

Use of Narrative Drawings to Improve the Understanding of Threshold Concepts in Anatomy

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Introduction

- Knowledge of the structure and function of the human body is fundamental to becoming a competent physician.¹
- However, early health professionals consistently face difficulty understanding anatomy.²
- Integration of newer teaching modalities and modern technology may encourage interest and retention of anatomical knowledge.³
- Learner-generated drawings have shown to be effective in anatomy education.⁴
- Drawing has proven to improve understanding of anatomical concepts compared to dissection and cadavers.⁵
- We sought to determine if presenting threshold concepts related to anatomy through narrative drawings improves medical student comprehension and retention.

Aims and Objectives

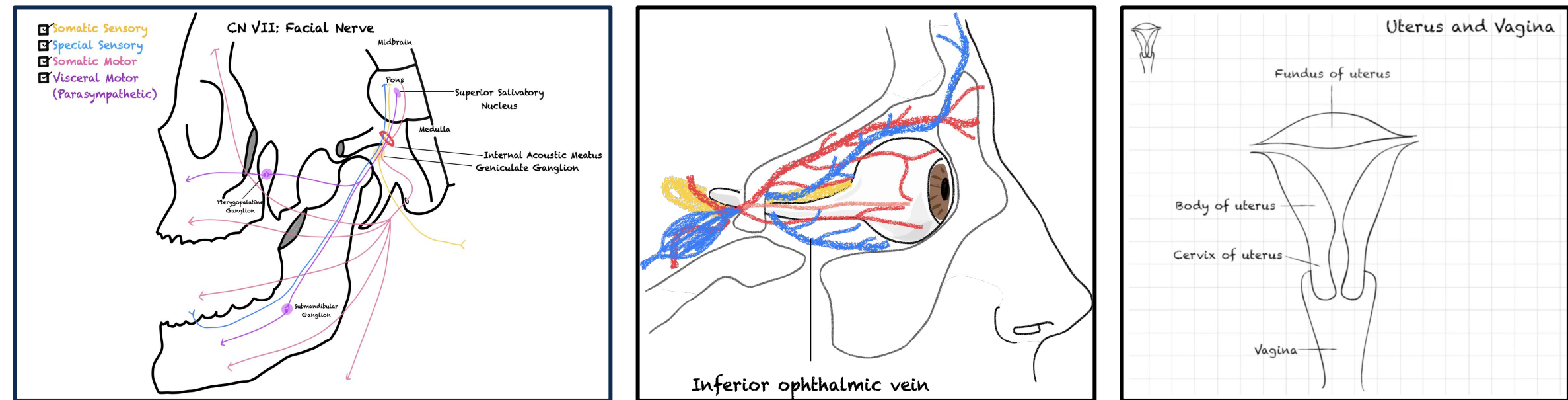
- Identify threshold concepts⁶ related to anatomy and create narrative drawing videos illustrating these concepts.
- Assess the effectiveness of narrative drawings on students' comprehension and retention.
- Assess students' perception of their understanding of anatomical concepts.

Methods



Study Population: First year medical students (n=127) enrolled in the Anatomical Foundations of Clinical Practice 2 (AFCP2) at Oakland University William Beaumont School of Medicine.

Learning Modules: Students were offered 7 modules for Cranial Nerves, 8 modules for Head & Neck and 5 modules for pelvis and perineum.



Figures 1, 2, 3. Examples of learning modules.

*Note: Lindsay Gallagher (lgallagher@oakland.edu) and Diana Lee (dianalee@oakland.edu) contributed equally to this project.

Results

- Average post-test scores improved from pre-test scores across all modules, with statistical significance varying by subject:

