ORIGINAL RESEARCH

Implementing Interactive Nursing Administration lectures and identifying its influence on students' learning gains

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Abstract

In the present study the effect of structured interactive lectures on students' learning was assessed using a pre-experimental study design. All students enrolled in the fourth year of faculty of nursing, Damanhour University were exposed to four interactive nursing administration lectures given by the researcher. Effects of these lectures were evaluated by giving students "Students Assessment of Learning Gains (SALG)" questionnaire in order to identify their learning gains acquired after attending the interactive lectures. 134 students out of 182 agreed to respond to the questionnaire. There were significant correlations between activities used during interactive lectures and the different students' learning gains (6 gains). Students ranked their acquired information as the highest gain while their ability to integrate the lectures concepts as the least gain. The study recommended continuing the investigation of interactive lectures in terms of determining how to introduce other activities that help in increasing the students' abilities to integrate lectures concepts together. A comparison between the effects of interactive versus traditional lectures could be studied further.

Key words

Interactive lectures, Students' learning gains, Teaching methodologies, Role play, Jigsaw method

1 Introduction

All over the world as well as in the United States lecturing is the most common method when teaching adults. In spite of opportunities for innovation provided by changing technology and educational research, there is little change in the dominant use of lectures [1]. Weaknesses of traditional lecturing are that it stimulates very few of the senses that people use to learn with [2]. Also, the students are passive receivers of information and therefore are not involved in process of learning, which makes lectures characterized by poor attendance rates [3]. If properly planned and organized lectures can be very effective. So, nowadays it is recommended to develop and implement new educational practices to make classrooms more interesting and interactive even in a lecture format [4].

Steinert and colleagues (1999) defined the interactive lecture as the lecture in which active involvement and participation by the students and classroom assessment strategies are embedded into a lecture at frequent intervals in order to foster deeper processing of course content [5]. Instructional strategies used during active learning can (a) be completed by

students either in-class or out-of-class, (b) be done by students working either as individuals or in group, and (c) be done either with or without the use of technology tools [6, 7].

Interactions allow discussion, reduce the monotony of passive learning, and enhance the students' level of understanding and their ability to synthesize and integrate material [8]. Moreover, interactive lectures can increase student engagement with course material and facilitate learning, as well as, they allow students to use material learned in class and contribute to their own learning [5]. In this approach, the role of the instructor is more like that of a facilitator leading to student's and teacher's satisfaction [3]. Active learning instructional strategies can be created and used to engage students in (a) thinking critically or creatively, (b) speaking with a partner, in a small group, or with the entire class, (c) expressing ideas through writing, (d) exploring personal attitudes and values, (e) giving and receiving feedback, and (f) reflecting upon the learning process [8, 9].

Many advantages are found to be correlated with interactive-learning strategies such as giving students opportunities to connect new information to their own experience, providing them with models for applying new knowledge, and promoting cognitive skills for higher-order thinking [10-16]. Furthermore, through interaction students learn to interrogate issues, share ideas, clarify differences, and construct new understandings [17, 18]. A properly structured lecture can capture students' interest and attention, engage them in self-learning, efficiently cover important topic areas, and increase retention of information. Therefore, "Interactive Lecture" will continue to be an important and critical element of the revised nursing curriculum [19].

Interactive lectures can be implemented through the use of different instructional methodologies, such as: brain storming, small group discussion, jigsaw methods, role playing as well as simulation. Brainstorming refers to that process whereby students generate a list of issues in response to a specific question or topic and judgment of the responses is initially suspended. Only after the list is completed are comments or critiques invited [20]. Another method is the Jigsaw in which each group of students works on a different aspect of the same problem, question, or issue. At the conclusion of small group discussions, the class rejoins for synthesis of the results and discussion of the problem as a whole [21, 22]. Furthermore, the discussion with each group prevents receiving answers from only the eager students in the front row. Topics that have more than one correct answer are essential to promote involvement of all group members. Example: Ask students to compare or relate topics from class to events in their own lives [6]. Role playing is considered an excellent tool for engaging students and allowing them to interact with their peers as they try to complete the task assigned to them in their specific role. This work can be done in cooperative groups and/or students can maintain the personal of their role throughout the class period. Students are more engaged as they try to respond to the material from the perspective of their character [23].

As discussed previously, the interactive lectures have many advantages if well prepared and implemented. Thus, the present study is conducted in order to help faculty find different ways in implementing lectures to be interactive and to investigate the effect of this type of lectures on students' learning gains.

