

# Active Learning with CATs Overview



COLLEGE OF MEDICINE TUCSON  
Curricular Affairs

FID in the Transition



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“One of the most promising ways to improve learning is to improve teaching.”

Angelo & Cross (2005, 7)



# Active Learning Strategies

- Active learning strategies are one way to grab and sustain attention and involve students more deeply in learning experience.
- There are many types of active learning strategies
- Including CATs is one way to incorporate active learning in live sessions or in preparation for flipped sessions.

# What are CATs?

The acronym CATs refers to Classroom Assessment Techniques

- CATs are strategies for ongoing assessment of student knowledge and performance in adult and higher education
- The goals of using CATs are to:
  - Guide curriculum content
  - Enhance teaching methods
  - Monitor how much and how well students are learning

Angelo & Cross (2005)



# The CATs Model



Based upon theories of adult and active learning



Uses active learning strategies to enhance learner engagement and experience



Implements explicit goals and objectives for learners



Emphasizes the use of formative assessment and timely, constructive feedback to improve learners' outcomes



Aims to reduce the gap between teaching and summative assessment



Emphasizes systematic inquiry and intellectual challenge to promote learning

CATs  
should be...

Learner-  
centered

Guides students in learning & developing skills for learning

Teacher-  
directed

Guides instructors in where & how to begin or adapt instruction

Formative

Provides immediate evaluation and/or feedback

Ongoing

Generates a “feedback loop”

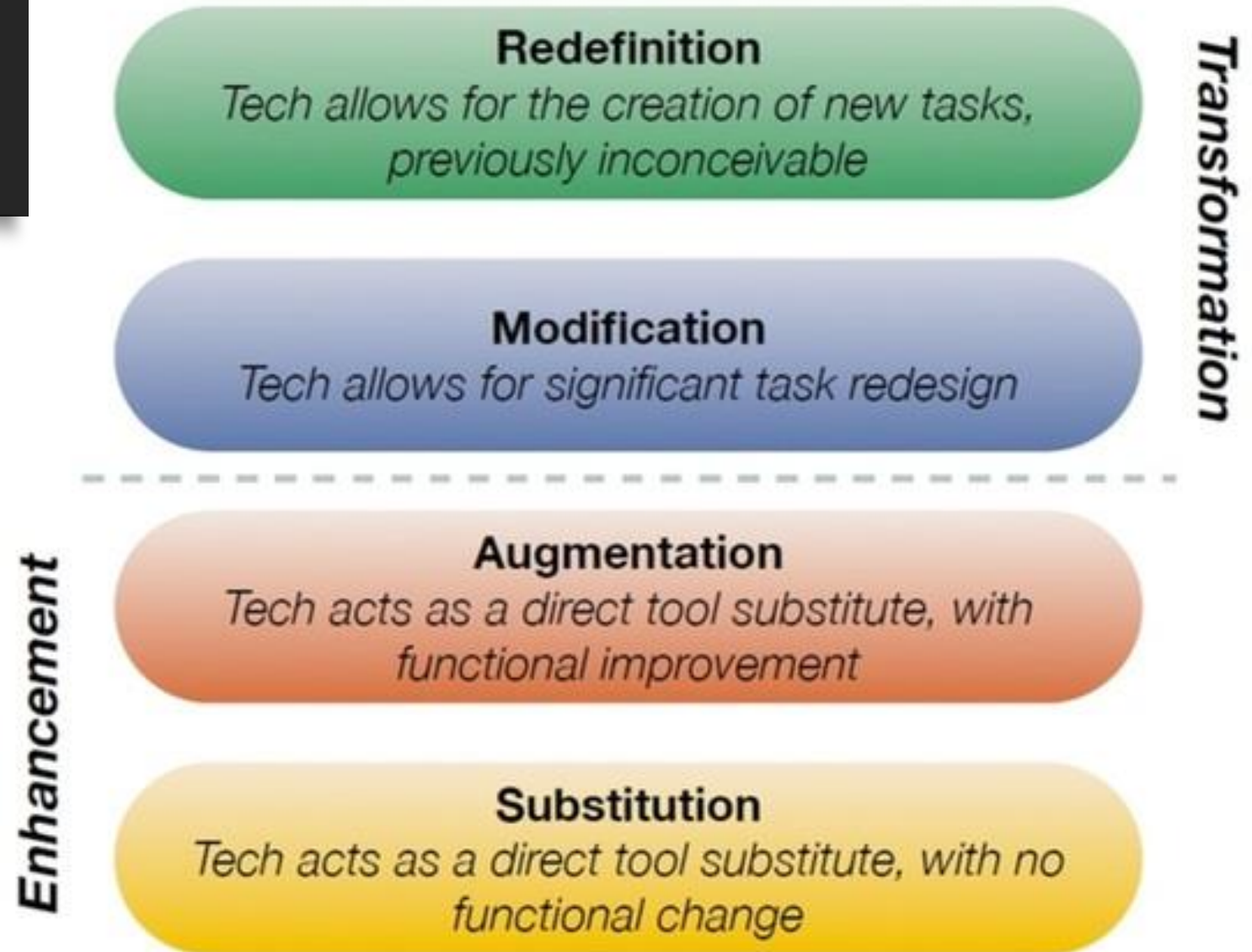
# How do we know whether we need CATs?

