

# Will Virtual Labs Replace Cadavers in the Future of Nursing Curriculum?

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## RESULTS

- The survey results showed that the majority of students reported a positive impact of the virtual labs on their learning, and would recommend it to future students.
- There was a positive correlation between the virtual lab scores and the percent class average.

## DISCUSSION AND CONCLUSIONS

- The positive comments by students on the inclusion of the virtual labs indicate that they found these labs beneficial to improve their knowledge and understanding of the body.
- A positive correlation between the percent class average and virtual lab scores may be due in part to the visualizing effects of three dimensional (3D) virtual images. This may have helped them recall anatomical knowledge (Narnaware and Neumeier, 2021), and thus may provide a true perception of the human body.
- The virtual labs may be used as one of the active learning pedagogies and can be introduced as an alternative teaching tool in the nursing curriculum.

## REFERENCES

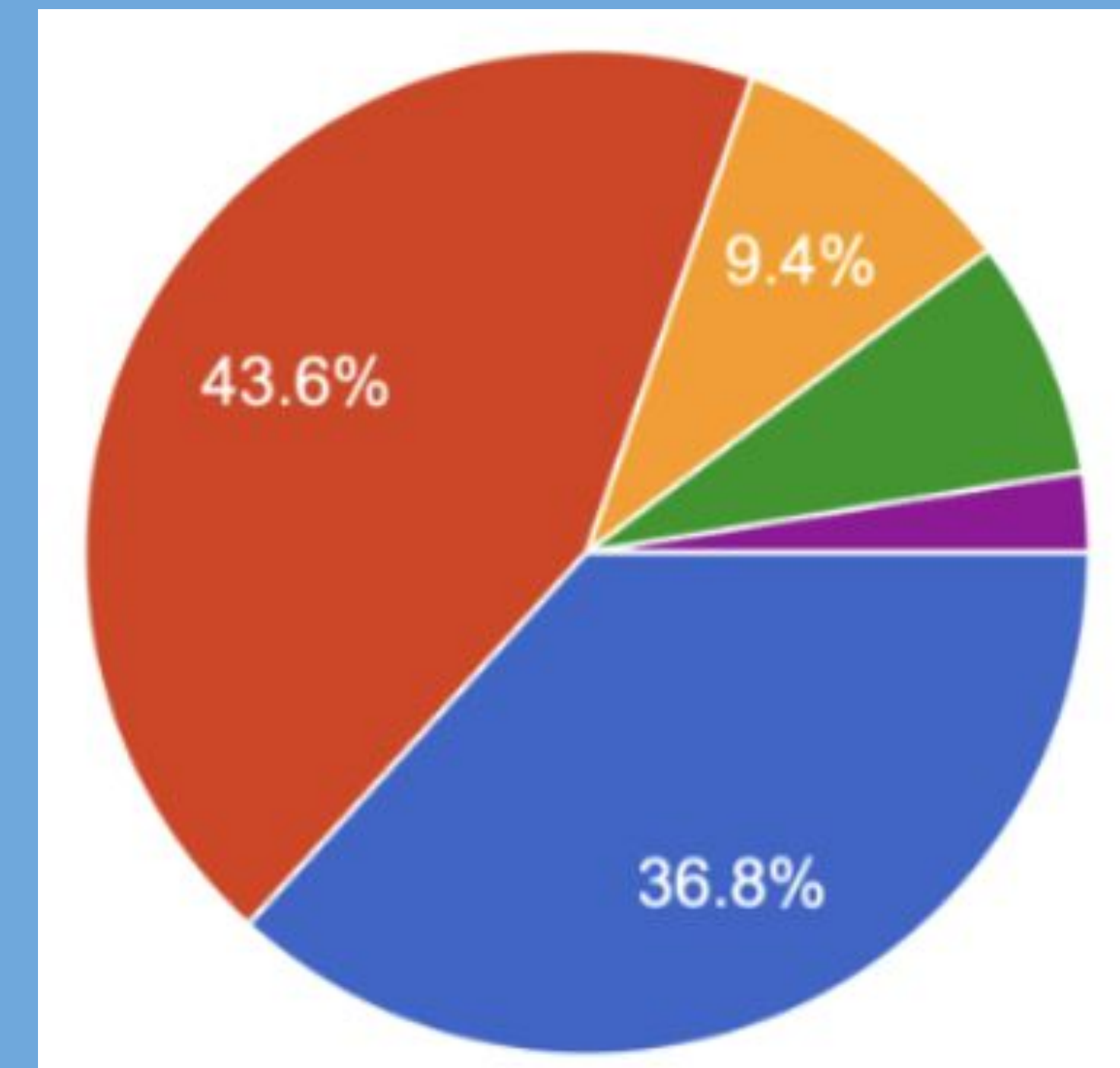
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## INTRODUCTION

