

QR Equals Quick Response to Simplify OR Equipment Setup



Claudette Revote, RN, MSN, CNOR , Performance Improvement Specialist
 Albert Tia, RN, BSN, CNOR, Operating Room Manager
 Godfrey Ortiz, RN, MSN, ACNS-BC, NE-BC, Perioperative Services Director
 Houston Methodist West Hospital, Houston TX, 77094
 ierevot@houstonmethodist.org



LEARNING OBJECTIVES

- Identify methods for adapting the QR code to guide setup of less frequently used equipment in the operating room.
- Describe new educational techniques to support highly skilled staff members in the operating room.

PURPOSE

One of the most intricate specializations in healthcare is the operating room (OR). The OR nurse must be able to handle all its intricacies not just about the surgical procedures but also with operating over a hundred different equipment used in different procedures. This extensive variety of equipment creates a challenge for the nurse to learn and remember how to operate every single piece of equipment safely and efficiently every single time which greatly affects patient safety. Short instructional videos about the equipment are uploaded to the internet, then a QR Code is created and linked to the videos that the nurses can access using their smart phone. This will provide real-time support and guidance to the nurse when operating the equipment that they are not comfortable using.

GOAL

To measure self-efficacy using the Learning Self Efficacy Scale (L-SES) after viewing the QR code educational material. L-SES is defined as the learners' confidence in their capability to learn specific subjects.

STUDY DESIGN

This research is a **single blind, quasi experimental study**. The study will evaluate the nurse's learning self-efficacy after using the QR code educational videos on an equipment that the nurse does not frequently use.

Learning self-efficacy, defined as the trust in one's ability to master topics vital for intellectual growth, on account of its close association with academic accomplishment and effective learning approach use (Kang, et al, 2019).

The Learning Self Efficacy Scale (L-SES) was the selected tool due to its reliability and validity.

L-SES was developed to fulfill the need for a standard learning self-efficacy scale that can be used extensively in the clinical setting instead of domain-specific learning tasks.

PROTOCOL

1. INSTRUCTION PHASE

Posters about the research project were displayed in the department. Emails were sent to all full time and part time OR staff nurses.

2. RECRUITMENT PHASE

An informational meeting was conducted to introduce the study to the nurses where the informed consent was explained and voluntarily signed.

3. PRE-DATA COLLECTION PHASE

Pre-data was collected using the L-SES tool.

12 question survey using Likert scale

L-SES tool – assess cognitive, affective, and psychomotor factors.

QR Code Equals QR (Quality Results)

Learning Self Efficacy Scale

Domain/Number	Participant's ID number: _____ (PRE DATA)	Disagree — Agree				
	ITEM	1	2	3	4	5
COGNITIVE						
1	I can recall how to perform or operate orthopedic and general surgery equipment					
2	I can understand the content of instructions for operating the orthopedic and general surgery equipment and can demonstrate it to others					
3	I can verbally explain the purpose and principle of operating orthopedic and general surgery equipment					
4	I can verbally explain the sequence and interrelationship between each step					
AFFECTIVE						
5	I think I spend more time on reviewing the instructional information course than on others regarding the use of orthopedic and general surgery equipment					
6	I think I gain more in utilizing the instructional information course than in others					
7	I tend to pay more attention to information related to orthopedic and general surgery equipment operating instruction course					
8	I tend to actively look to information related to "this" course					
PSYCHOMOTOR						
9	I can precisely imitate the instructor's step and actions of operating orthopedic and general surgery equipment portrayed on the instructional information					
10	I can smoothly complete the operation steps of orthopedic and general surgery equipment					
11	I try to monitor my confidence level when using orthopedic and general surgery equipment and look for areas for improvement					
12	I try to monitor my confidence level when performing orthopedic and general surgery equipment operation (process) and make adjustments as needed					

4. INTERVENTION PHASE

Learning videos for general and orthopedic equipment were collected from the equipment vendors, and if none is available, the research team created short 3-minute videos with the help of the most experienced nurses.

Videos were uploaded into a QR code.

QR code stickers were then attached to the equipment.

An in-service was conducted for study volunteers on how to access educational videos in a QR code.

