **Program Goal**	*Programmatic goal(s) address(es) programmatic elements (i.e., to graduate students who are prepared for the workplace).*
	Section includes evaluation methods describing how goal will be achieved and what measures will be used.
	Section includes results and findings (i.e., What did you find out? Summarize your results here in tables or narrative, and attach redacted data to support your summary).
• **Student Learning Outcomes**	*Student Learning Outcomes reflect the curriculum, and as curriculum evolves, learning outcomes change. SLOs should be current, relevant, and rigorous. Effective SLOs focus on what students will know and be able to do in terms of observable and measurable actions or behaviors.* *Current outcomes reflect current knowledge and practice in the discipline.* *Relevant outcomes relate logically and significantly to the discipline.* *Rigorous outcomes require an appropriate degree of academic precision and thoroughness to be met successfully.*

Assessment Review Process: Feedback

- Do program goals address programmatic outcomes and not student level outcomes?
- Do student learning outcomes (SLOs) reflect recent, relevant, and rigorous outcomes?
- Are the assessment methods appropriate and aligned to the SLOs, and how?
- Are the results being used to improve SLOs and program objectives?

Introduction

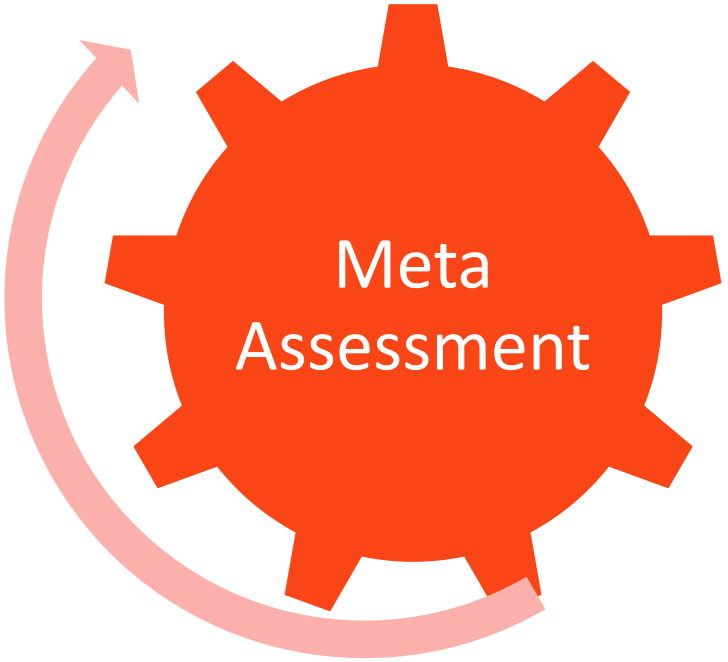
Continuous Improvement Process

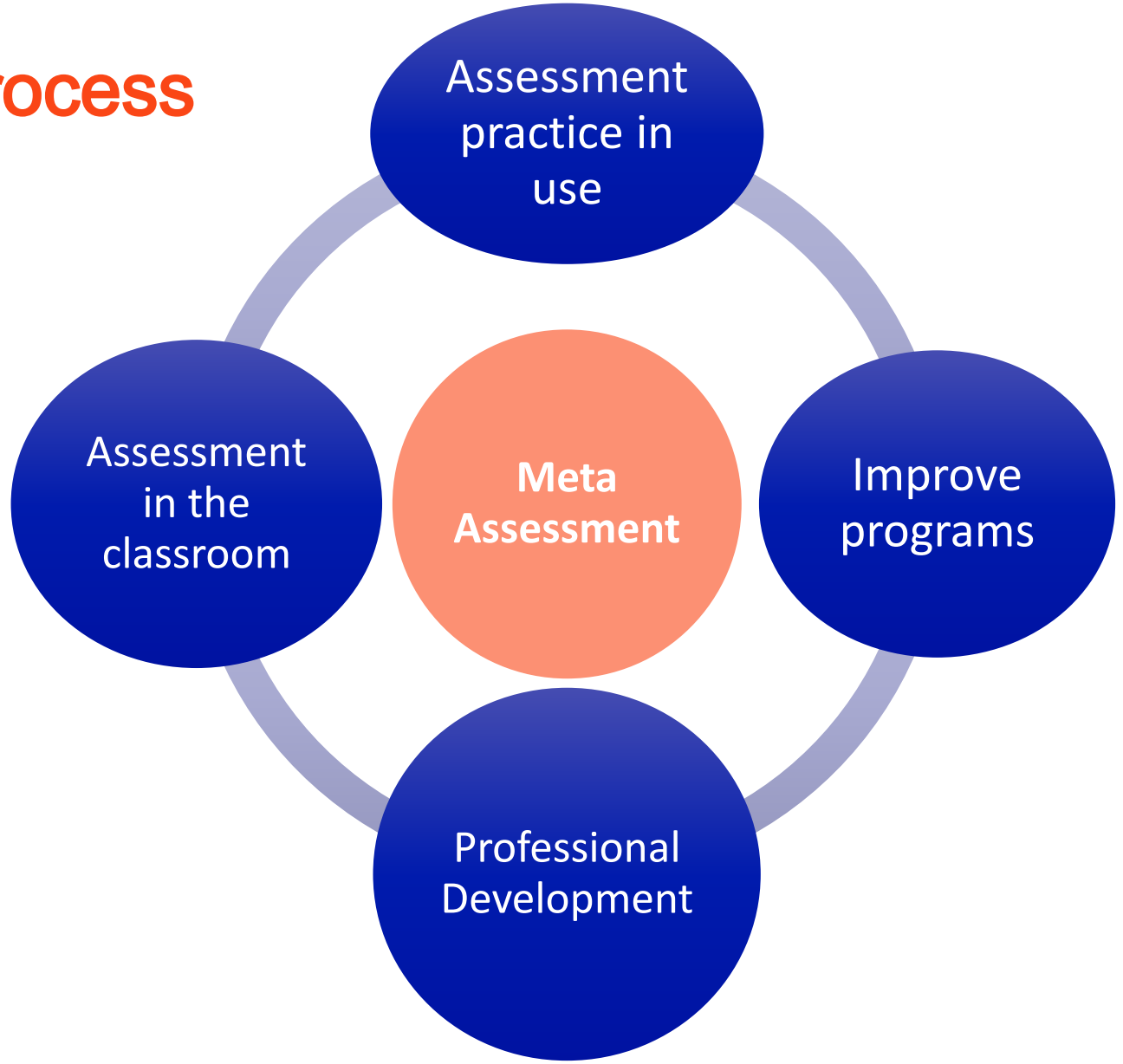


Fulcher & Good, 2013; Stanny & Bryan, 2021; Ewell & Cumming, 2017

Introduction

Continuous Improvement Process





Stanny & Bryan, 2021

The Problem

The Solution

Topic Modeling

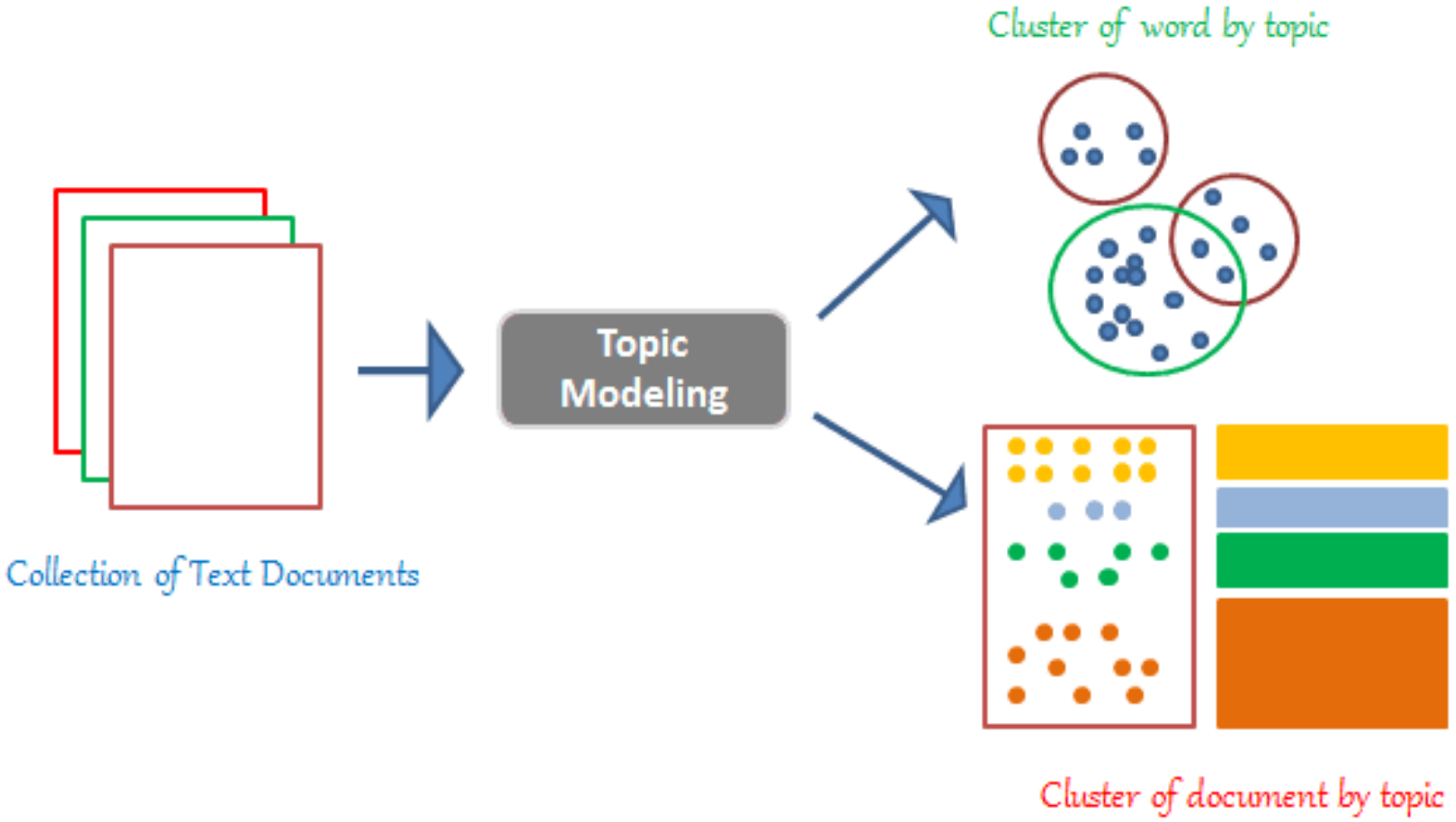


Image taken from: https://www.analyticsvidhya.com/blog/2021/07/topic-modelling-with-lda-a-hands-on-introduction/