An introduction to the SAMR model for integrating education technology



# The SAMR Model

- Used to determine whether particular technology can substitute for a low tech way of involving students in active learning or require greater modification or redesign of the learning experience.
- [View, SAMR Model Video](#) By Julie Yum PhD, Instructional Technologies Group, University of California, Irvine, School of Medicine





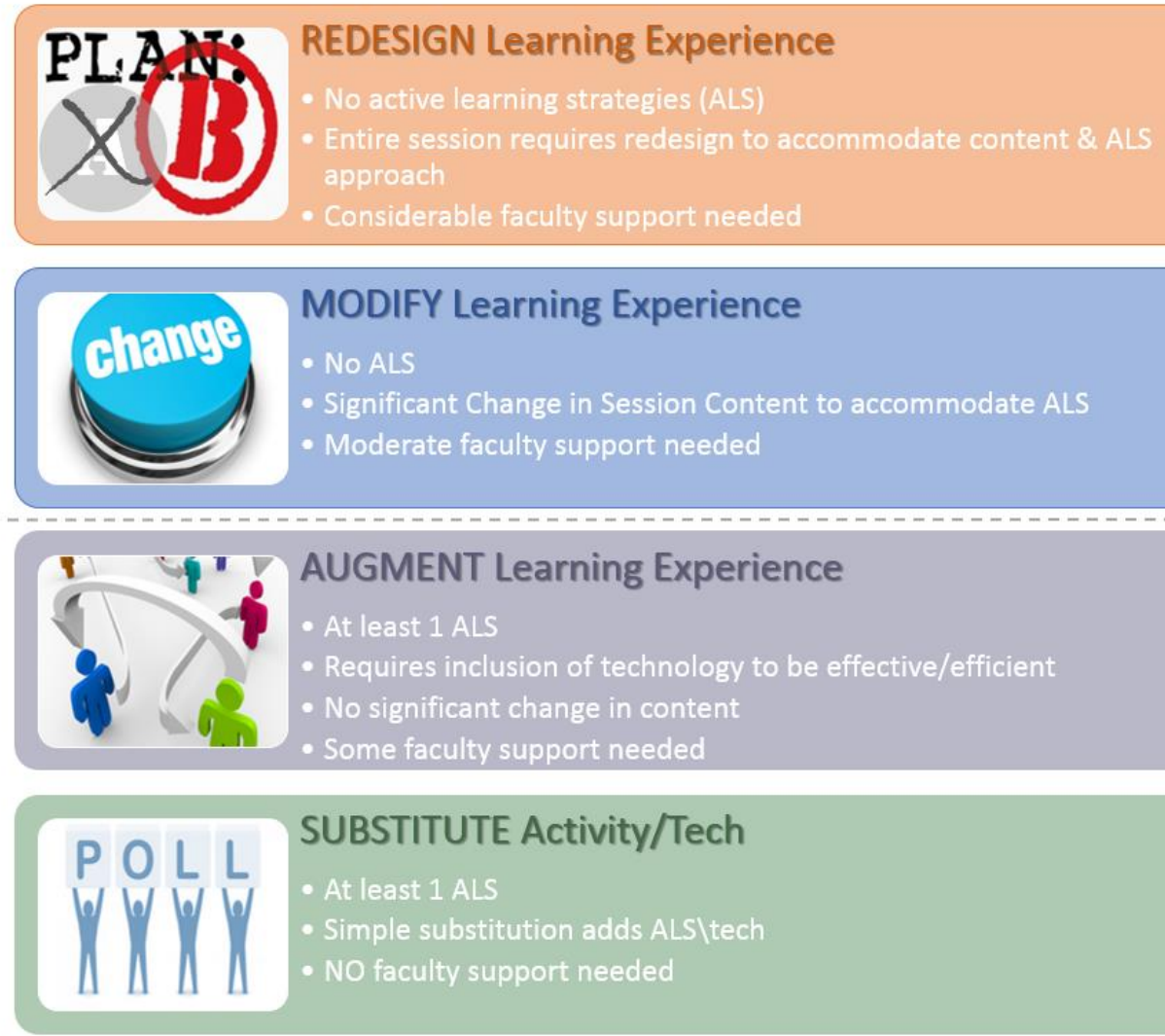
# Using SAMR for Curriculum Design

We can use the same SAMR concept for reviewing block sessions to determine whether they

- contain essential content
- include active learning strategies
- sustain student attention
- require some level of change and/or faculty support for making changes.



