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Original Research Article

EFFECTIVENESS OF ANIMATED TEACHING OVER MODEL TEACHING IN EMBRYOLOGY FOR FIRST YEAR MBBS STUDENTS

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ABSTRACT

Introduction: Animated teaching method imparts a better understanding in studying the basis of Embryology in 3 dimension. Whereas in the conventional method of teaching embryology the use of clay models which enables the students to handle, touch and there by visualize in two dimension and three dimension. So, the aim of the study is to find out which one of the following two methods is more effective in teaching embryology among first year MBBS students.

Materials and methods: 150 first year MBBS student at DMWIMS was divided into Group A (75) and Group-B (75). For Group-A embryology classes was conducted using animated vedios in lecture classes. For Group-B the same topic was taken by using clay models and lectures. Then MCQ test was conducted. Later the groups were crossed over and took the feedback from both the groups. The data was analysed by SPSS software version 16.

Results: The test results showed there was no statistical difference in the knowledge scores in MCQ test of students in both the groups. The feedback was collected and analysed by proportion test which showed animated embryological teaching was better than clay model teaching in understanding the concept, basis, functional relations of embryology.

Conclusion: The present study showed that performance was same in both the methodologies but perception of students was that they were able to understand better by animated teaching then clay model teaching. This may help teachers to incorporate these both innovative teaching methods in teaching embryology for better understanding along with routine lectures.

KEY WORDS: Animated Teaching, Model Teaching, Embryology, First Year MBBS Students.

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INTRODUCTION

Anatomy is a discipline where spatial visualization is of great importance [1]. Unlike gross anatomy, histology or osteology, embryology is a dynamic subject as its sequential changes occurs across a timeline [2]. Till now, lectures in embryology have been a mix of didactic talk with illustrations such as line diagrams drawn by chalk, use of Overhead projectors and pictures used in PowerPoint. The understanding of embryology is incomplete unless a dimensional (2D/3D) approach is made. Animations

are sequential frames of pictures shown across a period of time build upon a concept [2]. This method imparts a better understanding in studying the basis of embryology. Whereas in the conventional method of teaching embryology the use of clay models is the age old method which enables the students to handle, touch and there by visualize in two dimension and three dimension [3,4].

Aim – The aim of the study is to find out which one of the following two methods is more effective in teaching embryology among first year MBBS students.

a) Animated embryological teaching learning method.

b) Conventional clay model demonstration along with didactic lectures.

Objective –

a) To assess the effectiveness of animated embryological teaching over exhibition of models during lectures for first year MBBS students.

b) To assess the perception of students about animated embryology teaching in contrast to teaching by models among first year MBBS students.

Research question? Is teaching embryology by animation is more effective than teaching by models for 1st year MBBS students?

MATERIALS AND METHODS

Type of study: Quasi Experimental study.

Place of study: Department of Anatomy, DMWIMS, Meppadi post, Wayanad, Kerala.

Period of study: Three months from Nov 2017-Jan 2017.

Sample size: 150 students from 1st year MBBS.

Methodology: 150 Students was divided into Group A (75) and Group-B (75) by using there roll number. For the 75 students in Group-A e mbryology classes was conducted using animated vedios from Langmans Clinical embryology CD in lecture classes. For the 75 students in Group-B the same topic was taken by using clay models and lectures. The students exposed to clay model teaching were also shown clay model prepared by senior batch students and motivated to prepare the clay models in there free time.

Inclusion criteria- Students who have given written consent for the study.

Exclusion criteria- Students who were absent for all the three sessions of exposure.

Frequency of exposure- Each week one class separately for 2 groups on same topic about development of pharyngeal apparatus and respiratory system in embryology by different teaching methods was taken. Like this it was carried out for three weeks. After 3weeks of classes MCQ test on the topic was given for both the groups and marks was recorded. At the end of the study the Group-A was exposed to clay models and Group-B to animated embryological videos. Feedback was taken from both the groups regarding perception using a pre- validated questionnaire.

