

**E-LEARNING VERSUS TRADITIONAL LEARNING  
IN TEACHING CRITICAL CARE NURSING: ITS  
EFFECT ON STUDENTS'  
PERFORMANCE**

*Thesis*

Submitted for Partial Fulfillment of the Requirements  
of Doctorate in Nursing Science Degree  
(**Medical–Surgical Nursing**)

*By*

**Eglal Hassanein Abd El-Hakeim Mohamed**

(M.Sc. Nursing)

**Assistant Lecturer**

Maghrabi Mansour Nursing Faculty  
British University in Egypt

**Faculty of Nursing  
Ain Shams University  
2012**

**E-LEARNING VERSUS TRADITIONAL LEARNING  
IN TEACHING CRITICAL CARE NURSING: ITS  
EFFECT ON STUDENTS'  
PERFORMANCE**

*Thesis*

Submitted for Partial Fulfillment of the Requirements  
of the Doctorate in Nursing Science Degree  
(**Medical–Surgical Nursing**)

*Under Supervision of:*

**Prof. Dr. Kamelia Fouad Abdalla**

*Professor of Medical-Surgical Nursing  
&  
Vice Dean of Post Graduate Studies and Research  
Faculty of Nursing  
Ain Shams University*

**Assist. Prof. Dr. Omar Hassan Karam**

*Assistant Professor of Information System  
Faculty of Computer & Information Sciences  
Ain Shams University*

**Assist. Prof. Dr. Neamat Allah Gomaa Ahmed**

*Assistant Professor of Medical-Surgical Nursing  
Faculty of Nursing  
Ain Shams University*

**Faculty of Nursing  
Ain Shams University  
2012**

---

---

## ABSTRACT

The 21 century is the era of high technology, and the information age. E-Learning is becoming one of most important educational means. The present study is aiming to compare between e-Learning and traditional learning methods regarding critical care nursing and assess the effect of e-Learning teaching unit on students' performance regarding critical care nursing. The research hypothesis focused on that; students exposed to the e-Learning teaching unit will have positive effect on their performance regarding critical care nursing. A quasi-experimental design was applied to achieve the objectives of the study. The sample composed of (60) second year nursing students at Mubarak Kohl Technical Institute of Nursing, Faculty of Medicine, Cairo University, included control and study groups of 30 students each. Data were collected using self administered questionnaire sheet, students' performance observational checklist, and students' opinionair sheet. An e-Learning module was designed and implemented to students in the study group. The study results showed that the two groups were similar in their characteristics. There was no statistically significant difference between the control and study groups regarding knowledge related to critical care nursing, however a highly statistically significant difference was found between the control and study groups regarding performance in relation to critical care nursing, and both control and study groups were satisfied with both methods of teaching. The study recommended the use of "blended learning", to provide the most efficient and effective teaching.

---

**Key words:** E-learning, blended learning, traditional teaching



---

---

## **CONTENTS**

---

---

<b>Subject</b>	<b>Page</b>
<b>Abstract</b>	<b>i</b>
<b>Introduction &amp; Aim of the study</b>	<b>1</b>
<b>Review of literature</b>	<b>6</b>
<b>Subject and Methods</b>	<b>52</b>
<b>Results</b>	<b>74</b>
<b>Discussion</b>	<b>115</b>
<b>Conclusion and Recommendations</b>	<b>142</b>
<b>Summary</b>	<b>145</b>
<b>References</b>	<b>153</b>
<b>Appendices</b>	
<b>Arabic Summary</b>	

## LIST OF ABBREVIATIONS

<b>AACN</b>	: American Association of Critical Care Nurses
<b>ABGs</b>	: Arterial Blood Gases
<b>ADDIE</b>	: Analysis, Design, Development, Implementation, and Evaluation
<b>ADL</b>	: Advanced Distributed Learning
<b>BSIs</b>	: Blood Stream Infections
<b>CAL</b>	: Computer Assisted Learning
<b>CBT</b>	: Computer Based Training
<b>CC</b>	: Critical Care
<b>CCNs</b>	: Critical Care Nurses
<b>CCS</b>	: Critical Care Setting
<b>CCRN</b>	: Critical Care Registered Nurse
<b>CDC</b>	: Center of Disease Control and Prevention
<b>CD-ROM</b>	: Compact Disk Read-Only Memory
<b>CPR</b>	: Cardio Pulmonary Resuscitation
<b>CVC</b>	: Central Venous Catheter
<b>CVP</b>	: Central Venous Pressure
<b>DVD</b>	: Digital Versatile Dick
<b>ECG</b>	: Electro Cardiography/ Electrocardiogram
<b>ETT</b>	: Endotracheal Tube
<b>E-Learning</b>	: Electronic Learning
<b>FIO<sub>2</sub></b>	: Fraction of Inspired Oxygen
<b>HAIs</b>	: Hospital Acquired Infections/ Healthcare Associated Infections