1.1 Aim of the study

The current study aims to identify the effect of interactive lecture format on students' learning gains (students' understanding of class content, their skills , students' attitudes, integration of different lectures' concepts, students' acquired information during the lectures and gains due to support given to the student as an individual learner).

1.2 Research question

Is there an effect of the interactive ways of teaching on students' learning gains?

2 Materials & methods

2.1 Design

The study has a pre-experimental correlational design.

2.2 Setting

The study was conducted at Faculty of Nursing, Damanhour University. The faculty is newly developed since 2006 and it is the place where the researcher works.

2.3 Subjects

Subjects of the study included all students (n = 182) enrolled in the fourth year at Faculty of Nursing, Damanhour University at the academic year (2012-2013) who studied the Nursing Administration course as a mandatory subject. Only 134 students attended the lectures and agreed to respond to the study questionnaire.

2.4 Study instrument

The Student Assessment of Learning Gains (SALG) [24] revised instrument was used in the current study to identify the gains acquired by students after attending 4 interactive lectures. The SALG was developed in 1997 by Seymour and was subsequently revised by Carroll, Seymour, and Weston in 2007 to better reflect the goals and methods used in a broader array of courses. The SALG instrument focuses exclusively on the degree to which a course has enabled student learning. In particular, the SALG asks students to assess and report on their own learning, and on the degree to which specific aspects of the course have contributed to that learning [25]. The researcher customized the SALG to reflect the learning activities and objectives of the presented nursing administration course and then administered the assessment to the students in a paper and pencil format.

The SALG was divided by the researcher to 3 parts.

Part 1 consisted of 29 statements that measure students' gains in six dimensions, namely; a) students' understanding of class content, b) their skills, c) students' attitudes, d) integration of different lectures' concepts, e) students' acquired information during the lectures and f) gains due to support given to the student as an individual learner. Examples of questions in this part: As a result of your work in this class, what gains did you make in your understanding of each of the following? 1. The main concepts explored in this class. Another example, As a result of your work in this class, what gains did you make in the following skills? 1. Working effectively with others. Feedback from students includes quantitative ratings on a 5 points likert – scale ranging from 1 "No gains" to 5 "great gain".

Part 2 concerned with the students' opinions about the different methods of teaching activities used during the interactive lectures. Examples of questions in this part: How much did the following aspects of the class help your learning? 1. The instructional approach taken in this class Responses. 2. How the class topics, activities, reading and assignments fit together. Responses on part 2 were on 5 points Likert scale (1 No help to 5 very much help).

Part 3 asked about their demographic characteristics (sex, Administration was taught in the first or second semester).

2.5 Methods

1) An official permission from the Dean of Faculty of Nursing, Damanhour University was obtained to allow data collection from students.

2) The fourth year students were divided into two groups according to the faculty policy, each group consisted of 91 students and studied a mandatory nursing administration course during one semester.

3) Four lectures out of 12 lectures of the nursing administration course namely; "nursing documentation, nurses staffing, nurses scheduling and quality of patient care" were lectured by the researcher using interactive ways of teaching.

4) Students who attended the lectures in each semester were divided into groups (7-9 groups) ranging from 7-9 members for each group to work together during the lectures. They were exposed to many interactive methodologies such as brain storming, Jigsaw, small group discussion followed by oral presentation and role play.

5) Brainstorming was used in the 4 mentioned lectures either to generate purposes, definitions or even principles. The jigsaw method was used in the nursing documentation lectures to form the whole picture of what should be documented and how. In addition to the discussion with each group which was used in all lectures and the students got a written piece of paper after the discussion then chose one of group members to present it to the large group. In the study, role playing was used in the lecture of scheduling as the students were required to simulate the Centralized and Decentralized scheduling while showing the advantages and disadvantages of each one of them.

6) The four lectures were given twice during the academic year once in the first semester for one group of students and repeated again with the same methods in the second semester for the second group of students.

7) The SALG was translated into Arabic by the researcher and was tested for content validity using five experts' reviews. Each statement was written in English and in Arabic and a space to write the right translation and distributed to the experts namely 2 professors, 2 lecturers of nursing administration and one lecturer of nursing education. They reviewed the Arabic to ensure that the statement has the same meaning of the English one and that it will help to measure the intended dimensions. Modifications were done accordingly. The reliability of SALG was tested using Cronbach alpha and was equal to (0.945).

