



Revolutionizing Anatomy Education: Introducing Virtual Dissection Application to Anatomy Education (A Survey)

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ABSTRACT

The article aimed to provide a comprehensive overview of the virtual dissection system and its benefits in teaching human anatomy to medical students. By describing the experience of using this technology, the article highlighted how it can enhance the learning process by providing a more interactive and engaging experience for students. Students now have a special chance to learn about human anatomy in a more interactive and interesting manner thanks to this application. Students can better grasp how the various systems and organs interact by being able to zoom in and explore the body from various perspectives. The quiz portion also enables students to assess their knowledge and pinpoint any areas that may require more research. The community forum also offers an environment for interaction and debate between students and lecturers.'

Students completed a survey asking about their use of technology and their experiences with the virtual dissection system for human anatomy and the survey response was 35 (n=35)

The results of the survey showed that a majority of students found the dissection application good learning aid for learning anatomy.

Keywords: Anatomy, Cadaver dissection Power BI, Virtual system, Virtual dissection

INTRODUCTION

Anatomy is the study of the structure and organization of the human body and is a foundational subject in medical sciences (Alasmari, 2021). The history of anatomy dates back to ancient civilizations, where early physicians and scholars first began to understand the workings of the human body. Over time, the study of anatomy has evolved and expanded, with new technological advancements and emerging trends shaping the future of the field.

The introduction of fundamental anatomical concepts into the clinical context is the goal of human gross anatomy, which is a foundational component of medical curricula around the globe (Boscolo-Berto et al., 2021).

The word anatomy was gotten from the Greek word 'ana' which means part and 'tome' which means to cut, the combination of these words means to cut or cut repeatedly (Santana et al., 2022).

Anatomy is a fundamental subject for medical students, as it provides them with a comprehensive understanding of the human body's structure and function. It helps them to identify the different organs, tissues, and systems that make up the body and how they work together to maintain homeostasis. This knowledge is essential for diagnosing and treating diseases, injuries, and other medical conditions (Darras et al., 2019)

The study of anatomy is crucial to many other fields of study, including medicine, nursing, and physical therapy. By understanding how the body works, professionals in these fields are better able to diagnose and treat a wide range of illnesses and injuries. In addition, the study of anatomy can also help us gain a better understanding of the human body as a whole, including its evolution and development over time.

Dissection exposes and demonstrates the internal body organs and structures to the students, who use touch and vision to better comprehend the human body. Nevertheless, there are times when access to cadavers may be restricted because of the expense, the requirement for donated bodies, and the length of time required for embalming, dissection, and disposal processes.

The importance of teaching anatomy cannot be overstated. It serves as the framework for medical practice, improving diagnostic abilities, developing new treatments, and communicating effectively with patients. Medical professionals must have a thorough understanding of the body's structures and functions to make informed decisions and provide efficacious care.

AIM OF THE SURVEY

The aim of the survey was to:

- To assess the manner in which virtual dissection application could fit into the Anatomy teaching curriculum.
- To gather perceptions of students regarding their experience with the dissection application
- To assess students' opinion on the introduction of virtual dissection application as an additional tool in learning anatomy.

VIRTUAL DISSECTION SYSTEM FOR HUMAN ANATOMY

This is a web application that allows anatomy student to dissect virtual cadavers. The virtual cadavers are highly detailed and accurate, providing students with a realistic experience of dissecting a human body without the need for physical specimens.

The quiz part of the application is designed to test students' knowledge on various aspects of human anatomy. The questions are randomized, ensuring that each student gets a unique set of questions

every time they take the quiz. The feedback provided after each question helps students understand where they went wrong and how they can improve their understanding of the topic.

The chat box feature enables students to interact with their peers and lecturers in real-time. This fosters collaboration and discussion among students, leading to a deeper understanding of the subject matter. Moreover, the link to Wikipedia provides an additional resource for students to clarify any doubts or questions they may have.

METHODS

This study used an electronic questionnaire consisting of 10 questions addressing the student's perception of applying the application as an additional tool to cadaver dissection in anatomy education. The survey asked questions about the topic's depth of understanding and application of anatomical knowledge. The questionnaire was completed by 35 medical students who studied Anatomy using the virtual dissection application alongside the Cadaver dissection. Of the 35 participants, 29 were females (82.9%) and 6 were males (17.1%)

The responses were collected from the students after using the application. The data was analyzed using Microsoft Power BI and the dashboard from google forms.

