SEAMEO CENTRES POLICY RESEARCH NETWORK (CPRN) SUMMIT 2025

Building Bridges to a Sustainable Future: Inclusive Collaboration and Innovation in Education, Science, and Culture

Effectiveness of Gamification in Basic Life Support Competency among Nursing Students: A Quasi-Experimental Study

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'One ITE System, Three Colleges' Governance Model

ITE College West (2010)

Enrolment	9,390

- School of Hospitality
- School of Business &
- School of Electronics & Info-
- School of Engineering

ITE Headquarters (2013)

ITE College Central (2013)

Enrolment	11,890

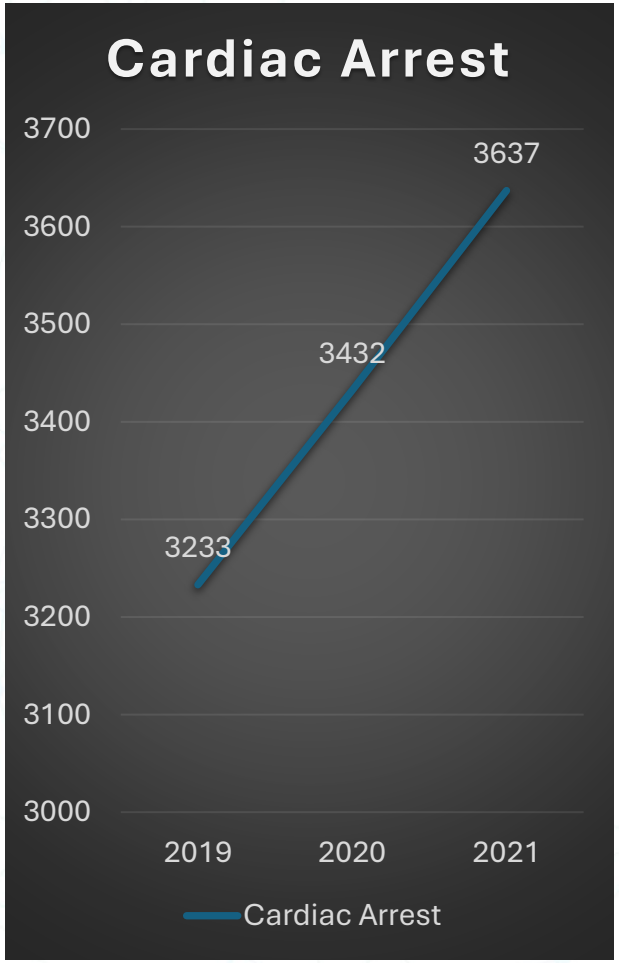
- School of Design & Media
- School of Business &
- School of Electronics & Info-
- School of Engineering

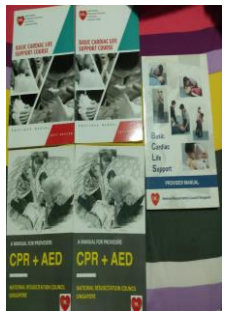
ITE College East (2005)