8) After finishing both semesters, All students (n = 182) were given the SALG questionnaire. Only 134 students attended the lectures and agreed to respond to the questionnaire after subtracting 18 students of the pilot study.

9) The students were notified not to write their names on the questionnaire to ensure anonymity. Also, the purpose of the research was explained to all students and was written on the first page of the questionnaire as introduction.

10) During the data collection phase, the students were attending other classes either in the clinical area or in the faculty building. The researcher took the permission from their instructors to give the students the questionnaire, and then recollect them on the same day or on the second day from their instructors.

11) Data were collected in the period from last week of April 2013 to first week of May 2013. The instrument was completed by participants within approximately 10 – 15 minutes.

2.6 Statistical analysis

After data were collected, coded and fed to statistical software SPSS version 16. All statistical analysis was done using two tailed tests with alpha error set of .05 *P* value.

Regarding scoring system, the items scores for each student's gains dimensions (6 dimensions). Part (1) were summed together then the sum of scores for each dimension and total score was calculated by summing the scores given for its responses. The scores then transformed into score percent as the following:

$$\text{Score (\%)} = (\text{the observed score} / \text{the maximum score}) \times 100$$

The following statistical tests were used:

A. Descriptive statistics: included the mean with standard deviation and percent to describe the scale and categorical data.
B. Analysis of numeric data: One-Sample Kolmogorov-Smirnov Test: Independent sample *t*-test and Correlation

analysis: The spearman correlation co efficient (rho) is expressed as the Pearson co efficient. The value indicates the strength of relation as follow: Weak correlation for rho less than 0.25, intermediate correlation for rho of value between 0.25-0.74 and strong correlation for values between 0.75-0.99.

C. Reliability analysis: Internal consistency between the scale items was tested using alpha Cronbach's for each domain and the overall.

3 Results

Table 1 shows that the majority of students (82.2%) was female and (61.9%) of them studied nursing administration during the second semester of the Academic year 2012-2013.

Table 1. Distribution of fourth year students according to their demographic characteristics. (n = 134)

	No	%
Sex		
Male	23	17.2
Female	111	82.8
Semester of study		
1st semester	51	38.1
2nd semester	83	61.9

Table 2 shows that activities used during the interactive lecturing affected significantly all students' gains namely; gains in students' understanding (r = 0.656, p = .001), gains in students' skills (r = 0.648, p = .001), gains in students' attitudes (r = 0.662, p = .001), gains in integrating lectures concepts (r = 0.623, p = .001), gains in students' acquired information (r = .689, p = .000), gains due to support given during interactive lectures (r = 0.635, p = .001) and finally the total students' learning gains (r =.887, p = .001).

Table 2. The correlation between activities used during interactive lectures and the Students' learning gains

Correlations	**Activities used in Interactive lectures (part2)**	
	r	***P***
Gains in students' understanding	0.656	.001*
Gains in students' skills	0.648	.001*
Gains in Students' attitudes	0.662	.001*
Gains in integration of lectures concepts	0.623	.001*
Gains in students' acquired information	0.689	.001*
Gains due to support given during lectures	0.635	.001*
Total SALG	0.887	.001*

Note. Significance level $P < .05$

Table 3. Mean percent score and the standard deviation of students' assessment learning gains (SALG) dimensions

Dimensions	**Mean (%)**	**SD**
Gains in students' understanding	72.6	12.2
Gains in students' skills	70	15.3
Gains in Students' attitudes	71.3	17.6
Gains in integration of lectures concepts	66	16
Gains in students' acquired information	74	17
Gains due to support given during lectures	70	15.5
Total SALG	70.9	15

Table 3 illustrates the mean percent scores and standard deviation of SALG dimensions. The total possible score on the SALG is (70.9 ± 15). Dimensions of students' learning gains as perceived by students could be ranked in a descending order as follows; gains in students' acquired information (74 ± 17), gains in students' understanding (72.6 ± 12.2), gains in students' attitudes (71.3 ± 17.6), gains in students' skills and gains due to support given during lectures received the same mean percent score (70 ± 15.3, 70 ± 15.5) respectively and finally gains in integrating the lecture concepts (66 ± 16).

Table 4 shows the correlation matrix between SALG dimensions. It could be seen from the table that highly significant correlations were found between SALG dimensions where all Ps= (0.000).

