Original Article

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Application of Multimedia Design Principle in Learning Anatomy and Physiology

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Abstract

The study is conducted for application of multimedia design principle as a cost effective tool for must know cardiac muscle knowledge. First MBBS Students- two groups of 20, theory lecture for group A and theory lecture with animations for group B. In MCQ of 90% of Group B shows good to excellent performance; 65% of Group A gave good to excellent performance. The student's feedback shows that lecture with the animations received good and excellent remarks. The role of teacher as a source of knowledge and role model cannot be replaced by technology. Whereas Application of multimedia design principle in learning is useful for improvement in understanding, reviewing and self-study.

Keywords: Animations; Learning; Multimedia.

Introduction

Anatomy and Physiology are pillars of medical sciences. Only memorising knowledge is useless for these subjects. The understanding knowledge is important. This subject contains designs and hypothesis. Hence imagination power is needed for understanding these subjects. Keeping this view, Video animations can help student's learning, many software for animations are available in market and internet.

The animations based learning is a dynamic form of multimedia learning. The use of information and communication technology in medical field is transforming MBBS education. Compact discs (CDs) and digital animations discs are the tools of information and communication technology[1]. In this study the traditional teaching theory lecture is compared with theory lectures with animations.

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Material and method

Context of Study

Aim: Impact of animations on Ist MBBS student's learning.

Objectives: To improve learning and increase confidence of students.

Overall goal: Application of multimedia design principle as a cost effective tool for must know cardiac muscle knowledge for Ist MBBS students.

Material

- First MBBS Students- two groups of 20.
- Group A-theory lecture for 45 minutes .
- Group B- theory lecture with animations for 45 minutes.
- Topic of theory lecture anatomy and physiology of cardiac muscle.
- Material for cardiac muscle from textbook and available software compact discs.

Method

1. Permission of the Dean, Government Medical College & Hospital, Latur.
2. Approval from the Ethical Committee.
3. Preparation of checklist for MCQ evaluation.

4. Peer review of documents.
5. Consent of all students.
6. Group A – received theory lecture followed by MCQ.
7. Group B – theory lecture with animations followed by MCQ.

Observations

1) MCQ of cardiac muscle topic performed both groups.

2) *Students feedback*- Students were guided to fill the feedback forms after the MCQ evaluation. The eight points were asked to grade as poor, average, good, excellent in all groups.

Table 1 MCQ performance

Group	Performance					
	Average		Good		Excellent	
	Students	%	Students	%	Students	%
Group A	7	35	11	55	2	10
Group B	2	10	14	70	4	20

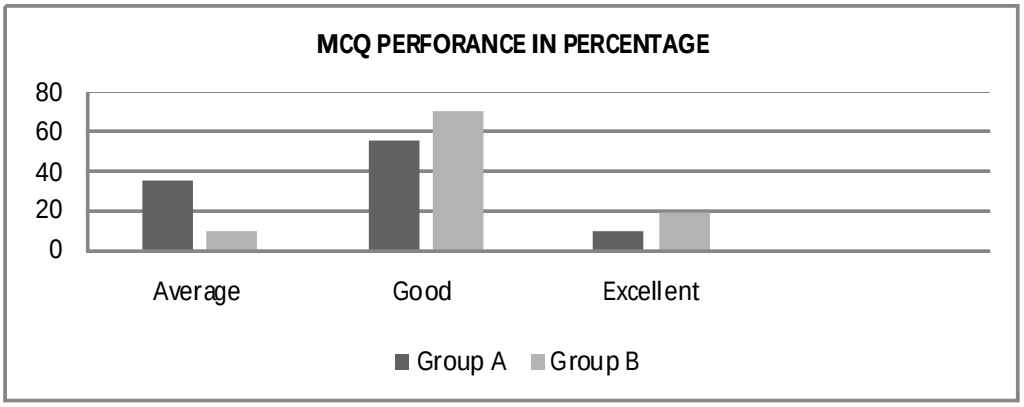


Fig. 1 MCQ Performance Vertical axis (VA)-percentage of students,Horizontal axis(HA)- grading of performance.

Table 2 feedback of Group A

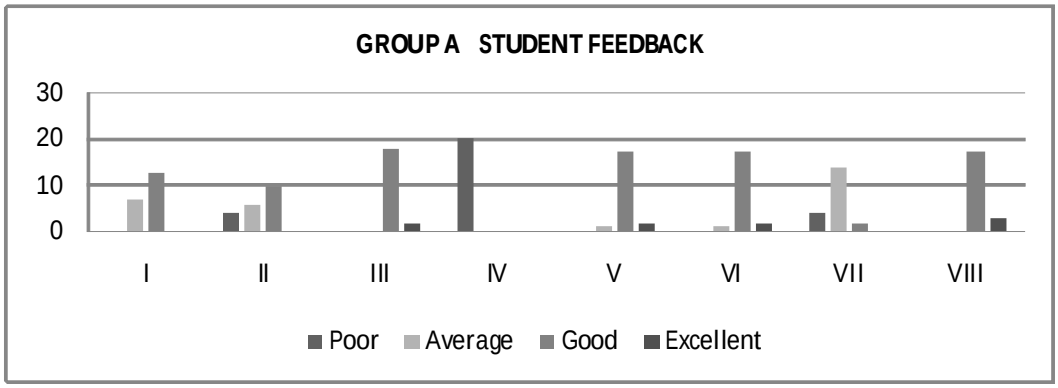
Sr no	Charecteristic	Score-1 Poor	Score-2 Average	Score-3 Good	Score-4 Excellent
1	Understanding of all steps	0	7	13	0
2	Ability to recollect	4	6	10	0
3	Relevance of subject	0	0	18	2
4	Opportunity to review	20	0	0	0
5	Opportunity to interact	0	1	17	2
6	Content of knowledge	0	1	17	2
7	Confidence of performing	4	14	2	0
8	Satisfaction of learning	0	0	17	3