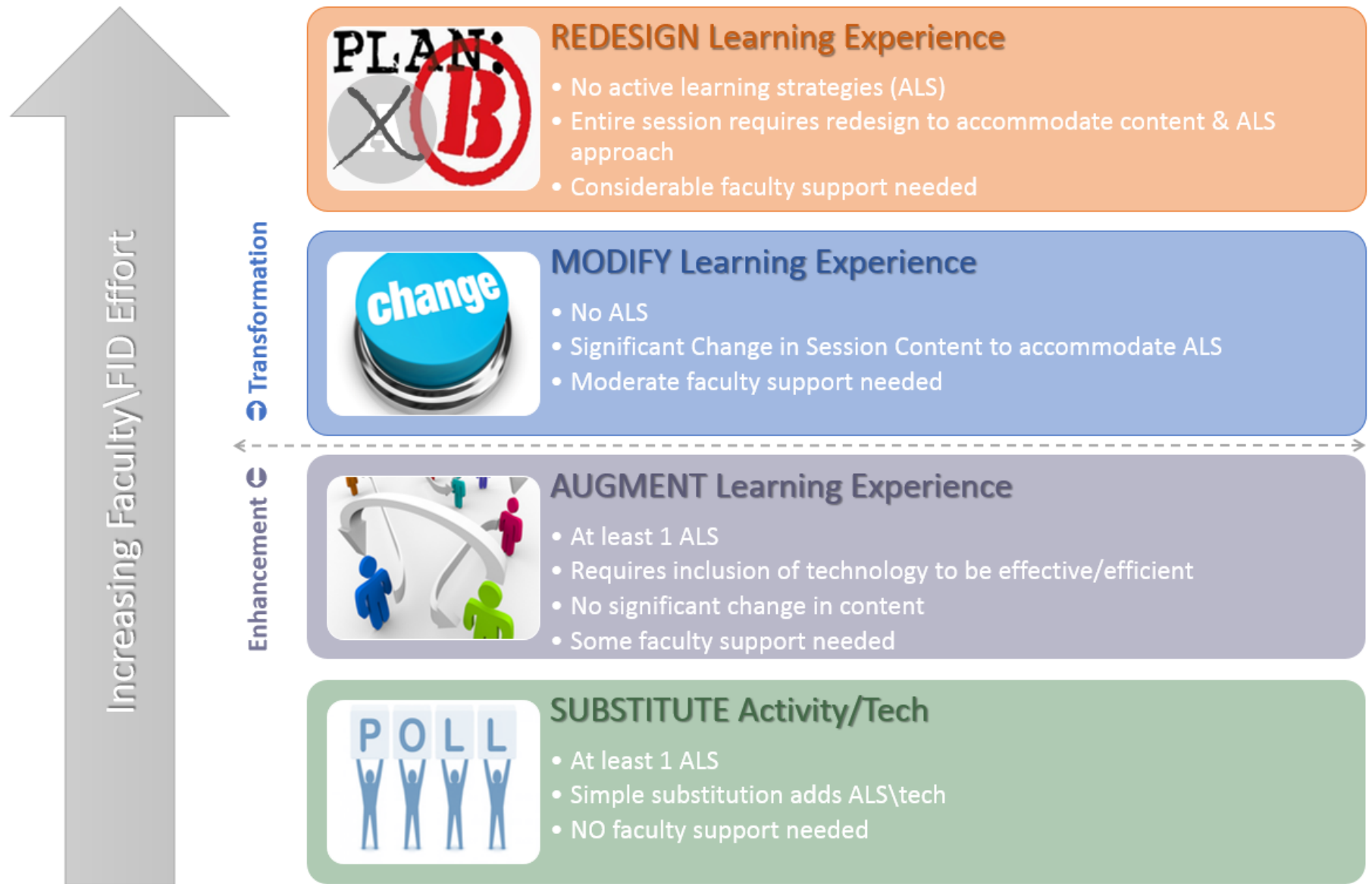
Transformation  
Enhancement



Do block sessions need to be...

- Transformed?
- Or, simply enhanced?

Take the FID Needs Assessment





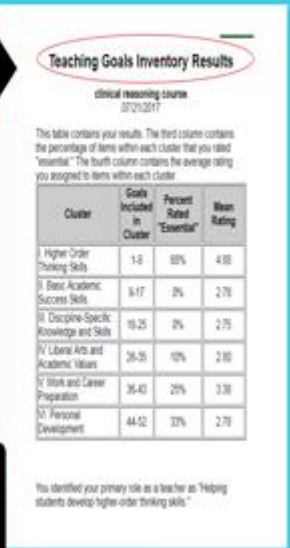
# Teaching Goals Inventory (TGI)

Sample Report from Online TGI

- Identifies primary category of teaching goals for the course
- This suggests the type of engagement to promote
- Helps focus on the types of assessment strategies for teaching/learning you might want to use
- Here the example addresses the clinical reasoning course to illustrate the report info and layout

Take the TGI!

Note: Taken by FTD Director to produce sample report.



**Teaching Goals Inventory Results**  
clinical reasoning course  
