INTEGRATING REFLECTIVE ASSESSMENT IN A FLIPPED CLASSROOM MODEL FOR AN ENGINEERING PHYSICS COURSE

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&
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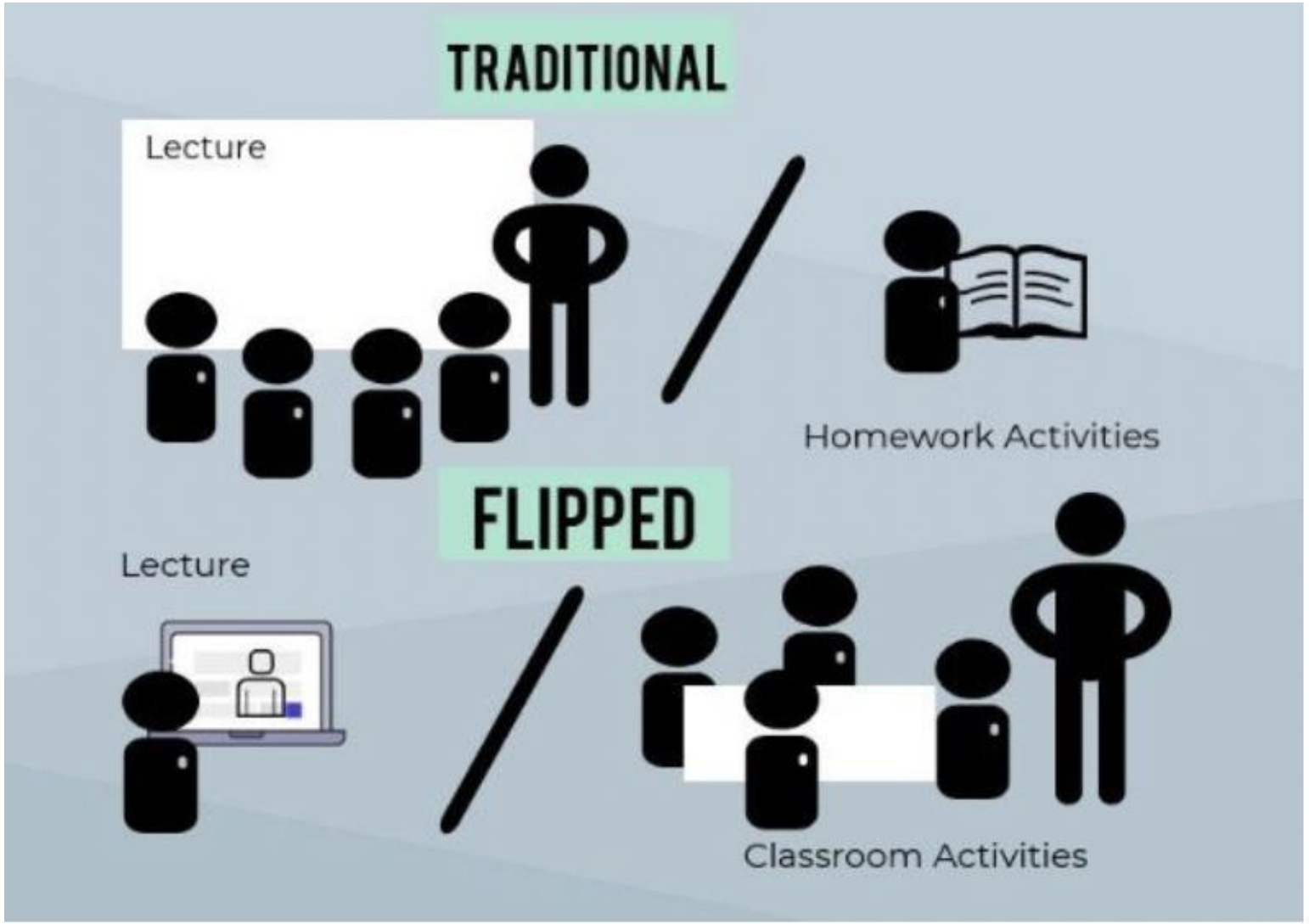
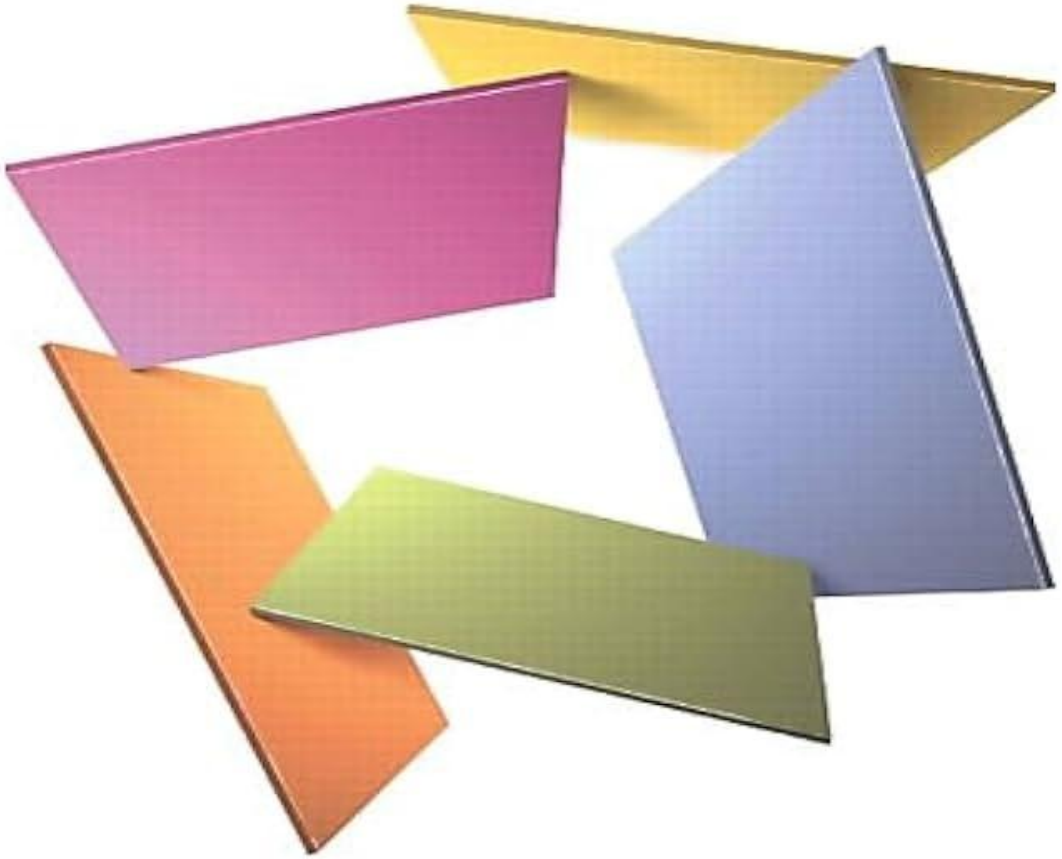
Introduction