What is Topic Modeling

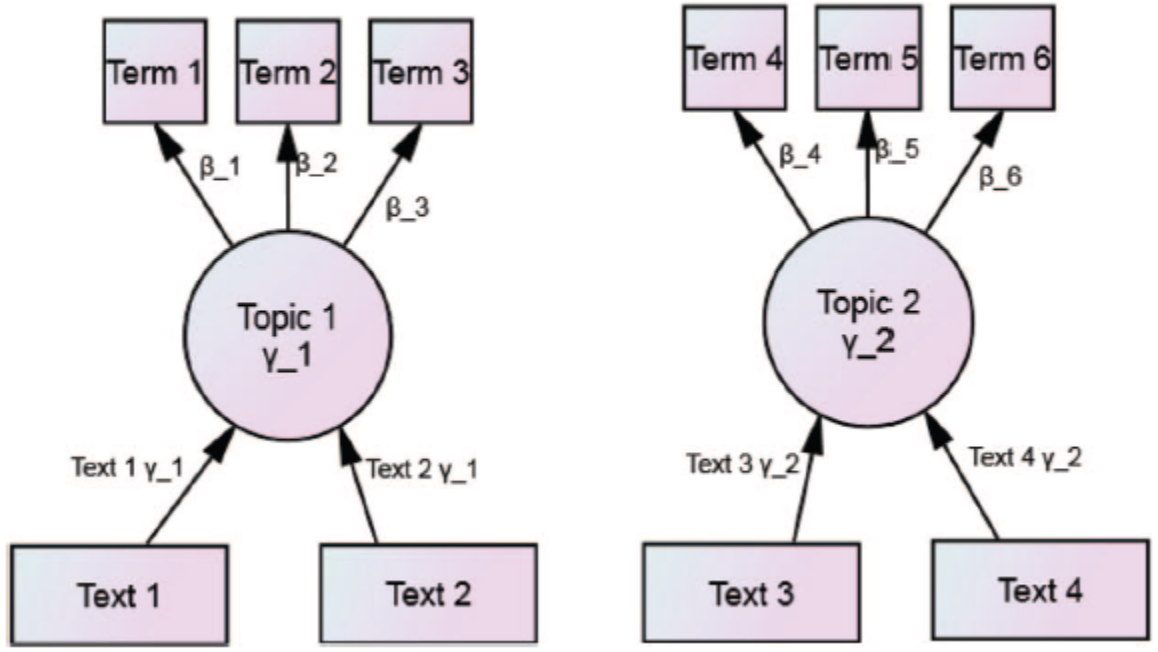
Statistical methods that analyze the words of original texts to discover:

- Themes that occur
- Themes that connect
- How they change over time

Blei (2012, p. 17)

Methodology

Topic Modeling: Latent Dirichlet Allocation



Finch et al., 2018, p. 406

The Solution

Finch et al., 2018

- Used for insights from open ended responses for identifying underlying themes

Hujala et al., 2020

- Allows for richer meaning from written feedback *without* having to read every single line of feedback

Gencoglu et al., 2023

- Analyzing open-ended feedback is possible and manageable

Research Question

Why do we want to evaluate our feedback?

Research Purpose

We want to evaluate our feedback process (i.e., meta assessment) to help better inform our assessment review process for the following reasons:

1. Provide evidence of continuous improvement within institutional assessment
2. Make recommendations for improvement
3. Understand common themes and areas of concern

Methodology

Methodology

Finch et al., 2018

1. Data downloaded from Qualtrics*
2. Pre-process data:

   Punctuation, articles, stop-words, digits, symbols, and common words (“thank you”, “etc”…) were removed; lowercase
3. 439 responses
4. Determine number of topics to retain (Cao et al., 2009)
5. Training and cross validating data set
6. Evaluated the final 3 topic model
7. Bigram analysis
8. Identifying and characterizing topics

