The mind is not a vessel to be filled, but a fire to be ignited.

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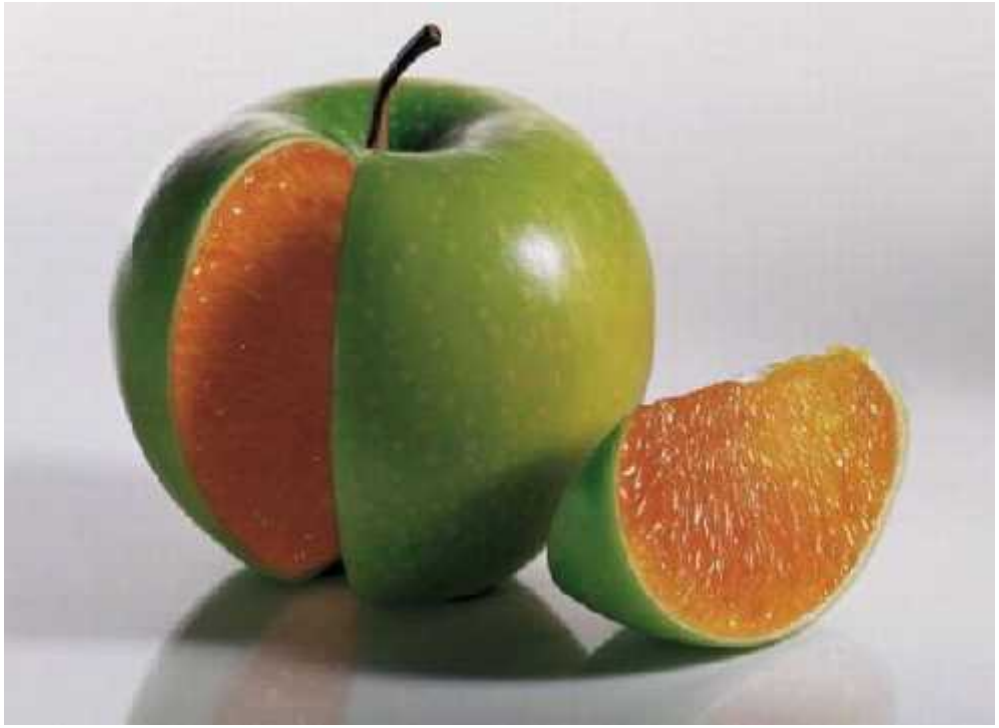
Stay Ahead

Student Centered learning Pedagogy and Assessment to Enhance Practical Learning and Employability Skills in the Engineering Disciplines: A Digital Approach

Teaching Learning Process through

Revised Blooms Taxonomy - Creative Learning Methodology (RBT - CLM)



Revised Blooms Taxonomy Table

KNOWLEDGE DIMENSION	Cognitive Process Dimension					
	1. Remember	2 Understand	3 Apply	4 Analyze	5 Evaluate	6 Create
A. Factual Knowledge						
B. Conceptual Knowledge						
C. Procedural Knowledge						
D. Meta Cognitive Knowledge						

CLASSIFYING OBJECTIVES WITH THE REVISED TAXONOMY TABLE

Educational Objective: The student will learn to apply the reduce-reuse-recycle approach to conservation

Knowledge Dimension: Factual, Conceptual, Procedural, Meta-cognitive

Cognitive Process Dimension: Remember, Understand, Apply, Analyse, Evaluate, Create

The Knowledge Dimension	The Cognitive Process Dimension					
	Remember	Understand	Apply	Analyze	Evaluate	Create
Factual Knowledge						
Conceptual Knowledge						
Procedural knowledge			★			
Meta-cognitive knowledge						