Enrolment	9,350

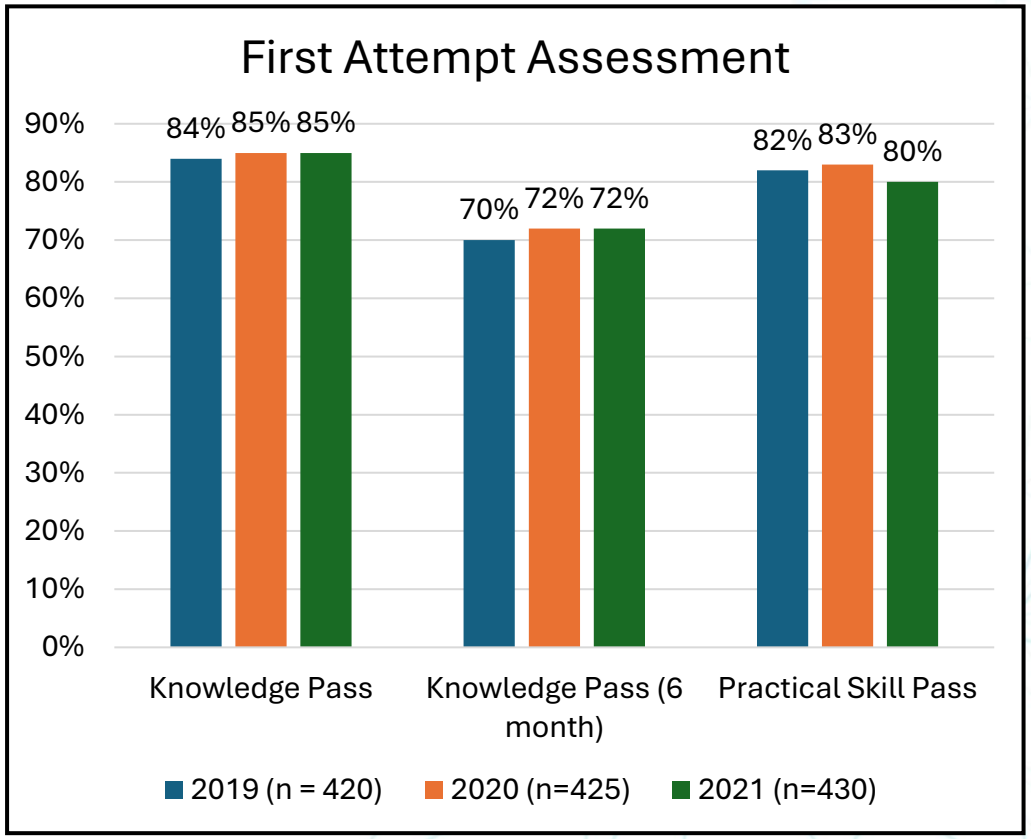
- School of Health Sciences
- School of Business &
- School of Electronics & Info-
- School of Engineering

Background





BCLS+AED provider course manual from Singapore Resuscitation and First Aid Council (SRFAC).



Background

Heliyon. 2024 Apr 10;10(8):e29538. doi: 10.1016/j.heliyon.2024.e29538

The effects of flipped learning and gamification on nursing students' patient safety education: A mixed method study

Soo Jung Chang [a], Geun Myun Kim [a], Jeong Ah Kim [b,*]

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PMCID: PMC11036057 PMID: 38655326

Comparison of gamification and role-playing education on nursing students' cardiopulmonary resuscitation self-efficacy

Ata Khaledi, Raziyeh Ghafouri, Sima Zohari Anboohi, Malihe Nasiri & Mohsen Ta'atizadeh

BMC Medical Education **24**, Article number: 231 (2024) | Cite this article

4249 Accesses | **1** Altmetric | Metrics

Attitudes and Skills in Basic Life Support after Two Types of Training: Traditional vs. Gamification, of Compulsory Secondary Education Students: A Simulation Study

by Adrián Rodríguez-García [1,2], Giovanna Ruiz-García [3], Rubén Navarro-Patón [4,*] and Marcos Mecías-Calvo [4]

The Effectiveness of Technology-Based Cardiopulmonary Resuscitation Training on the Skills and Knowledge of Adolescents: Systematic Review and Meta-analysis

Xiu Ming Amanda Lim[1], BSc; Wenxin Ariel Liao[1], BSc; Wenru Wang[2], BSc, MSc, PhD; Betsy Seah[2], BSc, PhD

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Study Aim and Research Question

Study Aim

This study aims to compare the effectiveness of gamification-based BLS training with traditional classroom instruction for nursing students, focusing on competency levels and confidence in performing BLS and using AED. We hypothesised that students exposed to gamification-based training will demonstrate higher competency levels and greater confidence in BLS and using AED skills.

Research question

How effective is gamification-based BLS training in improving knowledge, skill competency, confidence and readiness to perform CPR with the use of an AED compared to traditional BLS training in nursing students in Singapore?

Methodology (Research Design)

445 second-year nursing students in the cohort

Excluded (n=30)
age above 36 years (n=25)
prior certification in BLS (n=5)

Pre-Knowledge Test on BLS and AED (n=415)

Control (n=193)

Traditional Classroom Teaching on BLS and AED

Intervention (n=222)