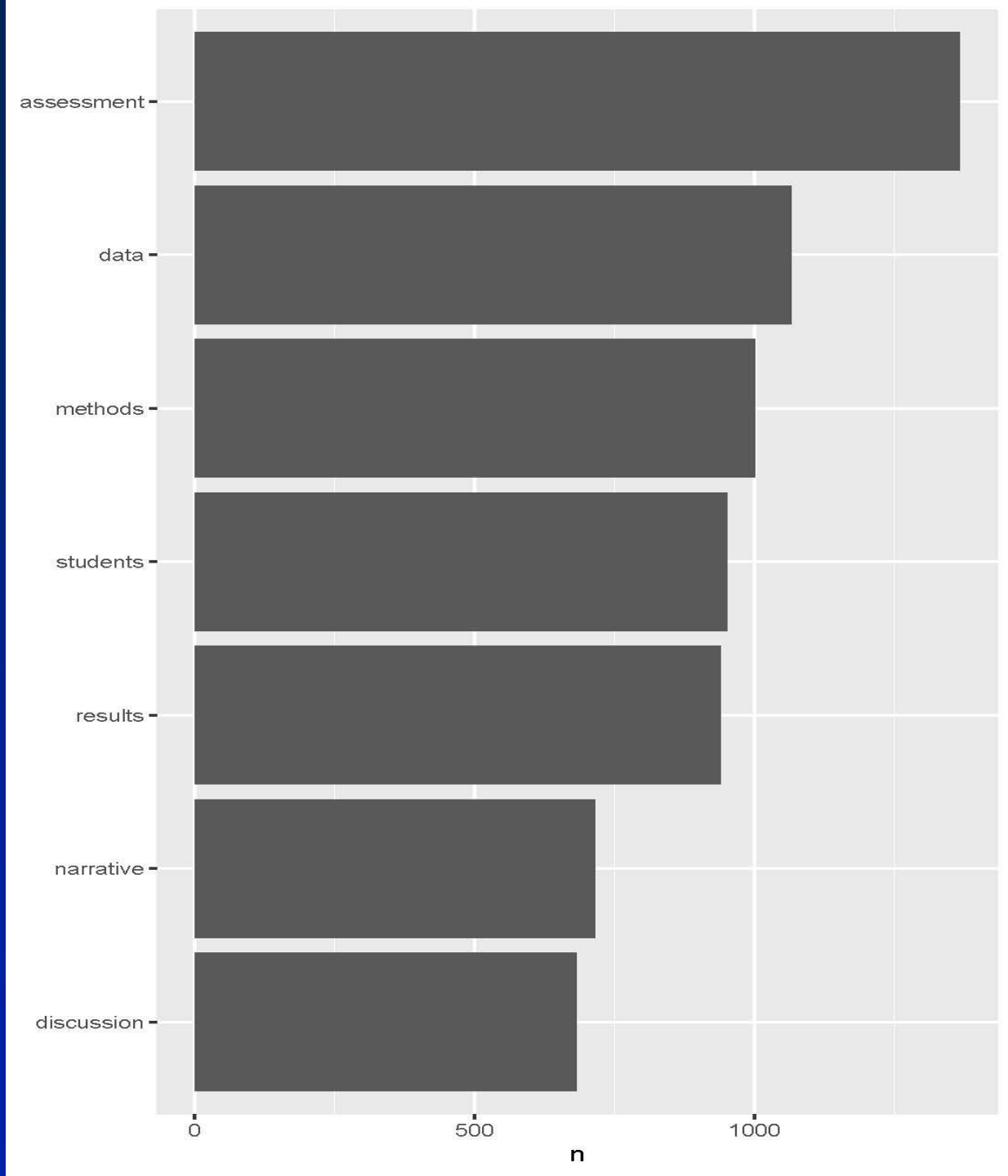
All analysis were completed in RStudio:
Tidyverse, tidytext, topicmodels, tm