Methods of data collection & enclosed the proforma for Data collection: MCQ test results and pre validated questionnaire sheets from students was taken from both the groups and then entered in excel sheet later entered to data entry sheet in SPSS software for analysis. The data was analyzed.

Statistical analysis Student un paired Mann Whitney U test was done on the marks scored by both the groups with confidence interval of 95 percent and p value <0.05 using SPSS software version 16. The qualitative data (ordinal scores) from each group was tested using Proportion test/Binomial test and interpreted in percentages.

Date IRSC approval on 24-11-2017

RESULTS

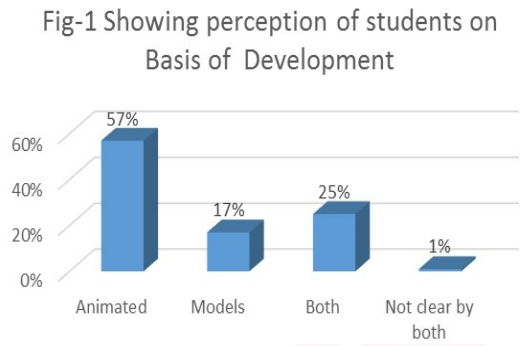
The MCQ test scores were analyzed using Man Whitney U test and results are as given in Table-1.

Table 1: Shows the median scores of both groups exposed to two different teaching methods.

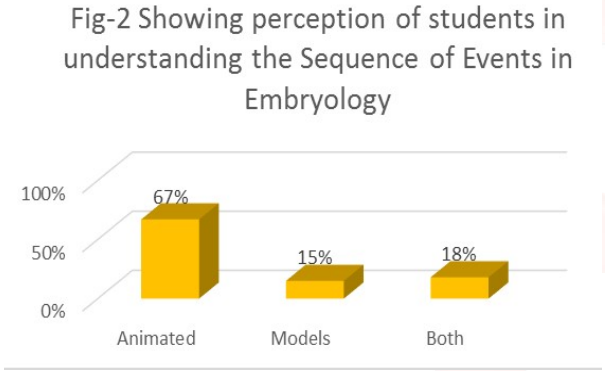
Particulars	Scores of students exposed to Animated embryological teaching	Scores of students exposed to teaching embryology by clay models	P-value
Median (IQR)	14.00 (4)	14.00 (5)	0.681

The test results showed that there was no statistical difference in the knowledge scores in MCQ test of students in both the groups who had underwent animated embryological teaching and teaching embryology by clay models as p value was >0.05.

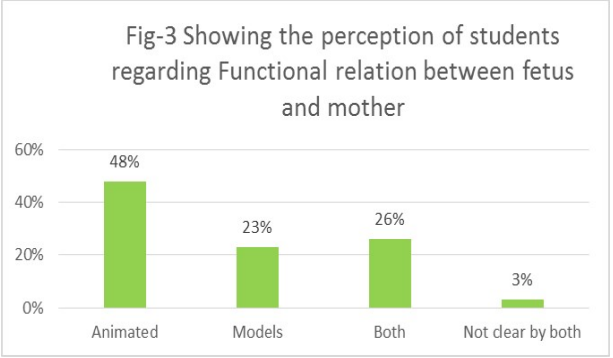
The feedback was collected in excel sheet and the data was analyzed by proportion test. The results showed that 57% student felt that they understood basis of development better by animated embryological teaching, 25% by both teaching methodologies, 17% felt better by clay model teaching as shown in Fig-1.



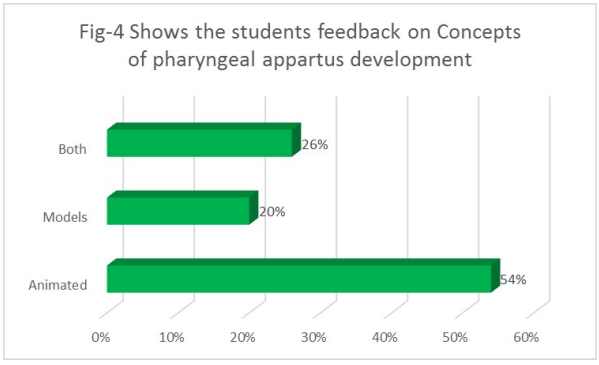
67% students understood the sequence of events in embryology better by animated embryological teaching, 18% felt that both methodologies was equally effective and rest felt that it was understood better by teaching embryology by clay models as shown in fig-2



