

Fixed Versus Random Team Assignments and Student Outcomes in a Therapeutics Course

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INTRODUCTION

- Team-based learning (TBL) is one method that prepares students for interprofessional teamwork, and team permanence, or using the same teams throughout a semester, has historically been recommended as a 'best practice'
- However, using the same teams for the duration of a semester does not always translate to the 'real world' healthcare environment, where pharmacists must quickly adapt to varying team dynamics
- Purpose:** To examine the association between fixed, systematically developed teams vs teams randomly assigned just before each session on workshop preparation and learning outcomes

SPECIFIC AIMS

- To examine the association between two different methods of team formation on learning outcomes
- To examine the differences in student perceptions of learning and required preparedness of the two different team formation methods
- To identify factors that may influence preference for one method over another

METHODS

- Study design:** a prospective, crossover study in which students were randomized to complete workshop sessions 1-4 in fixed, systematically developed teams or randomly assigned teams before crossing over to the opposite intervention for workshops 5-8
- Inclusion:** third-year PharmD students enrolled in final semester of a five-semester therapeutics sequence (66/120 students provided consent and are included in analysis)
- Data collection:** abbreviated version of the Motivated Strategies for Learning Questionnaire (MSLQ); questions about leadership preferences, work experience
 - Post-workshop quizzes: students reported time spent preparing for workshop and rated perceived preparedness of self and peers
 - End of semester survey: team formation preference

RESULTS

- Demographics: participating students (N=66) were 77.3% age 20-30; 69.7% female; 57.6% white, 24.2% Asian; 28.8% Hispanic/Latinx; 68.2% Tucson, 31.8% Phoenix campus
- Workload: students were taking a median of 16 credits [IQR: 15-17]; had worked in a pharmacy setting for 4 years [2.5-5.5] for a median of 14.5 hours/week [10-19]

Assessment and Preparation Outcomes Associated with Team Formation Method

	Overall (n=66)	While Working in Fixed Teams (n=66)	While Working in Random Teams (n=66)	P value
Assessment Outcomes, Mean (SD)				
Post-Workshop Quiz Score#	7.73 (.74)	7.87 (.74)	7.74 (.91)	.213
Exam Scores#	77.75 (11.35)	77.89 (11.16)	77.61 (12.93)	.788
Workshop Preparation, Median [IQR]				
Time Spent (in minutes) Preparing	95.6 [65.9-131.3]	91.3 [67.5-120.9]	95.6 [68.4-138.1]	.483
Perceived Preparedness of Self^	3.9 [3.4-4.25]	4.00 [3.5-4.4]	3.75 [3.3-4.25]	.014
Perceived Preparedness of Peers^	4.0 [3.7-4.4]	4.0 [3.75-4.5]	4.0 [3.7-4.4]	.166

SD = Standard Deviation; IQR = Interquartile Range

#Parametric data (paired samples t-test)