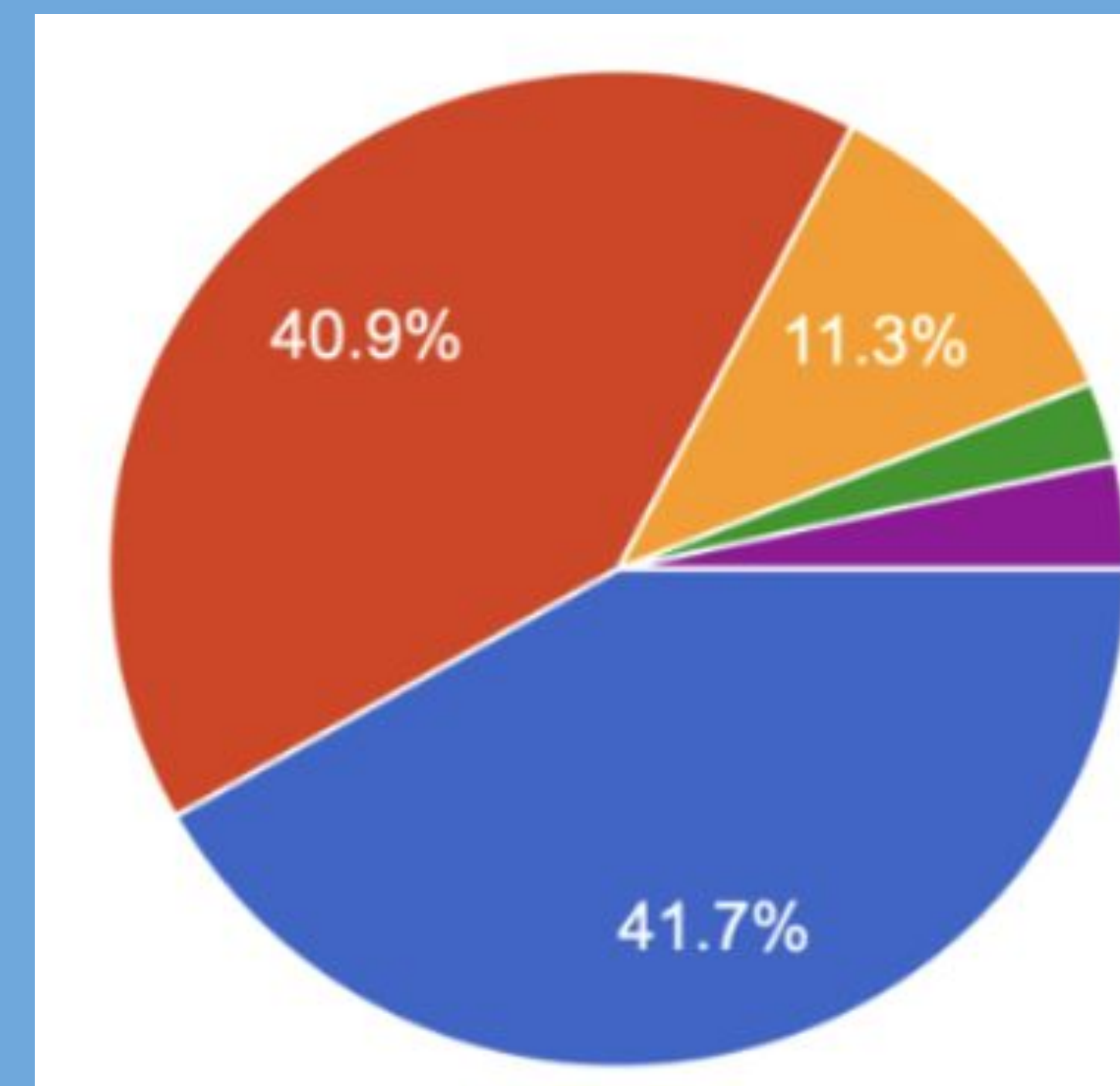
- Immersive learning, including virtual labs, is a new approach to an active teaching and learning of the human anatomy and physiology to medicine, allied-health and nursing students (Narnaware, Y. 2021). However, this approach has not yet been evaluated in nursing programs.
- There is a shortage of cadavers for medical research, and a shortage of space, tools, funding, and allotted time in classrooms (Kleeman, J. 2024).
- Immersive learning should no longer be considered an accessory to education for nursing students, but a fundamental part of their learning. These realistic labs aim to increase clinical reasoning, skills, and competency in a safe environment (Aebersold, 2018).