STEM EDUCATION: Preparing Students for a Growing Field

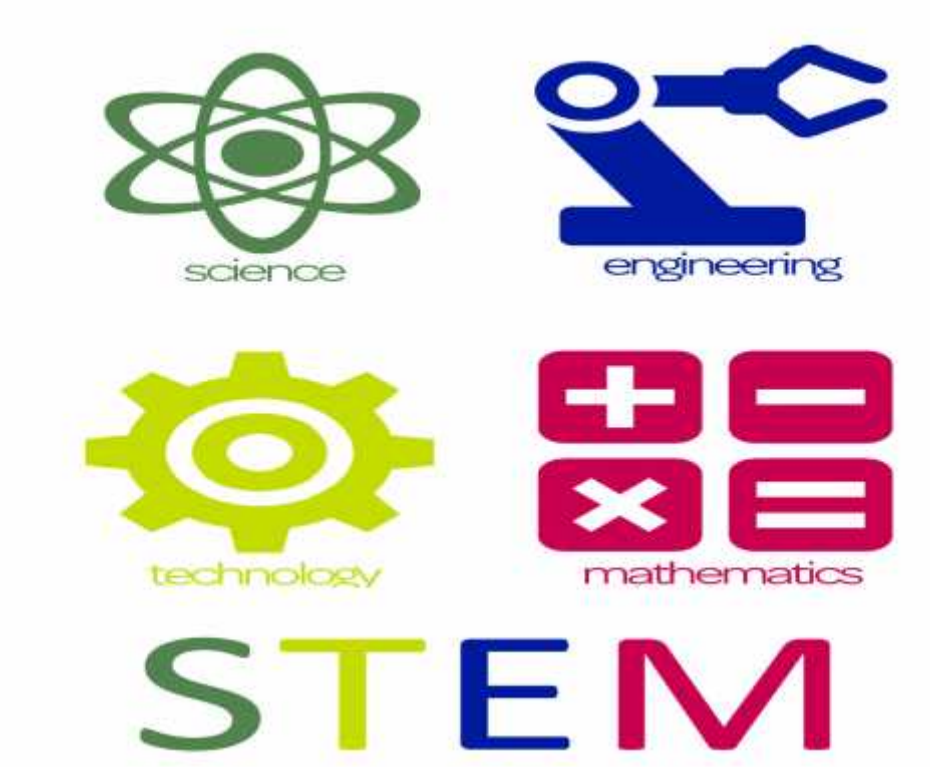


ILLUSTRATION OF HOW AN OBJECTIVE IS CLASSIFIED IN A RBT TABLE

General Objective:

Students will be able to understand the truth table and Boolean expression of 7 different logic gates and will be able to design logic diagrams for any combinational circuit using logic gates.

Specific Objectives:

Students will be able to

1. Interpret the doping of impurities in semiconductors used to design the basic gates and universal gates. **(S, E ,M)**

   1.1 Demonstrate the concept of semiconductor and doping with an experiment and an animation video. (Activity) ***(S,E)***
2. Construct the AND, OR and NOT gate using the 2 Universal gates. **(E, M)**
3. Compare the logic function of XOR and XNOR gate with one application each. **(E, T, M)**
4. Derive the logic diagram for a given application using logic gates. **(E,T)**

Educational Objective:

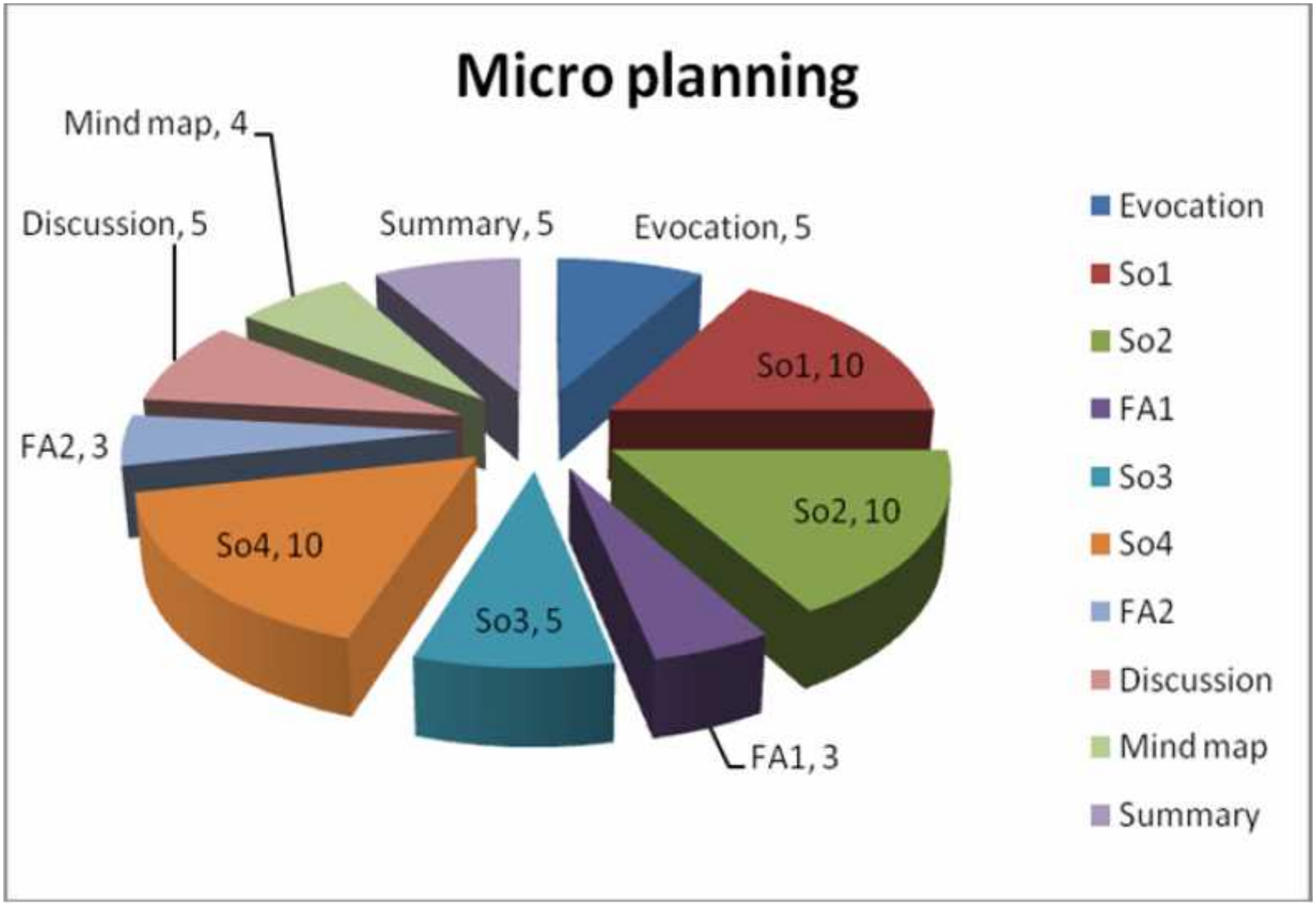
Interpret the doping of impurities in semiconductors used to design the basic logic gates and universal gates.