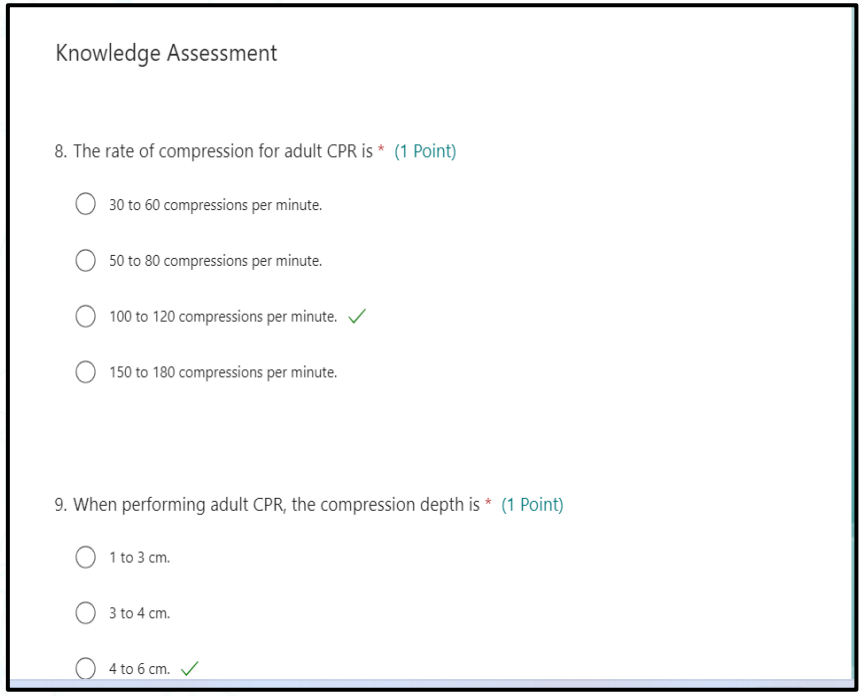
Traditional Classroom Teaching and Gamification-Based Learning on BLS and AED

Practical Practice (10 hours)

Practical Skills Assessment

Post-Knowledge Test on BLS and AED (n=415)

Methodology (Data Collection)



Knowledge Assessment

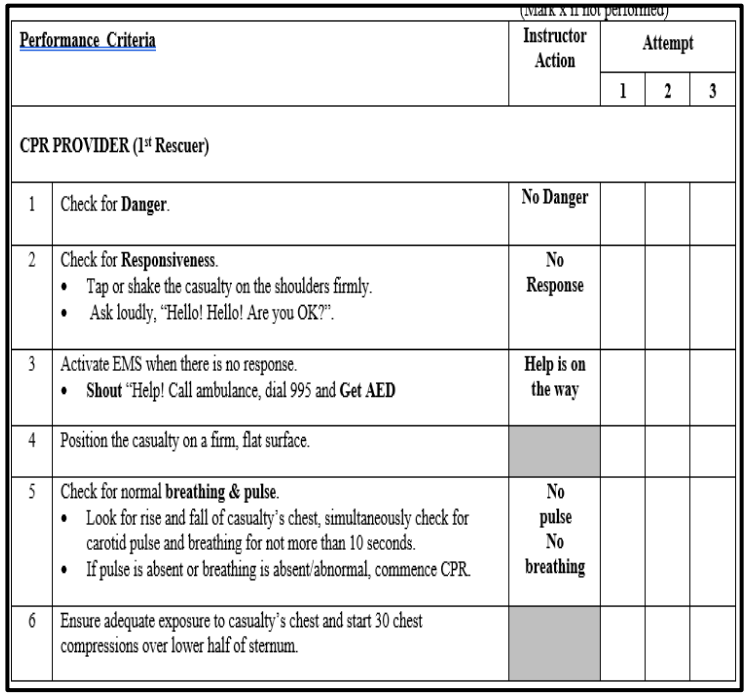
8. The rate of compression for adult CPR is * (1 Point)

- ○ 30 to 60 compressions per minute.
- ○ 50 to 80 compressions per minute.
- ○ 100 to 120 compressions per minute. ✓
- ○ 150 to 180 compressions per minute.

9. When performing adult CPR, the compression depth is * (1 Point)

- ○ 1 to 3 cm.
- ○ 3 to 4 cm.
- ○ 4 to 6 cm. ✓

25 Multiple-choice questions pre & post course



(Mark X if not performed)

Performance Criteria		Instructor Action	Attempt		
			1	2	3
CPR PROVIDER (1st Rescuer)					
1	Check for **Danger**.	**No Danger**			
2	Check for **Responsiveness**. • Tap or shake the casualty on the shoulders firmly. • Ask loudly, "Hello! Hello! Are you OK?".	**No Response**			
3	Activate EMS when there is no response. • **Shout** "Help! Call ambulance, dial 995 and **Get AED**	**Help is on the way**			
4	Position the casualty on a firm, flat surface.				
5	Check for normal **breathing & pulse**. • Look for rise and fall of casualty's chest, simultaneously check for carotid pulse and breathing for not more than 10 seconds. • If pulse is absent or breathing is absent/abnormal, commence CPR.	**No pulse No breathing**			
6	Ensure adequate exposure to casualty's chest and start 30 chest compressions over lower half of sternum.				