## METHODS

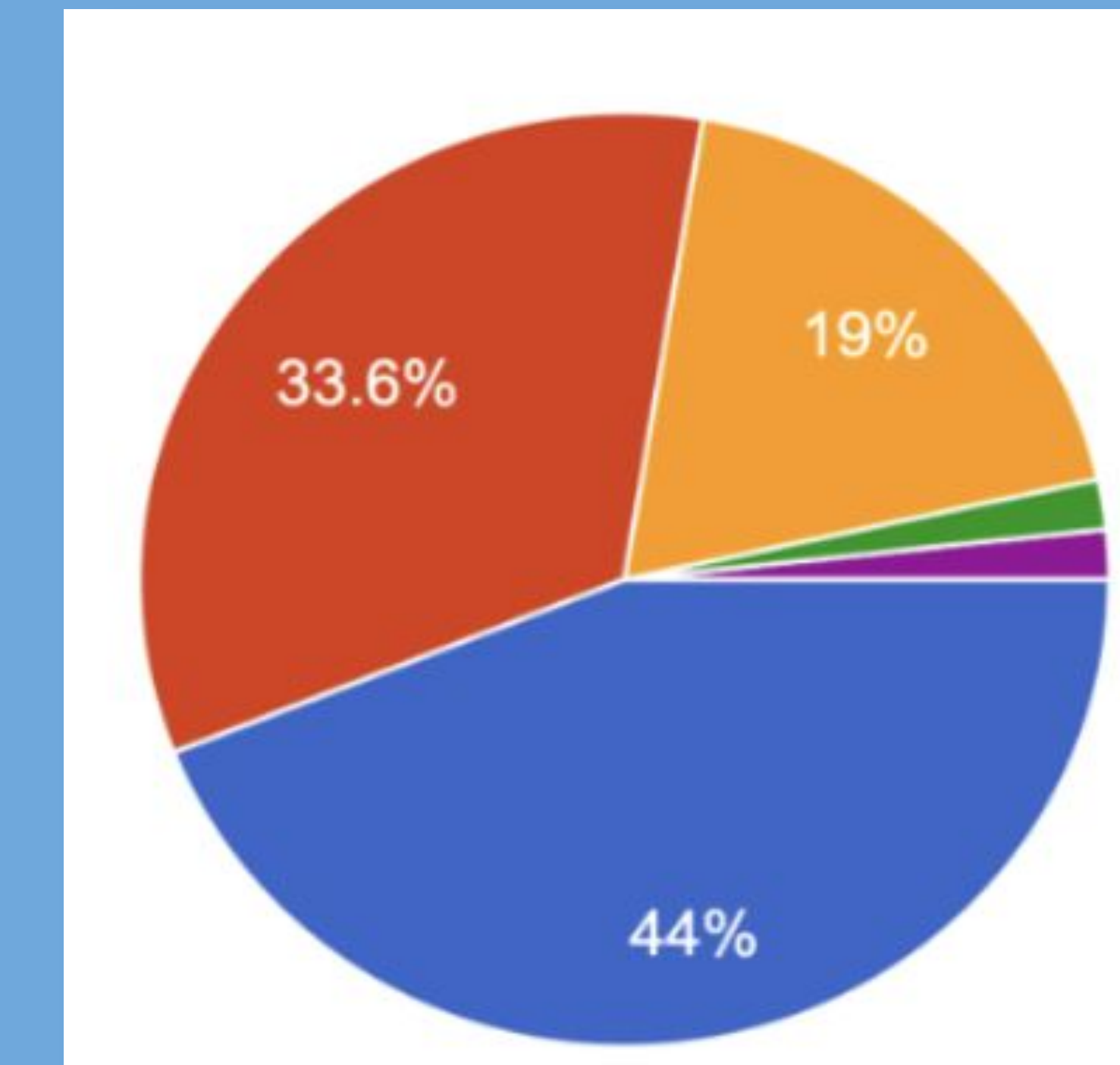
- The present study was conducted in the semester of Winter 2024 with two anatomy sections of 80 anatomy students each.
- The fifteen virtual labs designed by McGraw Hill Connect (McGraw Hill, inc., USA) were assigned to both sections, corresponded with the organ systems taught in class.
- A Google survey comprising of 17 questions in the form of Likert scale (1-5), 1 being strongly agree and 5 being strongly disagree, were delivered via McGraw Hills Connect platform.
- The labs in each category were marked out of 4.0 total points.
- The class average (%) was calculated from each of the three midterms, to determine the association between virtual labs scores and percent class average.
- Data was statistically analyzed using SPSS II, and means were compared using 2 sample t-tests.
- The scores are described as the mean and standard deviation (SD) and are presented in Table 1.