Knowledge Dimension: Conceptual

Cognitive Process Dimension: Understand

The Knowledge Dimension	The Cognitive Process Dimension					
	Remember	Understand	Apply	Analyze	Evaluate	Create
Factual Knowledge						
Conceptual Knowledge		★		3		
Procedural knowledge			2			4
Meta-cognitive knowledge		1.1				

List of Associated Action verbs for Cognitive Process Domain in RBT		
Cognitive Process Domain	Main Words	Auxiliary Words
1. Remember	Recognise, Recall	Define, State, List, Label, Reproduce, Retrieve
2. Understand	Interpret, Exemplify, Classify, Summarise. Infer, Compare, Explain	Identify, Indicate, Illustrate, Represent, Formulate, Subsume, Interpolate, Extrapolate, Abstract
3. Apply	Execute, Implement	Predict, Select , Assess, Find, Show, Demonstrate, Construct, Compute, Use, Carry-out, Design
4. Analyse	Differentiate, Organize, Attribute	Conclude, Compare, Contrast, Justify, Resolve, Breakdown, Parse, Outline, Structure, Integrate
5. Evaluate	Check, Critiquing.	Judge, Determine, Support, Defend, Criticise, Choose
6. Create	Generate, Plan, Produce.	Combine, Re-state, Argue, Derive, Relate, Generalize


Micro planning
Mind map, 4
Discussion, 5
Summary, 5
Evocation, 5
So1, 10
So2, 10
FA2, 3
So4, 10
So3, 5
FA1, 3
Evocation
So1
So2
FA1
So3
So4
FA2
Discussion
Mind map
Summary