BLS Skill Performance Assessment

	0% (Strongly disagree)	25%	50%	75%	100% (Strongly agree)
I am confident in performing CPR	○	○	○	○	○
I have prior knowledge in CPR+AED	○	○	○	○	○
It is only the responsibility of medical professional to save life and learn CPR+AED	○	○	○	○	○
I do not think it is important to learn CPR+AED	○	○	○	○	○

Pre & post course self-evaluation Survey with demographic questionnaire

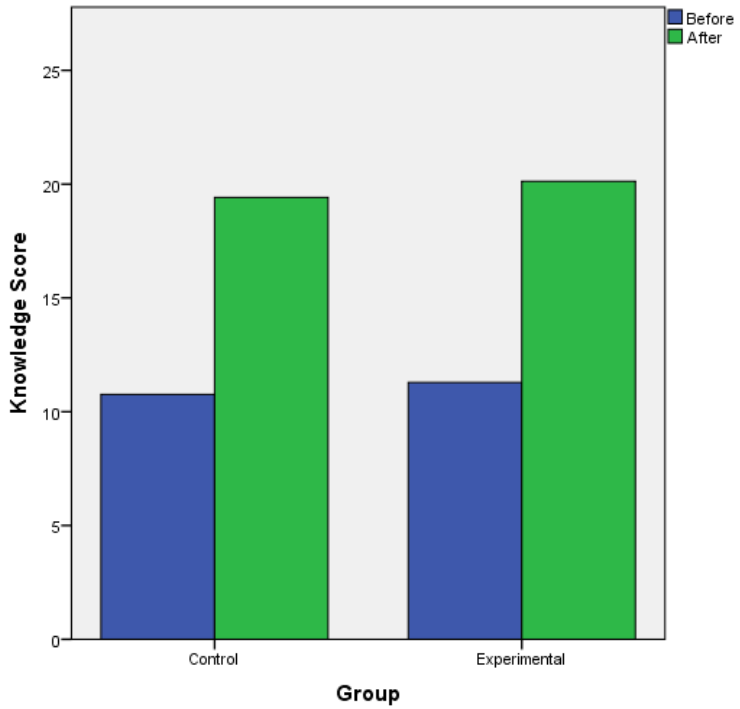
Finding

Table 1: Baseline Characteristics of Participants by Group

Variable / Category	Total n (%)	Control n (%)	Intervention (%)	P value (Chi-square)
Sex				
Male	96 (23.1%)	45 (23.3%)	51 (23%)	0.934
Female	319 (76.9%)	148 (76.7%)	171 (77%)	
Education				0.461
Secondary Level	381 (91.8%)	176 (91.2%)	205(92.3%)	
Vocational	25 (6.0%)	6 (3.1%)	3 (1.4%)	
Diploma	9 (2.2%)	11 (5.7%)	14 (6.3%)	
Age Group				
17-20	359 (86.5%)	160 (82.9%)	199 (89.6)	0.259
21-25	24 (5.8%)	14 (7.3%)	10 (4.5%)	
26-30	17 (4.1)	10 (5.2%)	7 (3.2%)	
31-35	15 (3.6%)	9 (4.7%)	6 (2.7%)	

