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Video-Based Teaching as a Reinforcing Tool for the Potential Learners

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Abstract

Video is considered as a successful medium of learning because it can expose learners to events that cannot be easily demonstrated. More recent study proved that video-based learning permits students to view actual process and genuine acts, to see steps in proper sequence, and to listen to description. From the students' perspective, video-based learning can be a more efficient medium than transcript because it improves their learning, gratification and drive during the learning process.

The study aimed to assess the outcomes of learning and perception of potential learners about video-based learning in practical Biochemistry so that it can be used as a reinforcing tool for them. Data were collected from 30 potential learners who have scored < 40% marks in I part completion Test in I MBBS. OSPE was conducted for the qualitative tests in Biochemistry and all the errors made by the students were noted. After the discussion with the faculty members and with correction of errors customized videos has been made and validated by subject experts. These videos then circulated to all subjects in the study group. After this intervention II PCT and OSPE were conducted and score were compared by doing statistical analysis.

Results of the study revealed that learning through video offer more successes in practical Biochemistry as they rated highly for the reception and satisfaction with the video-based learning.

1. Introduction

Video links the audio-visual together and provide a multisensory experience for the learner.[1] Thus it is considered as an effective medium of learning. Learning through proves that the visual component is memorable. Getting ideas from video might be superior for learning complex skills because it can expose learners to events or steps of skills that cannot be easily demonstrated. [2,3] Studies proved that video permits students to understand actual process and accurate scenes, to see the skills in

proper sequence, and to attend narrations.[4] student need to get motivated and encouraged during the process of leaning. Teaching them by using Video as a one of the additional aids can be a more effective and gives satisfaction on the part of students 5,6]

Qualitative tests of Biochemistry in I MBBS students are traditionally taught by demonstration followed by practical using practical manual and some practical experiences. However this approach is weak for the slow/potential learners as they actually forgot the procedure till

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examination. Video - based learning stimulates *brainstorming and knowledge sharing*. The visual connection and interaction among participants *enhances understanding*. Video training addresses this concern efficiently. It ensures consistent and similar learning experience for every participant, no matter who is imparting the training.

The visual impact with proper guidance made it successful and proves to be more effective and efficient as it can improve retention and can give revision of particular test which is taught to them. So there is need of video bases teaching among these students to improve their knowledge and skill of the subject. Present study aimed to assess the outcomes of the learning and perception of potential learners about video-based learning in practical Biochemistry so that it can be used as a reinforcing tool for them.

2. Aim

To analyze the impact of video-based teaching as a reinforcing tool for potential Learners in Biochemistry

3. Objectives

1. To introduce the customized video as a teaching tool.

2. To determine the effectiveness of video - based teaching
3. To evaluate perceptions of students and faculty.
4. To find out whether learning is enhanced by using this method.

4. Methodology

The Interventional study was carried out in the Biochemistry Department after getting Clearance from the Institutional Ethical committee. (DMIMS (DU)/IEC/2017-18/6925)

Total 30 Potential learners were selected after the result of I PCT. Students who had scored <40% marks in I pct were included in the study, OSPE has been conducted for five qualitative tests in the Biochemistry for all the 30 potential learners. Whatever errors they have made were documented. After consultation with other faculty members, the customized videos were made with correction of errors made by students. These videos has been circulated amongst all the students so that they can go through these videos and learn the technique and procedures of the test in practical Biochemistry and can perform the tests accurately OSPE has been conducted again for five qualitative tests in the biochemistry for all the 30 potential learners and score were obtained After the result of II PCT the score was compared with the score of I PCT for the same qualitative experiment

Table 1: Data collection analysis

Tool	Type of analysis
Feedback questionnaire to evaluate students' perceptions (close ended items)	Quantitative analysis In Percentage and Average Scores.
Feedback questionnaire to evaluate students' perceptions (open ended items)	Qualitative analysis Themes and categories
Comparison of Pretest (I PCT) and Posttest (II PCT) scores in study group	Quantitative analysis (Paired t-test) Mean, SD, p value
Comparison of OSPE scores in study group	Quantitative analysis (Paired t-test) Mean, SD, p value

Validation of tool: Validation of Questionnaire was done by subject expert and MEU member.

5. Observation & Results

1. Evaluation of Reaction

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The response rate for the feedback taken at the end of completion of activity was 100%. It means all those who participated in the study and belonged to study group gave their responses. Analysis of close and open ended questions is depicted in table no.1&2 respectively

2. Analysis of close ended questions

The Opinion of the research participants were ranged between score 4 to score 5 i.e. between agree to strongly agree. Table 1 shows the score given by the participants for each item. First six items were included in this table as these were close ended and scores are represented using Likert Scale. 40% responses agreed & 60% responses strongly agreed with the statement Video –Based learning proved to be supportive to improve the knowledge about biochemical tests. 100% students [27% - strongly agreed (SA) and 73% - agreed (A)] were of opinion that It actually adds on to the minute procedural details while performing biochemical tests during practical. Almost all students felt that It improves the confidence, hence helped the students to be more competent in Biochemistry Practical. 16% responses agree and 84% responses strongly agreed with the statement

Video –Based Teaching is helpful to improve the skill about manual tests in practical of biochemistry. All students felt that performance in practical examination of Biochemistry will improve if all the practical skills of biochemistry would teach by Video –Based Teaching.