A)Best in theory lecture –student's feedback

1. Live perception of Topic.
2. Interaction with teacher.
3. Increased confidence of student.
4. Decrease fear & apprehension to learning.

Table 3 Students feedback, Group B

Sr no	Charecteristic	Score-1 Poor	Score-2 Average	Score-3 Good	Score-4 Excellent
1	Understanding of all steps	0	0	13	7
2	Ability to recollect	0	0	14	6
3	Relevance of subject	0	0	7	13
4	Opportunity to review	0	0	4	16
5	Opportunity to interact	0	0	6	14
6	Content of knowledge	0	1	4	15
7	Confidence of performing	0	1	7	12
8	Satisfaction of learning	0	0	8	12



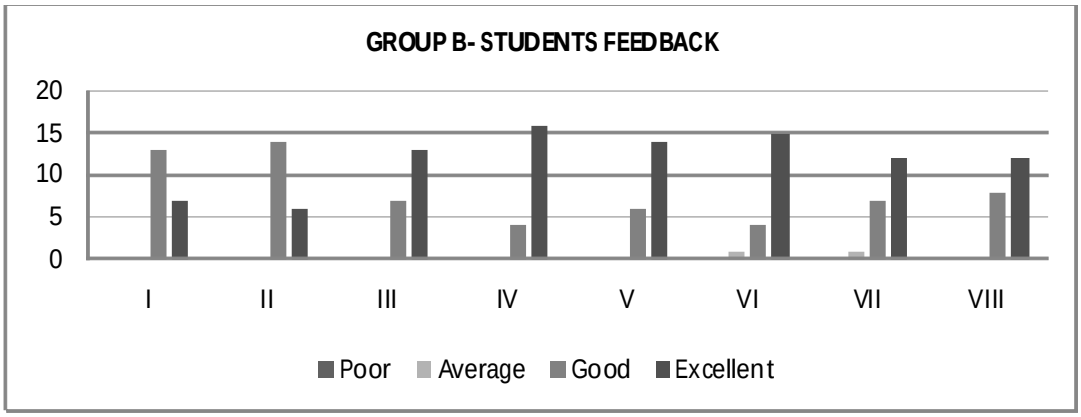


Fig. 2 & 3 VA-Number of students, HA–the feedback points from 1 to 8

B)Best in Theory Lecture with animations-student's feedback

1. It shows the internal anatomical structures illustratively.
2. Cardiac musle nicely demonstrated ,visually excellent.
3. Modifications seen better.
4. Increased ability to recollect and reviewing.
5. Helps to improve confidence.
6. Interest in the subject is increased.
7. Each individual can see the field area as compared to theory lecture.
8. Better Clarity & magnification.

Evaluation

1. From Table No I, in MCQ of cardiac muscle the 90% of Group B shows good to excellent performance; 65% of Group A gave Good to excellent performance. Thus the students with both performed better than those with only theory lecture.

2. The student's feedback shows that the understanding of steps and ability to recollect the animations received good and excellent remarks. The theory lecture has the best ability to interact and

animations gives opportunity to review. Group B had more confidence of performance and satisfaction of learning. 80% students mentioned that reviewing helped in improvement of learning.

Discussion

Videos can have a strong effect on the mind and senses. Students can experience the powerful cognitive and emotional impact[2]. In a study conducted by Durham et al. (2009) on the effectiveness of video-based teaching, much less figure of 64.6% was quoted by students that watching the animations(videos) made it easier for them to put theoretical knowledge to clinical action. The use of animations was thought to have been useful for improving capabilities to deal with exams, thus attributing to MBBS education in an effective way[3]. It has been suggested that Information Communication Technology and online learning will replace many of the traditional methods of teaching. However, it could not replace the physical presence of teachers nor should it be seen as a substitute for curriculum content[4].

Conclusion

The present study shows that students with both i.e. lecture with animations were better in all aspects. Thus the combination of theory lecture and video animations is the best Teaching Learning method for the anatomy and physiology. The role of teacher as a source of knowledge and role model cannot be replaced by technology. Whereas Application of multimedia design principle in learning is useful for improvement in understanding, reviewing and self-study.

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