Original Article

CCTV Guided teaching in Histology – An Outcome Based Study

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Abstract

Background: For ages, histology has always been a constant, a fundamental part of the biomedical curriculum. Despite its ardent importance, it remains tedious and challenging for our first-time learners. Histology has always relied on technology, which has brought significant changes to teaching methods. CCTV-guided histological teaching is one such remarkable visual aid. Satisfactory learning outcomes determine the quality of teaching aid. Students' perceptions and evaluations of learning outcomes as a measure of the success of a teaching aid. This Study was conducted keeping these facts in consideration. The objective is to analyze whether CCTV-guided histology teaching, when combined with traditional blackboard teaching, is effective in stimulating students' interest and perceptions of learning histology and increasing their long-term retention capacity. **Material and Methods:** A prospective study was conducted among 150 first-year undergraduate students without prior histology experience. The students were first briefed on epithelial histology using PowerPoint and a blackboard. Following that, they were asked to identify the respective slides under the microscope. By the end of the practical session, they filled out a standardized feedback questionnaire. In subsequent practical classes, Blackboard teaching was reinforced through CCTV-guided histology instruction (Figure 1) on cartilage histology. At the end of the lab session, the process was followed to assess their ease of learning histology. In addition, Students were asked to complete a feedback questionnaire to determine their preferred mode of histology instruction. After a 3-month gap, without prior announcement, histological images of epithelium and cartilage were projected onto an LCD screen, and the students were assessed for retention. The results were analyzed using SPSS Software. **Results & Conclusion:** After analyzing the psychomotor and affective domains of the students, we found that students showed a positive attitude toward CCTV-combined teaching. The majority of the students agreed that CCTV facilitated understanding of the intricate details of tissue architecture, kindled their interest in histology, and enabled them to identify structures more readily. In addition, knowledge retention was found to be 52% higher when taught with CCTV.

Keywords: CCTV-guided teaching, Histology, Medical education, Teaching aids.

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Introduction

Histology has always been a constant, fundamental part of the biomedical curriculum for ages. It serves as the central link between the visible and submicroscopic dimensions. Though it is of ardent importance, the micro-level perspective remains tedious and challenging for our first-time learners.[1]

Histology has always relied on Technology. The past few decades have seen remarkable technological advances, bringing significant changes in the teaching of histology. One such consequential Visual aid is the CCTV-guided Histological teaching.[2]

The quality of teaching aids is determined by whether they support students in achieving the expected learning outcomes. Students' perception and evaluation of the learning outcome are directly proportional to the success of a teaching aid. This Study was conducted keeping these facts in consideration.

CCTV TEACHING SET-UP:

A Minitron 63K3HP CCD (Charge-coupled device) processor-based CCTV (closed-circuit television) is attached to the Eyepiece of a Compound Microscope, which in turn is connected to an LED TV [Figure 1].

Materials and Methods

A prospective study was conducted among 150 first-year undergraduate students at the institution who had no prior exposure to histology for 5 months. According to their roll numbers, the 150 students were divided into 3 groups (A, B & C). The students were first taught in the lecture hall on the topic "Histology of epithelium" using PowerPoint and a blackboard. Following that, a checklist was prepared to assess the students' ability to focus and identify the covered slides on various types of epithelium. By the end of the practical session, they were handed a standardized feedback questionnaire that records no personal information about the student to gauge their perception of ease of learning and understanding histology.

In subsequent practical classes, blackboard teaching was

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reinforced through CCTV-guided histology instruction on the topic "Histology of Cartilage." They were made to observe the slides, and the checklist was ticked off. At the end of the lab session, they were handed the same questionnaire to know about their interpretation and ease of learning histology. In addition, students were asked to complete a feedback questionnaire to determine their preferences for histology teaching modes.

Without prior intimation, four months from the date of histology sessions, the histological images of the slides from epithelium and cartilage were projected on an LCD screen, and a spotter examination was conducted. The result was then analyzed using Descriptive statistics and a t-test in SPSS Software. The student's personal information was not recorded throughout the study to avoid bias.

Results

Descriptive statistics revealed that 83% of students found identifying the shape of individual cells easier when CCTV-guided teaching was combined with traditional blackboard instruction.

Additionally, 88% identified the structures, and 76% reported that identification was easier with the combined teaching method. A chi-square test showed a significant preference for the combined method for understanding tissue microarchitecture, with 82% of students agreeing that it enhanced their comprehension. The analysis of spotter exam results using a t-test indicated a 52% higher long-term retention rate among students who experienced combined teaching methods compared to those who did not.

Figure 1: CCTV setup in histology

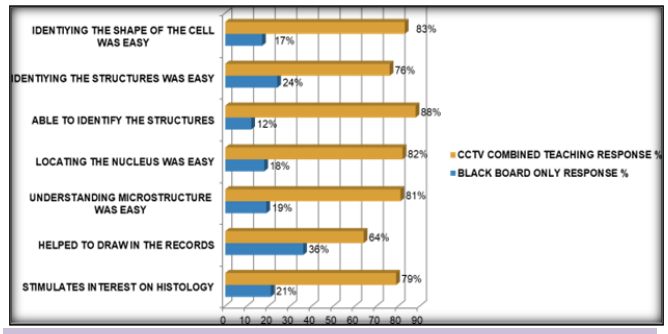

Figure 2: responses from students on combined teaching and black board teaching

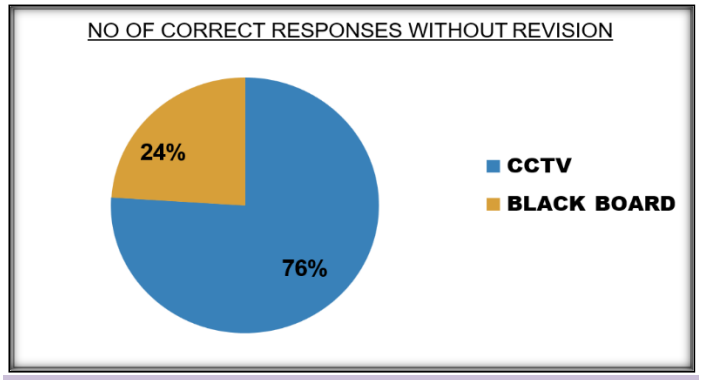

Figure 3: retaining capacity of the students

Discussion

By the end of the study,83% of students thought that identifying the shape of the individual cells was easier when CCTV teaching was combined with the Blackboard teaching.88% of the students were able to identify the structures and 76% added that identifying the structures was easier when CCTV was combined with traditional teaching.82% agreed that Combined teaching helped them in identifying and understanding the microarchitecture of the tissue.64% of the students were able to record the findings with ease in the case of the combined teaching and over 79% agreed that CCTV combined with blackboard teaching kindled their interest in learning histology [Figure 2].

After analyzing the checklist, 71% of the students were found to identify and focus on the slides better with the combined teaching.

In the analysis of spotter exam results, the long-term retention capacity of students was found to be 52% higher when CCTV-guided histology teaching was combined with Traditional blackboard teaching.

Conclusion

After analyzing the psychomotor and affective domains of the students, we conclude that students showed a positive attitude towards CCTV-guided teaching combined with traditional blackboard teaching. The majority of the students agreed that:

- -It facilitates the understanding of intricate details of individual cells
- -It helps in appreciating the tissue architecture
- -It kindles their interest in Histology.

In addition, knowledge retention is 52% higher when taught with CCTV (Figure 3). The future of histology is virtual microscopy. As technology booms, let's embrace modern teaching alongside traditional teaching for better learning outcomes for students.

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Conflicts of interest

There are no conflicts of interest.

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