



BACKGROUND

- Challenges exist in the instruction and learning of antimicrobial spectrum of activity (SOA).
- Learners may utilize rote memorization to prepare for examination, which is not an effective evidence-based strategy for studying material.
- Learners often have a learning style that can guide study strategies.
 - VAK model¹: Visual, Auditory, Kinesthetic
- Currently, no data is published on the use of kinesthetic tools in pharmacy education.

OBJECTIVE

- To describe differences in academic performance in an infectious diseases (ID) integrated course following implementation of kinesthetic blocks as a learning tool.

METHODS

- Students enrolled in Fall 2017 ID module were provided a set of kinesthetic blocks to model bacterial pathogens and antimicrobial SOA.
- Course and examination data were used to compare overall and SOA question performance from Fall 2017 to Fall 2016, prior to implementation of blocks.
 - A voluntary survey was disseminated to collect baseline demographics, quantify use of blocks outside of the classroom as a study tool, and collect student self-reported learning styles.
- This study was approved by the Institutional Review Board at Presbyterian College School of Pharmacy.

IMPLEMENTATION

Figure 1. Process for Course Integration

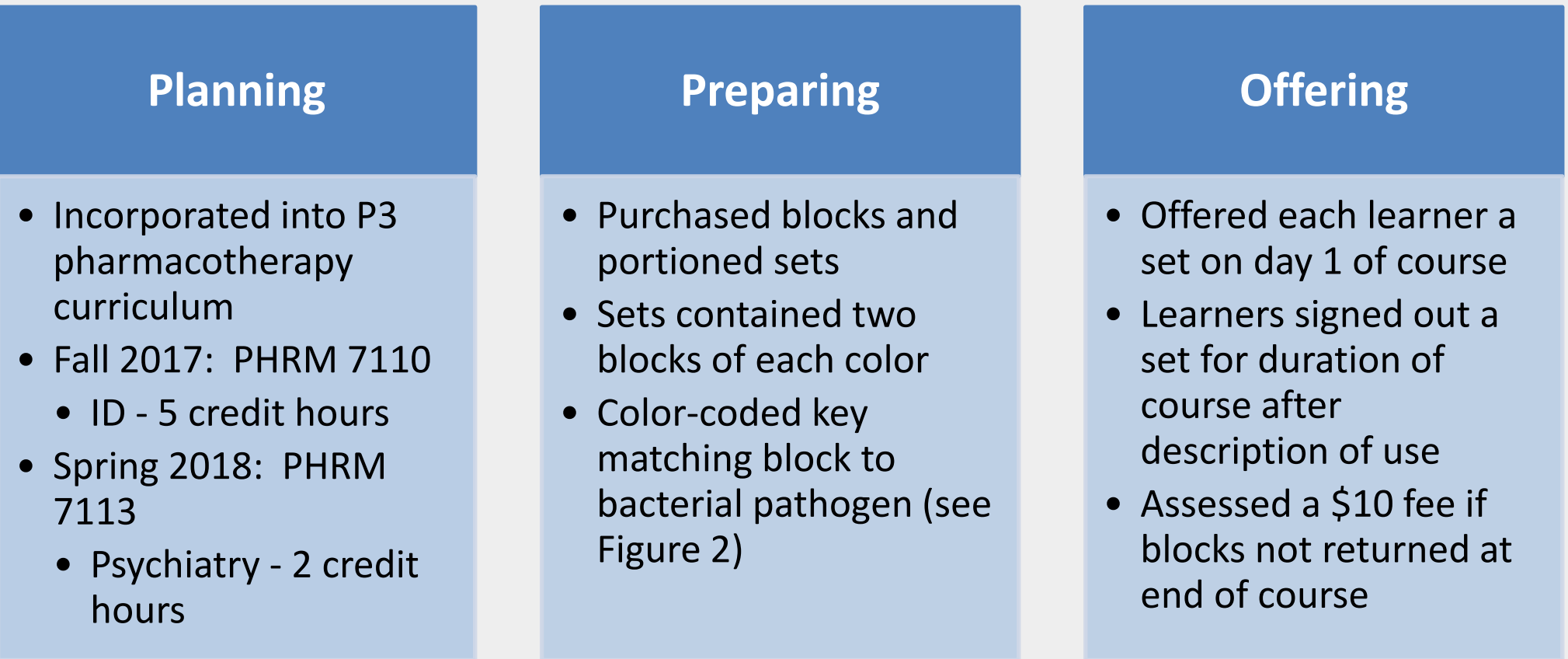


Figure 2. Bacterial Pathogen Key for Blocks

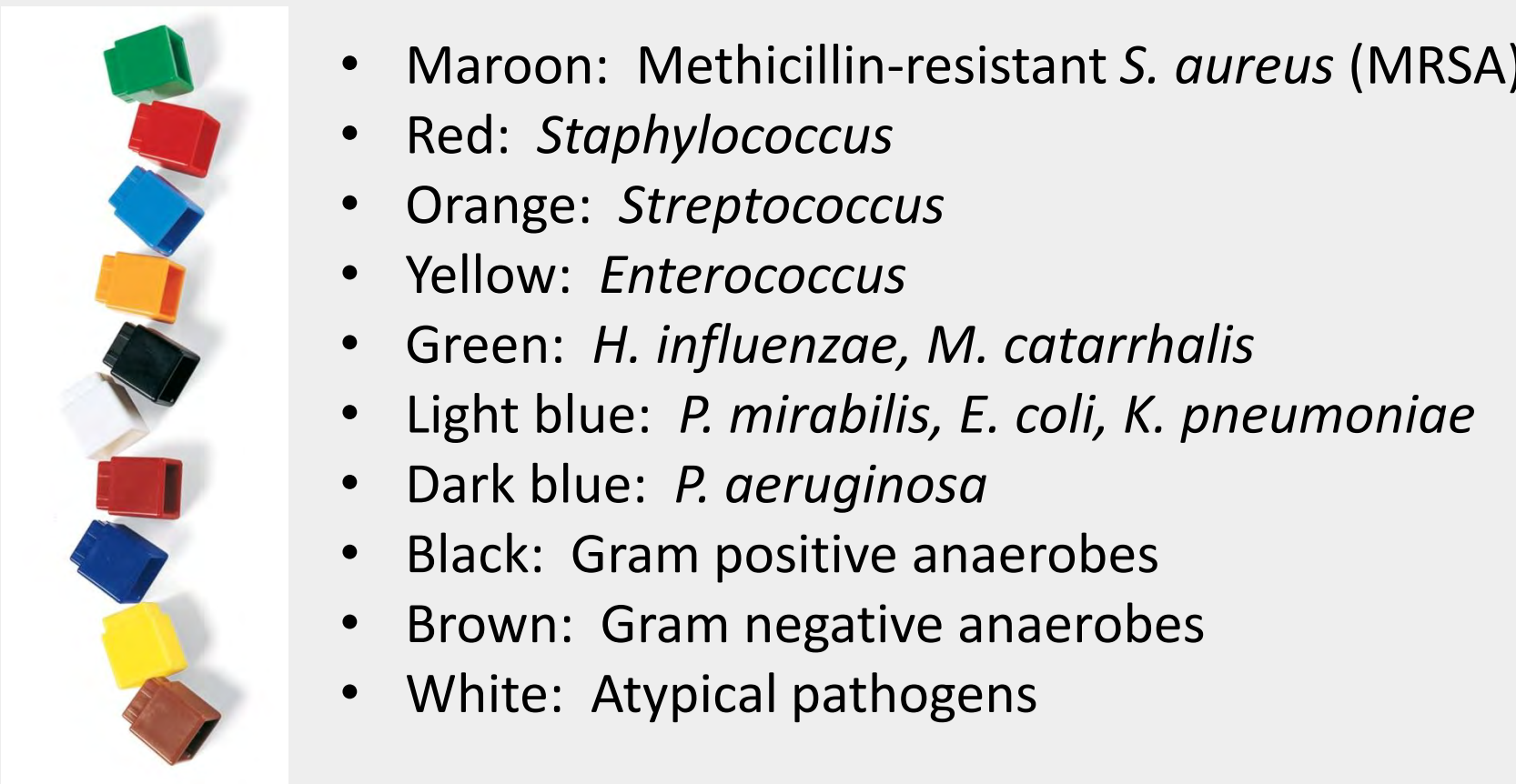


Figure 3. Active Learning With Blocks In Course

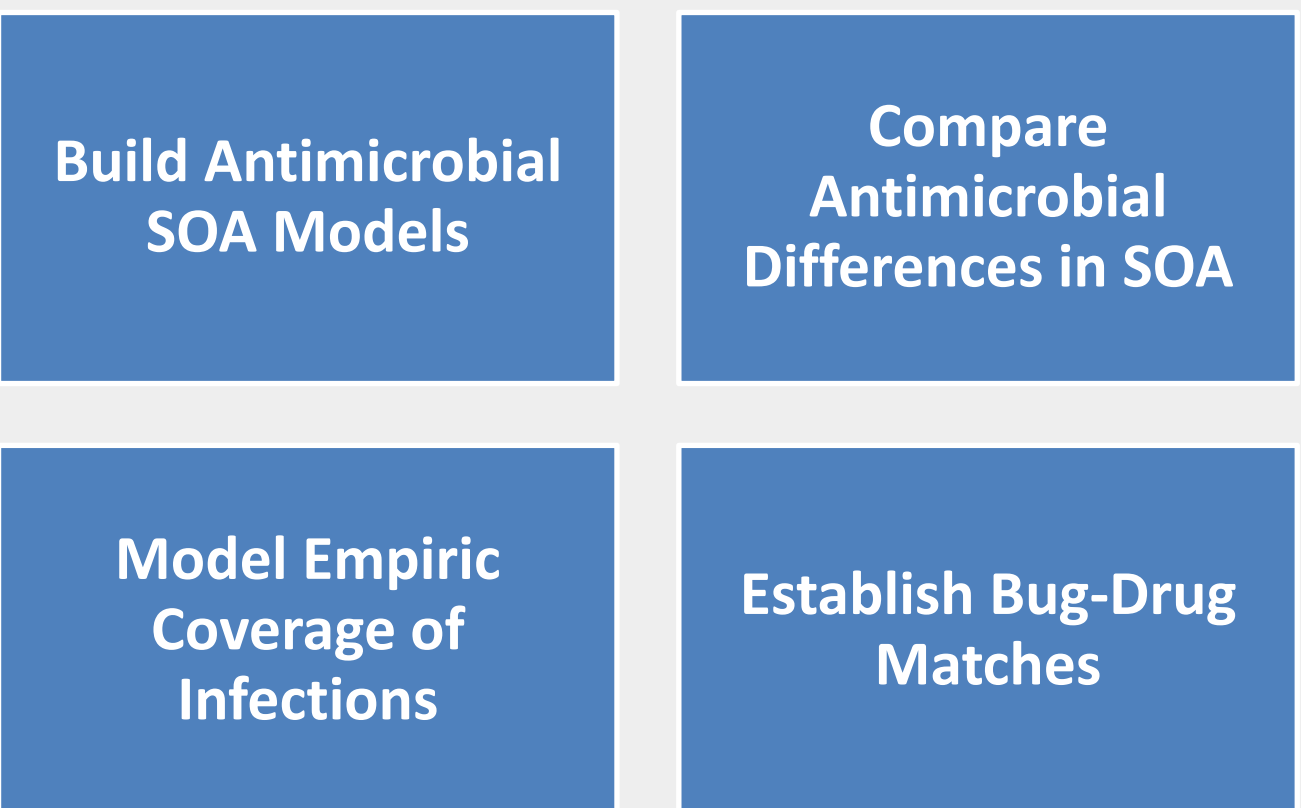
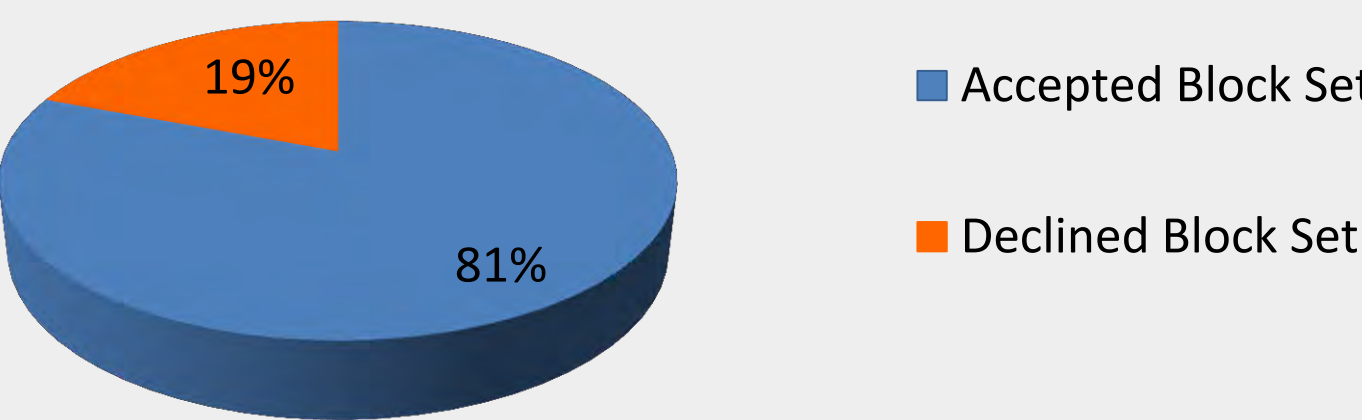