Five Easy Lessons

Strategies for Successful Physics Teaching



Randall D. Knight

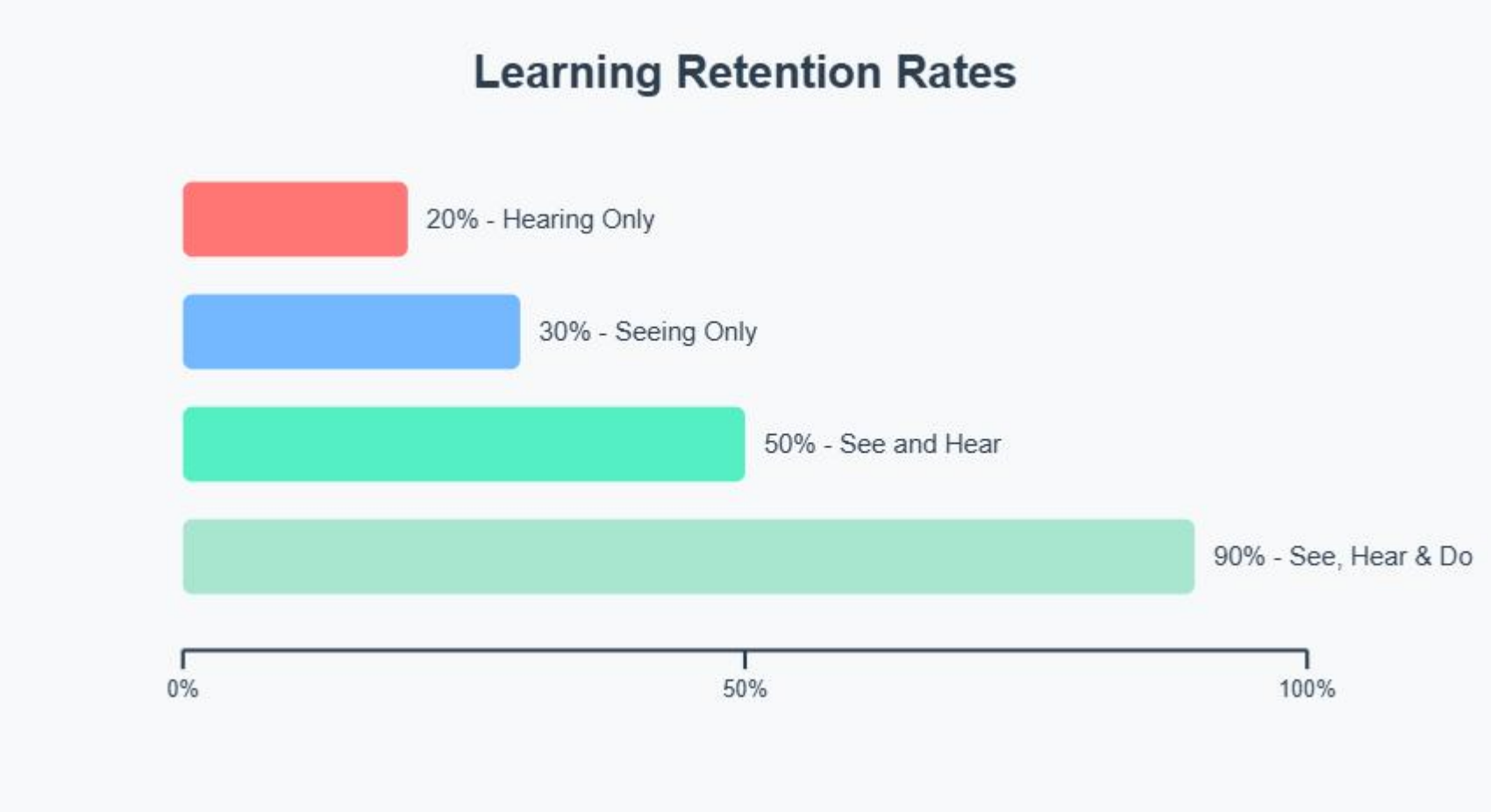
What is Teaching?

- The best approach to understanding the nature of teaching is establishing a harmonious relationship between teacher, student and subject.

- Teaching is the activity of facilitating learning.

- Effectiveness in teaching does not relate to teacher's age, sex, and teaching experience.

How learning happens ?