The virtual lab improved my understanding and knowledge of the body's tissues



The experience was engaging and I enjoyed exploring a 3D environment.



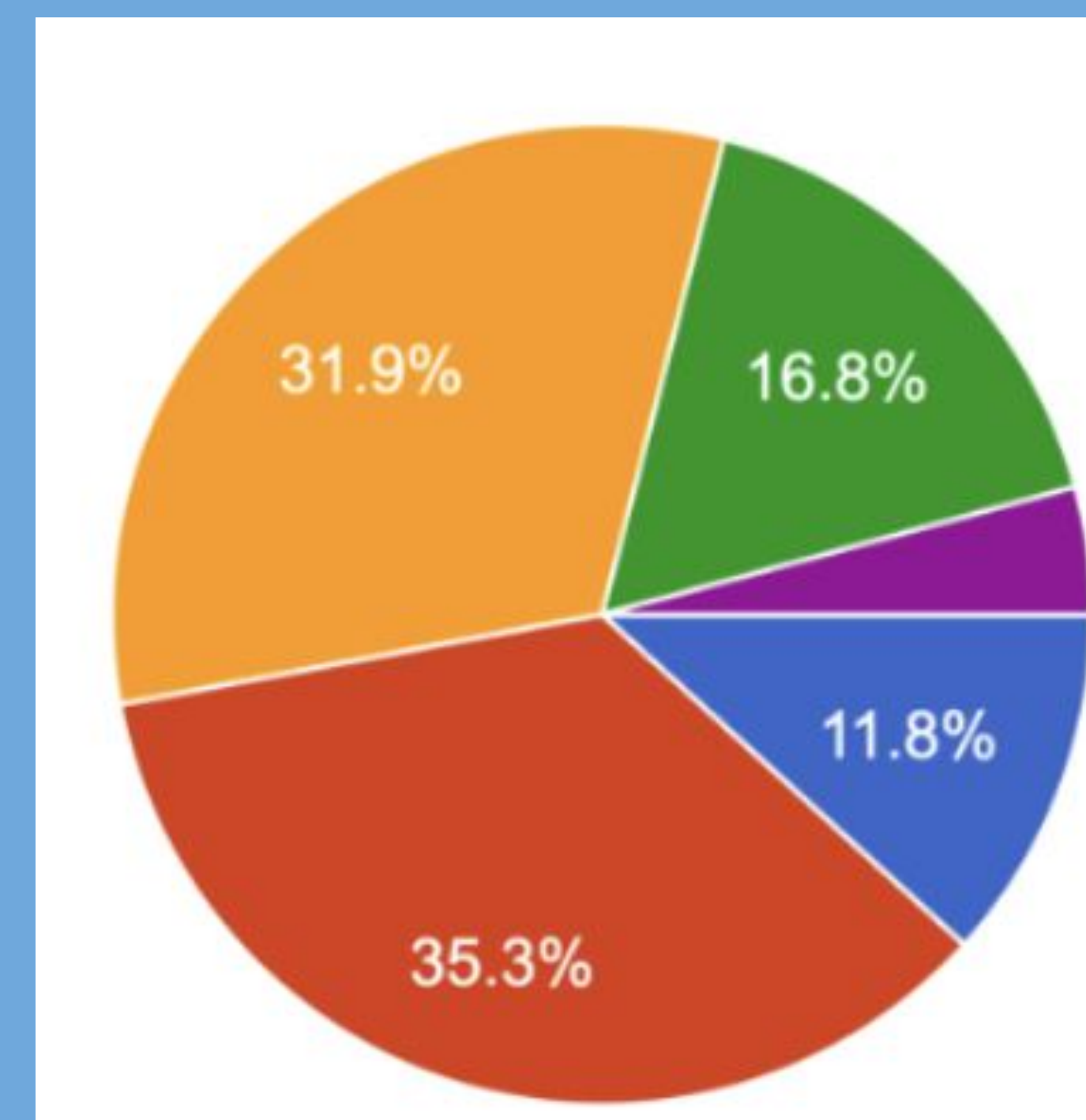
I would recommend the virtual lab to future students.