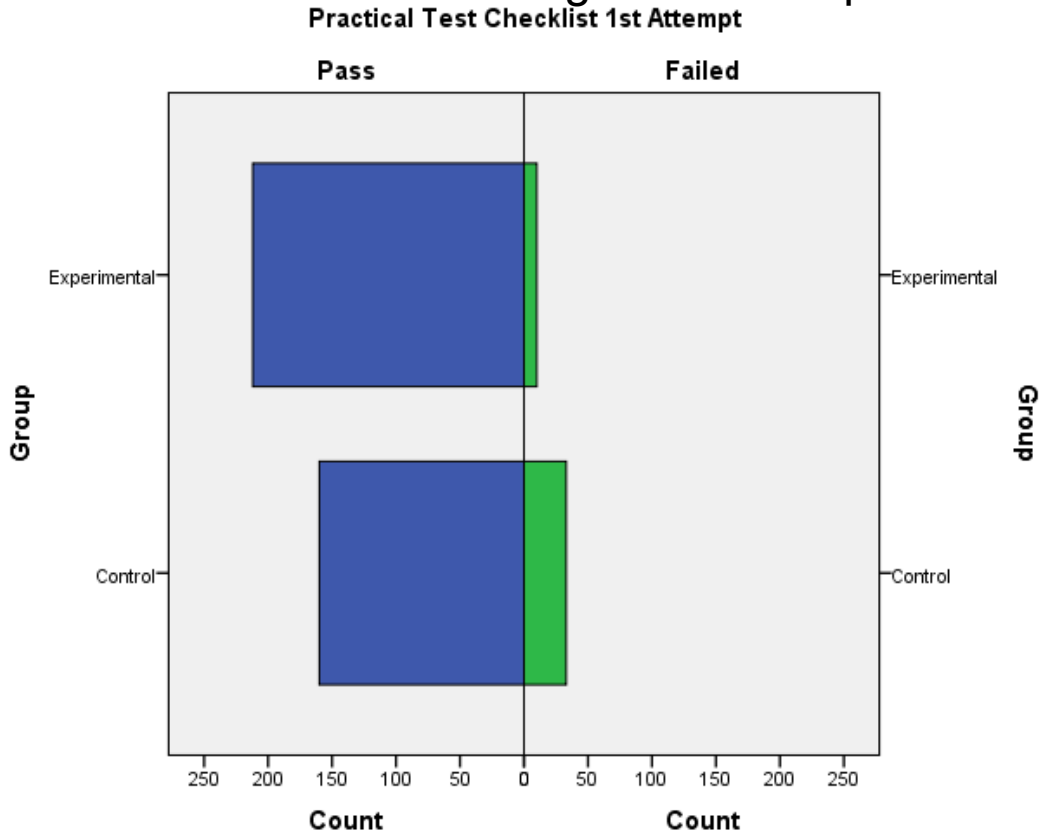
Finding: Knowledge and Practical CPR Skills Test by Group

Pre- and Post-Test Knowledge Scores



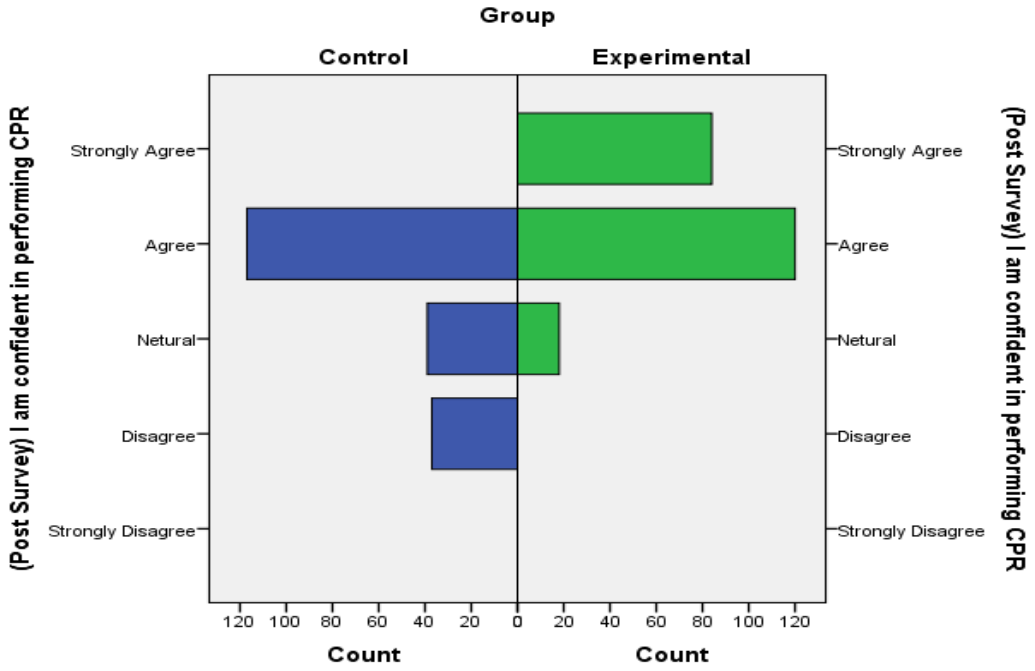
Group	Pre-Test Mean (SD)	Post Test Mean (SD)	Adjusted Post Test mean (SE)*	95% CI for Adjusted Mean
Control (n=193)	12.75 (4.03)	19.47 (3.70)	19.45	18.93,19.98
Intervention (n=222)	12.34 (3.75)	19.98 (3.73)	19.99 (0.25)	19.50,20.48