Changes in Teacher Role

A shift from:

1. Knowledge transmitter, primary source of information, content expert, and source of all answers

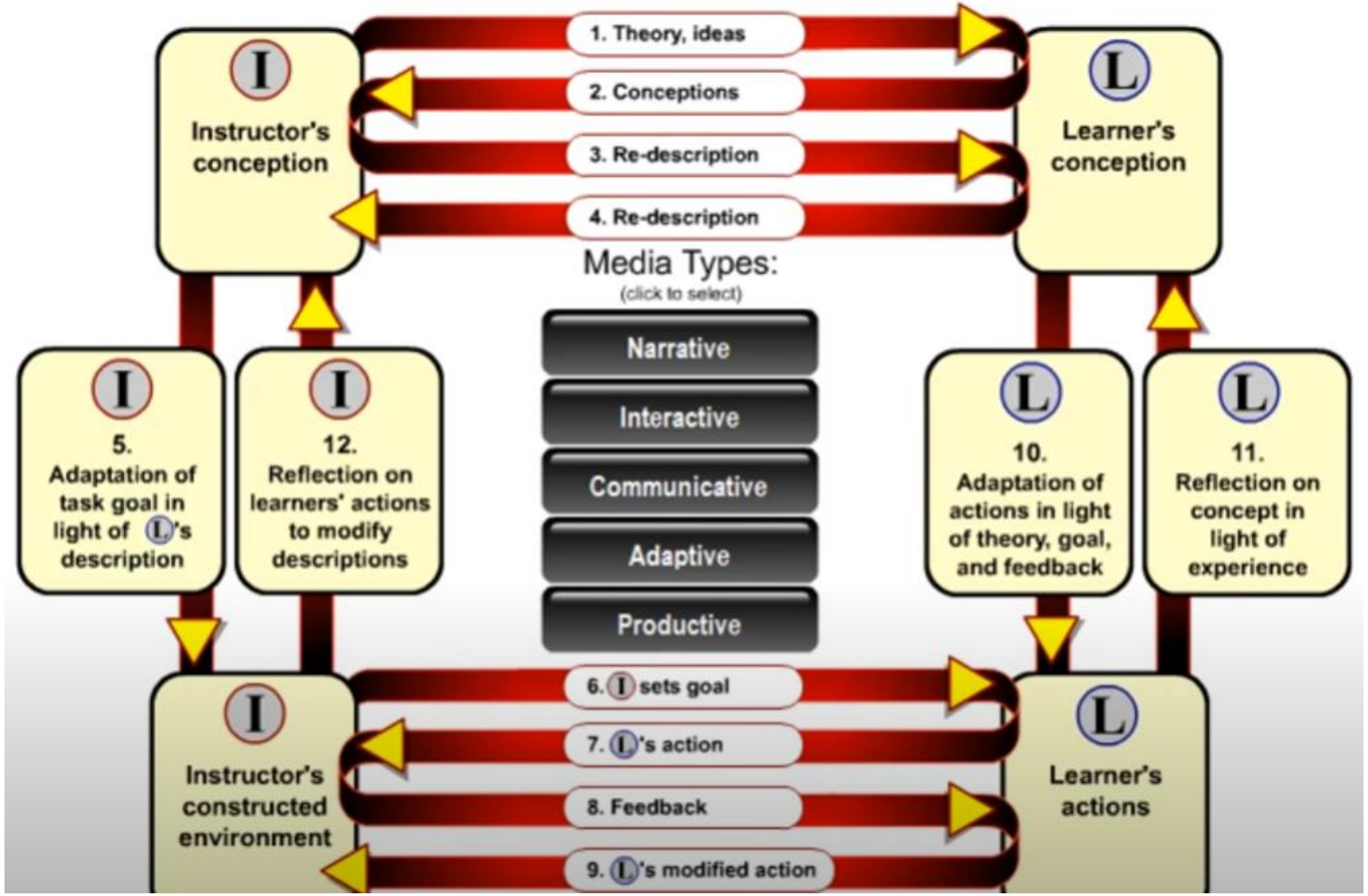
2. Teacher controls and directs all aspects of learning

A shift to:

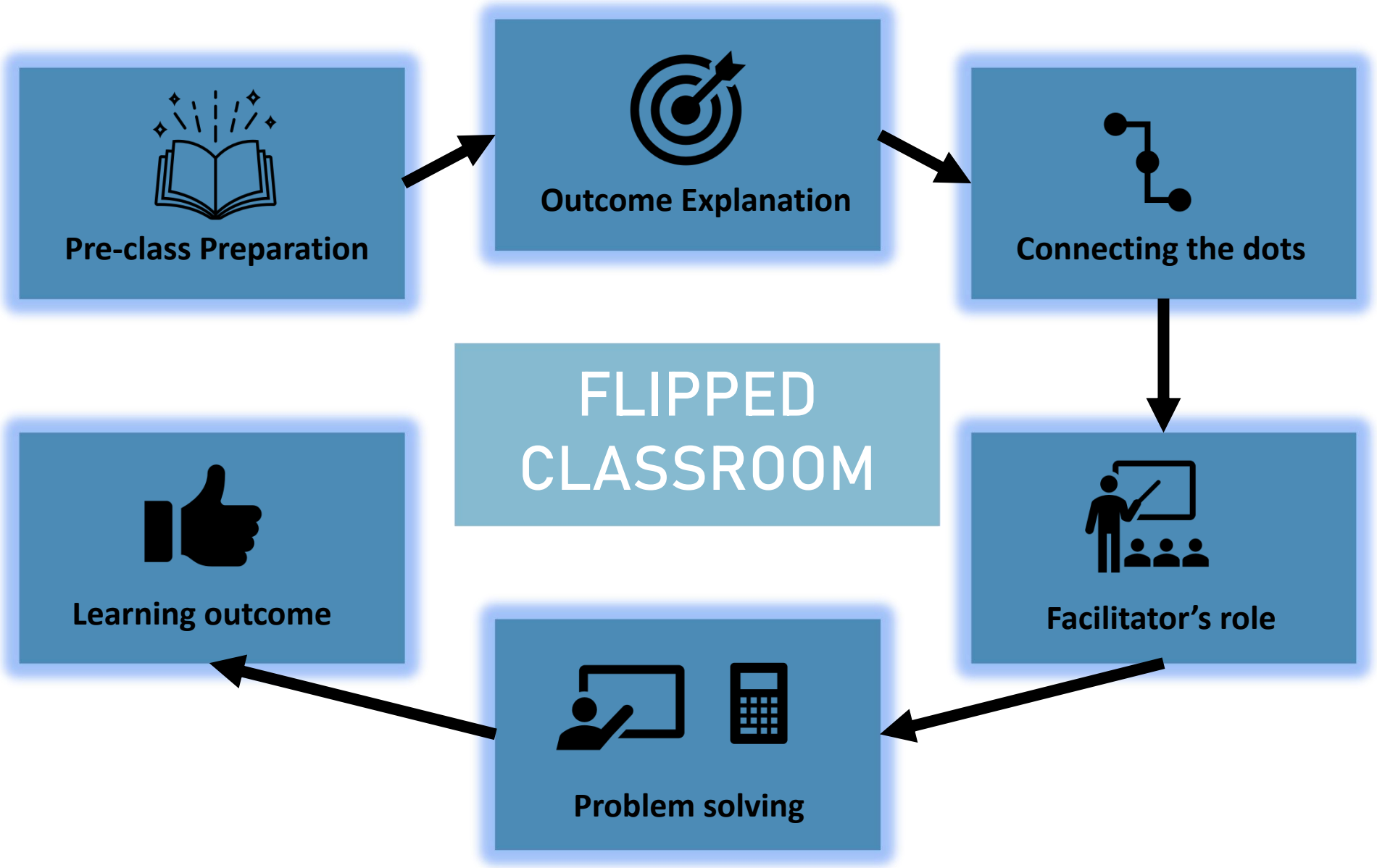
1. Learning facilitator, collaborator, coach, mentor, knowledge navigator, and co-learner