07/21/2017

This table contains your results. The third column contains the percentage of items within each cluster that you rated "essential." The fourth column contains the average rating you assigned to items within each cluster.

Cluster	Goals Included in Cluster	Percent Rated "Essential"	Mean Rating
I Higher Order Thinking Skills	1-8	88%	4.00
II Basic Academic Success Skills	9-17	2%	2.70
III Discipline-Specific Knowledge and Skills	18-25	2%	2.75
IV Liberal Arts and Academic Values	26-35	10%	2.80
V Work and Career Preparation	36-43	25%	3.30
VI Personal Development	44-52	33%	2.70

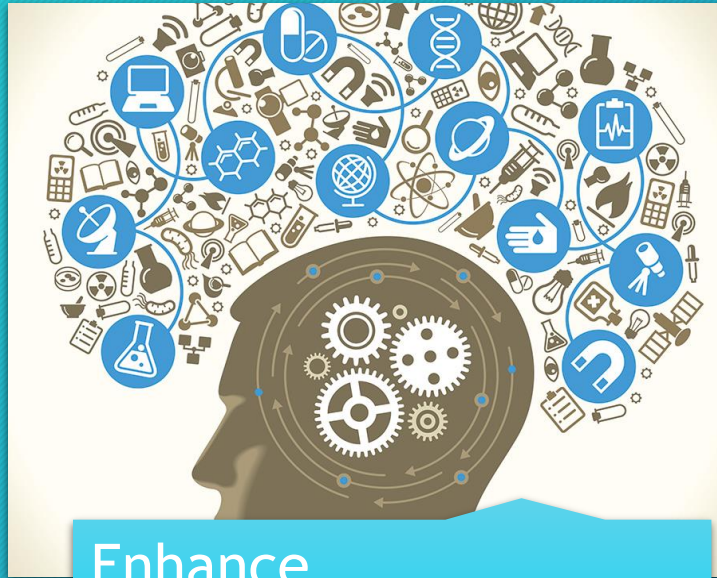
You identified your primary role as a teacher as "helping students develop higher order thinking skills."