5. POST DATA COLLECTION PHASE

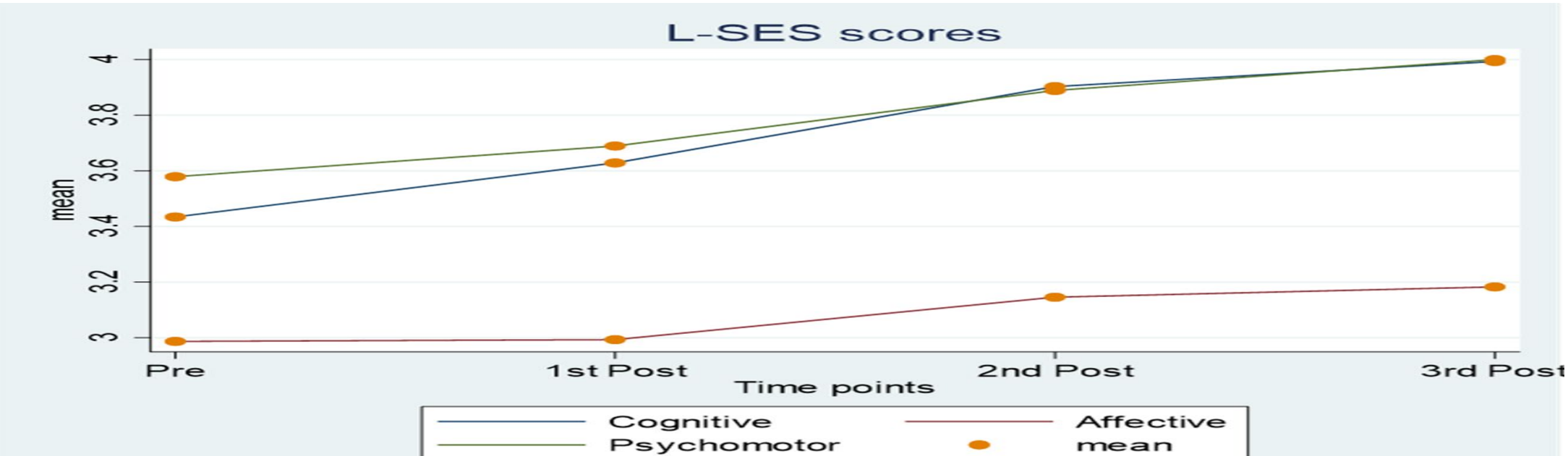
Post data was collected using the same tool

1st post data was collected after 2 months of exposure to the QR code.

2nd post data was collected after 4 months of exposure to the QR code.

3rd post data was collected after 6 months of exposure to the QR code.

DATA ANALYSIS

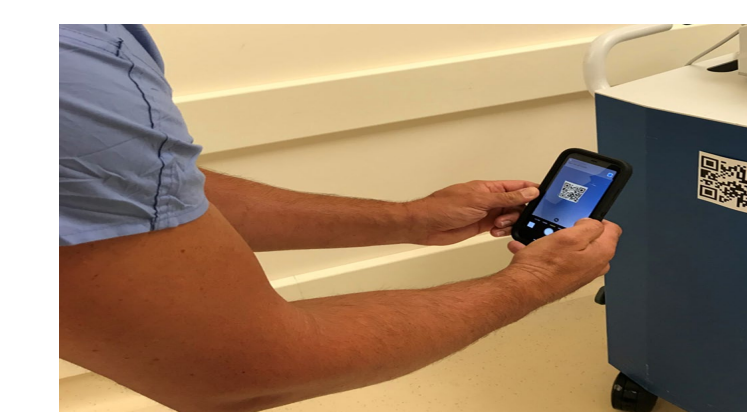


The study data were analyzed using Analysis of Variance (ANOVA) with three measurements collected using repeated measures.

RESULTS/IMPLICATIONS

Results indicate that the QR code educational tool for equipment is feasible and well accepted by OR nurses. The findings highlight significant differences in cognitive and psychomotor scores of learning self-efficacy for nurses after viewing the QR code educational material over a period of six months. Although the affective scores were trending upwards, they were statistically insignificant; therefore, research modification to understand this discrepancy in the affective scores was completed and submitted to statistician for analysis.

SAMPLE VIDEO: SCAN ME



REFERENCES

- Kang, Y. N., Chang, C. H., Kao, C. C., Chen, C. Y., & Wu, C. C. (2019). Development of a short and universal learning self efficacy scale for clinical skills. *PLoS one*, 14(1), e0209155. <https://doi.org/10.1371/journal.pone.0209155>
- Karia, C. T., Hughes, A., & Carr, S. (2019). Uses of quick response codes in healthcare education: a scoping review. *BMC medical education*, 19(1), 456. <https://doi.org/10.1186/s12909-019-1876-4>



QR Code Equals QR (Quality Results)

Learning Self Efficacy Scale

Domain/ Number	Participant's ID number: _____ (PRE <u>DATA</u>)	Disagree ← → Agree				
	ITEM	1	2	3	4	5
COGNITIVE						
1	I can recall how to perform or operate orthopedic and general surgery equipment					
2	I can understand the content of instructions for operating the orthopedic and general surgery equipment and can demonstrate it to others					
3	I can verbally explain the purpose and principle of operating orthopedic and general surgery equipment					
4	I can verbally explain the sequence and interrelationship between each step					
AFFECTIVE						
5	I think I spend more time on reviewing the instructional information course than on others regarding the use of orthopedic and general surgery equipment					
6	I think I gain more in utilizing the instructional information course than in others					
7	I tend to pay more attention to information related to orthopedic and general surgery equipment operating instruction course					
8	I tend to actively look to information related to "this" course					
PSYCHOMOTOR						
9	I can precisely imitate the instructor's step and actions of operating orthopedic and general surgery equipment portrayed on the instructional information					
10	I can smoothly complete the operation steps of orthopedic and general surgery equipment					
11	I try to monitor my confidence level when using orthopedic and general surgery equipment and look for areas for improvement					
12	I try to monitor my confidence level when performing orthopedic and general surgery equipment operation (process) and <u>make adjustments</u> as needed					

QR Equals Quick Response to Simplify OR Equipment Setup

Claudette Revote, RN, MSN, CNOR , Performance Improvement Specialist
Albert Tia, RN, BSN, CNOR, Operating Room Manager
Godfrey Ortiz, RN, MSN, ACNS-BC, NE-BC, Perioperative Services Director
Houston Methodist West Hospital, Houston TX, 77094
ierevote@houstonmethodist.org

