

The Effect of a Themed Learning Community on Physics Students' Performance on the Force Concept Inventory



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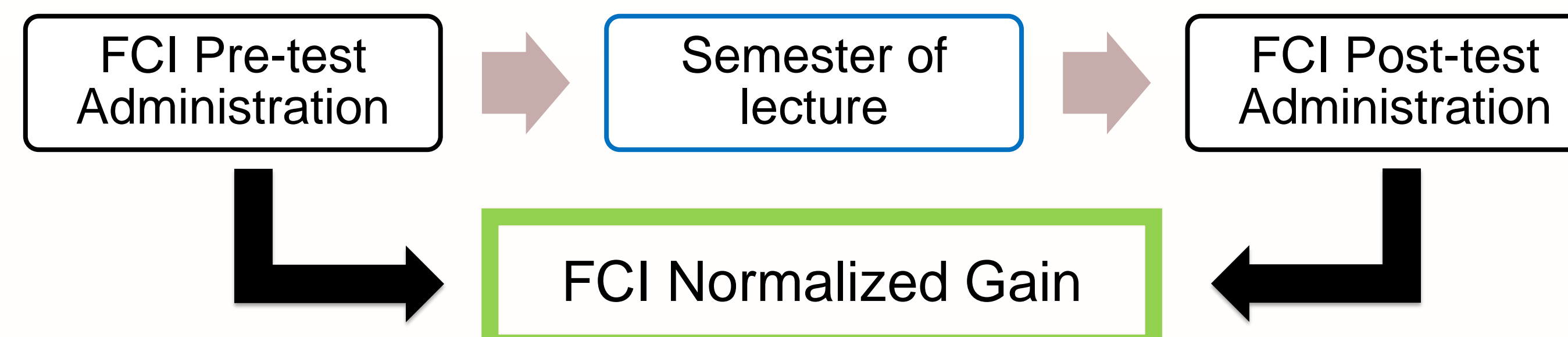
Introduction

Characteristics of Themed Learning Community (TLC)

	Class size	Students' Major	Year	Structure
TLC	Small (20-30)	Unified	Same	Related conjugate classes
		Engineering	Freshman	First semester TLC Calculus TLC General Physics I
Non-TLC	Large (100-150)	Various	Different	Unrelated conjugate class
		Biology Physics Engineering Finance Chemistry Accounting	Freshman Sophomore Junior Senior	Calculus I Calculus II Calculus III Differential Eq.

Question: Do TLC Physics Students perform better than Non-TLC Students?