- The authors of Classroom Assessments for Teaching\* created a self-scorable version of their Teaching Goals Inventory\*
- Block directors could use the TGI to:
  - Evaluate whether course goals are reflected in session learning objectives
  - Consider how they want to prioritize course goals and session learning objectives
  - Help faculty to determine whether their sessions need enhancement or redesign



## Apply

- Apply principles & concepts



## Enhance

- Analytic skills



## Develop/Enhance

- Problem-solving skills

TGI Report identifies the top 3 Course Goals  
Providing context for session objectives and activities

For example, the TGI asks whether you aim to promote...





# The TGI asks you which of the following you would like your block to emphasize...



Content  
knowledge



Analytic or  
problem-solving  
skills



Communication  
skills



Self-efficacy



Reflection and  
metacognitive  
engagement









# Example: Matching CATs to Bloom's Taxonomy

**Lower  
Order**

**Higher Order Thinking**

**Recall** - Use CATs requiring students to demonstrate current knowledge or skill

**Application** - Use CATs requiring students to apply new knowledge

**Analysis** - Use Problem-solving CATs

**Synthesis** - Use CATs that ask students to design & plan

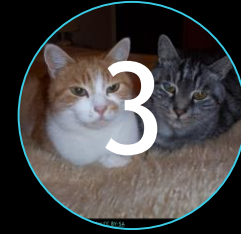




Assess Prior  
Knowledge, Recall  
And  
Comprehension



Assess Learner  
Attitudes, Values &  
Self-awareness



Assess Learner  
Reactions to  
Instruction to learn  
how students learn

There are 3 CAT Categories

Select types that  
best suit the goals

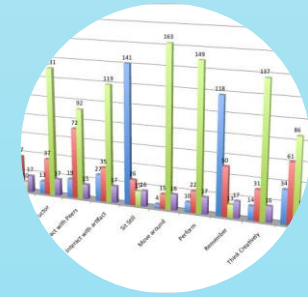
# Each CAT estimates the amount of effort required for 3 factors