Stages of RBT- CLM

Alpha breathing

Stage 1: Evocation

Stage 2: Subject introduction through General and

Specific objectives with **STEM** mapping

Stage 3: Formative assessment

Stage 4: Discussion by students

Stage 5: Drawing mind map evolving a concept

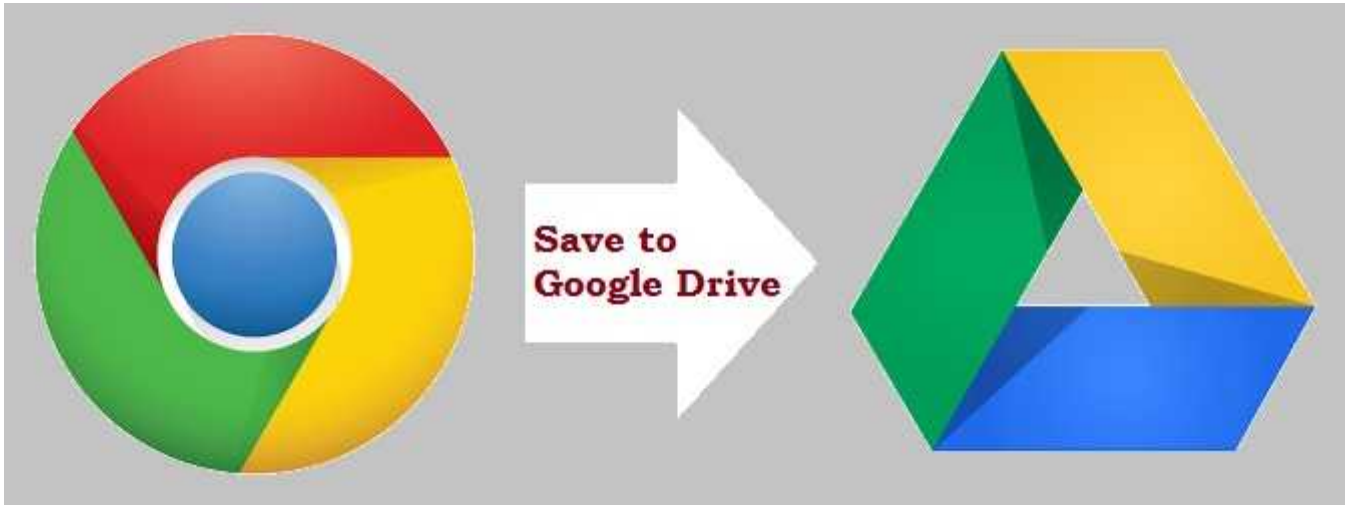
Stage 6: Stimulating questions

Stage 7: Presentation of Summary by students

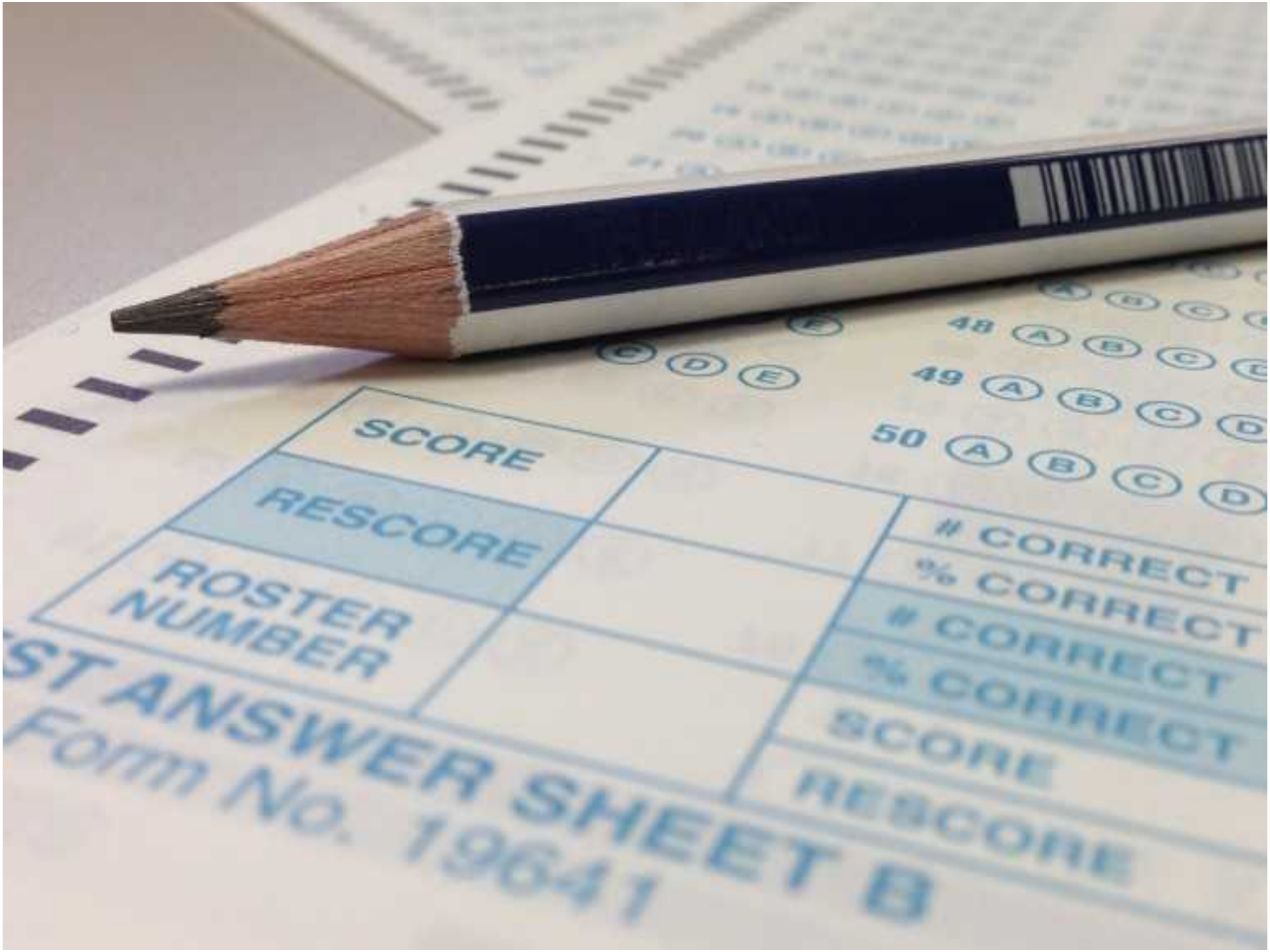
Why RBT-CLM?