### Anonymous Student Comment

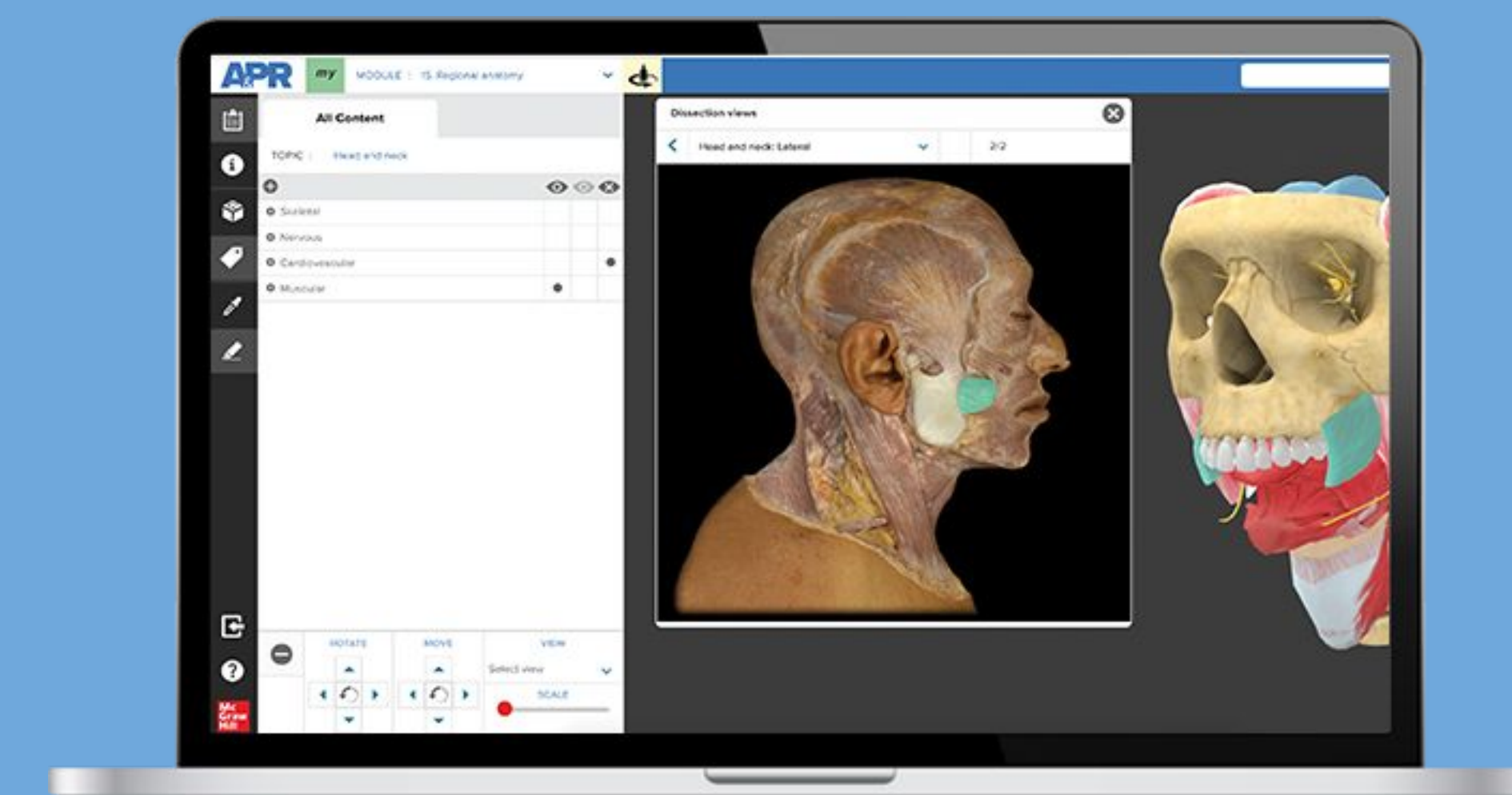
"I liked the virtual labs and found them helpful and interesting."

### Anonymous Student Comments

"As an extra credit opportunity, they are beneficial, however my overall learning did not increase following the completion of these labs."



I would struggle to apply theory into practice if I did not have the virtual lab.



**Table 1: Correlation between Virtual Labs Scores and Class Average**

Students	Virtual Labs Scores (Out of 4.0)	Percent (%) Class Average
Category #1	3.9 ± 0.031	93.25 ± 2.63
Category #2	3.12 ± 0.39#	85.97 ± 4.39*
Category #3	2.54 ± 0.66##	70.9 ± 13.84**

\*,#P<0.05 compared to category#1, \*\*,##P<0.001 compared to category#2