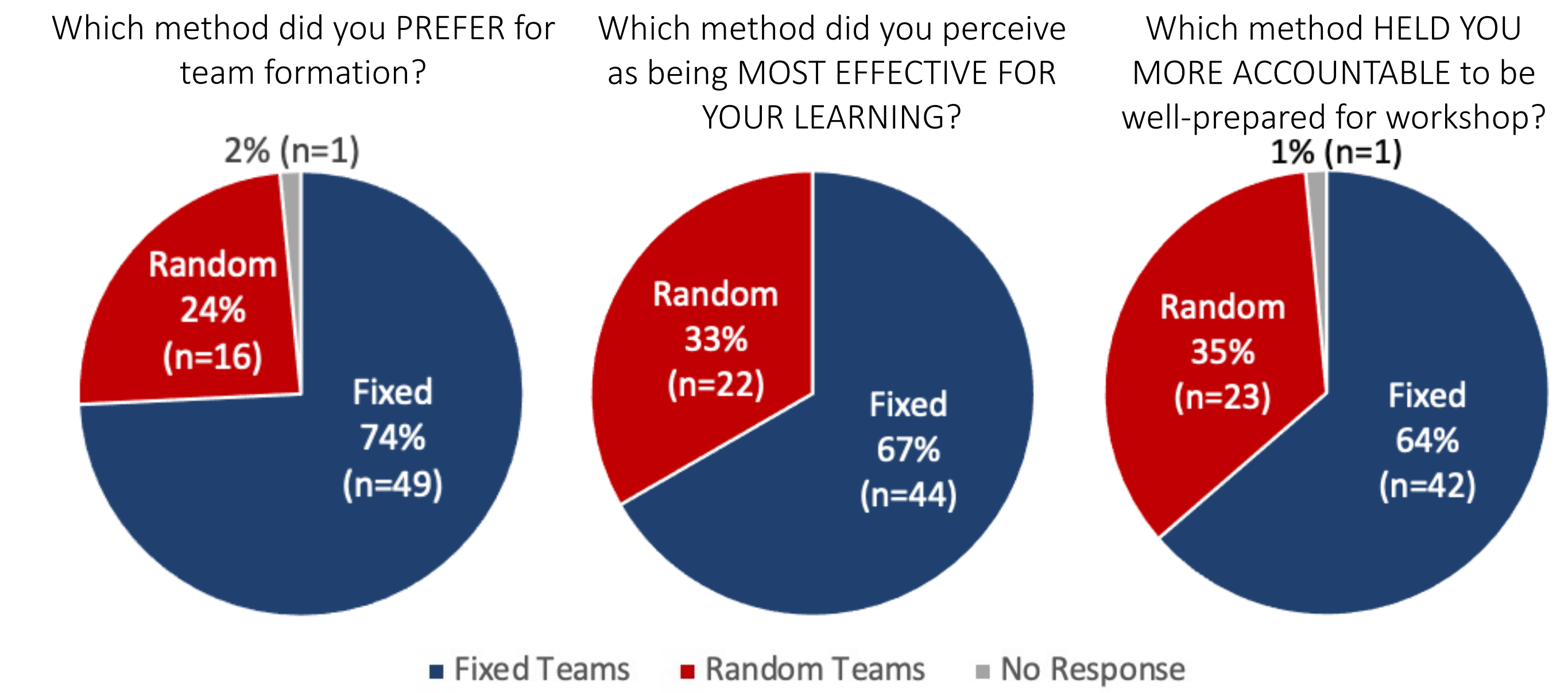
^Degree of perceived workshop preparedness using a 5-point Likert scale (1: not at all prepared, 2: poorly prepared, 3: somewhat prepared, 4: well-prepared, 5: very well prepared); non-parametric data (Wilcoxon signed rank)

While students preferred and felt more prepared working in fixed teams than teams randomly assigned before each workshop session, there was no difference in learning outcomes or time spent preparing.



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Team Formation Preferences



Factors Associated with Preference of Random Team Formation

Logistic Regression Coefficients	Odds Ratio	95% CI	p value
MSLQ Motivation Domains			
Intrinsic Goal Orientation	1.31	.69-2.49	.42
Extrinsic Goal Orientation	1.53	.92-2.53	.10
Test Anxiety	1.01	.71-1.44	.95
Self-Efficacy for Learning and Performance	.92	.58-1.44	.71
MSLQ Learning Strategies Domains			
Cognitive and Metacognitive Strategies: Elaboration	1.10	.64-1.90	.73
Cognitive and Metacognitive Strategies: Organization	1.03	.70-1.51	.88
Cognitive and Metacognitive Strategies: Critical Thinking	1.40	.85-2.30	.18
Cognitive and Metacognitive Strategies: Metacognitive Self-Regulation	.91	.50-1.66	.76
Resource Management: Peer Learning	.87	.61-1.24	.45
Assessment Performance			
Exam average in course (1-4)	1.00	.95-1.05	.97
Final course grade	1.00	.001-1266.89	1.00
PCOA score	1.00	.98-1.02	.84
Academic Background			
Based on Phoenix (satellite) campus	.40	.10-1.59	
Official GPA	1.72	.29-10.22	.55
Official therapeutics GPA	1.13	.39-3.23	.83
Work Experiences			
Work experience (years)	.79	.61-1.02	.073
Average work hours per week	.96	.89-1.04	.34
Leadership Preferences			
Number of pharmacy student organizations	1.06	.80-1.39	.69
Number of leadership positions currently held	1.05	.77-1.43	.75
Prefers leading when working on a team	.62	.15-2.54	.51

DISCUSSION

- While there was no difference in median time preparing for workshop, quiz and exam scores, or perceived preparedness of peers when working in fixed versus random teams; students perceived themselves to be more prepared for workshop when in fixed teams
- No factors assessed (MSLQ domains, exam scores, course grades, GPA, work experiences, leadership tendencies) were predictive of team formation preference
- Strengths:** prospective, crossover design; all students were randomized to a crossover cohort, regardless of if they participated in the study
- Limitations:** single course with 55% response rate; one-semester timeframe may have limited the 'treatment effect,' Hawthorne effect impacting the way students answer questionnaires

FINANCIAL DISCLOSURE

- This project was possible through the AACP New Investigator Award, and the authors would like to thank AACP for their financial support.