2. Teacher gives students more options and responsibilities for their own learning

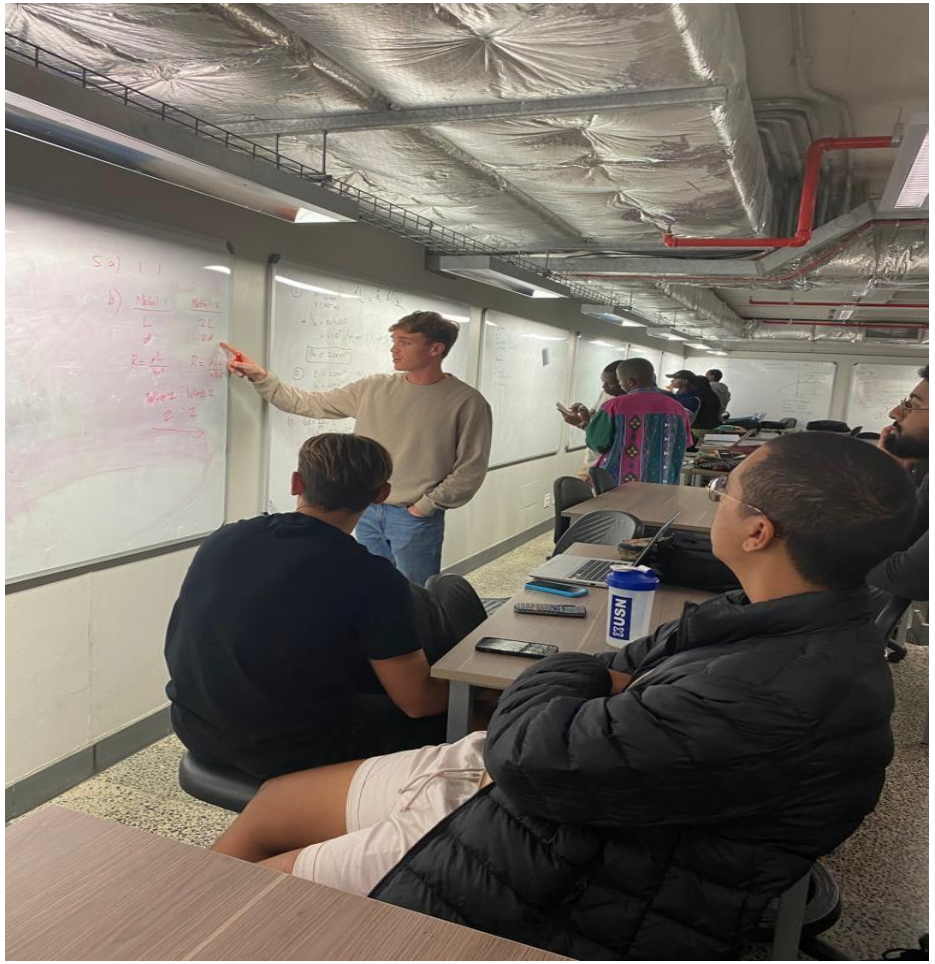
Laurilland's Teaching and learning framework