Data Collection



Simple Gain

$$Gain = Post\ test - Pre\ test$$

Ex. Pre = 10, Post = 20
Simple gain will be $20 - 10 = 10$

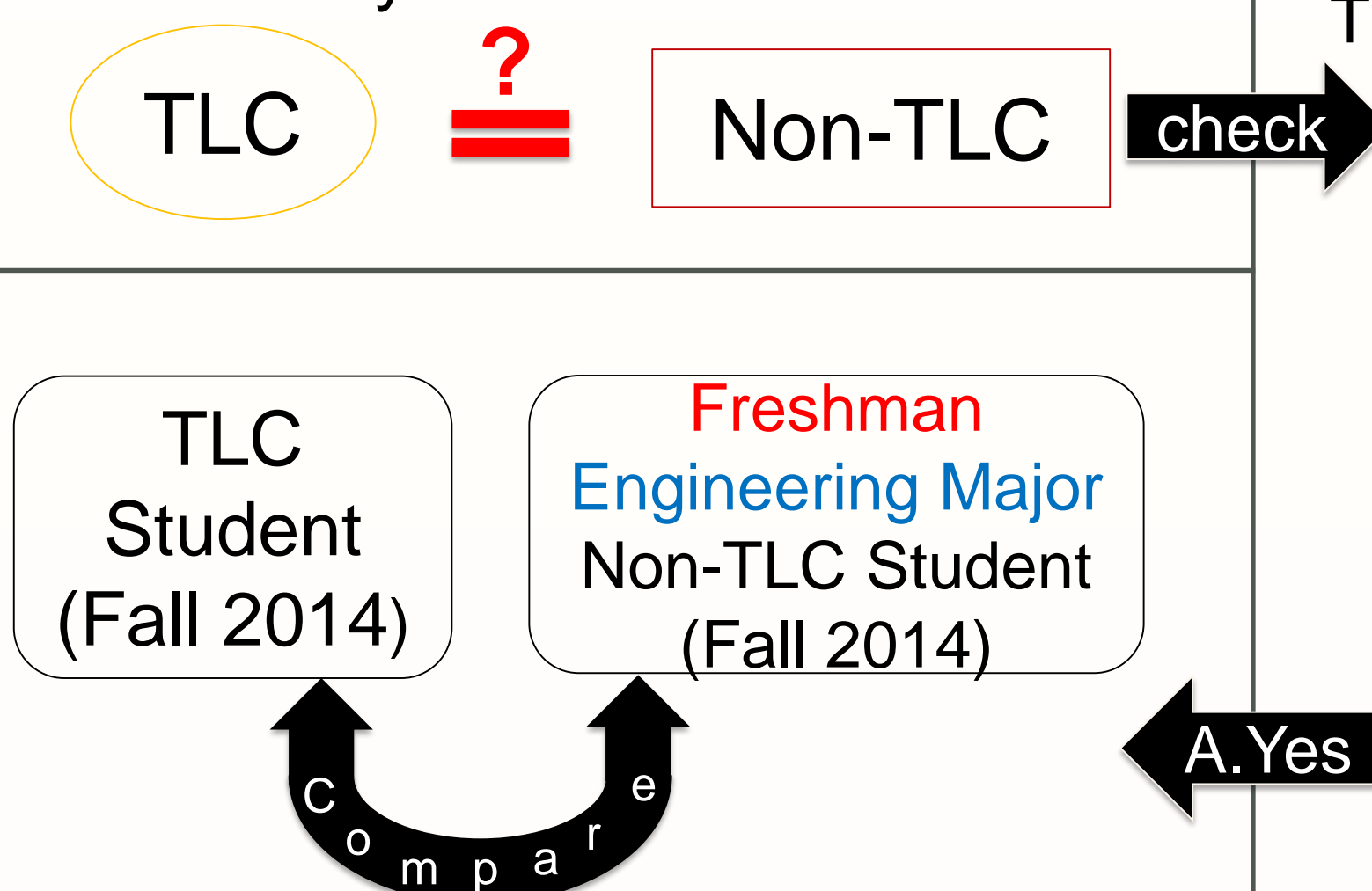
V.S. Normalized Gain

$$Gain = \frac{Post\ test - Pre\ test}{Max\ Score - Pre\ test}$$

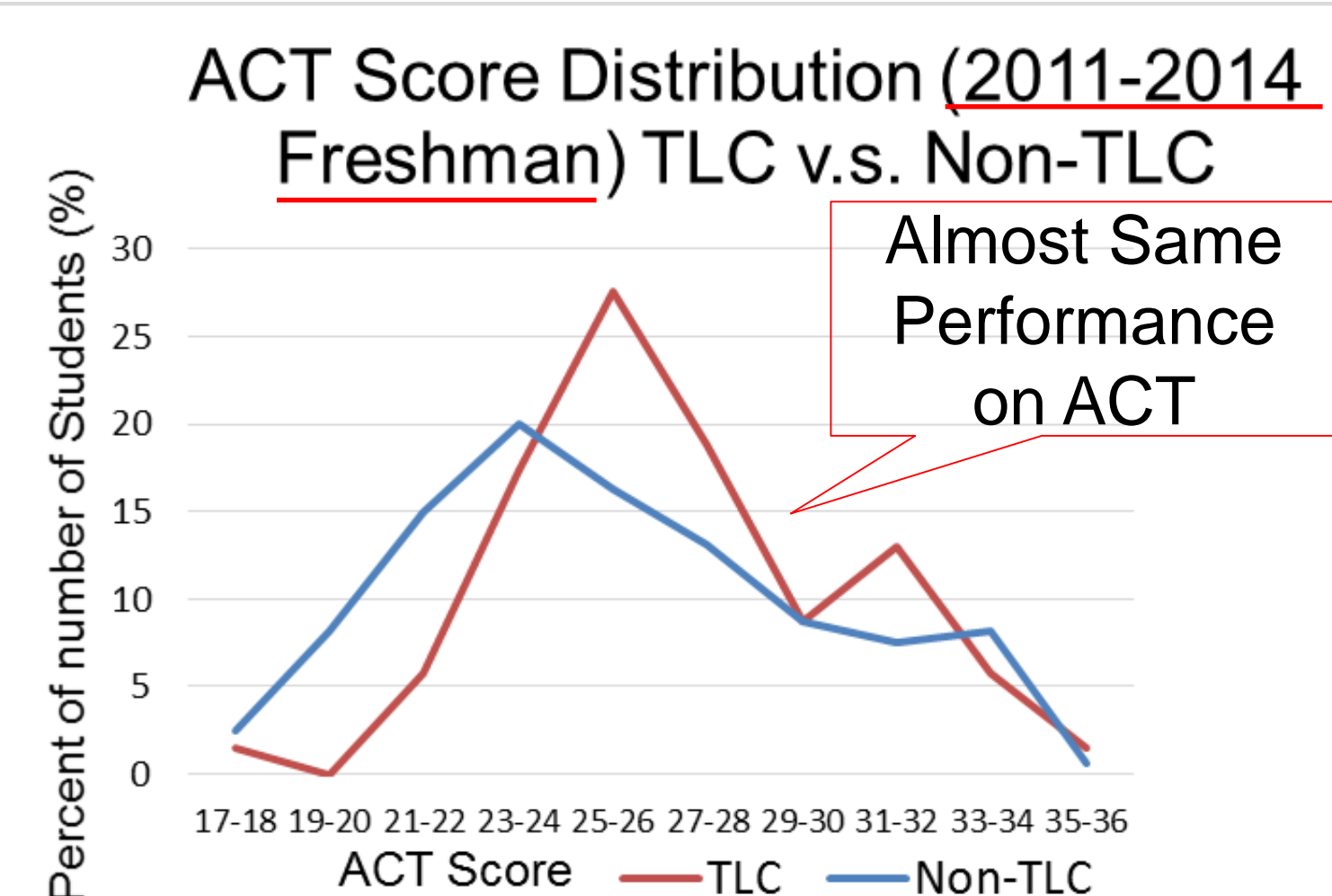
Ex. Pre = 10, Post = 20, Max = 30
Normalized gain will be $\frac{20 - 10}{30 - 10} = 0.5$

