

Comparative Evaluation of Choose Your Own Adventure (CYOA) Vs. Team-Based Learning (TBL) Patient Cases

Petrov, K., PharmD;¹ Johnson, M., PharmD, BCPS;¹ Joyner, K., PharmD, BCPS;¹ Lennon, A., PharmD, BCACP, CDCES;¹
¹ Bernard J. Dunn School of Pharmacy, Shenandoah University, Winchester, Virginia

INTRODUCTION

- Over the past decades, active learning has become a mainstay in health professional education due to its ability to improve students' performance compared to traditional lectures.¹
- Though many types of active learning are cited in pharmacy education literature, team-based, case-based (TBL), and problem-based learning are among the most common types used in pharmacy schools.¹
- TBL is a structured form of small-group learning that emphasizes student preparation outside of class and the application of knowledge in class.²
- Though used in many disciplines, case-based learning and problem-based has been employed in pharmacy education to aid students in developing critical thinking and problem-solving skills for a patient case.^{3,4,5}
- Patient cases often are static views of a patient's care and do not demonstrate the continuity of care and dynamic problem-solving skills students must employ to meet patient needs.
- CYOA-type cases blend both case-based learning and problem-based learning with gamified elements to engage students and develop clinical problem-solving skills.⁵⁻⁸
- To date, there is one published comparative evaluation of "Choose Your Own Adventure" (CYOA) technique vs. Team-based Learning (TBL) technique in medical students' education.⁹ There is no comparative evaluation of CYOA vs. TBL teaching and learning techniques in pharmacy education.
- The Patient-Centered Care (PCC) series at Shenandoah University School of Pharmacy is designed to have students apply therapeutic knowledge to patient care via case-based learning.
- Integrated therapeutics courses, such as Infectious Diseases Integrated Pharmaceutical Care and Science (ID-ICARE), at the school often use TBL to enforce learning.

OBJECTIVE

To compare CYOA case-based learning technique in PCC to the TBL based learning technique in ID-ICARE in terms of their respective impacts on pharmacy students' perceived knowledge, engagement, confidence in clinical decision making, and overall preference.

METHODS

- Two third year required pharmacy courses, PCC and ID-ICARE implemented CYOA and TBL, respectively, with the same instructors.
- Two sessions in PCC utilized CYOA via Google Forms and ID-ICARE implemented six TBL sessions.
- A survey assessing student outcomes using 7 Likert scale questions to evaluate clinical decision-making skills before and after CYOA and TBL, 6 comparative questions about CYOA versus TBL, and 1 open feedback question.
- Analysis was conducted using descriptive statistics and the Wilcoxon signed-rank test.

RESULTS

- Fifty-three students completed the survey (98% response rate). Baseline demographics are located in **Table 1**
- Students' confidence in clinical decision-making significantly improved ($p < .001$) across all 7 Likert scale questions after the active learning sessions. **Table 2**
- The comparative questions analysis showed the majority of students favored CYOA for increased engagement (54.72%), self-directed learning (58.49%), and perceived knowledge (43.40 %). **Figure 1**
- Over half (54.75%) of students preferred CYOA, with 47.17% feeling more confident with CYOA, versus 18.87 % with TBL and 33.96% neutral.
- Open ended question yielded positive comments regarding the game-like atmosphere and was less stressful

Table 1. Baseline characteristics of students who completed the activities and the follow up survey