RESULTS

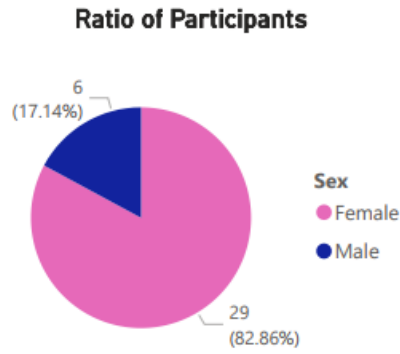


Fig 1: The number of participants in the survey

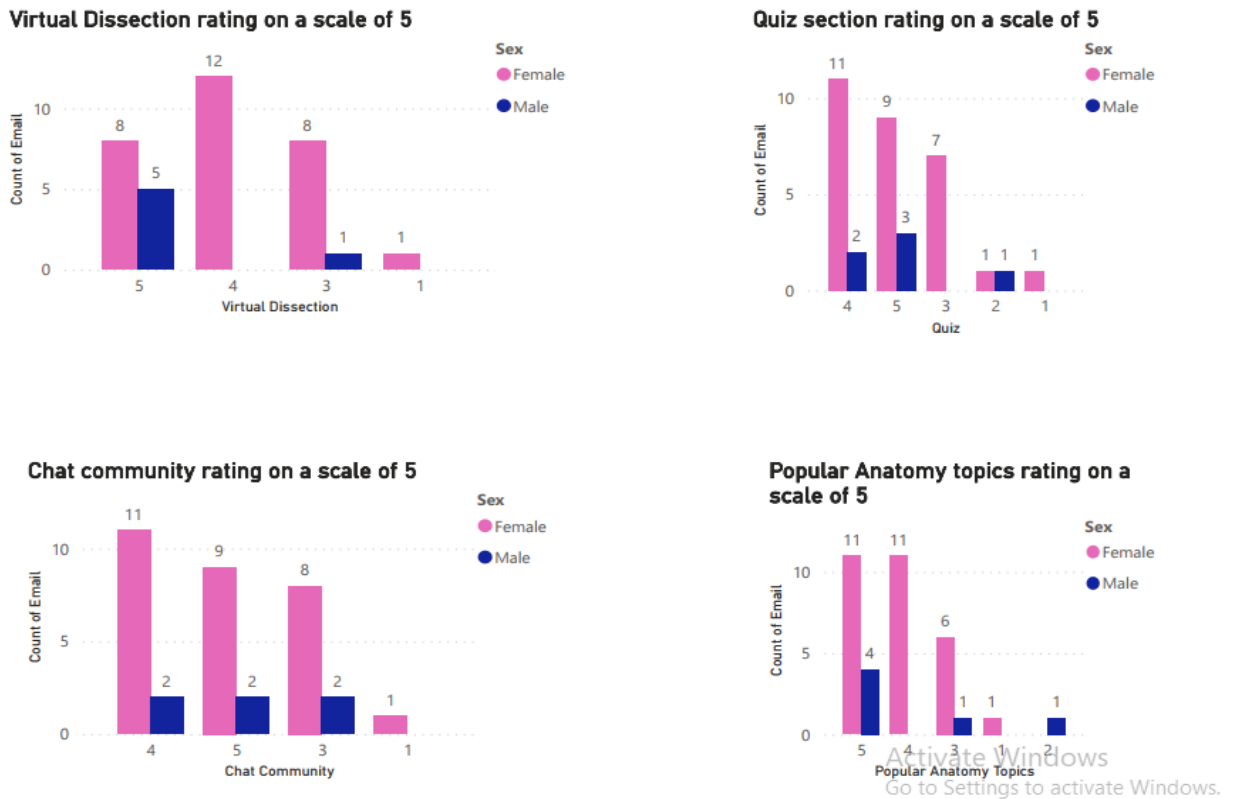


Fig 2: Result from the survey showing the analysis from virtual dissection, quiz, chat community and popular anatomy section.

S/N	Survey Question	Total Items	N (%) (Ratings)				
			5	4	3	2	1
1	How satisfied are you with the applications' overall performance	35	74.3%	17.1%	5.7%	2.9%	0%
			26	6	2	1	0
2	How easy is it to navigate the application's user interface	35	54.3%	28.6%	14.3%	2.9%	0%
			19	10	5	1	0
3	How relevant are features and functions of this web application to the field of Anatomy	35	57.1%	25.7%	17.1%	0%	0%
			20	9	6	0	0

Table 1: Students' perception on the use Virtual dissection system for human anatomy.

Advantages of using the Virtual dissection web application

The dissection application can be utilized in a variety of ways to better demonstrate and learn anatomy. The dissection application offers a more in-depth and engaging educational experience. Students can manipulate the virtual cadaver in ways that might not be feasible with a physical cadaver, such as by zooming in on particular areas. This can help students better understand the structure and function of different organs and systems within the body.

Also, this dissection application can be used to supplement traditional classroom lectures and textbooks. By providing an additional visual aid, students may be able to better retain information and make connections between different concepts. It also provides a more accessible learning experience for students who may not have access to a physical cadaver dissection laboratory.

The quiz features of the application allow instructors to assess student understanding in real-time, providing immediate feedback and opportunities for improvement.

DISCUSSION

Medical education is constantly advancing and incorporating interactive technology more frequently (Tanya & Michael, 2015)

Students frequently struggle to comprehend the connections between the different structures and how to perceive depth from one-dimensional projections and study tools like textbooks and atlases (Rosario, 2021).

The results of the study showed the advantages of using the dissection application outweighed the disadvantages. The ability to visualize and manipulate anatomical structures in a three-dimensional space also helped students develop a deeper understanding of complex anatomical concepts.

Additionally, the application provided a safe and cost-effective alternative to traditional cadaver dissection, which can be expensive and pose potential health risks.

The disadvantages cited by the student were some technical difficulties with the application, such as slow loading times. Some also noted that more quiz could be added to the quiz section of the web application.

CONCLUSION

When subjected to peer review for validation, the virtual dissection functions as an effective integrative tool for teaching and learning anatomy, and implementing these cutting-edge methods will help redefine teaching skills.

Virtual dissection can be a helpful addition to traditional. It enables repeated practice without requiring extra cadavers, which can be expensive and challenging to acquire. The ability to view structures from various angles and views provided by virtual models also makes it easier to comprehend intricate anatomical relationships.

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