3. Analysis of open ended questions

Responses to open ended questions were analyzed qualitatively and categorized as advantages and disadvantages of Video –Based Teaching and suggestions to improve it further. Table 2 shows the responses of the participants.

4. Evaluation of Learning

Total thirty potential learners identified on the basis of I PCT scores with mean score of 37%. It is observed that their II PCT score has been increased to 54% after video- based learning which is statistically significant.

Objective structured practical examination was conducted before and after intervention, results shows that score have increased after intervention which means students has understood the basic and minute skills of practical tests which reflect in their performances.

Table 2: Student's perceptions-Analysis of close ended questions

Sr. No.	Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Disagree (5)	Rating Average
1	Video –Based Teaching is helpful to improve the knowledge about biochemical tests	0(0.00)	0(0.00)	0(0.00)	12(40)	18(60)	4.6
2	It actually adds on to the minute procedural details while performing biochemical tests	0(0.00)	0(0.00)	0(0.00)	8(27)	22(73)	4.7
3	It improves the confidence, hence helped the students to be more competent in biochemical tests	0(0.00)	0(0.00)	0(0.00)	10(33)	20(67)	4.6
4	Video –Based Teaching is helpful to improve the skill about manual tests in biochemical tests	0(0.00)	0(0.00)	0(0.00)	5(16)	25(84)	4.8
5	This will improve the	0(0.00)	0(0.00)	0(0.00)	0(0.00)	30(100)	5.0

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	performance in practical examination of Biochemistry.						
6	All the practical skills of biochemistry should be taught by Video –Based Teaching	0(0.00)	0(0.00)	0(0.00)	5(16)	25(84)	4.8

Values in bracket indicate percentage * n=30* Likert Scale: SD= Strongly disagree; D= Disagree; N= Neutral; A= Agree; SA= Strongly agree

Table 3: Analysis of Open-ended questions

Advantages
Better understanding of the practical skills.
Provide minutes details
Will improve performance in the exam
Disadvantages
No as such
Suggestions
Should be given for all the tests done in practical
Student's specific comments
It should be carried out for all subjects.
These videos are better than the online available videos

Table 4: Test scores in study group

Score (Maximum Score: 35)	Mean $\pm$ SD (n=30)	p value
I PCT Score (%)	13.1 $\pm$ 2.4 (37%)	<0.001*
II PCT Score (%)	18.86 $\pm$ 3.25 (54%)	

p<0.01 was considered statistically highly significant, *HS (Highly Significant). Values of I PCT and II PCT score are represented as Mean $\pm$ SD (Percentage)

Table 5 : OSPE scores in study group

Score (Max Score 25)	Mean $\pm$ SD (n=30)	p value
I OSPE (Q 1 to Q 5)	12 $\pm$ 3.1	<0.001*
II OSPE (Q 1 to Q 5)	24.5 $\pm$ 0.5	

p<0.01 was considered statistically highly significant, *HS (Highly Significant)

6. Discussion

Several decades of research proved that there are many advantages to use video in education. It facilitates the thinking process and detail learning. Shepard and Cooper (1982) and Mayer and Gallini (1990) concluded that there are connections between visual clues, memory process, and recall of new knowledge. Allam (2006) observes that the creative challenge of using moving images and sound to communicate a topic indeed appealing and insightful, but adds that it also enables students to

acquire a range of transferable skills in addition to filmmaking itself. These include research skills, team working, critical thinking, clinical reasoning, technology, and organizational skills (Bijnens, N.D.) if student can involve in making process of these videos. In some cases, video can be as good as an instructor in communicating evidences or demonstrating procedures to promote mastery learning where a student can view complex clinical or mechanical procedures as many times as they need to. Willmot et al (2012) showed the strong evidence of digital video reporting which inspire

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and engage students when incorporated into student centered learning activities through increased student participation and enhanced learning experience.

7. Conclusion

Video - based teaching can be a more efficient teaching method because it improves learner's gratification and drive during the learning process. The visual impact proves to be more effective and efficient as it can improve retention and can give revision of topic. So it can be used as a reinforcing tool for the potential learners to improve their knowledge and skill of the subject.

Competing Interest: Nil

Author contribution:

Dr Archana Dhok: Idea and conceptualization,

Final approval

Dr Ashish Anjankar: Data collection

Dr Priyanka Bhatkulkar: Data interpretation

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