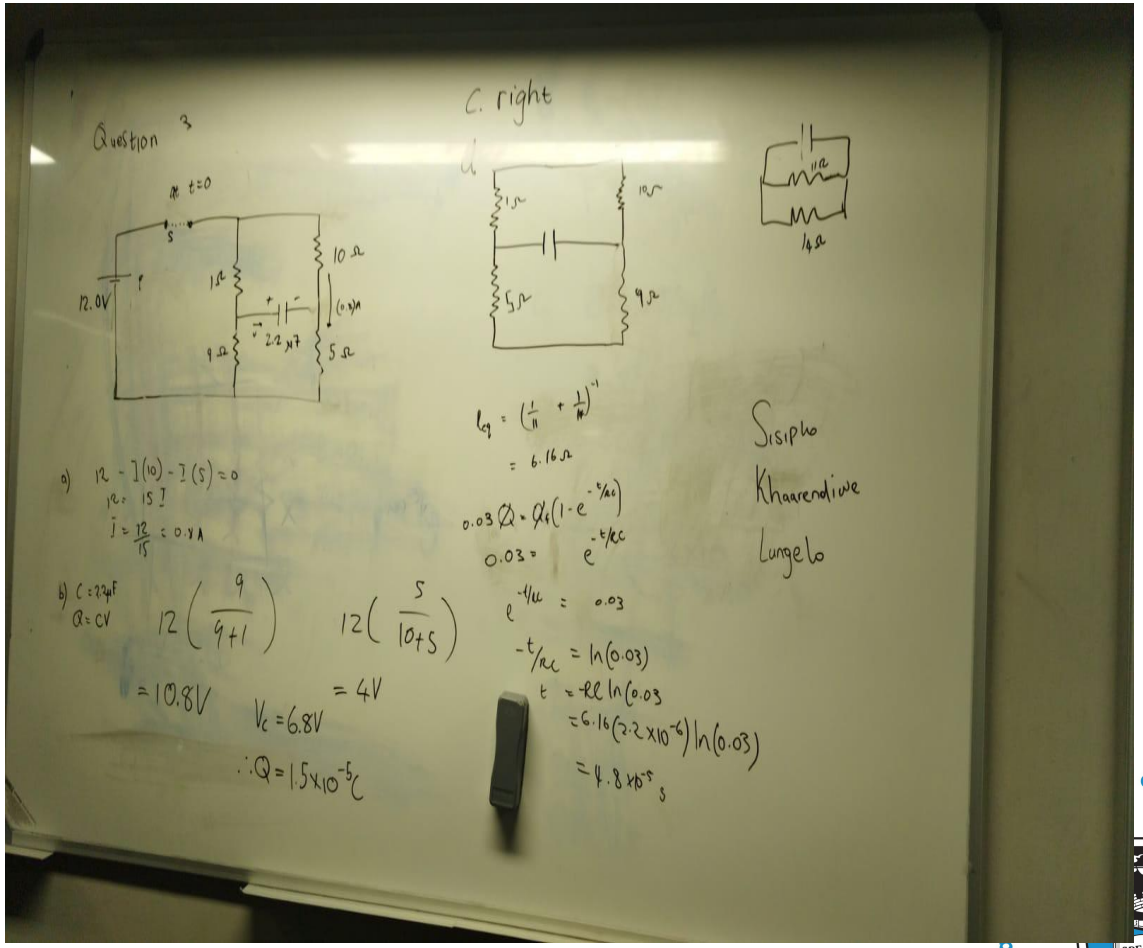


The flipped classroom approach



White Board sessions





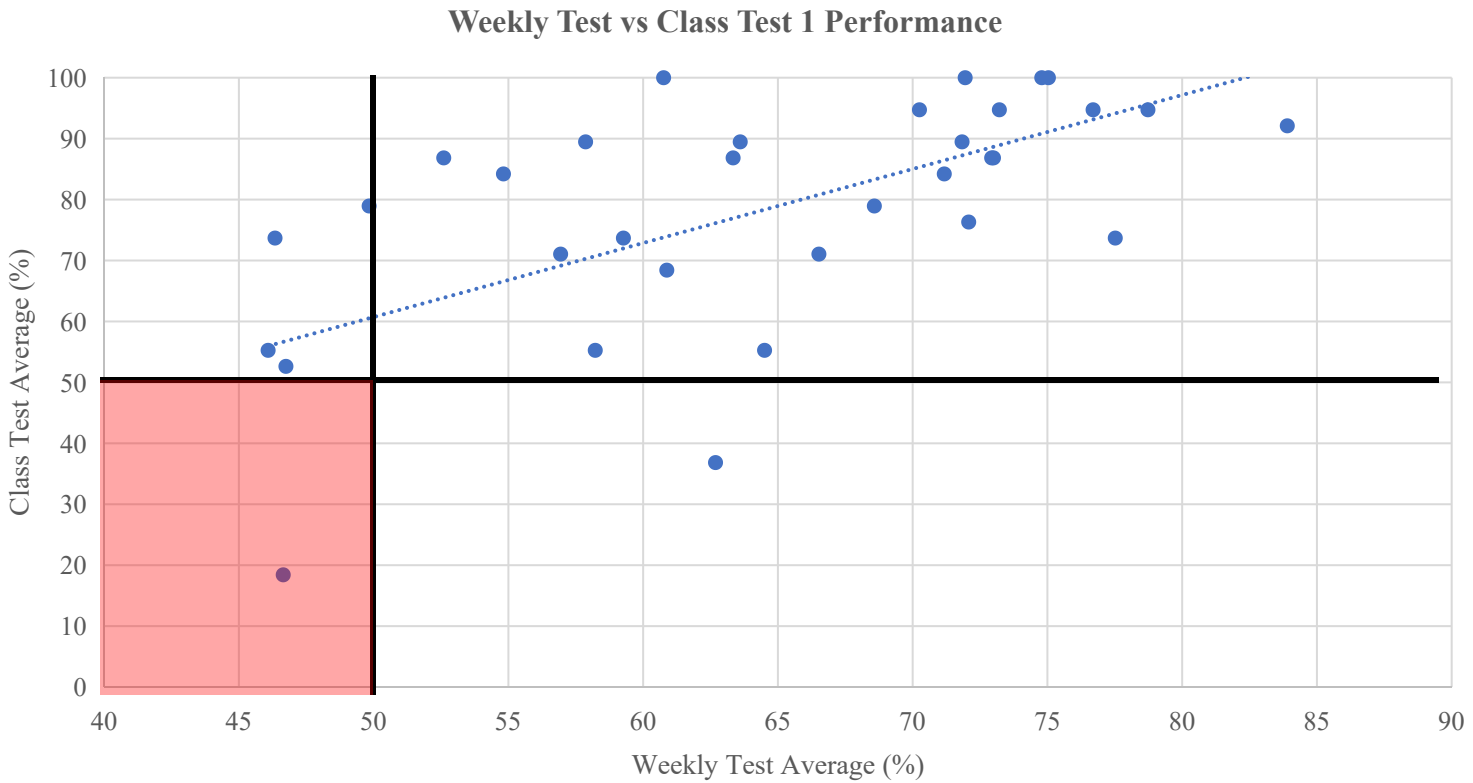
Participation Score

- Students receive a daily participation score, and they can achieve a perfect score of 100% if they miss no more than three classes throughout the semester, which account for 3% of course marks. This approach has significantly increased student participation and attendance.