## **LIST OF ABBREVIATIONS (Cont.)**

<b>IBT</b>	: Internet-Based Training
<b>ICT</b>	: Information and Communication Technology
<b>ID</b>	: Instructional Design
<b>IT</b>	: Information Technology
<b>IV</b>	: Intra Venous
<b>LCMS</b>	: Learning Content Management System
<b>LMS</b>	: Learning Management System
<b>LLL</b>	: Lifelong Learning
<b>LOC</b>	: Level of Consciousness
<b>MCQ s</b>	: Multiple Choice Questions
<b>MV</b>	: Mechanical Ventilator
<b>N</b>	: Number
<b>OFL</b>	: Open/Flexible Learning
<b>OL</b>	: Online Learning
<b>PDF</b>	: Portable Document Format
<b>RAID</b>	: Re-usable, Accessible, Interoperable, and Durable
<b>SCORM</b>	: Sharable Content Objectives References Model
<b>SPO<sub>2</sub></b>	: Percent of Oxygen Saturation of Hemoglobin Measured by Pulse Oximetry
<b>T&amp; F</b>	: True and False
<b>VS</b>	: Vital signs
<b>WBI</b>	: Web-Based Instruction
<b>WBL</b>	: Web-Based Learning
<b>WBT</b>	: Web Based Training

---

---

## LIST OF TABLES

---

---

<b>Table</b>	<b>Title</b>	<b>Page</b>
1	Frequency distribution and percentage of students in both groups.	75
2	Comparison between pre/post test mean scores of knowledge among the control group.	77
3	Comparison between pre/post test mean scores of knowledge among the study group.	79
4	Comparison between pre test mean scores of knowledge among both groups pre module implementation by two teaching methods.	81
5	Comparison between post test mean scores of knowledge among both groups post module implementation by two teaching methods.	83
6	Comparison among quizzes mean scores of Knowledge in both groups throughout module implementation by two teaching methods.	85
7	Comparison between mean scores of students' performance regarding oxygen administration in both groups post module implementation by two teaching methods.	87
8	Comparison between mean scores of students' performance regarding suction in both groups post module implementation by two teaching methods.	90

---

---

**LIST OF TABLES (Cont.)**

---

---

<b>Table</b>	<b>Title</b>	<b>Page</b>
9	Comparison between mean scores of students' performance regarding endotracheal suction in both groups post module implementation by two teaching methods.	93
10	Comparison between mean scores of students' performance regarding pulse oximetry in both groups post module implementation by two teaching methods.	97
11	Comparison between mean scores of students' performance regarding care of central venous catheter in both groups post module implementation by two teaching methods.	100
12	Comparison between mean scores of students' performance regarding measuring central venous pressure in both groups post module implementation by two teaching methods.	102
13	Comparison between total mean scores of students' performance in both groups post module implementation by two teaching methods.	104
14	Comparison between mean scores of students' satisfaction in both groups (control& study) post module implementation by two teaching methods.	106
15	Frequency distribution and percentage of students' like and dislike regarding traditional method of teaching used.	108
16	Frequency distribution and percentage of students' recommendations and barriers regarding traditional methods of teaching used.	109

---

---

**LIST OF TABLES (Cont.)**

<b>Table</b>	<b>Title</b>	<b>Page</b>
17	Frequency distribution and percentage of students' like and dislike regarding e- Learning method of teaching used.	110
18	Frequency distribution and percentage of students' recommendations and barriers regarding e-Learning methods of teaching used.	111
19	Correlation analysis between total score of students' knowledge and total scores of students' performance in both groups.	112
20	Correlation analysis between total score of students' knowledge and total scores of students' satisfaction in both groups.	113
21	Correlation analysis between total score of students' performance and total scores of students' satisfaction in both groups.	114

## ACKNOWLEDGEMENT

*My sincere gratitude should be submitted first for "ALLAH "Who always helps and cares for me.*

*I would like to express my deepest gratitude and appreciation to Prof. Dr. Kamelia Fouad Abdalla, Professor of Medical-Surgical Nursing and Vice Dean of Post Graduate Studies and Research, Faculty of Nursing, Ain Shams University, for her sincere guidance, constructive suggestions, continuous encouragement, and motherly advice for the fulfillment of this study.*