1. Conventional method is teacher driven. Students are passive listeners.
2. RBT - CLM is student centered approach – Every student is engaged.
3. Objectives are important to establish in a pedagogical interchange so that teachers and students alike understand the purpose of that interchange.
4. Organizing objectives helps to clarify objectives for themselves and for students.
5. Having an organized set of objectives helps teachers to:
   - "plan and deliver appropriate instruction";
   - "design valid assessment tasks and strategies";and
   - "ensure that instruction and assessment are aligned with the objectives."
6. Ensures self learning, peer learning and group learning.

Improve teaching and learning by leveraging innovative tools.

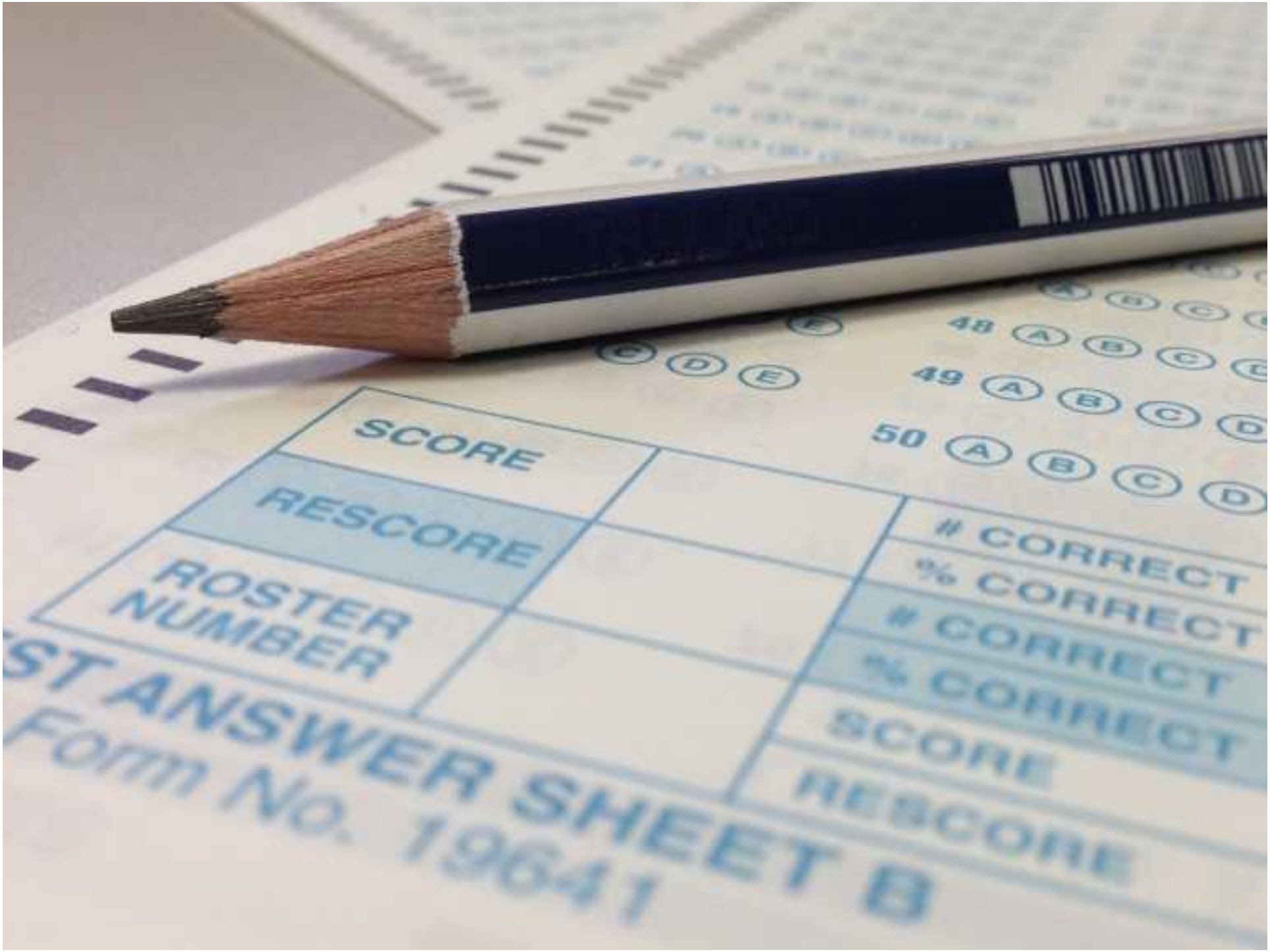

Save to
Google Drive


flubaroo


SCORE
RESCORE
ROSTER NUMBER
CORRECT
% CORRECT
# CORRECT
% CORRECT
SCORE
RESCORE
ST ANSWER SHEET B
Form No. 19641
48 A B C
49 A B C D
50 A B C D