- To track their participation, students post pictures of their whiteboard screens with their names visible, which are then checked for attendance. In addition, every Wednesday, students are evaluated for their weekly work during a three-hour workshop session, and they receive timely feedback on their performance.

Results

Weekly Test VS Class Test 1

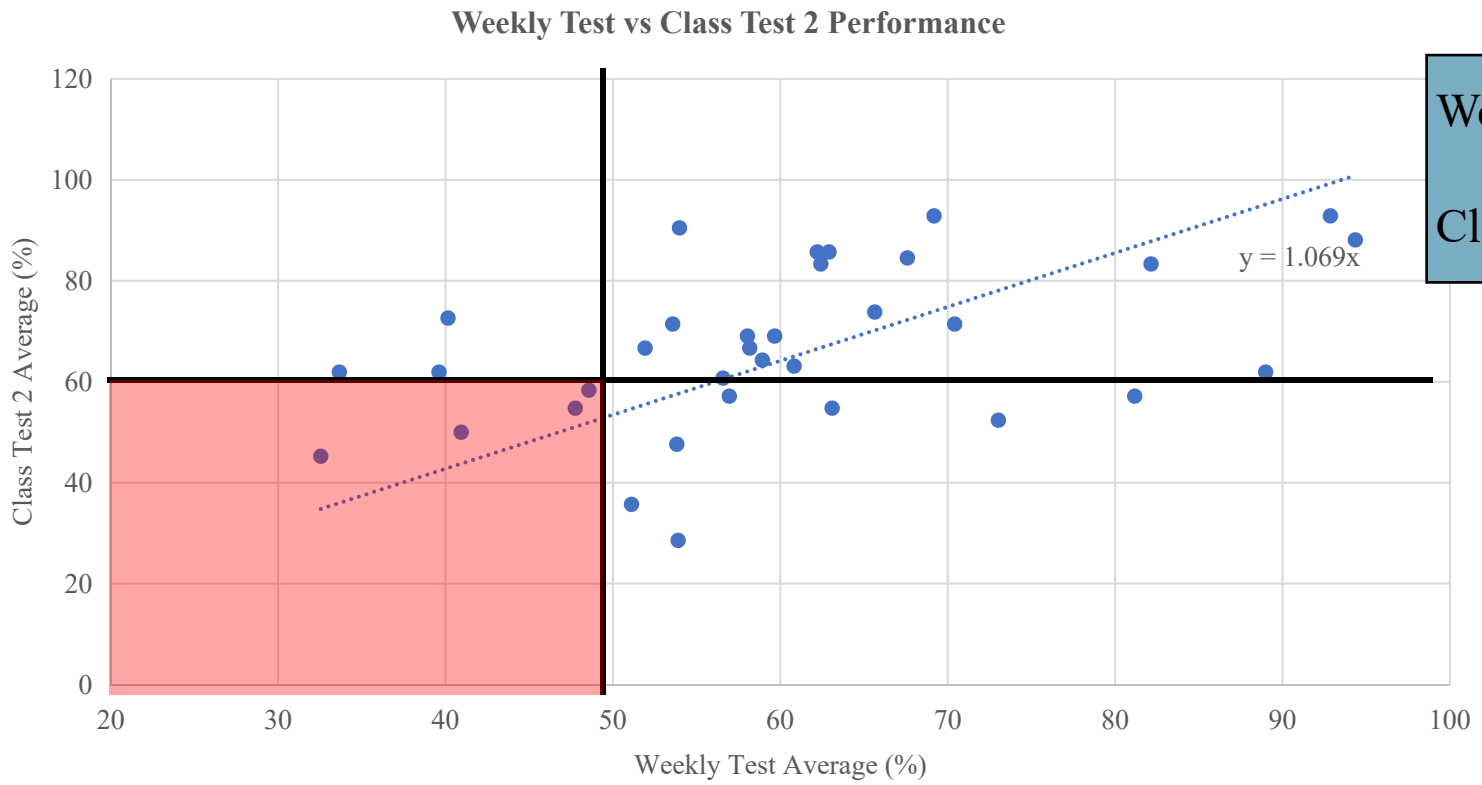


Weekly Test average: 64.5 %

Class Test Average: 78.6 %

Results

Weekly Test VS Class Test 2

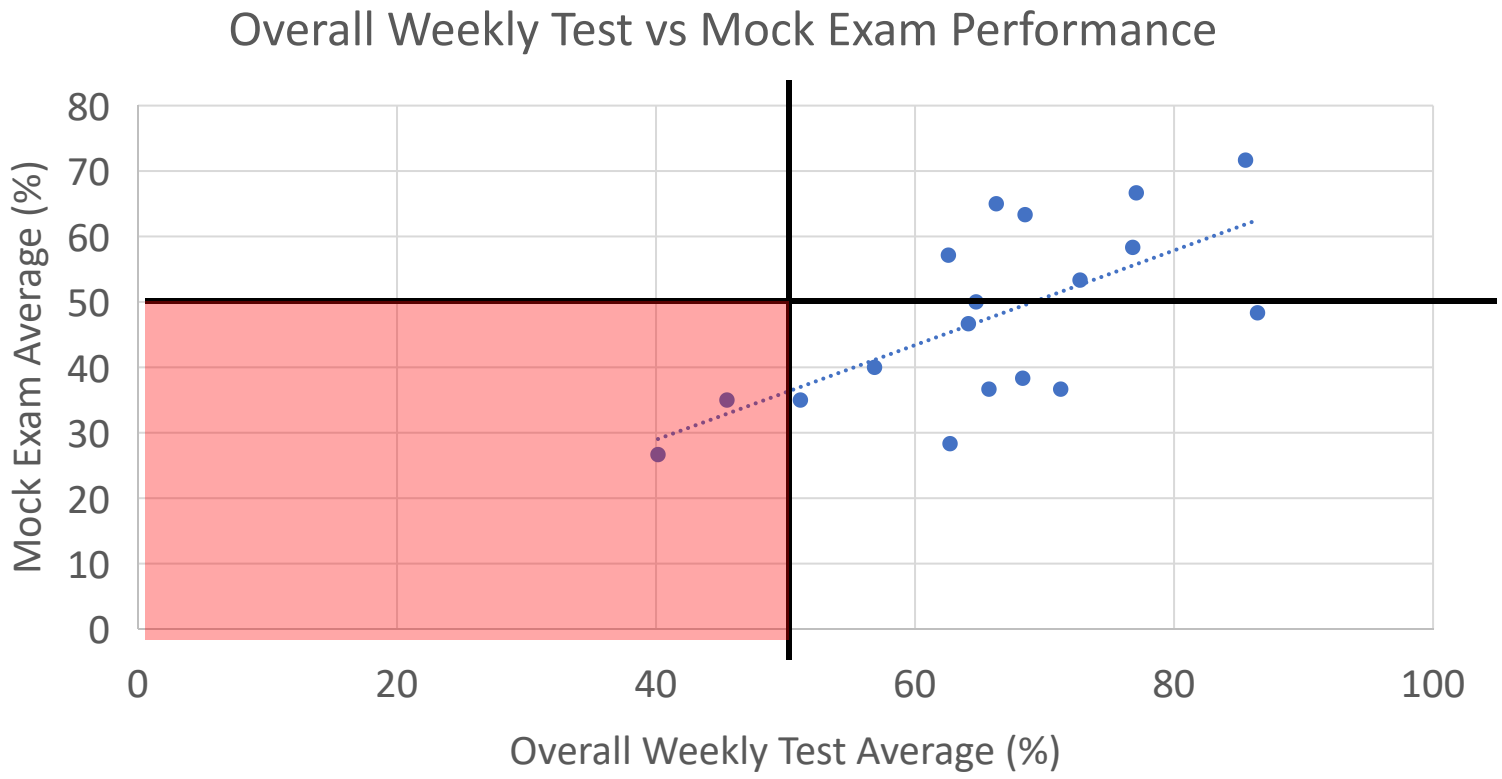


Weekly Test average: 60.8 %