*I would like to express my deepest gratitude and appreciation to Assist. Prof. Dr. Omar Hassan Karam, Assistant Professor of information system, Faculty of Computer and Information Sciences, Ain Shams University, for his kind supervision, and fatherly attitude.*

*My deep appreciation to Assist. Prof. Dr. Neamat Allah Gomaa Ahmed Assistant Professor of Medical-Surgical Nursing, Faculty of Nursing, Ain Shams University, for her guidance, help, effort, support, and advice during various phases of the study.*

*Special thanks and gratitude are devoted to all students, who shared in this study at Mubarak Kohl Nursing Institute.*

*Last, but not least, my sincere and heartfull thanks are due to all my family members, and to my real friends for their constant support, interest, and encouragement.*

*Special thanks to all who helped me throughout this work.*

*Eglal Hassanein Abd El-Hakeim*

## INTRODUCTION

Nursing education principally concentrates on transmitting nursing knowledge, and assisting nursing students to acquire the necessary skills and attitudes associated with nursing practice. To meet the diverse needs of today's educational climate, nursing educators must develop an understanding of a variety of learning environments and skills in modern teaching strategies (**Abu Hasheesh, Al-Mostafa, & Obeidat, 2011**).

Nursing practice is changing globally, and with these changes, nursing education must build a new infrastructure. Effective nurse education can influence and lead to safe clinical intervention (**Steen, & Costello, 2008**).

The 21 century is the era of high technology. It is the information age. In the last decade, educational research reported increasing Internet use for academic purposes in higher education institutes. As the internet has become more central to students' experiences in higher education (**Ahmed, 2010; Lee, & Tsai, 2011**). Due to increasing demand for education and

training in the information age, online learning and teaching is becoming a necessity in their future (**Oncu, & Cakir, 2011**).

Electronic Learning (e-Learning) can be described as “integration information technology into the learning/teaching process using materials delivered by the Internet. E-Learning is becoming ever more important in higher education and the centrality of e-Learning to educational diversity and the shift from teaching to learning. E-Learning is becoming one of most important educational means (**Xi, & Yong, 2007; and Blake, 2009**).

E-Learning is considered to be a system where the features of the formative and teaching process give the students the chance of attending their studies in a time, place and logical order far from the teachers. E-Learning has caused a general change in today's teaching because it modifies identity, role, and functions of space and time (**Bourlova, Bullen, 2005; and Cartell, 2006**).

Traditional teaching methods are ineffective as an instructional method. They also assert to create a passive, non-thinking, information-receiving role. Furthermore, a paradigm

shift from the traditional methods to the one that uses a variety of approaches which focus on effective teaching and stimulating students to think critically, and more specifically, to analyze and synthesize information (**Abu Hasheesh et al., 2011**).

Critical care nursing may be defined as the area of nursing that specializes in caring for patients who are in need of an immediate care response for life-threatening situations. A critical care nurse (CCN) deals with critically-ill patients, and patients who need emergency care. The rationale for specialization of this branch is that special skills and techniques are needed for working with these patients, for whom care can make a huge difference, often between life and death (**Alhirish, 2010; and AACN, 2011**).

**Significance of the study:**

Education in health cares today both patient education and nursing staff/student education is a topic of greatest interest to nurses in every setting in which they practice. Teaching is the major aspect of the nurse's professional role (**Bastable, 2008**).

E-Learning is currently viewed by Arab government officials as a viable solution to their educational problems. As a result, heavy investments by local, regional, and international organizations are made to implement e-Learning programs. In 1989, the Supreme Council of Egyptian Universities approved distance education programs at four of the Egyptian traditional universities. Under this ruling, both undergraduate and graduate degrees are awarded using the distance education model (**Selim, 2007; Dajani, 2009**).

Findings indicate that nursing students had positive perception of the impact of using information technology on teaching and learning critical care nursing in Egypt (**Kandeel & Ibrahim, 2009**). Researches reported that, the importance for nursing education is to concentrate on developing intensive care courses, where the performance of students is weakest (**Aari, Castren, & Kilpi, 2004**).

## **AIM OF THE STUDY**

This study aims to:

1. Compare between e-Learning and traditional learning methods regarding critical care nursing.
2. Assess the effect of e-Learning teaching unit on students' performance regarding critical care nursing.

### **Research Hypothesis:**

Students exposed to the e-Learning teaching unit will have positive effect on their performance regarding critical care nursing.

### **Operational definition:**

**Performance** is the act of performing; of doing something successfully; using knowledge. Mainly by using manual skills; experience generally improves performance.