

## THE EFFECTS OF MODIFIED LOG BOOK ON LEARNING PERFORMANCE OF OPERATION ROOM STUDENTS IN ARDABIL UNIVERSITY OF MEDICAL SCIENCE

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### ABSTRACT

**Introduction:** Daily log or log book is a book containing general objectives of the course, course process, and performance of the student throughout the course and program. Therefore, this research aimed to examine effects of using the log book on educational performance of the students of operation room in Ardabil University of Medical University.

**Materials and Methods:** This semi-experimental study was carried out in two phases of preparing a modified log book and implementing and evaluating. At the first stage, operation room professors of Ardabil Medical Science University prepared and codified a log book for the students of operation room field (23 items). The final version was provided to all students of operation room in Ardabil after two revisions and in academic year 2015-2016.

**Results:** Totally, 98 students filled out the questionnaire, 64 were girls (65%) and 34 were boys (35%). Thirteen educational outcomes were examined including familiarizing students and professors with tasks of each clinical ward in the operation room ( $p = 0.001$ ), more than 80% coverage of educational objectives in each course ( $p = 0.001$ ), motivating the instructor to observe the student's performance ( $p = 0.001$ ), using electrical surgery tools (cutter, dermatome, suction, etc.) ( $p=0.001$ ), accurate record of the pertinent items ( $p=0.001$ ), packing and sterilizing surgery tools ( $p = 0.05$ ).

**Conclusion:** Log books is effective in evaluating and achieving learning goals so that operation room students and trainers had more chances for giving feedback about education process and students-trainers interaction in small education groups and clinical situation.

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### Introduction

Education systems all around the world try to replace the traditional methods with novel and dynamic methods. The new methods are expected to generate feedbacks and facilitate assessment, revision, and continuous reforms. One of the reliable candidates in this regard is log book. Daily log or log book is a book containing general objectives of the course, course process, and performance of the student throughout the course and program. The book is useful for evaluating education performance and assessing the education program. [1]

An education system is effective when it leads learns in the right path. A log book to log events and scientific experiences of the study gradually becomes a valuable set of information that facilitates identifying issues of the learning process and generating proper feedback. [2]

Log book lists the skills to be learned so that the student is required to log routinely. Through this, the student can give direct feedbacks about accuracy of scientific measures to the trainers. The student knows what he/she needs to learn and how the learning process is evaluated. In other words, the student receives a list of educational goals, clinical skills, and the type of patients that he/she needs to work with. Through this, a structure is formed of learning and evaluating in an experimental environment. Given the varying education environment that the student experiences, log book is a possibility to make the education experience more stable. [1, 2]

Different methods bring different advantages; however, using one tool regardless of the situation is not free of hardships. For instance, a study on student log book in Nottingham University showed that despite improvement in general trend, some of the students and professors were not aware of objectives and importance of log book. So that even the students had trouble having their logs signed by the professors. In some cases, the students were reluctant to have their logs signed by the professor [3]. Another study reported that most of the students had found log book not effective in creating motivation for learning or generating feedback. [4]

Literature review about the result of using log book in training interns highlighted paucity of research works. A study in the Faculty of Nursing and Midwifery, University of Qazvin compared checklist and log book method for evaluating midwifery interns. The findings showed that the student tended to deemphasize their encounter with patients in the ward [5]. They also failed to complete the log book unless they were required to do so. Therefore, log book lacked the required validity and reliability in modifying the educational programs. However, an ideal log book is expected to be economic, feasible, and acceptable; it also should be easy to collect and check in a timely manner for further data analyzing and generating feedback to the student. [6]

To deal with the shortcoming, other studies have recommended combining clinical learning guidelines with log book to achieve more feedback [7], rethinking [8], student-professor interactions [9], and improvement of evaluation process [10], which are the main elements of education development.

A study in Ardabil-Iran on the factors effective on quality of clinical education in operation room students showed that the majority of the participants believed that education programming (58.3) and practical demonstration to the student (59.4) in the hospital were not satisfactory, there was a poor relevance between theoretical and practical works (45.8), and the trainers' supervision on performance of interns was at average level and inconsistent (60.4) [11]. Given the lack of any evaluation sheet or log book in University of Aradabil, the professors of operation room department decided to codify a logbook for the operation room course and review its strengths and weaknesses. Since the results of a similar study in Hamedan indicated reluctance to fill out the books and a great deal of paper works, a modified log book based on the headlines of the courses was developed in academic year 2015-2016. Therefore, this research aimed to examine effects of using the log book on educational performance of the students of operation room in Ardabil University of Medical University.

## **MATERIALS AND METHODS**

This semi-experimental study was carried out in two phases of preparing a modified log book and implementing and evaluating. At the first stage, operation room professors of Ardabil Medical Science University prepared and codified a log book for the students of operation room field (23 items) and provided it to the professors of operation room department in Hamadan University for revision. The final version was provided to all students of operation room in Ardabil after two revisions and in academic year 2015-2016. Participating students were selected through census sampling (n = 98; including two guest students). The students were grouped in control and intervention groups through block method. The intervention group used the log book and the control group followed the standard procedure. Content validity was used to check validity of the tool and relevance, clarity, and readability of each question were examined by the experts in the both universities. The data was analyzed using mean, standard deviation, and chi square. Reliability of the measures of realization of educational goals was %79 based on Cronbach's alpha. In general, 13 educational outcomes were examined.