Figure 4. Acceptance of Blocks By Learners (n=73)



RESULTS

Figure 5. Learner Course Performance

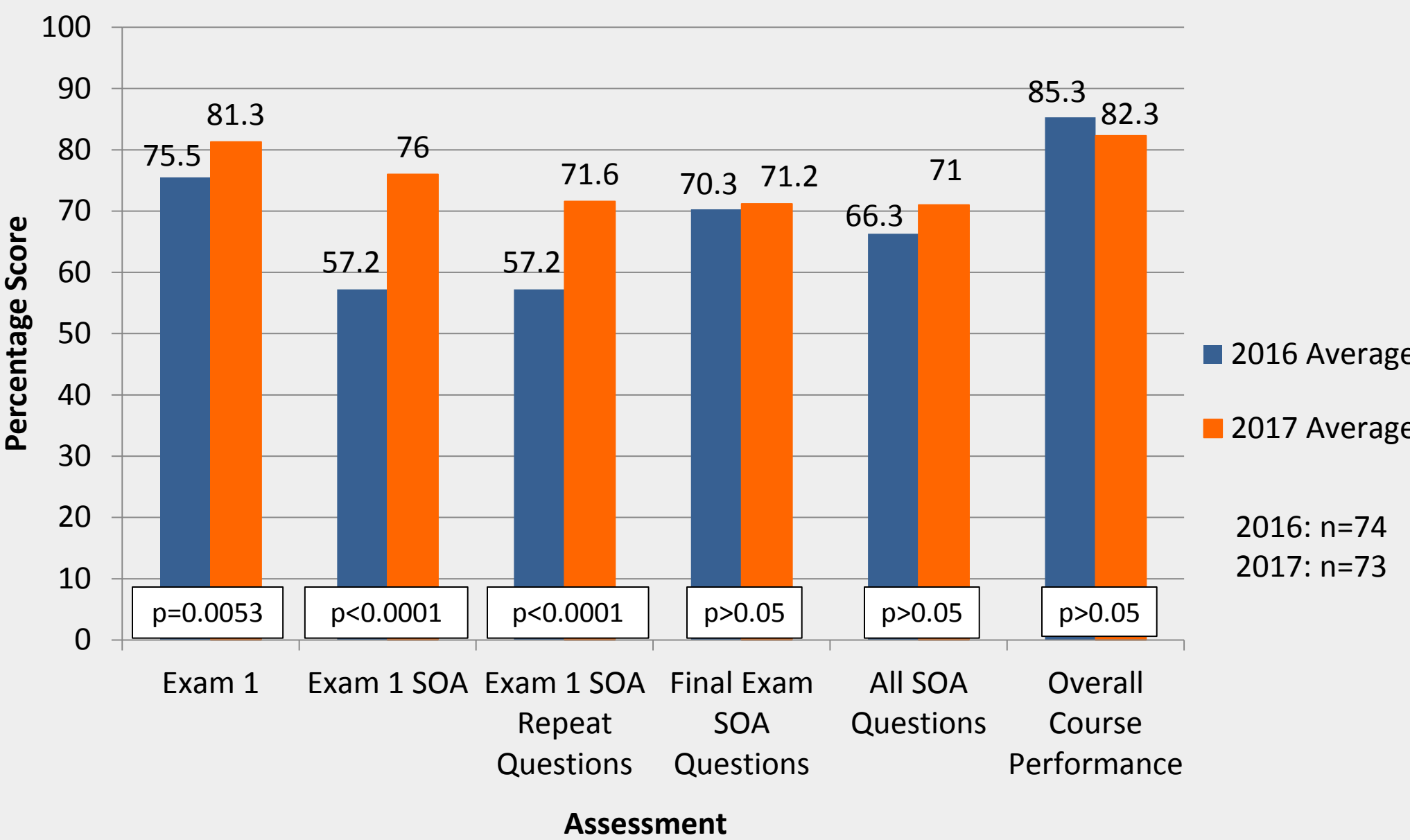
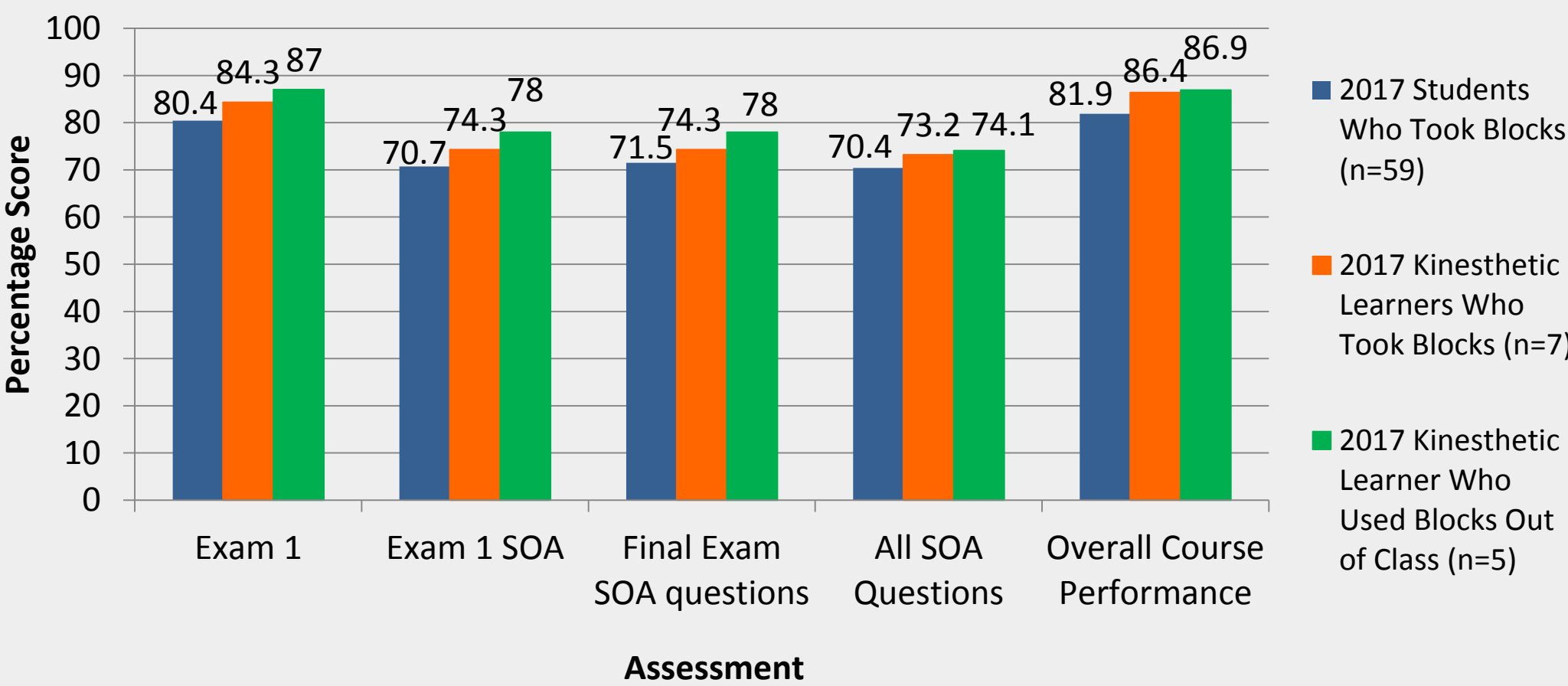