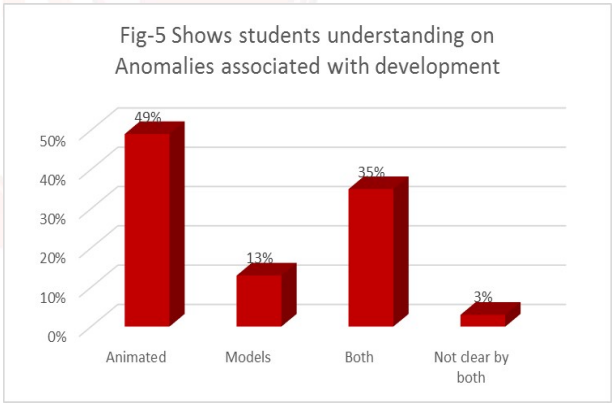
48% of students felt that they were able to understand functional relation between mother and fetus better by animated embryological teaching, 26% felt that both methods were equally effective,23% felt that it was better by teaching embryology by clay models and only 3% felt that it was not clear by both the methods as shown in fig-3



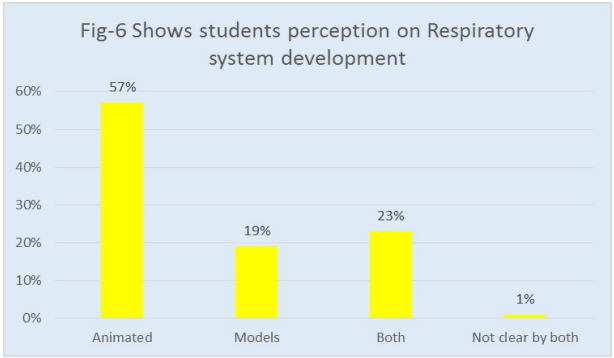
The concepts of pharyngeal apparatus development was better understood by animated embryological teaching among 54% of students, 26% felt it better by both teaching method and 20% felt it better by teaching embryology by clay models as shown in Fig-4.



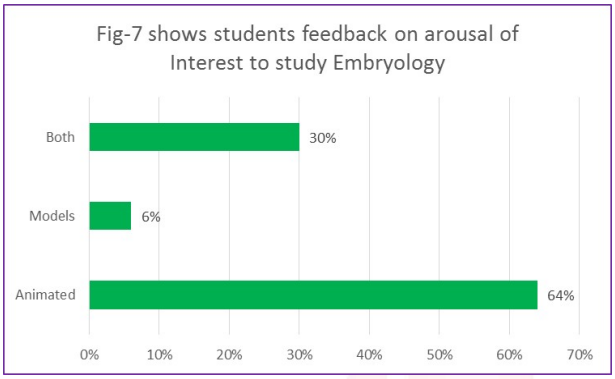
49% students felt they were able to understand better the anomalies associated with development by animated embryology teaching method, 35% of students understood better by both methods, 13% students felt model teaching help them to understand better and 3% felt both the methods were not clear to understand anomalies as shown in Fig-5.



57% students were able to understand development of Respiratory system better by animated embryological teaching, 23% students were able to understand better by both the methodologies, 19% students understood better by clay model teaching and 1% were not clear in understanding by both methodologies as shown in Fig-6.



In 64% of students animated embryological teaching arousal of interest to read embryology, 30% students felt both methodologies arousal of interest in embryological reading and 6% felt model teaching helped them to arousal of interest in embryology as shown in Fig-7.



DISCUSSION

According to Aversi Ferreira.T.A.et.al in 2012, construction of models study was more effective than traditional method of study in terms of mean performance.[5] In our present study, the performance level of students who were taught embryology by using animated teaching and those taught by didactic embryology classes substantiated by use of clay models is same. The exact reason for no significant changes in the performance level between these two methods could be attributed to the following factors like a) over emphasis of the subject by the teacher concerned b) simple and straight way of subject communication c) Highlighting of the subject from examination point of view. The above factors seem to have played a key role in performance level of traditional teaching on par with the performance level of those taught by animated teaching.

