

**A COMPARATIVE ANALYSIS OF TWO ANATOMICAL TEACHING  
MODALITIES: DISSECTION TABLES AND CONVENTIONAL MODELS**

**Mithilesh Chaurasiya**

Lecturer, Department of Anatomy  
Asia International University, Bukhara, Uzbekistan  
Email: [themithlesh@gmail.com](mailto:themithlesh@gmail.com)

**Abstract:** Few studies have directly compared virtual dissection tables with traditional models for teaching anatomy. This study provides a direct comparison to understand the strengths and weaknesses of each method. **Methods:** This randomized experimental study was conducted on first-year MBBS students at National medical college, Nepal, from April to May 2025. Students were randomly divided into two groups. Group A (n=58) was taught using a virtual anatomical dissection table, while Group B (n=58) was taught using traditional anatomical models. Neither group had prior experience with either tool. At the end of the study, both groups took the same multiple-choice question test. **Results:** The results showed a statistically significant difference in test scores between the two groups. Students taught with the virtual dissection table (Group A) scored significantly higher than those taught with traditional models (Group B), with a p-value of less than 0.001, indicating a highly significant difference. **Conclusion:** Teaching anatomy with the virtual dissection table is significantly more effective than teaching with traditional models

**Keywords:** Anatomy education; medical students; dissection table; conventional models; comparative study; Nepal.

### **Introduction**

Anatomy is one of the foundational subjects taught when students enter medical school, providing the basis for understanding organs, tissues, and cells from macroscopic to microscopic levels [1]. A strong grasp of anatomical organization lays the foundation for excellence in various medical fields such as radiology, surgery, and medicine [2]. As the cornerstone of medical science, anatomy demands the integration of innovative teaching methods [3].

Traditionally, anatomy teaching was largely limited to cadaveric dissection [4]. Even today, many anatomists continue to advocate for cadaveric dissection as an essential component of anatomy education [5]. However, the growing number of medical colleges has led to a shortage of cadavers for dissection [6]. Additionally, the use of human bodies for learning has raised ethical concerns [7]. With scientific advancement, plastic models became increasingly common for demonstrating anatomical structures and their relationships [8].

In the current era of artificial intelligence and technological advancement, virtual anatomical dissection tables have gained popularity. These tables allow students to understand structural relationships and visualize minute details with ease [9]. Numerous studies have demonstrated that virtual dissection tables enhance learning and knowledge retention [10]. Some researchers have compared virtual dissection tables with cadaveric dissections and found that students find the virtual tables easier to operate and understand [11].

However, limited research exists comparing virtual dissection tables with traditional plastic models for anatomy learning. This study, conducted at National Medical College, Nepal, aims to

evaluate and compare the effectiveness of teaching using a virtual anatomical dissection table versus traditional anatomical models, determining the most efficient method for learning human anatomy.

### **MATERIALS AND METHODS**

This randomized parallel-group experimental study was conducted in the Department of Anatomy, National Medical College, Nepal, after obtaining ethical approval from the Institutional Ethical Review Committee.

All first-year MBBS students were included. Inclusion criteria were enrollment in the anatomy course, informed consent, and no prior experience with the virtual dissection table. Students with visual or cognitive impairments, previous failure in anatomy, or low attendance were excluded.

A total of 116 eligible students were randomly divided into two groups of 58 each using simple random sampling. Group A was taught using the virtual anatomical dissection table, while Group B was taught using traditional anatomical models. Both groups covered the same upper limb gross anatomy curriculum over two and a half months (April to May 2025) by the same instructor to minimize bias.

At the end of the study, a post-evaluation test consisting of multiple-choice questions was conducted. Data were analyzed using IBM SPSS-23, with descriptive variables presented as mean  $\pm$  standard deviation and 95% confidence intervals.

### **RESULTS**

Each group comprised 58 students. An independent samples t-test revealed a statistically significant difference in post-test scores between the two groups ( $p < 0.001$ ). The standard deviation was 17.56 in Group A (virtual dissection table) and 38.72 in Group B (traditional models). Students taught using the virtual dissection table performed significantly better than those taught using traditional methods, indicating that the virtual dissection table was more effective for learning anatomy

Table-1: Post-test scores of students in Group A and Group B

Teaching method	N	Mean	SD	SEM	<i>p</i>
Anatomage table	5	50.237	17.5582	2.3055	<0.00
Traditional method	5	38.716	19.0647	2.5033	<0.00

### **DISCUSSION**

This study compared the effectiveness of the virtual anatomical dissection table versus traditional anatomical models among students at National Medical College, Nepal. The findings indicate that students exposed to the virtual dissection table demonstrated significantly stronger

understanding of anatomical structures compared to those who used traditional models, as evidenced by post-evaluation test scores.