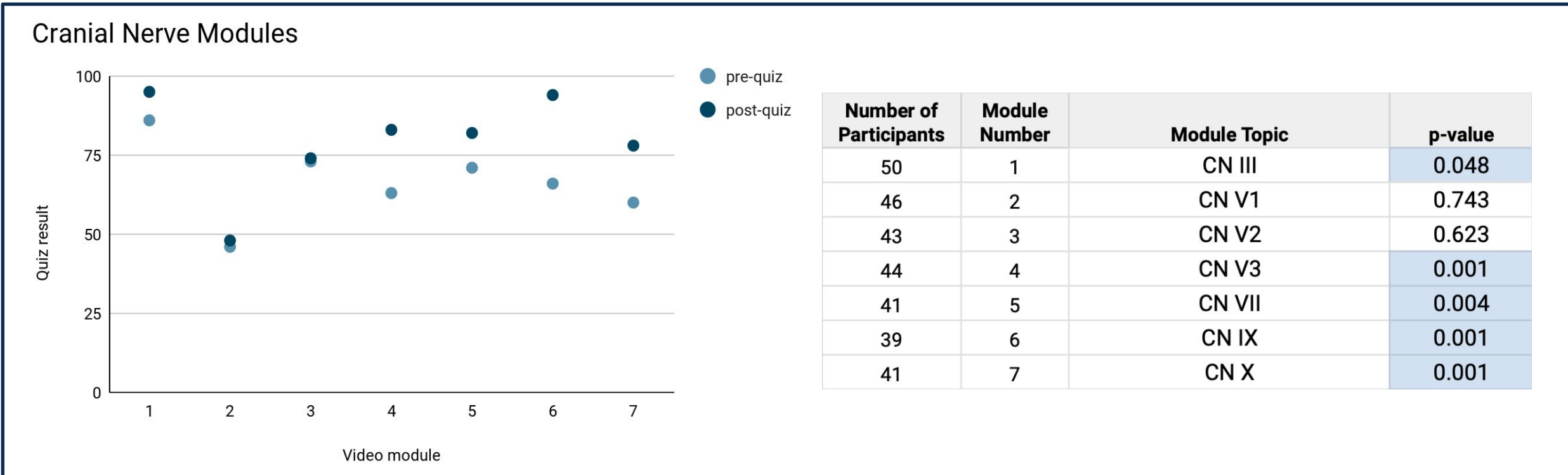


Figure 4 depicts a substantial score increase in 5 out of 7 modules within the Cranial Nerves section.

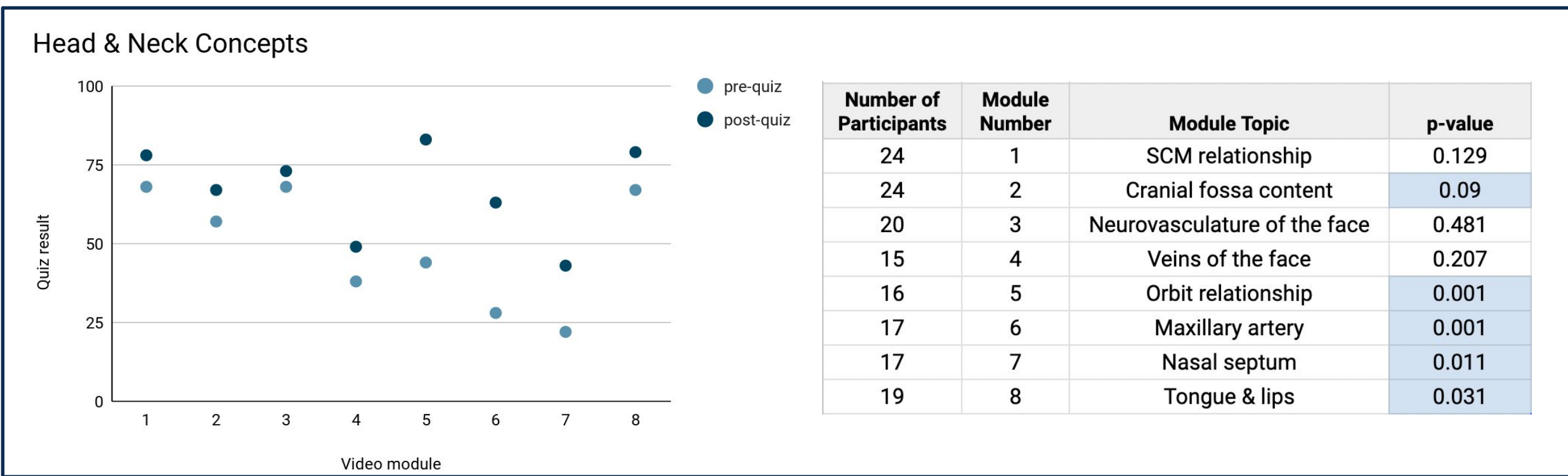


Figure 5 depicts a substantial score increase in 4 out of 8 modules within the Head and Neck section.