*AY 21-22

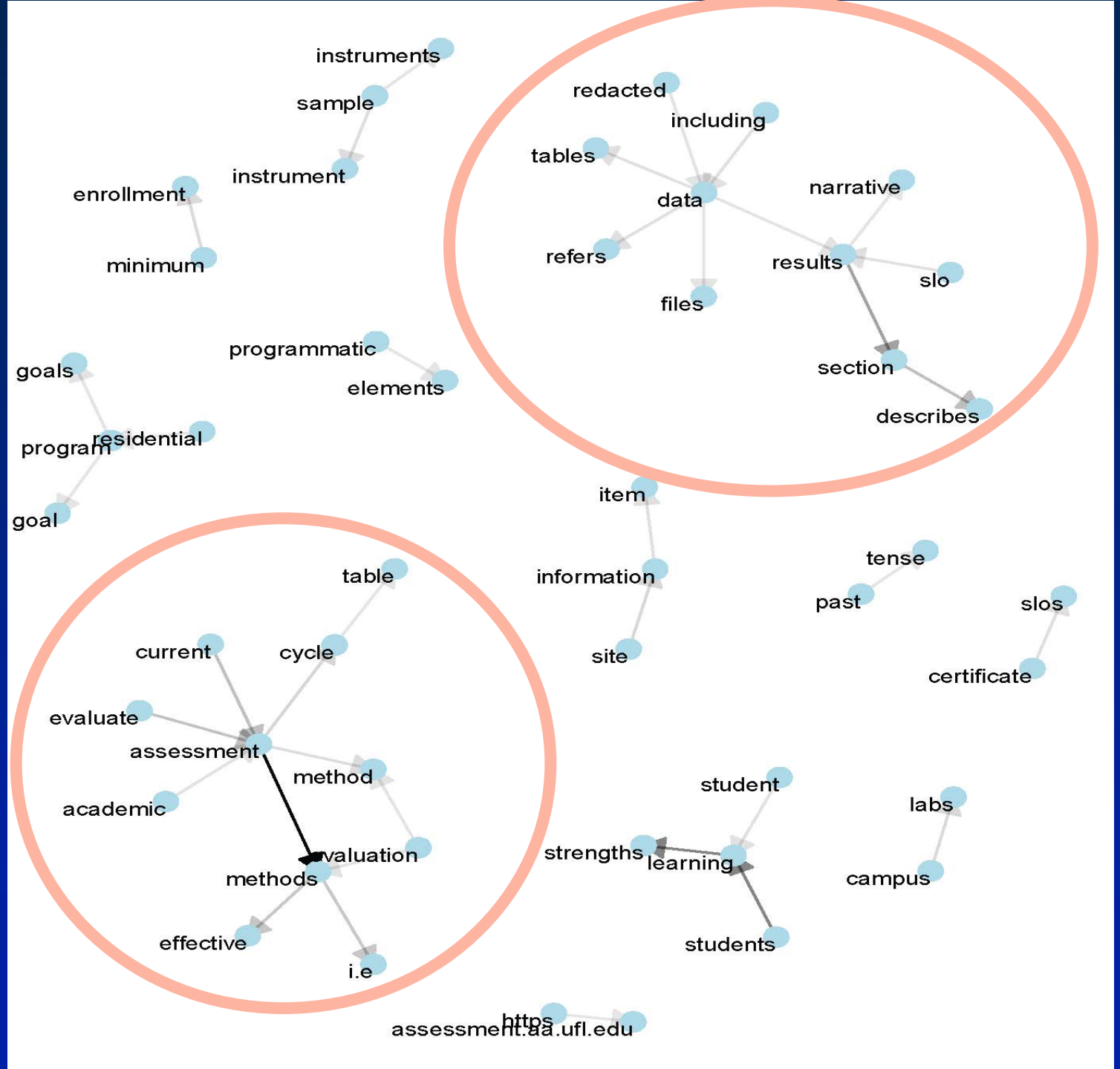
Results

Word Cloud from LDA With 3 Topics

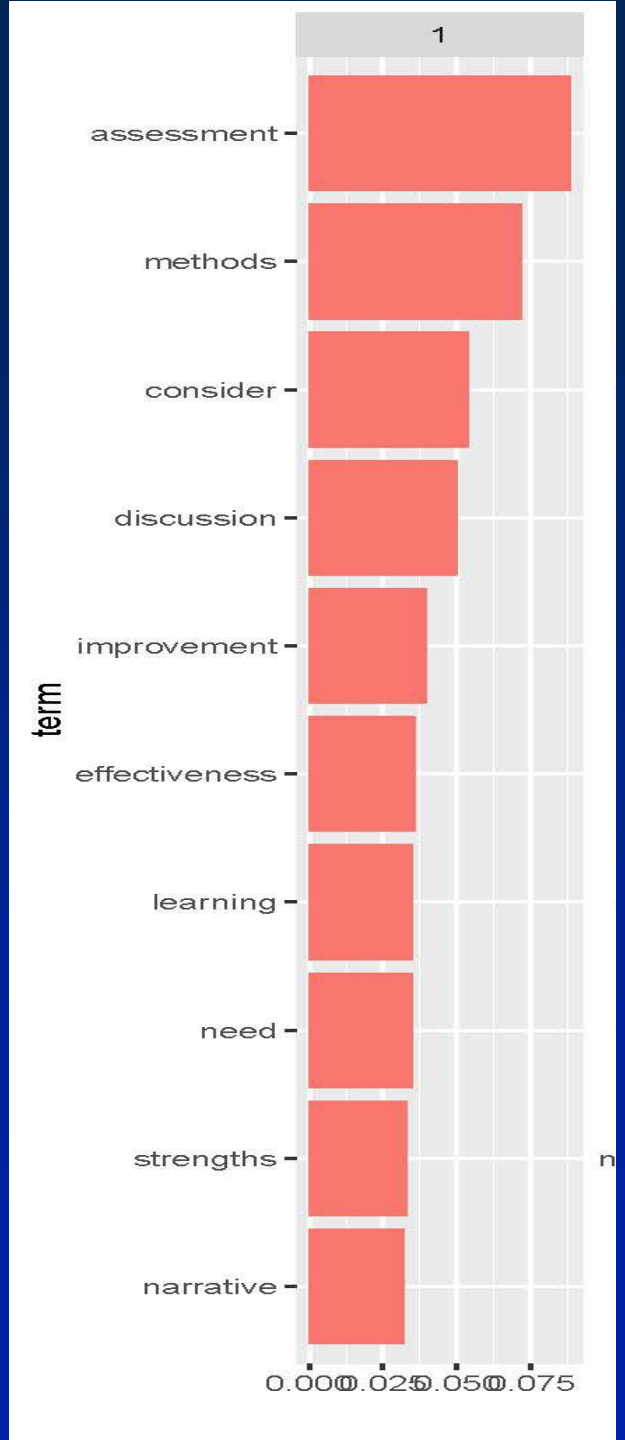
Top 7 Most Frequent Words



Bi-gram Displaying Groups Of Connected Words



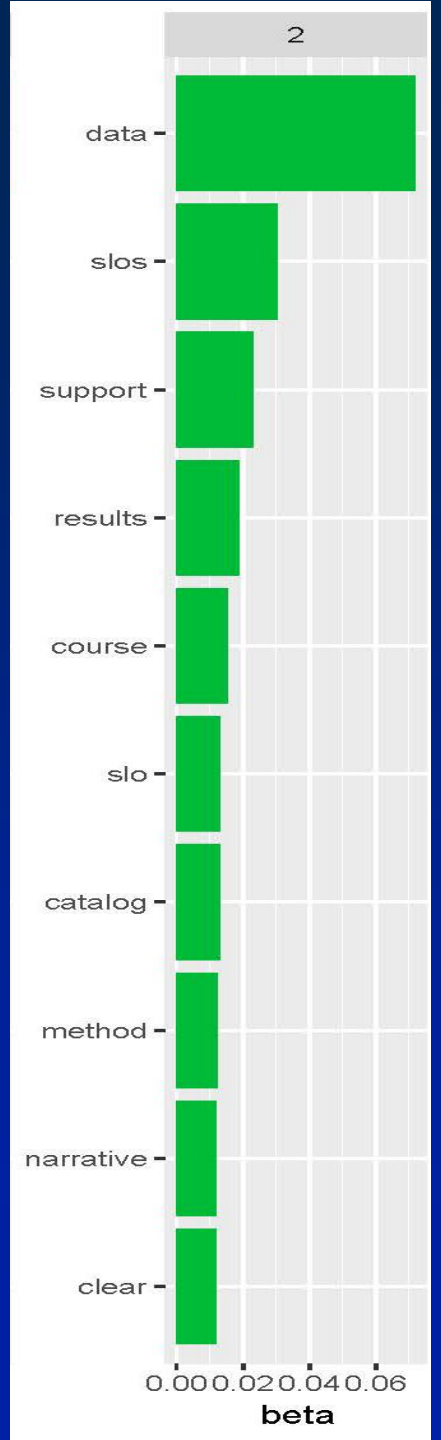
LDA Topic Model with 3 Topics



Topic 1: Student Learning Outcome Results

“Are the assessment methods meeting what students should know and be able to do”?

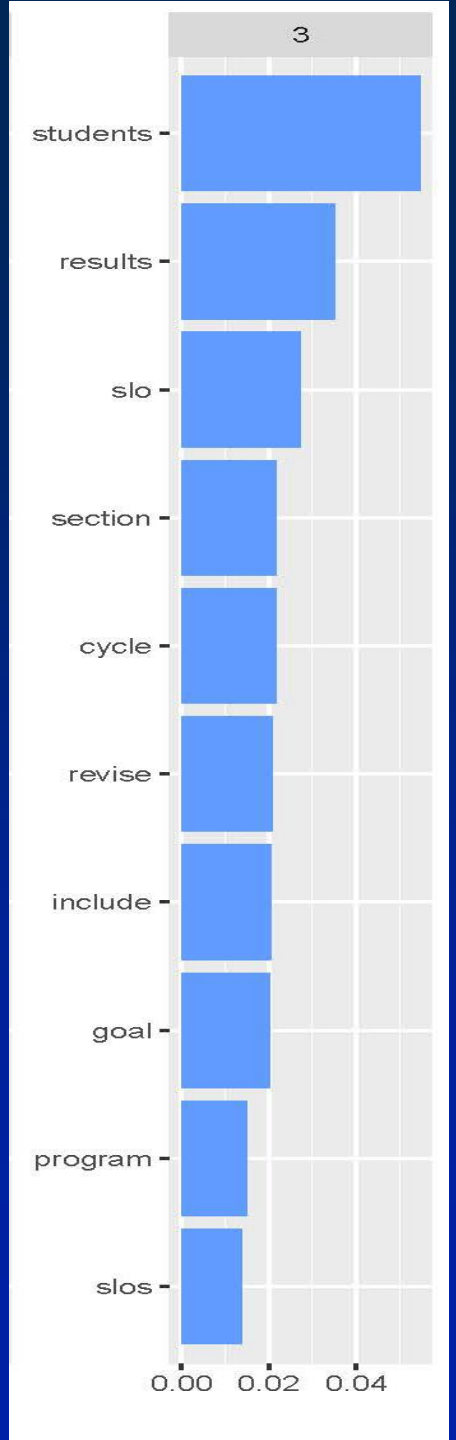
LDA Topic Model with 3 Topics



Topic 2: Academic Assessment Process

“Are the academic assessment plans reviewed and approved for appropriateness”?

LDA Topic Model with 3 Topics



Topic 3: Assessment Cycle

“When and how are assessment results discussed”?

Main Takeaways

Putting it all together.

3 Main Areas of Emphasis:

Topic 1: Focusing on what students are learning

Topic 2: Consistency of the information provided in the reports

Topic 3: Ensuring that the information is appropriate and accurate

Through this study: What we're currently doing

- Create a framework to better serve institutional assessment objectives such as:
  - Informing current practices to modify feedback process
  - Monitoring progress

Through this study: What we plan on doing

- Our future goals include:
  - Modifying assessment processes
  - Facilitating faculty professional development

Through this study: What we would like to do

- Our future *research* goals include:
  - Running LDA on other previous AY data to evaluate longitudinally
  - Use this method to evaluate alignment of institutional effectiveness reports to university strategic planning and goals

Thank you for your time.

https://assessment.aa.ufl.edu/office-of-institutional-assessment/