To explore the impact of clinical experiential learning to reflective perceptions from Kolb Experiential Learning Cycle Theory

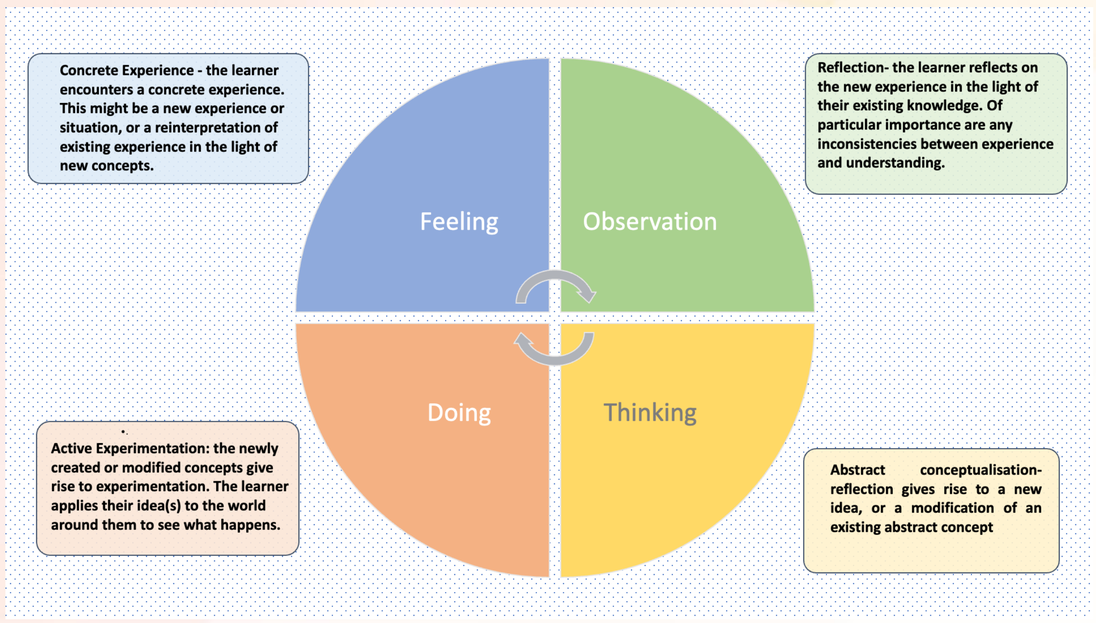
Department of Emergency medicine, School of Medicine, College of Medicine, National Cheng Kung University

Hsiang-Chin Hsu, Chih-Hsien Chi, Chia-Chang Chuang, Hsin-I Shih, Chih-Hao Lin

國立成功大學醫學院附設醫院 急診醫學部

Background

Experiential Learning, also called hands-on learning, is created by Kolb's learning theory in 1984 based on the Jean Piaget's focus on the fact that learners create knowledge through interactions with the environment. Learning follows a four-stage cycle, as outlined below. Kolb stated that learners progressed through the stages to complete a cycle, and, as a result, transformed their experiences into knowledge. Learning also involves the acquisition of abstract concepts that can be applied flexibly in a range of situations.



In medical education, clinical environments are a real and ideal environment for acquiring experiment for active experimentation. Based on the cycle of learning process, effective hands-on learning can execute all four stages of the model in order to reflect to their perception in simulation education. Therefore, the observational study is going to investigate the relation between clinical experimentation and reflective behaviors among simulation.

Table 1. The demographics data of the new and previous medical students in EM training

	Previous 6th year medical students	New 6th year medical students
Time	September 2007 to May 2009	June 2019 to May 2022
Academic year	96, 97	108, 109, 110
Male	93	166
Female	23	101
Duration in EM	Two weeks	Three weeks
Clinical practice	99 hours	6 hours