Moreover, the use of clay models also appears to have added to the better understanding and conceptualization from 2D/3D dimensional perspective. However, the group taught by animated teaching is likely to have long term understanding and application of their knowledge in comparison to other group with traditional teaching.

The studies conducted by Jean-Marc-Schelich. et.al (2002) by using animated techniques clear concepts in through understanding and reasoning of normal development of heart both spatially and temporally [6]. In the present study also the animation technique has been used in teaching the embryological basis of Pharyngeal apparatus and Respiratory system development and good feedback has been obtained from the students regarding the understanding of the subject.

A section of students also felt the desire and need for animated embryology CD to be made available for reference as well as in further teaching embryology classes.

In 2016 Samy A.Azer.et.al study after reviewing many articles on 3D model teaching felt mainly 3 main factor needed to be addressed that is student's learning needs, long term outcome and high research quality [7]. In our present study we have made an attempt to find out students level of perception and need for animated teaching for learning the developmental concept in embryology. The results showed that animated teaching was better to understand in comparison to traditional teaching along with clay models. However it is worthy to watch how long the acquired knowledge is retained and applicable. Moreover the study will be complete after evaluating through a larger population of diverse sections of medical fraternity students like medical, dental, nursing, etc.

CONCLUSION

The present study on effectiveness of animated embryological teaching over teaching it by clay models showed that performance was same in both the methodologies. But students felt animated teaching was better to understand the rationale, concept, relations, basis of anomalies in the development of pharyngeal apparatus and respiratory system when compared to teaching by clay models. This may help teachers to incorporate these both innovative teaching methods in teaching embryology for better understanding along with routine lectures.

Limitations of the study: This study has to be conducted in large number of student's population of different streams like medical, dental and nursing over long duration with compulsory projects on preparation of clay models as project work.

Recommendations to regulatory bodies: Both

animated and clay model teaching can be used as innovative methods of teaching in medical college. The animated Embryological CD should be made available any time for access such that students can access at their convenience.

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Conflicts of Interests: None

REFERENCES

[1]. Berney S, Bétrancourt M, Molinari G, Hoyek N. How spatial abilities and dynamic visualizations interplay when learning functional anatomy with 3D anatomical models. Anat SciEduc; 2015; 8(5):452–462.

[2]. Langlois J, Wells G A, Lecourtois M, Bergeron G, Yetisir E, Martin M. Spatial abilities of medical graduates and choice of residency programs. Anat SciEduc, 2015;8(2):111–119.

[3]. Freitas, L. A. M.; Barroso, H. F. D.; Rodrigues, H. G. & Aversi-Ferreira, T. A. Construction of embryonic models with recycled material for didactic using. Biosci. J, 2008;24:91-7.

[4]. Aziz, M. A.; Mckenzie, J. C.; Wilson, J. S.; Cowie, R. J.; Ayeni, S. A. & Dunn, B. K. The human cadaver in the age of biomedical informatics. Anat. Rec, 2002;269:20-32.

[5]. Aversi-Ferreira, T. A.; Aversi-Ferreira, R.A.G.M.F.; Nascimento, G. N. L.; Nyamdavaa, N.; Araujo, M. F.; Ribeiro, P. P.et.al, Teaching embryology using models construction in practical classes. *Int. J. Morphol, 2012;30(1)*:188-195.

[6]. Jean-Marc Schleich, Jean-Louis Dillenseger, Stéphane Andru, Jean-Louis Coatrieux, Claude Almange. Understanding normal cardiac development using animated models. IEEE Computer Graphics and Applications, Institute of Electrical and Electronics Engineers, 2002;22(1):14-19.

[7]. S.A. Azer, S.Azer, 3D Anatomy Model sand Impact on Learning: A Review of the Quality of the Literature, Health Professions Education 2016;2:80–98.

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