Demographic Comparison

Q. Are they the same students?



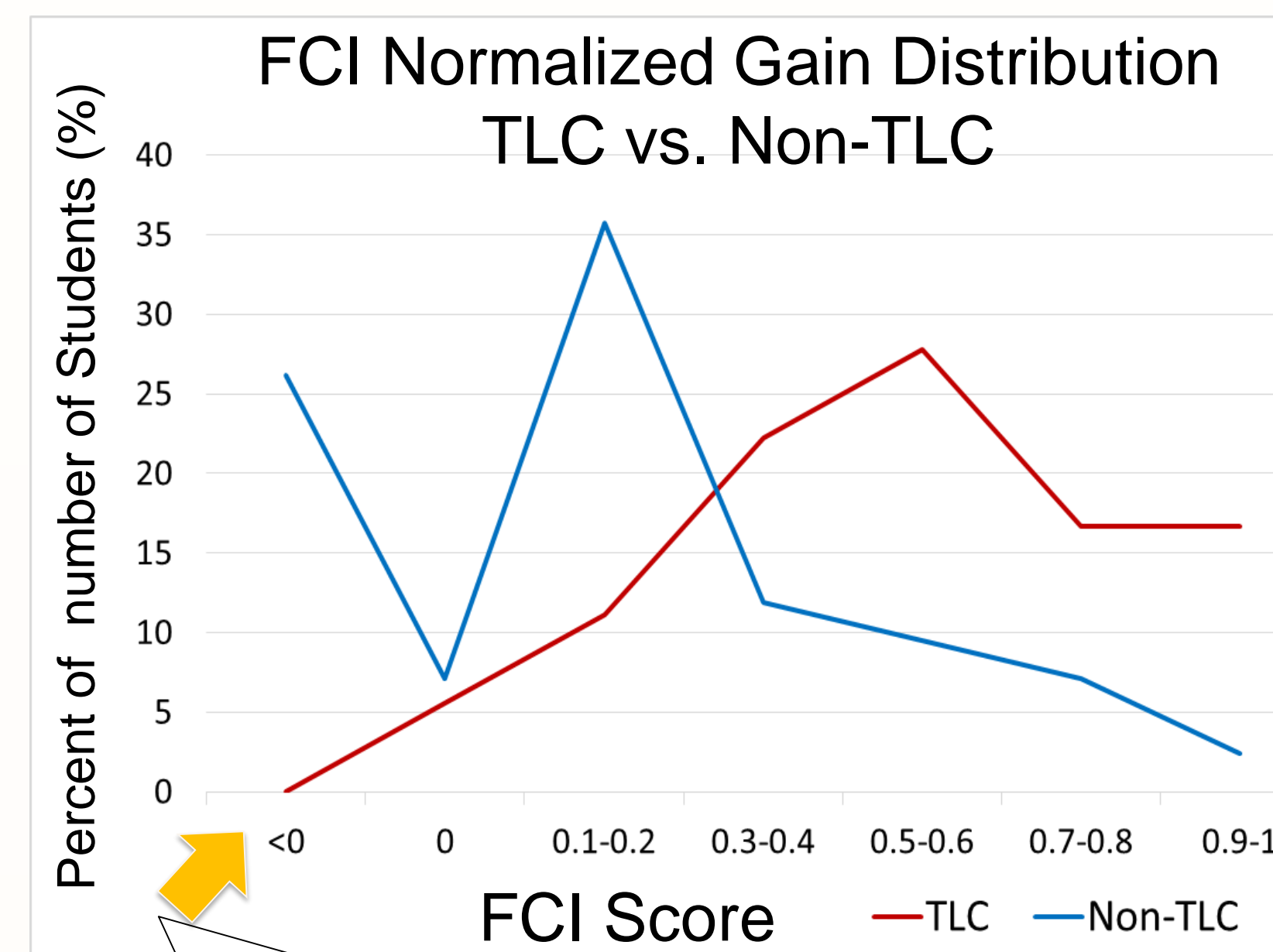
Compared the ACT Score of every TLC & Non-TLC Freshman Engineering major in past 4 years.