Table 1. Survey Response (n=39)

Demographic information	N (%)
Male	8 (20.5)
Female	31 (79.5)
20-29 years of age	34 (87.2)
30-39 years of age	5 (12.8)
Identifies as visual learner	20 (51.3)
Identifies as auditory learner	6 (15.4)
Identifies as tactile/kinesthetic learner	9 (23.1)
Identifies as unsure of learning style	4 (10.3)
Out-of-class use of blocks	N (%)
Used blocks as study tool outside of classroom time	20 (51.3)
Used blocks to build models	12 (30.8)

Figure 6. Tactile Learner Subgroup Performance



DISCUSSION

- Improved performance was seen on short-term retention assessments following course use of kinesthetic blocks.
- No difference in performance on items assessing long-term retention of material.
- Limitations include:
 - Change in course structure occurred from 2016 to 2017.
 - Survey yielded low response (53.4%) with lack of ability to account for student baseline academic performance.
 - Use of blocks in the course was front-loaded.
 - Student learning styles were self-reported.

CONCLUSION

- The incorporation of kinesthetic blocks into an ID integrated pharmacotherapy course was associated with overall improved aggregate performance compared to data from the previous year on initial assessment of material.
- No improvement in aggregate performance was seen on longitudinal assessments.
- Kinesthetic blocks may be a useful study tool to augment learning of SOA for self-identified tactile learners both in and out of class.

REFERENCES

1. Fleming ND, Mills C. *To Improve the Academy*. 1992;11:137-155.

DISCLOSURE

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

All authors have nothing to disclose.