Table 2. Personal experience in the simulation course

	Previous 6th year	New 6th year	Mean Dif.	95% CI	95% CI	p value
	Mean (SD)	Mean (SD)		Lower	Upper	
I felt well briefed prior to the scenario.	3.94 (0.57)	4.71 (0.57)	-0.768	-0.917	-0.619	<0.0001
I felt stressful during the mannequin-based simulation	3.51 (0.82)	4.19 (0.80)	-0.679	-0.854	-0.503	<0.0001
I enjoyed the simulation.	4.09 (0.80)	4.36 (0.78)	-0.273	-0.445	-0.102	0.002
I felt the mannequin and the simulation environment as a whole were realistic.	3.96 (0.92)	4.49 (0.60)	-0.53	-0.685	-0.375	<0.0001
The scenarios and their progress simulate real patient encounters.	4.43 (0.59)	4.52 (0.59)	-0.86	-0.215	0.43	0.192
The available drugs and equipment were similar to those in my practice.	3.84 (0.92)	4.47 (0.68)	-0.636	-0.802	-0.469	<0.0001
The time is adequate for me to manage such a critical simulation event.	3.12 (0.83)	3.48 (1.10)	-0.386	-0.563	-0.162	<0.0001
The debriefing session effectively clarified important issues of the scenarios.	2.56 (0.78)	4.60 (0.63)	-2.043	-2.205	-1.88	<0.0001
This simulation training will result in changes in my behaviors when managing critical events.	2.58 (0.85)	4.57 (0.61)	-1.992	-2.163	-1.82	<0.0001

Methods

Emergency practice is a mandatory two-credit course in sixth year of medical education. According the new six-year medical education, medical education emphasized on clinical learning, that is, the process of observation, thinking and doing. Compared with the past medical education (6 hours), the new system of EM education emphasize on more clinical experiential learning (99 hours). The simulation course is designed to integrate the acquired knowledge, then reflect and concrete acquired experience in the three weeks. This study retrospectively analyzed the sixth-grade medical students' perception and reflection from June 2019 to May 2022 (academic year 108, 109, and 110). In order to compare the impact of different levels of clinical experiment, this study simultaneously analyzed the reflection from previous six-grade medical students from the past seven-year medical education (academic year 96 and 97).

Results

We analyzed the 267 medical students from June 2019 to May 2022 and also compared with 116 medical students from June 2019 to May 2022. Medical students, with more hours in clinical learning, reflected more advanced reflection on personal experiences. Meanwhile, those students with more experiential learning also boots confidence and self-esteem.

Conclusion

The clinical hands-on learning in EM clinically can provide students with learning motivation (personal impact), strengthen and enhance learning strategies (behavioral impact) by simulating situations (environmental impact). More experiential learning can enhance the experiential concrete through the process of observation, thinking, doing, and then reflects the knowledge and skills into the perception. Experiential education gives students a more meaningful understanding of core competencies related to their fields, helps them build confidence and find jobs after graduation.

Table 3. Questions on participants' confidence about their performance exercising the scenarios

	Previous 6th year	New 6th year	Mean Dif.	95% CI		p value
	Mean (SD)	Mean (SD)		Lower	Upper	
I felt I had correct actions during simulation.	2.59 (0.87)	2.92 (0.96)	-0.335	-0.538	-0.132	0.001
I found my knowledge basis was adequate to the simulation task.	2.77 (0.78)	2.48 (0.95)	0.284	1.101	0.468	0.003
I showed leadership during the simulation.	3.07 (0.72)	3.00 (0.93)	0.073	-0.1	0.246	0.408
I communicated clearly and specifically with the "patient's" family or/and my assistant.	2.65 (0.83)	3.37 (0.93)	-0.728	-0.925	-0.531	<0.0001
I used all available sources of help effectively.	2.97 (0.75)	3.24 (0.94)	-0.278	-0.45	-0.1	0.002
I was able to remain free from environmental distractions.	4.26 (0.67)	3.04 (1.04)	1.214	1.038	1.39	<0.0001

Table 4. Questions on participants' value of the mannequin-based simulation

	Previous 6th year	New 6th year	Mean Dif.	95% CI		p value
	Mean (SD)	Mean (SD)		low	upper	
The mannequin-based simulation is very helpful in learning the management of critical events.	2.59 (0.87)	2.92 (0.96)	-0.335	-0.538	-0.132	0.001
The mannequin-based simulation would help the faculty/staff in teaching the management of critical events.	2.77 (0.78)	2.48 (0.95)	0.284	0.101	0.468	0.003
Acting as an assistant physician in a simulation will not impede learning.	3.07 (0.72)	3.00 (0.93)	0.073	-0.1	0.246	0.408
I am very happy to spend time (2-3 hours) to be trained/tested with a mannequin-based simulation.	2.65 (0.83)	3.37 (0.93)	-0.728	-0.925	-0.531	<0.0001
The mannequin-based simulation can be effectively used to examine physicians' competence in managing critical events.	2.97 (0.75)	3.24 (0.94)	-0.278	-0.455	-0.1	0.002
The mannequin-based simulation is a reliable tool in assessing clinical skills.	4.26 (0.67)	3.04 (1.04)	1.214	1.038	1.39	<0.0001