The improved learning outcomes with the virtual dissection table can be attributed to its 3D visualization features, which allow interactive study of the human body. These features provide a more active and immersive learning experience, potentially improving retention and comprehension, especially of complex anatomical relations. These findings align with previous studies [4,10,13-15], which concluded that digital anatomy learning enhances student performance. However, some cross-sectional studies [12,16], reported no statistically significant differences between modalities, while Totlis T et al found traditional methods more effective than online learning [17].

Several limitations should be considered. The study was conducted at a single institution, limiting generalizability. The sample size was relatively small, as the sanctioned class size is 120 students. Future studies should consider multicenter trials with larger cohorts. Additionally, no qualitative data were collected regarding students' perceptions or satisfaction with the learning modalities.

Despite these limitations, this study demonstrates that the virtual anatomical dissection table offers significant benefits compared to traditional anatomical models, including improved spatial awareness, better retention of anatomical knowledge, and reduced ethical concerns associated with cadavers.

### **CONCLUSION**

Teaching anatomy using the virtual anatomical dissection table is superior to traditional anatomical models in improving students' academic performance.

### **REFERENCES**

1. Klettner A, Luo S, Coyle LD, Liu N. A review of the link between psychological stress and inflammatory bowel disease exacerbation. *Acad Ment Health Well-Being*. 2025;2(1):7617.
2. Almizani MS, Alotaibi MA, Bin Askar MF, Albaqami NM, Alobaishi RS, Arafa MA, et al. Clinicians' and students' perceptions and attitudes regarding the anatomical knowledge of medical students. *Adv Med Educ Pract*. 2022;13:1251–9.
3. Diaz CM, Linden K, Solyali V. Novel and innovative approaches to teaching human anatomy classes in an online environment during a pandemic. *Med Sci Educ*. 2021;31:1703–13.
4. Pandey SB, Patel BN, Chourasia RS, Kumar R. A comparative study of traditional vs modern anatomy teaching methods on student knowledge retention. *Azerbaijan Pharm Pharmacother J*. 2024;23(2):193–9.
5. Ghazanfar H, Rashid S, Hussain A, Ghazanfar M, Ghazanfar A, Javaid A. Cadaveric dissection a thing of the past? The insight of consultants, fellows, and residents. *Cureus*. 2018;10(4):e2418.
6. Zhang L, Xiao M, Gu M, Zhang Y, Jin J, Ding J. An overview of the roles and responsibilities of Chinese medical colleges in body donation programs. *Anat Sci Educ*. 2014;7(4):312–20.

7. Zhang L, Wang Y, Xiao M, Han Q, Ding J. Ethical solution to the challenges in teaching anatomy with dissection in the Chinese culture. *Anat Sci Educ.* 2008;1(2):56–9.
8. Atwa H, Dafalla S, Kamal D. Wet specimens, plastinated specimens, or plastic models in learning anatomy: perception of undergraduate medical students. *Med Sci Educ.* 2021;31(4):1479–86.
9. Kavvadia EM, Katsoula I, Angelis S, Filippou D. The Anatomage Table: a promising alternative in anatomy education. *Cureus.* 2023;15(8):e43047.
10. Funjan K, Ashour L, Salameh M, Mustafa A, Seed Ahmed M. Perceptions and attitudes of Jordanian medical students on using 3D interactive anatomy dissection in teaching and learning anatomy. *Adv Med Educ Pract.* 2023;14:837–44.
11. Koney NK, Ansah AO, Asaku BNA, Ahenkorah J, Hottor BA, Adutwum-Ofosu K, et al. Anatomage virtual dissection versus traditional human body dissection in anatomy pedagogy: insights from Ghanaian medical students. *BMC Med Educ.* 2024;24(1):1059.
12. Anand MK, Singel TC. A comparative study of learning with 'Anatomage' virtual dissection table versus traditional dissection method in neuroanatomy. *Indian J Clin Anat Physiol.* 2017;4(2):177–80.
13. Qureshi F, Waseem U, Tafweez R, Zakia S, Fatima S, Qureshi F. Use of Anatomage virtual dissection table for teaching anatomy in medical college. *Pak J Med Health Sci.* 2022;16(12):53–5.
14. Tenaw B. Teaching gross anatomy: Anatomage table as an innovative line of attack. *Int J Anat Var.* 2020;13(1):76–9.
15. Duparc F. 3D-virtual dissection table: we did not imagine how much it will be useful for teaching anatomy and clinical anatomy. *Rev Argent Anat Clin.* 2017;9(1):9.