

The effect of video-based instruction on students' cognitive learning

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ABSTRACT

Background Video-based instruction has been stated as an effective method of teaching and its potentials have encouraged instructors and learners to opt this method.

Purpose The current study has compared the students' cognitive learning in the two approaches of lecture-based and video-based teaching.

Methods This quasi-experimental study was conducted on 88 senior nursing students who were randomly assigned into two groups based on their average score. One group attended a lecture accompanied by slides and the other viewed a video presentation.

Results With video presentation, the students achieved better results compared to the lecture method. The students were mostly satisfied with video instruction (75.6%) and they were willing to continue with this method (66.7%).

Conclusion Video-based instruction is an effective method for improving students' cognitive learning.

Key words VIDEO-BASED INSTRUCTION, STUDENTS COGNITIVE LEARNING

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Introduction

One of the most important principles in education is adopting a teaching method in concordance with objectives, contents, and learners (1,2). New research indicates that people can learn more and at a faster rate, than was previously thought, by means of improved teaching strategies aimed specifically at enhancing memory storage and retrieval, cognition, and learning (3).

The new computer assisted and interactive video instructions have been merged into a teaching system as an efficient method (4). This method is an effective medium for student learning, regardless of discipline (5). Video has proved effective where it has offered a number of benefits. These include ease of operation, visually effective presentations with motion, and learning perceptual-motor skills (6). Video instruction provides new potentials in interdisciplinary medical education with better cognitive and functional achievements. Different types of video applications include simulation, role model, video feedback, computer assisted video learning, video conference, and interactive video learning (5,7,8,9,10).

Studies have confirmed that interactive video instruction is an efficient, cost-effective, and timesaving educational method. Educational videodisc self-practice learning has enabled learning without the presence of an instructor. This method challenges the traditional methods in terms of the educational environment, instructional priorities, the student's role, and the teacher's role. The instructor serves as a facilitator rather than a conveyor of information. The students discuss their problems with the instructor for achieving the educational objectives. The student has self-learning responsibility, which assumes a more active and responsive role. Students will learn more as they may opt to participate at their convenient time and place, select instructional priorities, and increase their competence by repeating the material (4,11).

Chen et al. (12) and Schare et al. (9) found that both lecture and video instructions were equally effective, with video achieving slightly better result. Recent studies have shown that video-based instruction could be as effective, and in some cases more effective, as traditional lecture-based instruction in different disciplines (13,14,15,16).

The current study has compared students' cognitive learning in lecture-based and video-based teaching methods.

TABLE 1. FREQUENCY OF COGNITIVE LEARNING LEVEL IN CASE AND CONTROL GROUPS ($P = 0.1$)

Learning level	Case (%)	Control (%)	Total (%)
Good	24 (53.3)	14 (32.6)	38 (43.2)
Moderate	15 (33.3)	23 (53.3)	38 (43.2)
Poor	6 (13.4)	6 (14.1)	12 (13.6)
Total	45 (51.1)	43 (48.9)	88 (100)

Method

A quasi-experimental study was conducted on 88 fourth-year nursing students. The students were randomly assigned to case ($n=45$) and control ($n=43$) groups based on their grade average. The data were collected from a pretest, a posttest, and a questionnaire for demographic information. A pretest was given to both groups two weeks prior to the presentation sessions. Then, a session on dialysis patients care and two sessions on cardiopulmonary resuscitation were held. The lecture-based presentation by slides, with questions and answers, was performed in the case group. At the same time, the videotape presentation with no instructor was performed in the control group.

To minimize contact between the two groups, the posttest was taken within a few days after each presentation. The difference between the pretest and posttest scores was considered as their learning level and was categorized in three levels of poor, moderate, and good.

Test validities were determined by content validity evaluation and test reliabilities were determined by a pilot study. All tests were done with the SPSS software. The scores of the two groups were compared using t tests.

Results

There were no statistically significant differences between groups with regard to age, sex, grade average, history of taking care of dialysis and resuscitative patients, and previous use of educational videotapes. The difference of the pretest and posttest scores between the two groups was not statistically significant. However, in each group the posttest scores were

significantly higher than the pretest scores. The majority of students achieved "good" learning level in the case group and "moderate" learning level in the control group (Table 1).

In the case group, 75.6% considered the video presentation of the material satisfactory and 66.7% preferred other courses to be presented in the same way. Moreover, 80% of students found video-based instruction an effective method, and 66.7% believed that video-based instruction would lead to greater learning levels than lecture-based instruction (Table 2).

Discussion

The results indicated that both video-based and lecture-based instruction have led to the same level of cognitive learning. These findings are consistent with similar studies in different settings (9,13,14,15,16). Furthermore, the students have shown more interest in using video-based methods and would like that other courses be instructed with this method.

Overall, studies on interactive learning have pointed out two important notions. First, cognitive learning level acquired through video-based instruction is similar or even superior to that acquired through traditional methods such as lecture-based instruction. Second, students prefer video-based instruction to other conventional methods (9, 12). It seems that for courses with practical aspects in which students need a theoretical background in order to acquire the practical skills, video-based instruction leads to more effective learning.

It could be concluded that video-based instruction can be an effective method for replacing the lecture-based method. Therefore, considering the cost effectiveness of video-based instruction and its ease of use, this method can facilitate education in remote centers where lack of experienced instructors and educational equipment is most pronounced.

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TABLE 2. PERCENTAGE OF ATTITUDES TOWARDS VIDEO-BASED INSTRUCTION IN THE CASE GROUP

	Yes	No	Not specified
Are you satisfied with video-based instruction?	75.6	13.3	11.1
Are you willing to attend video-based instruction sessions again?	66.7	22.2	11.1
Is video-based instruction effective?	80	13.3	6.7
Is video-based instruction superior to lecture-based instruction?	66.7	17.8	15.6

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