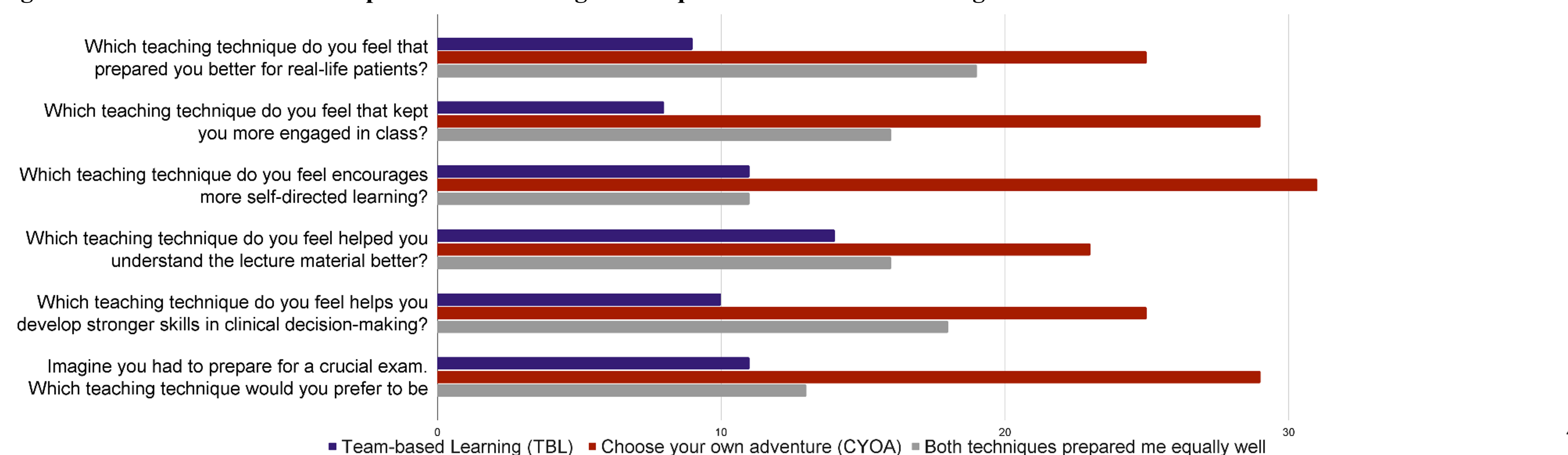
Demographic Characteristics N=53	Results
Age, mean	26.7
Female Gender, n (%)	41 (77.4 %)
English as a primary language, n (%)	39 (73.6 %)
Prior bachelor's degree, n (%)	42 (79.2 %)
Pharmacy Intern Experience, n (%)	49 (92.5%)

Table 2. Students perceived knowledge and skills before and after CYOA and TBL

Survey question	Before Active Learning	After Active Learning	p value
I feel confident that I can apply pharmacotherapy concepts to real patient cases	3.58	4.34	<0.001
I feel confident in my critical thinking skills	3.89	4.34	<0.001
I feel confident that I can identify relevant clinical information to make a therapy recommendation	3.60	4.28	<0.001
I feel confident to evaluate several therapeutic options	3.60	4.32	<0.001
I feel confident in anticipating outcomes from different therapeutic choices	3.60	4.24	<0.001
I feel confident in understanding how the patients' choices can affect their clinical recommendations	3.77	4.32	<0.001
I feel confident in modifying the patient's therapy based on patient-specific factors	3.66	4.30	<0.001

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

Figure 1. Student Perceived Comparison of Teaching Techniques: Team-Based Learning vs. Choose Your Own Adventure



DISCUSSION

- Students found active learning activities improved their perceived knowledge
- More students preferred the CYOA active learning modality over the TBL modality
- CYOA was described as a fun, game-like experience with valuable immediate feedback while TBL facilitated more discussion and teamwork.
- Free widely available tools were used to complete this activity
- Limitations
 - Only 53 students completed the survey
 - The data is based on the students perceived knowledge correlation with assessment data is needed
 - Novelty bias of the CYOA modality could not be ruled out as an underlying factor
 - Post-only design may lead to recency biases

CONCLUSIONS

Further research is needed to evaluate the effects of CYOA and TBL on clinical decision-making skills and how integrating CYOA's boost to engagement and perceived knowledge with TBL's collaboration and teamwork can advance pharmacy education.

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DISCLOSURE

The investigators of this study have no conflicts of interest to disclose