Comparing Assessment Data Between Learning and Teaching Assistant Supported Studios

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Previous Work

Data Collection (No LAs) → Transformation & LAs → Data Collection (LAs)

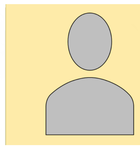
Studies have shown improvements in concept inventories after course transformations to LA models alongside tutorials, studios, or other changes.[1,2,3]

Some research has compared self-perceptions of LAs and TAs, but not much has compared LA and TA impacts on assessment results in nearly identical contexts.[4]

Context

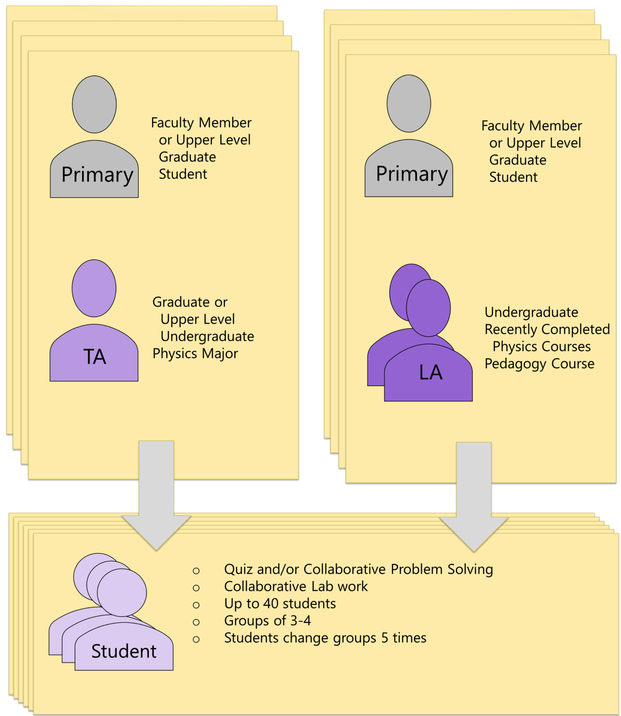
Calculus Based Physics Course

Lecture



Senior Faculty Member
125-300 Students

Studio



Data & Analysis

Engineering Physics I	Engineering Physics II
3 Semesters	1 Semester
FCI and CLASS	BEMA

Model: $Response = \beta_0 + \beta_1 Pre + \beta_2 Assistant + \beta_3 Term$

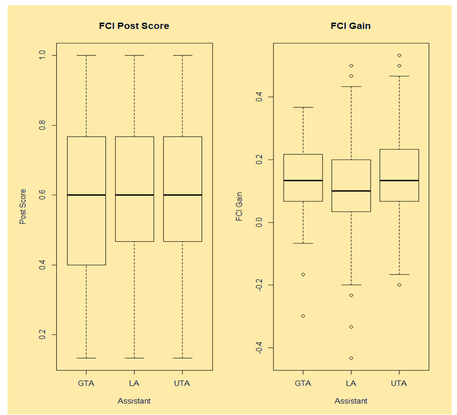
R analysis to study: ANOVA, Tukey HSD, Cohen's *d*

Assessment Results

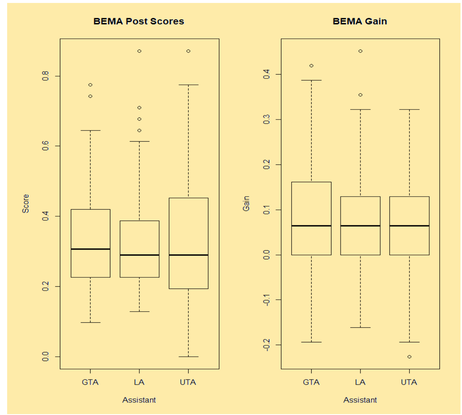
Semester 1 | Semester 2

Concept Inventories

FCI[5]

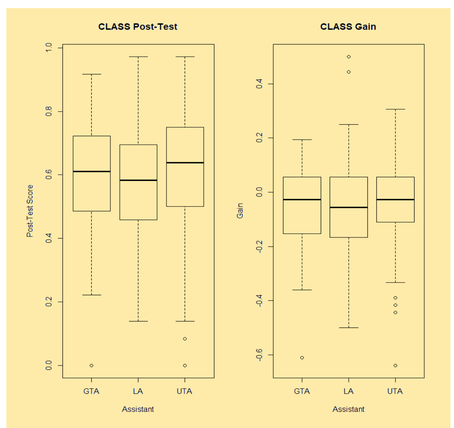


BEMA[7]



Attitudes Survey

CLASS[6]



Students by Assessment

	FCI	CLASS	BEMA
GTA	79	95	100
LA	391	360	121
UTA	281	253	46
Total	751	708	267

There were no statistically significant differences between LA and TA supported studios on the concept inventories.

There were small differences on the attitudes survey between LA and TA supported studios, specifically with UTA studios scoring higher.

Comparison to Previous Work

Transformation → Introduction of LAs → Data Collection (TAs) → Data Collection (LAs)

Possible reasons for this result:

Prior results could be due to other course transformations.

The LA pedagogy course may not affect these assessment results.

Post-assessments were administered at the end of the semester rather than right after Newton's Laws section for the FCI.[3]

Notes

We are not claiming that TAs and LAs are the same, only that the results are the same for these measures.

Impacts of the LA program on LAs are not accounted for.

Future Work

Implement inventories in other disciplines and contexts.

Collect more data in coming semesters.

Compare how students view LAs and TAs. (see Virginia Coghlan's poster at AAPT, PST2C25 at 10:15 am or at PERC, A12 at 5 pm)

References

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5. D. Hestenes, M. Wells, and G. Swackhamer, "Force concept inventory." Phys. Teach. 30 (3), 141 (1992).

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