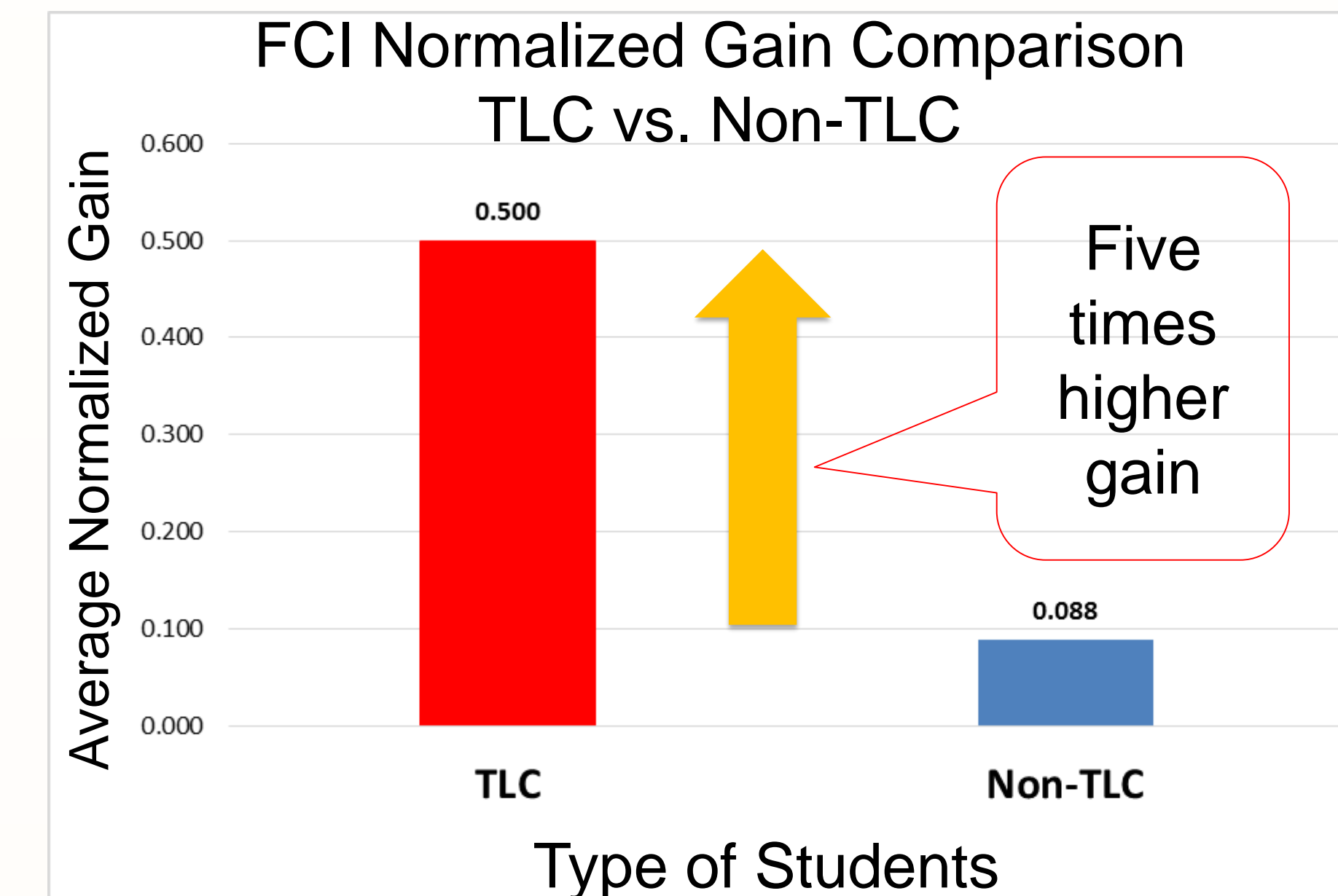
of TLC students = 69 # of Non-TLC students = 160