Class Test Average: 67.0 %

Results

Overall Weekly Test VS Mock Exam Test 3

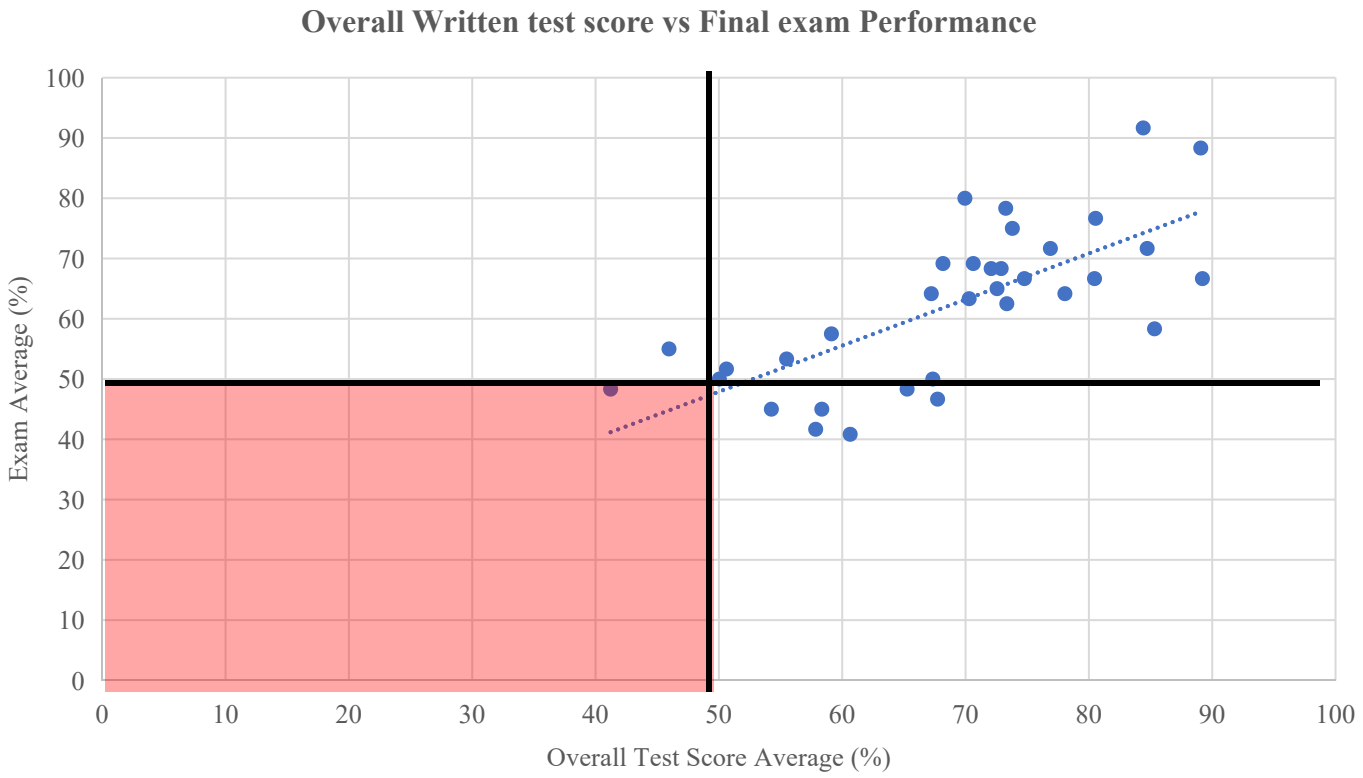


Weekly Test average: 65.9 %

Mock Exam Average: 47.6 %

Results

Overall Written test score vs Final exam score



Overall average: 68.9 %

Exam Average: 62.3 %

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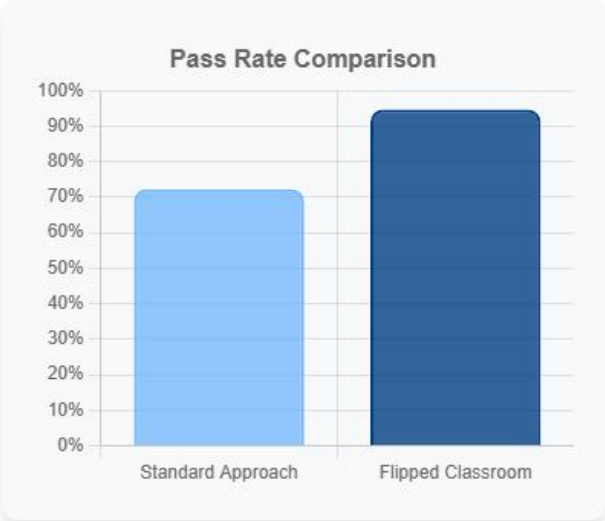
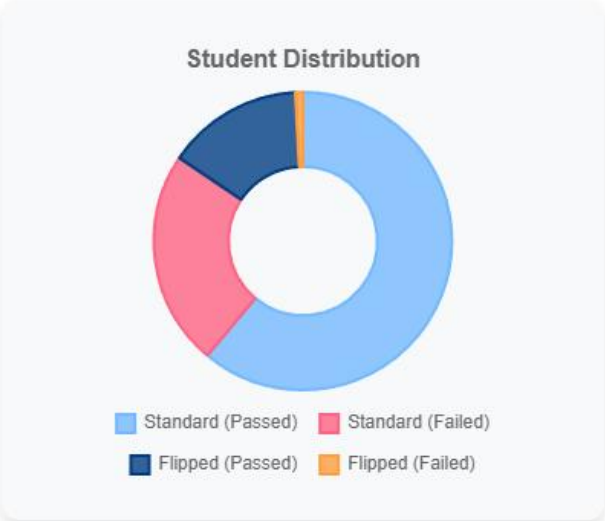
Traditional approach vs flipped classroom





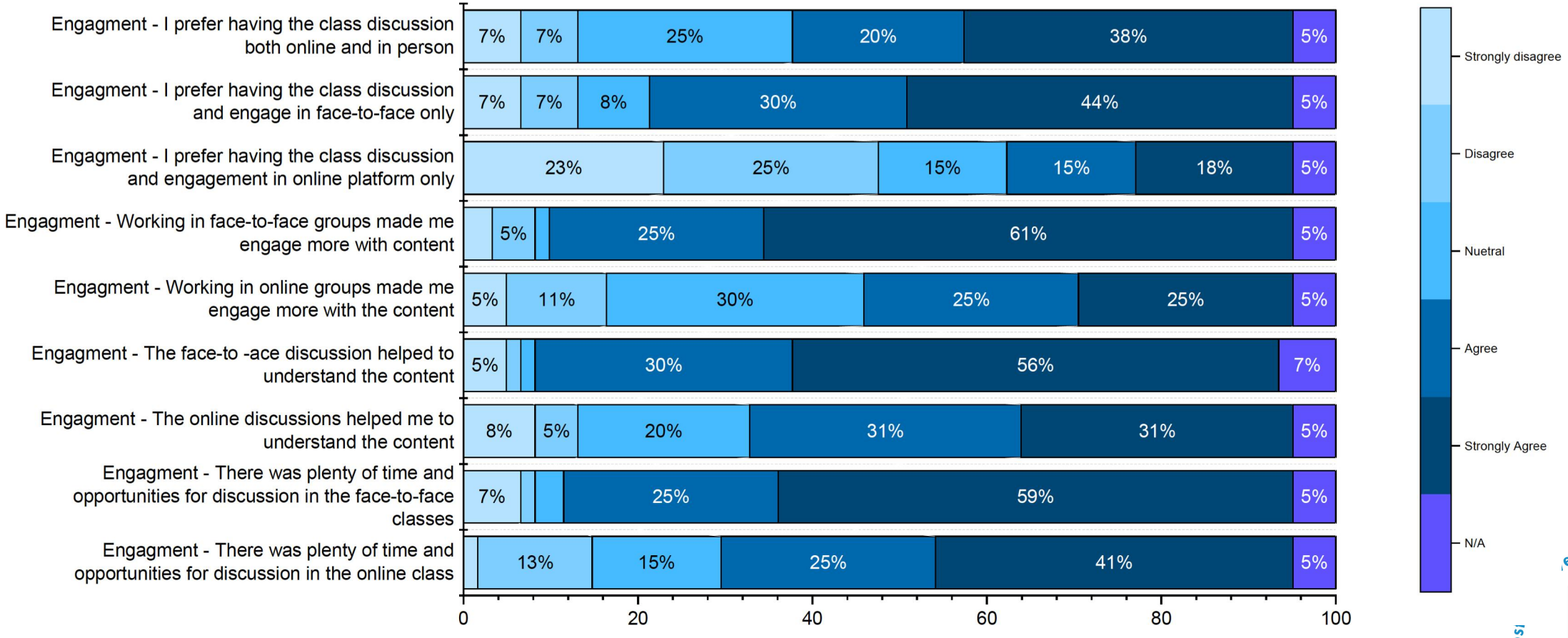
Standard Approach	Flipped Classroom	Standard Approach	Flipped Classroom
72.3%	94.7%	206	38
Pass Rate	Pass Rate	Total Students	Total Students

Supplementary Exam Analysis

Standard Approach:
- 47 supplementary exams (23% of students)
- 19 students passed supplementary exams
- 28 students failed even after supplementary exams

Flipped Classroom:
- Zero supplementary exams required
- 94.7% pass rate on first attempt
- Significantly higher initial success rate

Students Feedback on Engagement in a flipped classroom



Reference

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