



ANIMATION TECHNIQUE: AN EFFECTIVE TOOL TO UNDERSTAND CERTAIN BIOCHEMICAL PROCESSES LIKE BIOLOGICAL OXIDATION

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ABSTRACT

Background: Learning or computer assisted teaching-learning is becoming popular at every stage of life. Animation is one of the computer applications and can have its impact on teaching-learning process.

Aims: The present study was designed to know whether the use of animation technique, in teaching can improve the process of understanding

Methods: For this a group of 50 students was selected. The objectives of the study were explained to them. Pre-test was conducted by giving questionnaire. The topic was taught to them using overhead projector slides. Post test 1 was conducted giving same questionnaire. Then same topic was taught to them using animation tool. Post test 2 was conducted. The data obtained in the form of correct answers for all the three tests was analyzed statistically. At the same time feedback forms were given to all the students for purpose of analyzing the results qualitatively.

Results: The results of pretest ($P = NS$) and posttest1 ($p < 0.05$) were compared ($t = 4.8$), and post-test1 ($p < 0.05$) and post-test 2 ($p < 0.001$) were compared ($t = 7.43$)

Discussion: After statistical analysis significant improvement in the knowledge was observed with the use of overhead projector slides, while highly significant improvement in knowledge and understanding was observed using animation tool. As per the results of feedback forms, 100% students agree that the animation is powerful tool to understand biological processes as it improves understanding and make learning interesting.

Conclusion: Animation is a powerful tool than other traditional teaching tools, in understanding bioprocesses occurring in the cell.

Key Words: Animation, Teaching aids, Overhead projector, Audio-visual aids, Visual impact

INTRODUCTION

Teaching and learning are important events for an individual during his life. Throughout the life, any individual is either teaching or learning something. Teaching is effective when learner understands what is being taught. To make teaching effective various teaching aids are used^[1,2]. Chalk and board were used previously. Then teachers started using overhead projector slides (OHP). Now a days teachers are using PowerPoint presentations for delivering lectures^[3]. The choice of the teaching aid depends upon an individual. In Biochemistry, it is very difficult to imagine various biochemi-

cal processes as they occur in the cell. To make the learner understand these biological processes, animation tool may be more powerful than the others^[4]. Movement of molecules, their interaction could be better explained with animation. The visual impact is better than the descriptive lectures as we know that movies are remembered for longer time. With this idea, the present study was conducted in the department of Biochemistry to know the effectiveness of animation technique as a teaching tool over the other tools in understanding certain biological processes. As the study aimed to make use of teaching learning tool in teaching to improve understanding.

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Received: 04.01.2016

Revised: 22.01.2016

Accepted: 05.02.2016

MATERIALS & METHODS

Study design: Descriptive study

Inclusion criteria: 1st M.B.B.S. students ready to participate in the study were included.

Sample size: Total 50 students of 1st M.B.B.S. were included in the study conducted for a period of a month.

The descriptive study was designed as follows: The pre-test was conducted by giving self designed questionnaire based on question answer type, on the topic to be taught, This was to make sure that the students have no or poor knowledge about the topic to be taught. Then the topic “Biological Oxidation”, one of the most difficult topic to understand was taught to them by preparing and using OHP slides. The topic was taught by displaying slides on overhead projector. The post-test1 was conducted by giving same questionnaire based on question answer type. Then the same topic was taught using power point slides and giving animation to the molecules. To see the effect of animation tool, post-test 2 was conducted. The effectiveness of the tool was also judged qualitatively with the help of feed-back forms [5] to know their views about use of this tool.

Statistical analysis: The data obtained was entered in microsoft excel 2010 and after pre test, post test1 and post test 2 was analyzed statistically by applying paired t test.

RESULTS The results of the study are shown in the tables 1 and 2

DISCUSSION

In the present study, the results obtained as correct answers in the pre-test, post-test1 and post-test2 were analyzed statistically by applying paired T test. As observed in Table 1 the results obtained by using OHP slides as teaching aid are significant ($p < 0.05$). However highly significant improvement in understanding was observed with the use of animation technique as a tool ($p < 0.001$). When the results of pre-test and post-test 1 were compared ($t = 4.8$) while that of post-test1 and post-test2 were compared ($t = 7.43$) as shown in Table 2. Secondly the objectives of the study were explained to the students and were not under pressure while answering the questions. The students were frank enough about not answering the questions if they do not know the answer, as number of guess answers were low and number of questions not attempted were much more in the pre-test. This number of questions not attempted was decreased in post-test 1 and still further decreased in post-test 2. All the students participated in the study have stated in the feedback form that the presentation using animation technique was more interesting and more effective than those using OHP slides. The results

of the study are in agreement with previous study^{6,7}. In addition to this, if choice is given, all the students want teachers to use the animation technique for teaching as compared to OHP slides. The students had given various reasons for the same. 25% ($n = 13$) students say that it is easy to grasp information or knowledge with it, 50% ($n = 25$) feel it easy to understand and 12% ($n = 5$) feel it easy to explain while 13% ($n = 7$) find it easy to remember moving pictures like movie than information. Visual impact is more effective. Thus from the feedback results, response to the use of animation technique out of various teaching aids available is 100%. The reason is it can explain the events that could be occurring in the cell step by step. Movie or animated objects make us feel as if the process is happening in front of us, thus increasing involvement of the students. The effect of animated objects appears as if one is experiencing it actually in front of him. As the moving objects give more detail information of an object from several different angles. In addition to this moving objects better capture observer's attention. This increased attention may be responsible for better understanding^[8,9] Thus “Animation” is the most powerful tool in understanding biological processes

CONCLUSION

In conclusion I can definitely say that “Animation is a powerful tool than other traditional teaching tools, in understanding biochemical processes.”

ACKNOWLEDGMENT

To departmental staff and to authors, editors and publishers of articles referred by author for this manuscript.

Funding for the work: NA

Conflict of interest: NA

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Table 1: Shows P values of Post-Test 1 and Post-Test 2

Test Result	P value
Pre Test	NS
Post Test 1	<0.05*
Post Test 2	<0.001**

(NS not significant, P< 0.05 * significant, P< 0.001** highly significant)

Table 2: Shows comparison between pre-test and post-test 1, and post-test 1 and post-test 2

Comparison between pre-test and post-test 1	(t= 4.8)
Comparison between post-test 1 and post-test 2	(t= 7.43)