Table 4. Correlation matrix between SALG dimensions as perceived by fourth year nursing students

		Gains in students' understanding (1)	Gains in students' skills (2)	Gains in Students' attitudes (3)	Gains in integration of lectures concepts (4)	Gains in students' acquired information (5)	Gains due to support given during lectures (6)
2	*r*	0.604	1				
	P	.000*					
3	*r*	0.577	0.554	1			
	P	.000*	.000*				
4	*r*	0.579	0.651	0.720	1		
	P	.000*	.000*	.000*			
5	*r*	0.657	0.676	0.586	0.610	1	
	P	.000*	.000*	.000*	.000*		
6	*r*	0.544	0.535	0.529	0.474	0.577	1
	P	.000*	.000*	.000*	.000*	.000*	
Total SALG	*r*	0.830	0.777	0.818	0.803	0.802	0.737
	P	.000*	.000*	.000*	.000*	.000*	.000*

Note. Significance level $P < .05$

4 Discussion

Interactive lecturing has been found to help students in being actively involved in the lecture theatre. Also, the change of pace in this type of lecture breaks the monotony of the lecture resulting in increased attention and engagement which are necessary in developing interest in the subject matter [26]. Thus, the current study was conducted to explore the effect of interactive lectures on students' learning gains.

The current study findings showed that activities used during the interactive lecturing affected significantly all students' gains. This could be due to that these methods are considered new and different to the nursing students especially when used in lectures, which makes them more involved and enthusiastic. Also, the discussion, brain storming and role play break the monotony of the lectures which in turn lead to more understanding and participation of the students. The same was found by Berg and colleagues (2003) who stated that increased student involvement leads to change in attitude and learning outcomes [27]. Also, Goldberg et al (2006) stated that interactive lectures highlight common misconceptions held by the students and encourage students to question and thus increases self-efficacy of student which is linked to their academic achievements [28]. The same finding was reported by Knight& Wood (2005) who stated that students who were taught with (a) in-class activities in place of some lecture time, (b) collaborative work in student groups, and (c) group discussion were observed to make significantly higher learning gains and better conceptual understanding [12]. In the same line, Prince and Fedler (2006) found that interactive, inductive teaching and learning methods (such as case studies, problems, guided instruction, discovery, projects, or presentations by groups) produce more positive learning gains in science classes than traditional lecture methods [29].

The results of the present study illustrated that according to a descending rank of mean percent scores, the highest mean was for gains in students' acquired information followed by gains in students' understanding while the lowest mean was for gains in integrating the lectures' concepts. This may be a result of the students' reading during the lecture which enhances their gain of information. Also, the discussion with their colleagues allows them to clarify and express their ideas about the related concepts. The same was found by Roa and colleagues (2002) who stated that the interactive lectures result in significant improvement in interactive skills and justified this improvement that in this method learners acquired interactive skills and exchange of views with others through cooperating with others. So interactive lectures result in improving self-confidence, reducing shyness in learners especially in freshmen or lower educational grade [30]. Johnson and Johnson (2003) stated that in small group work, students develop self-esteem, as well as, communication skills which are essentials for building stronger communication with patients [31]. Also, Hwang & Tong (2008) documented positive results regarding the effects of interactive lecturing and cooperative learning pedagogy which enhances learners' ability to solve problems that require analysis of the subject matter [32].

Highly significant correlations were found between SALG dimensions. This result is expected because the faculty when using the interactive method in lecturing, he/ she intend to develop changes in the students' whole personality and not only in their knowledge. In Faculty of Nursing, Damanhour University, the faculty while developing the Nursing administration curriculum each lecture has its intended learning outcomes that are concerned with students' knowledge, skills as well as attitudes and not merely to add a piece of information to those students. While implementing the interactive lectures, the researcher was able to reach the most intended learning outcomes through the interaction with students and helping them to think, share their thoughts, discuss and present their work. The same was found by Baghcheghi *et al.* (2011) who reported that students in cooperative learning acquire more skills specially communication one than in traditional learning classes [33].

5 Conclusion

The current study findings revealed highly significant correlation between different activities used during interactive lectures and students' learning gains.

6 Recommendations

Based on the study findings, the following is recommended:

1) Continuing the investigation of interactive lectures in terms of determining how to introduce other activities that help in increasing the students' abilities to integrate lectures concepts together.
2) A comparison between the effects of interactive versus traditional lectures could be studied further.

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