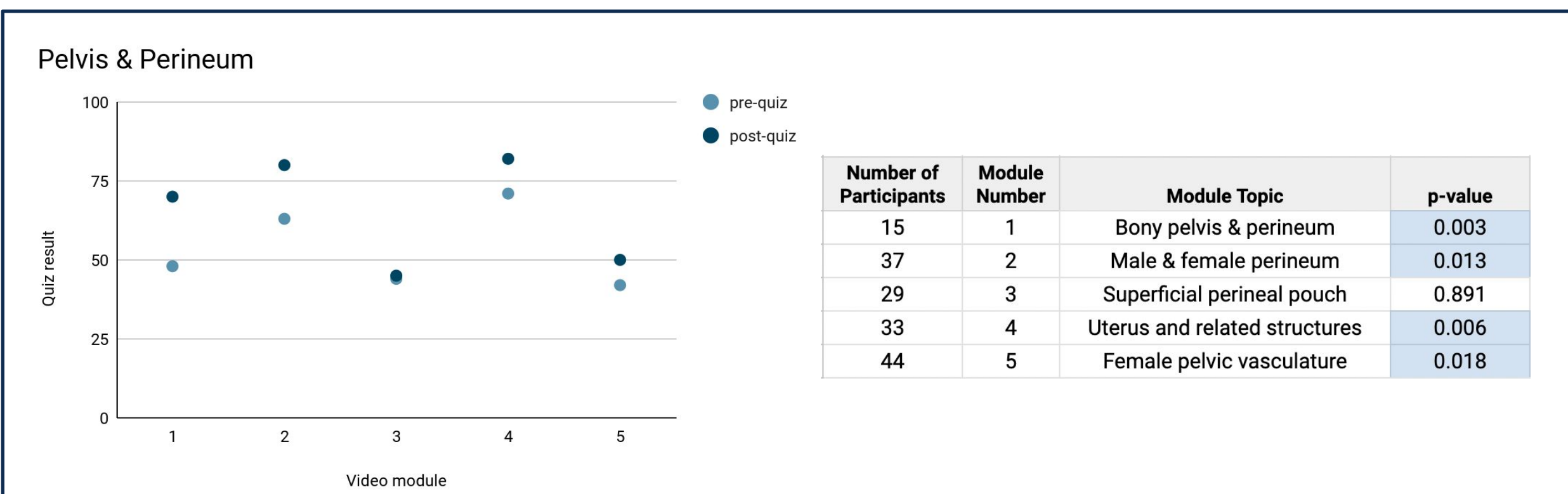


Figure 6 depicts a substantial score increase in 4 out of 5 modules within the Pelvis & Perineum section.

- **Survey Results:**
 - A majority of survey respondents (91.7%) agreed or strongly agreed that narrative drawings enhanced their understanding of anatomy, with 41.7% strongly agreeing that these drawings are beneficial at the start of a block.
 - Most respondents (83.3%) agreed that the narrative drawings provided a stronger foundation for understanding additional anatomy concepts. However, opinions were divided on whether these drawings are more beneficial at the conclusion of a block for consolidation and integration.
 - A significant percentage (75%) strongly agreed that they wish for additional learning modules featuring narrative drawings for other anatomy topics.

Conclusions

- Post-test scores significantly increased from pre-test scores in a majority of the modules, indicating the modules were effective in helping students attain short-term comprehension.
- Based on the analysis of the survey results, it is evident that narrative drawing videos have a significant positive impact on students' understanding of anatomy.
- The majority of respondents agreed that these videos enhanced their comprehension and provided a stronger foundation for learning additional anatomy concepts. This indicates the effectiveness of narrative drawings in facilitating learning and retention of anatomical knowledge.
- While opinions were divided on whether narrative drawings are more beneficial at the start or conclusion of a block, the overall consensus remains that they contribute significantly to students' learning experience.
- Furthermore, the preference for additional learning modules featuring narrative drawings for other anatomy topics highlights the value that students place on this method of teaching.

Discussion

- **Application:** This supports the effectiveness of integrating visual and interactive modalities into anatomical education for medical students. These findings could help educators adapt the medical school curriculum to more effectively address the requirements of students.
- **Limitations:** The optional nature of the study may select for participation from more motivated students.
- **Next steps:** Analyze students' final exam scores to determine if there is an association between module usage and exam performance.

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