Compare to see the effect of TLC on students' performance

Result



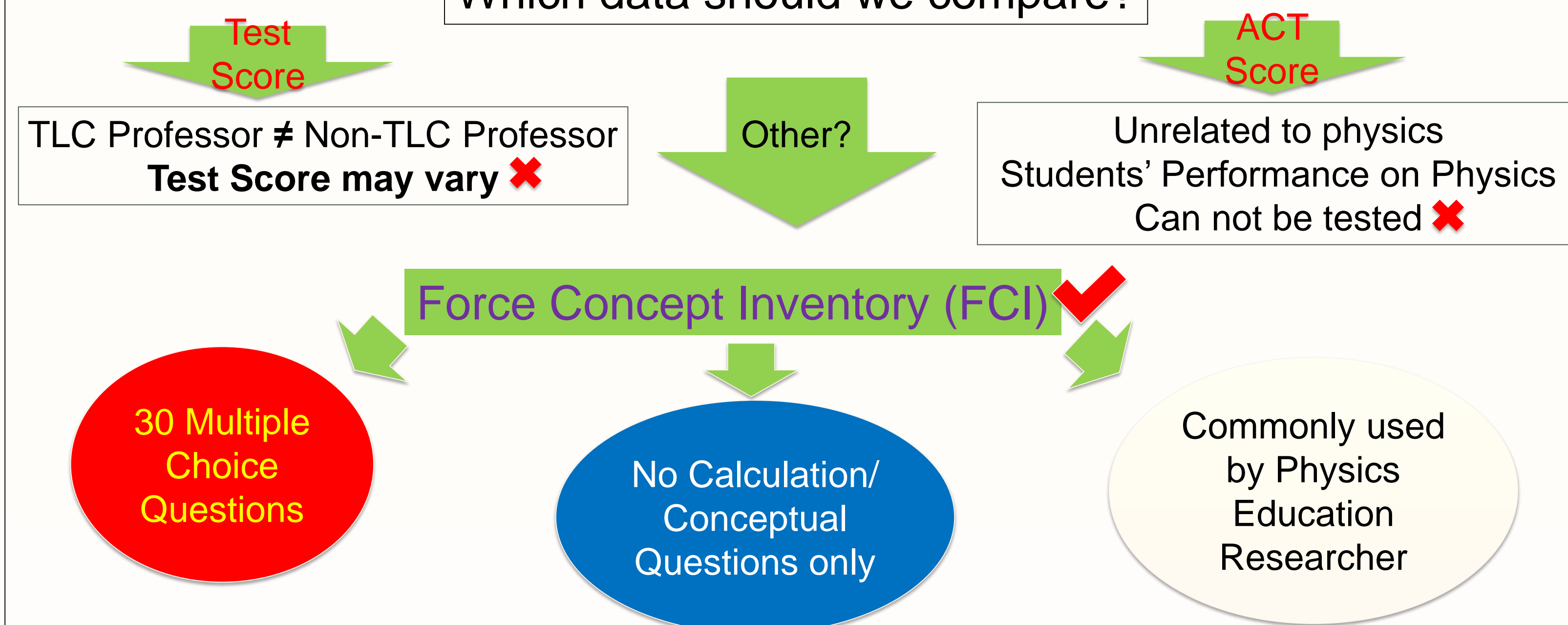
Every TLC students gained higher or same score in post test than pre test



of TLC students = 18 # of Non-TLC students = 42

Method

Which data should we compare?



Discussion

- TLC Students performed much higher in FCI than Non-TLC Students
- Professors in TLC & Non-TLC are different, which can cause difference in performance
- For the further study, we will examine the FCI score of algebra based physics, and test score of TLC calculus students to explore the reason why TLC students performed better
- This research is significant because it tells us the factors that can be used to improve student learning in introductory physics course

Acknowledgement

I would like to acknowledge my mentor Dr. Eads, Research Rookies, McKearn Fellows and Physics department, for the funding