Effect of Flipped Classroom on Learning Pharmacokinetics

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Objective

To analyze the effect of flipped (flip) classroom style teaching vs traditional (trad) style teaching in the learning of pharmacokinetics (PK).

Background

- Flipped classroom: traditional lecture and homework are "flipped," with in-class time used for hands-on learning with passive lecture viewing done by student before class.
- PK is ideal subject for flipped classroom because it gives students an opportunity to complete practice problems in class where they can ask questions and work together to better learn the material
- Goal: better understand how students learn to more effectively use class time to teach a difficult subject in pharmacy school
- Past studies have shown females and thinkers perform better in flipped classroom than males and feelers[1], the other study found no significant differences between groups[2].

DEMOGRAHPICS	Traditional (N=26)	Flipped (N=26)
Male	10 (38.5%)	9 (34.6%)
Female	16 (61.5%)	17 (65.4%)
Introverts*	9 (41%)	12 (48%)
Extroverts*	12 (55%)	13 (52%)
Sensing*	10 (45%)	11 (44%)
Intuition*	12 (55%)	13 (52%)
Thinking*	7 (32%)	10 (40%)
Feeling*	15 (68%)	15 (60%)

*percentages were taken out of students we had survey information for

Methods

- Students were randomized to traditional vs flipped classroom groups.
- Traditional group students attended in-class lecture and were given practice problems with key.
- Flipped group students given a recording of the in-class lecture to watch at home and class was used to complete practice problems together.
- Students were quizzed on the topic five days later.
- All students were also asked to complete the Meyers-Briggs personality assessment[3] and VARK learning style questionnaire[4]
- All data was assembled and blinded for analysis.
- Groups were compared using paired, two-tailed Student's t-test.

Statistics/Results

Average Quiz Score Between Groups of Students

*indicates statistical significance (p<0.05)
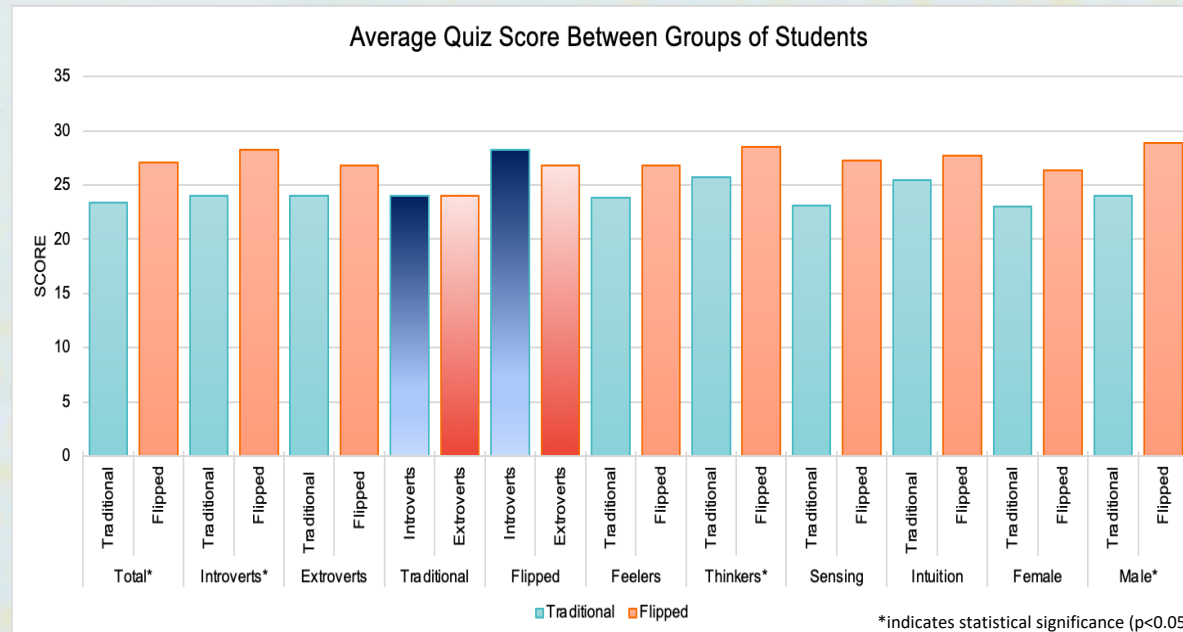
Conclusions/Discussion

- Overall, the flipped-style teaching method was superior to traditional-style teaching for the learning of pharmacokinetics (p=0.0063).
- Other statistically significant data showed introverts, thinkers, and males all did better in the flipped classroom setting.
- While according to the survey, more students "preferred" traditional style teaching (19) vs flipped style (16), the results show students perform better when learning in a flipped classroom style.
- 71% of students completed the surveys requested. Data was able to be pulled from P1 year for 10 additional students, giving us data for 90% of the group.
- Data was too small and unevenly distributed for learning style preferences and judging/perceiving, therefore this data was not statistically analyzed.
- Sample size was a limiting factor of this study. However, some statistically significant differences were still able to be seen.
- Future studies could include using a larger sample size, analyzing effect on learning other subjects and remote learning

References

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4. VARK-learn [Internet]. Christchurch (NZ): VARK Learn Limited; c2021. The VARK questionnaire; [cited 2021 Mar 30];[about 3 screens]. Available from: https://vark-learn.com/the-vark-questionnaire/?p=questionnaire.