## **RESULTS**

Totally, 98 students filled out the questionnaire and as the data showed, 64 were girls (65%) and 34 were boys (35%). Thirteen educational outcomes were examined including familiarizing students and professors with tasks of each clinical ward in the operation room (p = 0.001), more than 80% coverage of educational objectives in each course (p = 0.001), motivating the instructor to observe the student's performance (p = 0.001), using electrical surgery tools (cutter, dermatome, suction, etc.) (p=0.001), accurate record of the pertinent items (p=0.001), packing and sterilizing surgery tools (p = 0.05). These outcomes were significantly different. Moreover, familiarization with different stitching tools (p=0.4), identifying surgery tools and application of different prosthesis (p =0.05), cooperation with other members of surgery team as circuler (p=0.08), first and second scrub (p=0.07) were not significantly different between the two groups. (**Table 1**)

**Table 1:** Thirteen educational outcomes expected in operation room program in clinical situation

No.	Educational outcomes		Very high	High	Low	Very low	
1	Familiarizing the student and professor with tasks of each clinical unit in the operation room	Intervention	10	22	4	9	0.001
		Control	1	31	0	13	
2	Covering more than 80% of educational goals in each course	Intervention	12	11	15	7	0.0001
		Control	1	12	13	19	
3	Motivating the professor to observe the student and give feedback	Intervention	6	19	18	2	0.0001
		Control	1	8	23	13	
4	Familiarization with surgery sets in each clinical unit	Intervention	10	25	5	5	0.4
		Control	11	22	7	5	
5	Using electrical surgery tools (cutter, dermatome, suction, etc.)	Intervention	13	8	14	10	0.0001
		Control	2	2	21	20	
6	Identifying surgery tools and using prosthesis in surgeries	Intervention	15	8	22	0	0.08
		Control	13	23	9	0	
7	Surgery stitching methods	Intervention	9	18	6	12	0.4
		Control	9	12	11	13	
8	Accurate record of pertinent items in files	Intervention	10	11	17	7	0.0001
		Control	2	1	30	12	
9	Cooperating with the surgery team as circuler	Intervention	7	21	16	1	0.08
		Control	5	20	20	0	
10	Cooperating with surgery team as the second scrub	Intervention	5	25	5	3	0.07
		Control	2	30	8	5	
11	Cooperating with surgery team as the first scrub	Intervention	10	9	20	6	0.05
		Control	2	7	23	13	
12	Packing and sterilizing surgery tools	Intervention	4	30	9	2	0.3
		Control	5	32	7	1	
13	Respecting justice in evaluating students	Intervention	17	12	16	0	0.001
		Control	2	14	16	13	

## DISCUSSION

The effects of log books on educational achievements of students of operation room were examined. The results showed notable improvement in educational achievements of the students who used log books comparing with those who did not. This result supports the hypothesis of the study. In terms of “familiarizing the student and professor with tasks of each clinical unit in the operation room” the students who used log books were considerably more successful than those who did not use log books. In terms of “covering more than 80% of educational goals in each course” the students who used log books realized more than 80% of educational goals of the course. And in terms of “motivating the professor to observe the student and give feedback”, the professors who used log books were considerably more successful comparing with those in the control group so that the former were more effective on motivating learning in students. In terms of “using electrical surgery tools (cutter, dermatome, suction, etc.)” the group that used log book were more successful comparing with the control group. In terms of “accurate record of pertinent items in files”, the intervention group had more discipline in recording comparing with the control

group. In terms of “Cooperating with surgery team as the first scrub” the intervention group showed notably higher performance comparing with the control group. In terms of “respecting justice in evaluating students” the professors who used log books had more accurate, realistic, and fairer assessment of educational performance and skill of the students; while the professors in control group did not make highly reliable assessment of the student’s performance.

The findings showed that using log books improved scores in cognitive and skill fields; this is consistent with Moghadasian et al. A study on 26 BSc students of nursing – operation room showed that those who used log books were more successful in their field comparing with students in control group. [11]

The results reported by Watters et al (2006) showed effectiveness of log books in evaluating and achieving learning goals [9]. Some authors have argued that log books should be used by all trainers as a tool to report procedures throughout education [12]. Moreover, log book can be used as a tool to analyze depth and breadth of reported experience during internship [13]. Authors have shown that more than being a tool to control learning performance by the instructor, using log book is more effective than the instructor’s supervision. [10]

However, difference between the control and intervention groups was not significant in terms of “familiarization with surgery sets in each clinical unit,” “surgery stitching methods,” “packing and sterilizing surgery tools,” “cooperating with surgery team as the second scrub,” and “cooperating with the surgery team as circuler.” Kronwall reported that even after two years, students and instructors were not adequately familiar with using log books [10]. This is consistent with Raghoebar-Krieger et a. [14], Achuthan [15], and Denton [16]. As to limitations of using log books, Khorsandizadeh reported that log book information lacked the validity to be used as an evaluation tool. [17,18]

### CONCLUSION

log books is effective in evaluating and achieving learning goals so that operation room students and trainers had more chances for giving feedback about education process and students-trainers interaction in small education groups and clinical situation.

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### Conflicts of interest

There are no conflicts of interest.

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