Practical Test Passing at 1st attempt

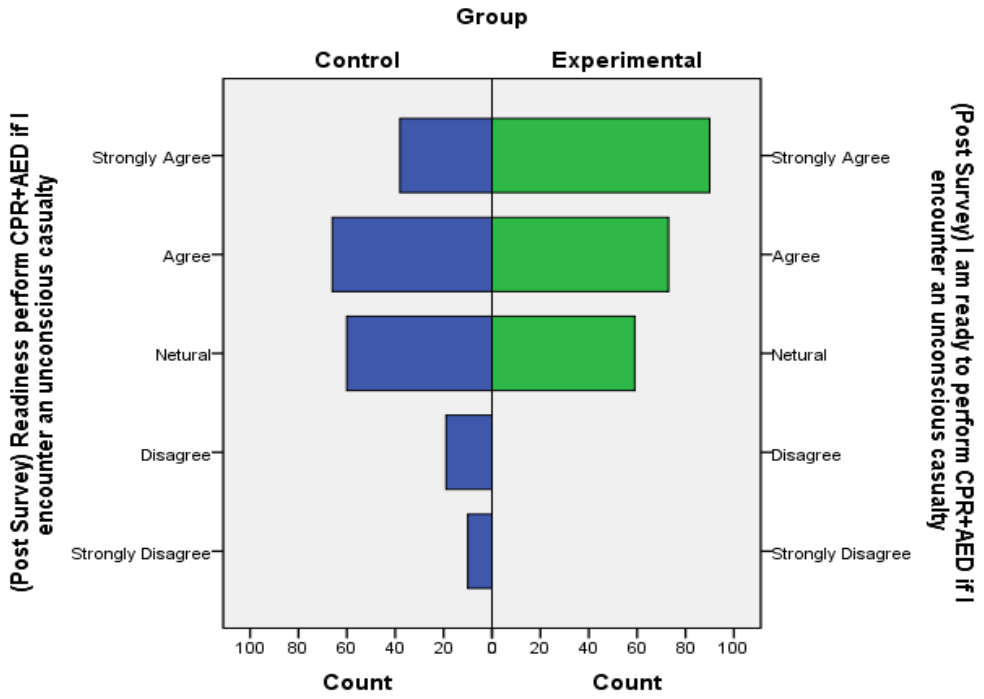


Variable / Category	Control (n = 193)	Intervention (n=222)	χ^2 (df)	P value
Pass	160 (82.9%)	212 (95.5%)	17.63 (1)	<0.001
Fail	33 (17.1%)	10(4.5%)		

Finding: Self-Reported Confidence in Performing CPR



Group	Mean Rank	Sum of Ranks	Mann Whitney	Z	P Value
Confidence in performing CPR+AED (Post-Intervention					
Control (n=193)	146.10	28198.99	9477.000	-10.944	<0.001
Intervention (n=222)	261.81	58122.00			



Group	Mean Rank	Sum of Ranks	Mann Whitney	Z	P Value
Readiness to perform CPR+AED (Post-Intervention)					
Control (n=193)	173.68	33520.00	14799.000	-5.699	<0.001
Intervention (n=222)	237.84	52800.00			

Conclusion

- Knowledge acquisition was similar between groups.
- Gamification approach led to better practical application of skills.
- Gamification-based BLS training is more effective than traditional classroom instruction in improving confidence, and readiness to perform CPR and use an AED among nursing students in Singapore.

Recommendation

This research adds valuable support to the international literature on the use of gamification in nursing education, providing meaningful guidance for educators, academic leaders, and policy decision-makers. The findings highlight the practical benefits of incorporating game-based strategies into learning environments for nursing students.

For future research, it is advisable to conduct longitudinal studies that monitor participants over an extended period. Such studies would help determine how well knowledge and practical skills are retained after gamification interventions, offering deeper insight into the long-term impact on competency development.

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