

Team-based learning implemented on paper vs. electronic platform in an interprofessional programme in Hong Kong

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INTRODUCTION

Traditionally, the various stages of team-based learning (TBL), namely the individual readiness assurance, the team readiness assurance, the appeal, and the application exercises, are implemented on paper (e.g., Koles, Stolfi, Borges, Nelson, & Parmelee, 2010). However, managing the distribution and collection of these papers can be a problem when the number of students is large, such as the interprofessional team-based learning (IPTBL) programme involving students coming from several health and social care undergraduate programmes in Hong Kong (Chan et al., in press). An electronic platform was thus developed in the Learning Activity Management System (LAMS) environment. This study aimed to compare the team learning efficacy (e.g., overall satisfaction of team experience, team impact on quality of learning, team impact on clinical reasoning ability, and collective efficacy) of three groups of students who have gone through TBL implemented in three different methods: paper-based (PB), electronic-based (EB, using an earlier version of the e-platform), and enhanced electronic-based (EEB, using a mature version of the e-platform).

METHODS

There were 593 students randomly assigned into 94 teams (5-7 members) in three groups: PB (12 teams), EB (25 teams), and EEB (57 teams). They came from the second to fourth year of eight programs: Chinese medicine, medicine, nursing, occupational therapy, pharmacology and pharmacy, physiotherapy, radiography, and social work. We used the Team Experience Questionnaire (TEQ, as cited by Currey, Oldland, Considine, Glanville & Story, 2015) and Generalized Self-Efficacy Assessment (GSEA, Schwarzer & Jerusalem, 1995). We used analysis of covariance (ANCOVA) to examine group differences in measures of team learning efficacy, controlling for the effect of pretest scores. For ANCOVA with significant main effect of group membership (i.e., PB vs. EB vs. EEB), we performed an ANOVA with Bonferroni correction post hoc test to examine group differences in change score after undergoing IPTBL.

FINDINGS

Results indicated that PB, EB and EEB team differences on overall satisfaction [$F(2, 91) = 12.97, p < .001, \eta^2 = .22$], team impact on quality of learning [$F(2, 91) = 10.56, p < .001, \eta^2 = .19$], team impact on clinical reasoning ability [$F(2, 91) = 25.50, p < .001, \eta^2 = .36$], and collective efficacy [$F(2, 91) = 16.37, p < .001, \eta^2 = .27$] were significantly different when pretest scores were controlled statistically.

CONCLUSION

The findings suggest that TBL conducted using an enhanced electronic-platform developed in the LAMS environment could be beneficial in large-scale TBL.

Table 1. Students' achievement in paper-based and electronic-based IPTBL ($n=94$ teams)

	Method	Time	M	SD	F	p	Partial eta squared	Multiple comparison for means of posttest-pretest difference (Bonferroni)
1. Overall satisfaction with team experience	PB ($n=12$)	Pretest	3.70	.30	11.80	.001	.21	PB<EEB ($p < .001$) EB<EEB ($p = .001$)
		Posttest	3.68	.45				
	EB ($n=25$)	Pretest	3.71	.24				
		Posttest	3.83	.26				
	EEB ($n=57$)	Pretest	3.61	.25				
		Posttest	4.01	.34				
2. Team impact on quality of learning	PB ($n=12$)	Pretest	3.52	.30	10.93	.001	.20	PB<EEB ($p < .001$)
		Posttest	3.56	.44				
	EB ($n=25$)	Pretest	3.42	.34				
		Posttest	3.71	.33				
	EEB ($n=57$)	Pretest	3.45	.27				
		Posttest	3.91	.36				
3. Team impact on clinical reasoning ability	PB ($n=12$)	Pretest	3.69	.29	20.71	.000	.32	PB<EEB ($p < .001$) EB<EEB ($p < .001$)
		Posttest	3.68	.50				
	EB ($n=25$)	Pretest	3.66	.23				
		Posttest	3.83	.29				
	EEB ($n=57$)	Pretest	3.52	.30				
		Posttest	4.01	.26				
4. Collective efficacy	PB ($n=12$)	Pretest	3.75	.27	7.54	.001	.14	PB<EEB ($p < .001$) EB<EEB ($p = .001$)
		Posttest	3.71	.50				
	EB ($n=25$)	Pretest	3.73	.23				
		Posttest	3.88	.28				
	EEB ($n=57$)	Pretest	3.41	.28				
		Posttest	3.83	.32				

Note: n =refers to teams; PB=paper based, EB=electronic based, and EEB=enhanced electronic based

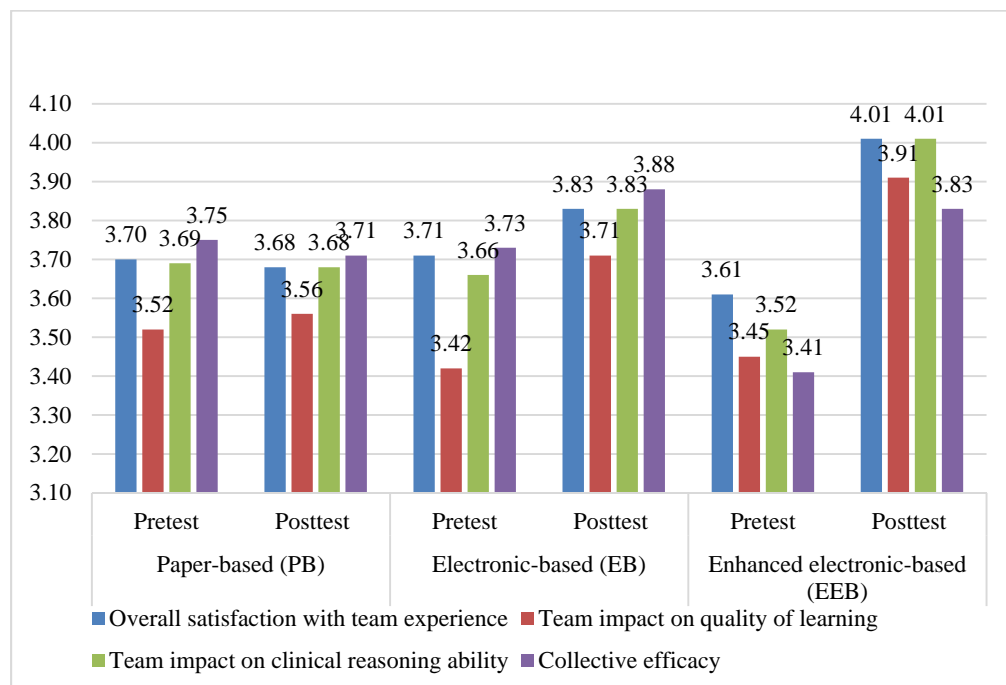


Figure 1. Pretest-posttest scores of the PB, EB, and EEB on measures of team learning efficacy

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