Faculty effort



Student effort



Data Analysis Effort

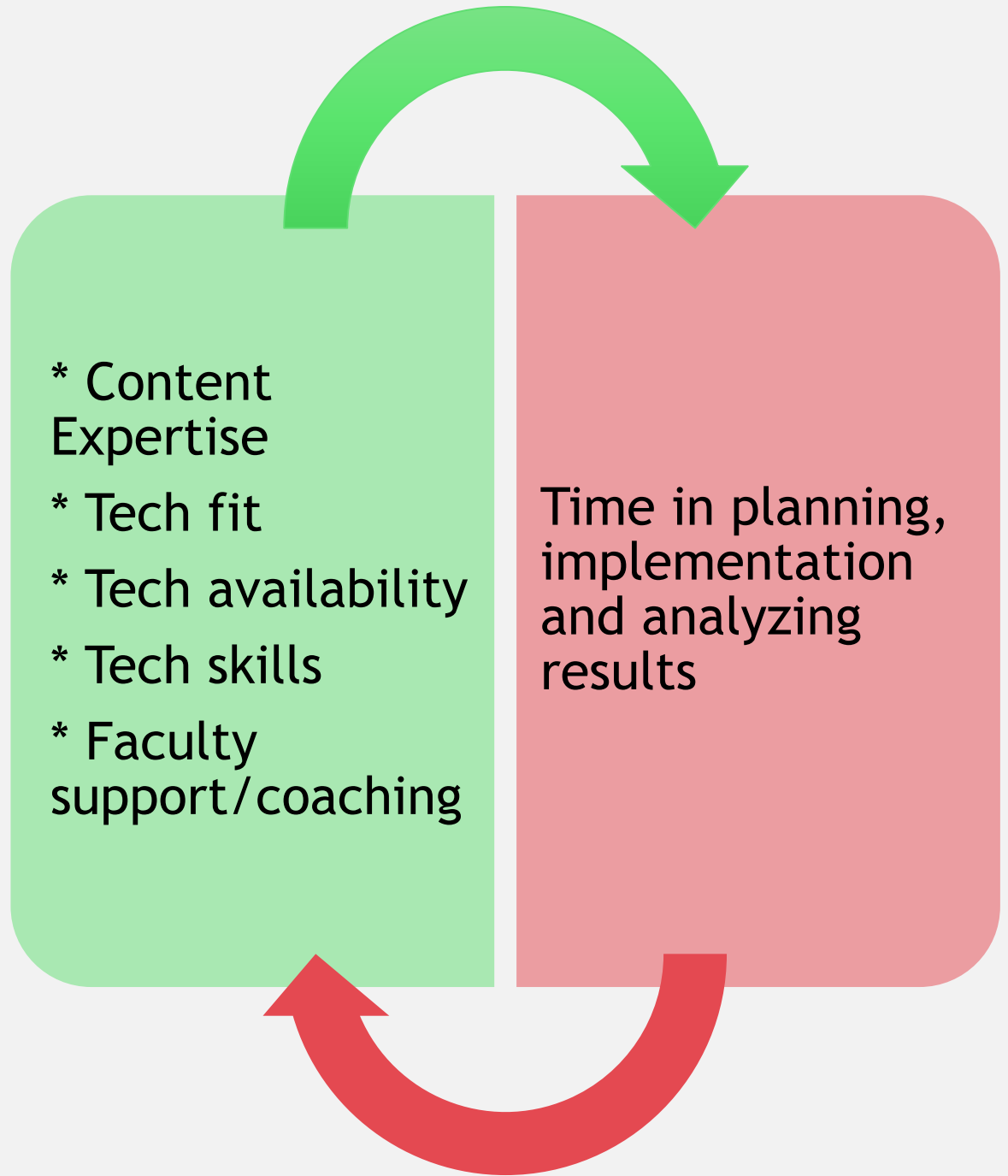




What affects  
whether effort  
is low, medium  
or high?

- \* Content Expertise
- \* Tech fit
- \* Tech availability
- \* Tech skills
- \* Faculty support/coaching

Time in planning,  
implementation  
and analyzing  
results



## 2 CAT Samples



Summaries of Classroom Assessment Techniques  
(strategies) that assess prior knowledge,  
comprehension, and analytic thinking



## Purpose

- Assess students' skills at digesting and categorizing important information according to a given set of critical defining features

## Description

- Requires students to categorize concepts according to the presence or absence of important defining features

## Teaching Goal

- Improve analytic skills, ability to draw inferences and generate taxonomies of knowledge
- Develop study skills
- Learn concepts, facts & theories of subject

## Effort

- Faculty: Medium (content expertise)
- Student: Low
- Data Analysis: Low(technology)

## Technology

- Low tech
  - Paper matrix
  - PDF matrix
- Medium tech
  - Poll Everywhere (Rank Poll)
  - Qualtrics (Sort poll)

# Defining Features Matrix

# CAT 9

Especially applicable to Pharmacology

## Purpose

- Enables faculty to find out how concisely, completely and creatively students can organize and summarize sizeable and significant information
- Promotes ability to articulate

## Description

- Instructor asks students to summarize in one sentence the import of content addressed in a given session -
- e.g., What do we need to know in order to do X and why?

## Teaching Goal

- Enhance memory
- Improve listening and reasoning skills
- Develop ability to synthesize related concepts
- Improve ability to summarize knowledge and articulate reasoning

## Effort

- Faculty: Low
- Student: Medium
- Data Analysis: Medium - *requires qualitative assessment*

## Technology

- Low tech
  - Verbal
  - Paper & pencil
- Medium tech
  - Poll Everywhere
  - *Qualtrics* (open ended)
  - Document upload to LMS

# One Sentence Summary

# CAT 13

Any subject matter, any context



# Reference & Resources

- Teaching Goals Inventory
  - Self-scoring ([online](#), [PDF](#))
  - [Online scoring](#) (University of Iowa)
- Text
  - Thomas A. Angelo and K. Patricia Cross. Classroom Assessment Techniques: A Handbook for College Teachers, Jossey-Bass Publishers:San Francisco, CA; 2005.

THOMAS A. ANGELO  
K. PATRICIA CROSS

## CLASSROOM ASSESSMENT TECHNIQUES

*A Handbook for  
College Teachers*



# For Faculty & Block Team Support

## Contact

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View other FID in Transition  
Guides, including:

- [Sample CATs](#)
- [TGI Guide](#)



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Take the FID  
Needs  
Assessment