Sample Formative Assessment

Formative Assessment Response by students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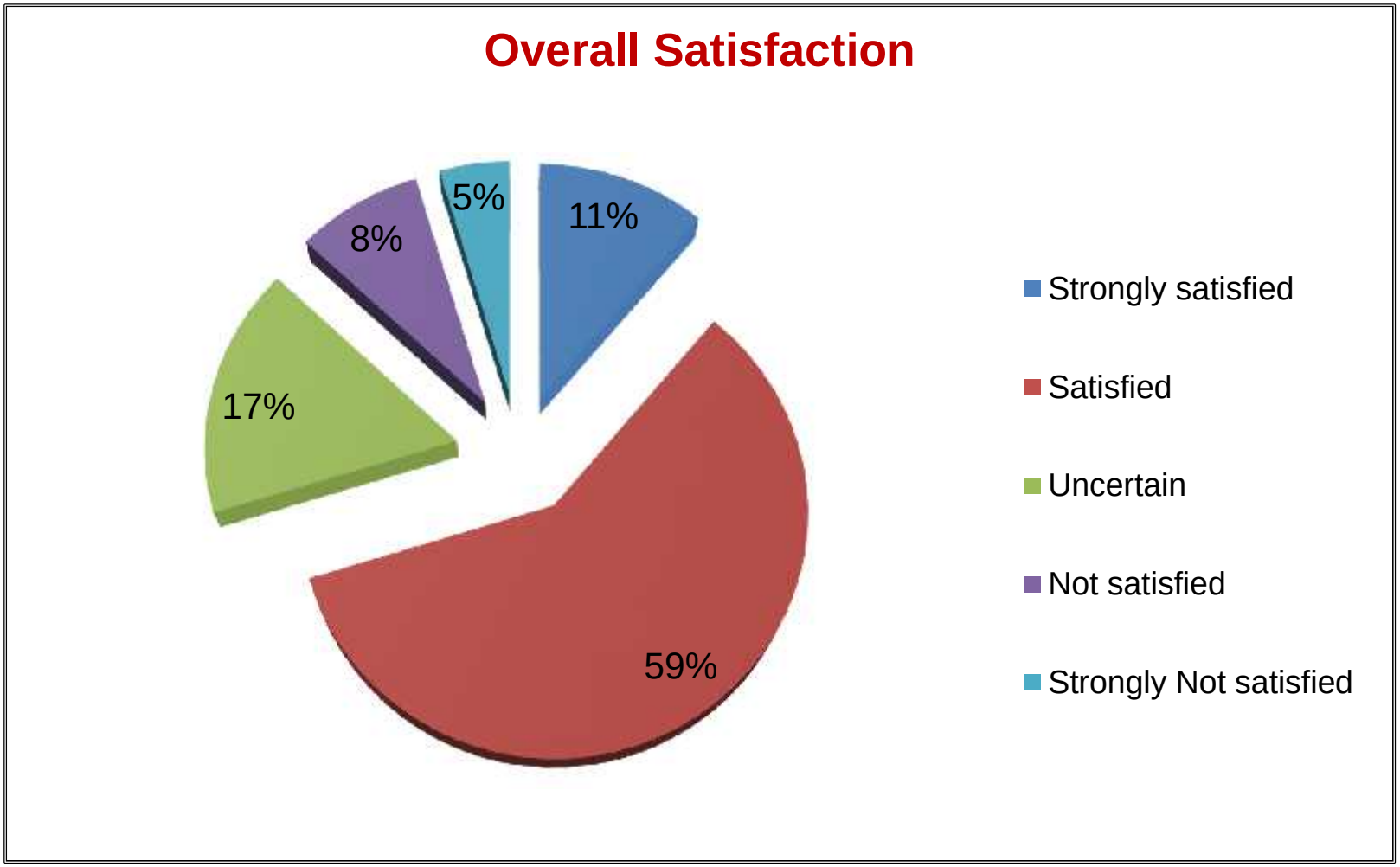
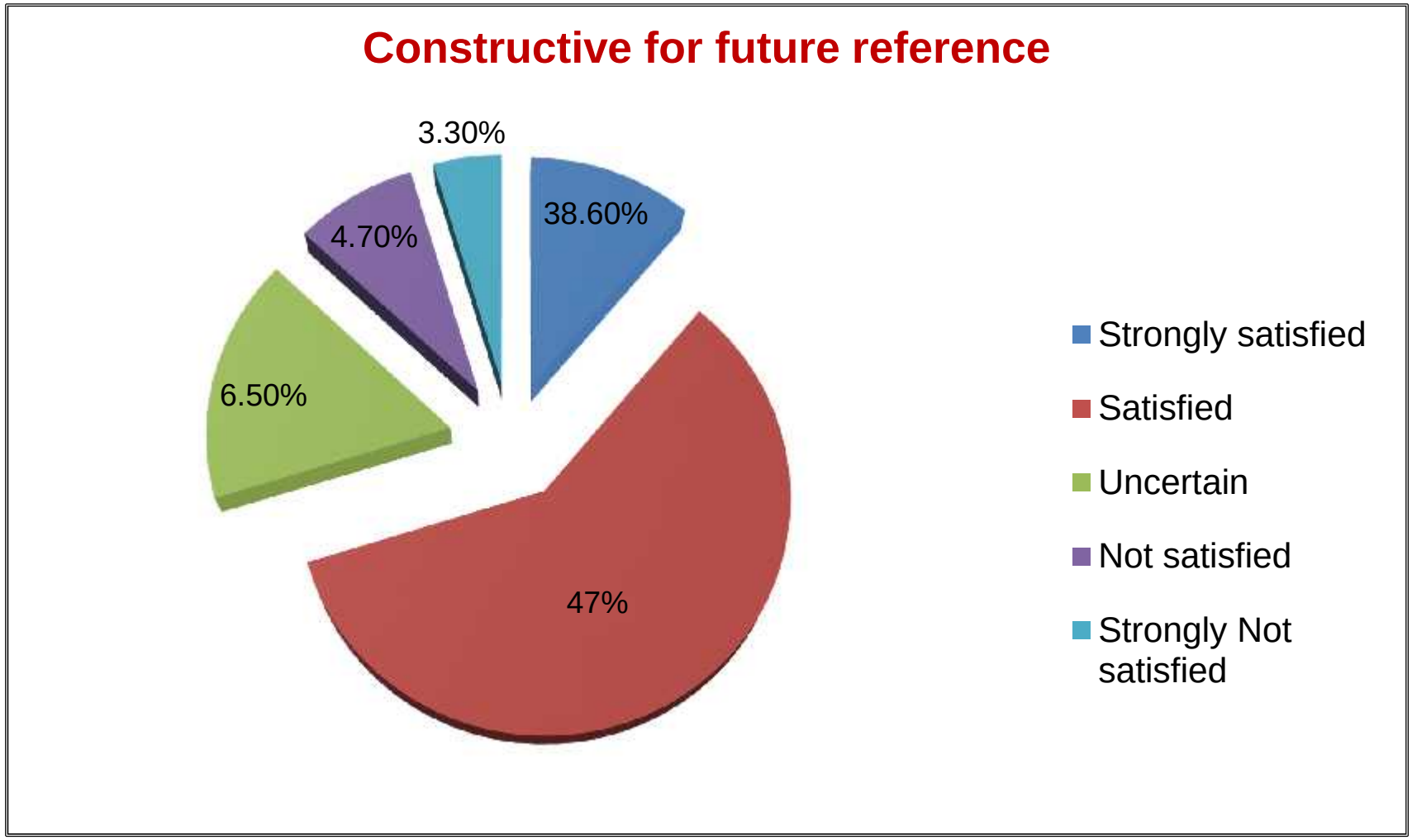
RESCORE
ST ANSWER SHEET B
Form No. 19641
48 A B C
49 A B C D
50 A B C D

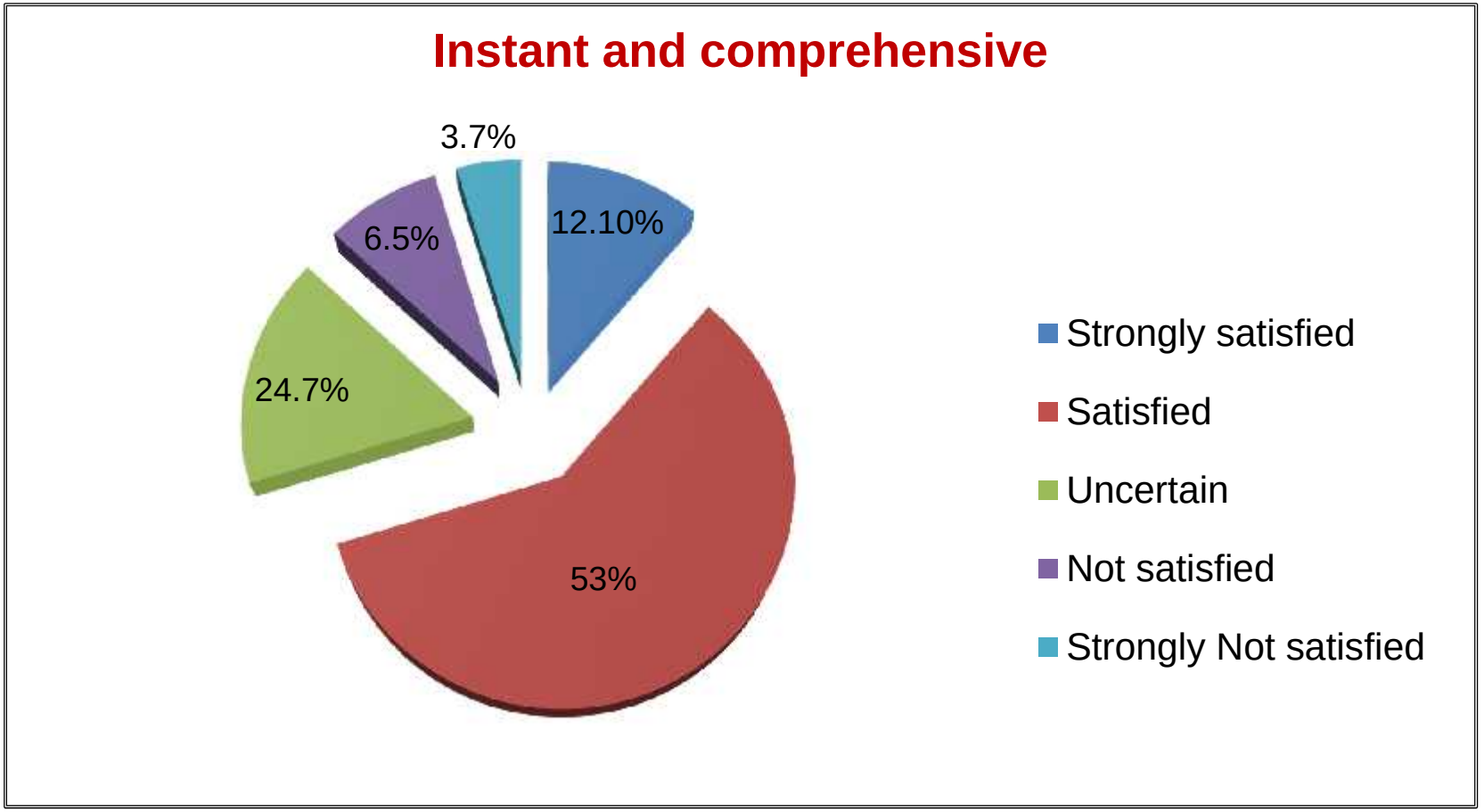
Survey on FA


Overall Satisfaction
11%
59%
17%
8%
5%
Strongly satisfied
Satisfied
Uncertain
Not satisfied
Strongly Not satisfied

Survey on FA


Constructive for future reference
3.30%
38.60%
4.70%
6.50%
47%
Strongly satisfied
Satisfied
Uncertain
Not satisfied
Strongly Not satisfied

Survey on FA


Instant and comprehensive
3.7%
12.10%
6.5%
24.7%
53%
Strongly satisfied
Satisfied
Uncertain
Not satisfied
Strongly Not satisfied

Upshots of using Flubaroo

1. Assessment is continuous, instant and comprehensive.
2. Gives an option to email each student their grade, and an answer key, thus highlighting the personalized feedback to students about their performance.
3. Computes average score per question, and flags low-scoring questions by calculating the facility value. This Helps in accessing the standard of the question.
4. Computes the average assignment score.

Conclusion

- The primary goal of this method is to examine how teaching and assessing can be broadened beyond with an exclusive focus on the cognitive process.
- With an eye of improving practical learning and employability skills, there are two main advantages of using Revised Bloom's taxonomy.
- The first is it suitably aligns objectives, activities and assessments.
- The second is to raise the learning targets in terms of cognitive complexity, type of knowledge (particularly metacognitive knowledge), or both.
- In addition to these general learning strategies, students can have knowledge of various metacognitive strategies and **STEM** concept that will be useful to them in planning, monitoring, and regulating their learning and thinking.


Thank You!