DARBHANGA MEDICAL COLLEGE & HOSPITAL

DEPARTMENT OF ANATOMY

PRESENTS

72nd NATIONAL CONFERENCE OF ANATOMICAL SOCIETY OF INDIA

NATCON-72

THE CADAVERIC PATH TO MEDICAL EXPERTISE

A Research Study Titled:

CADAVIZ

THE DIGITAL CADAVERIC PATH TO MEDICAL EXPERTISE

Presented at:

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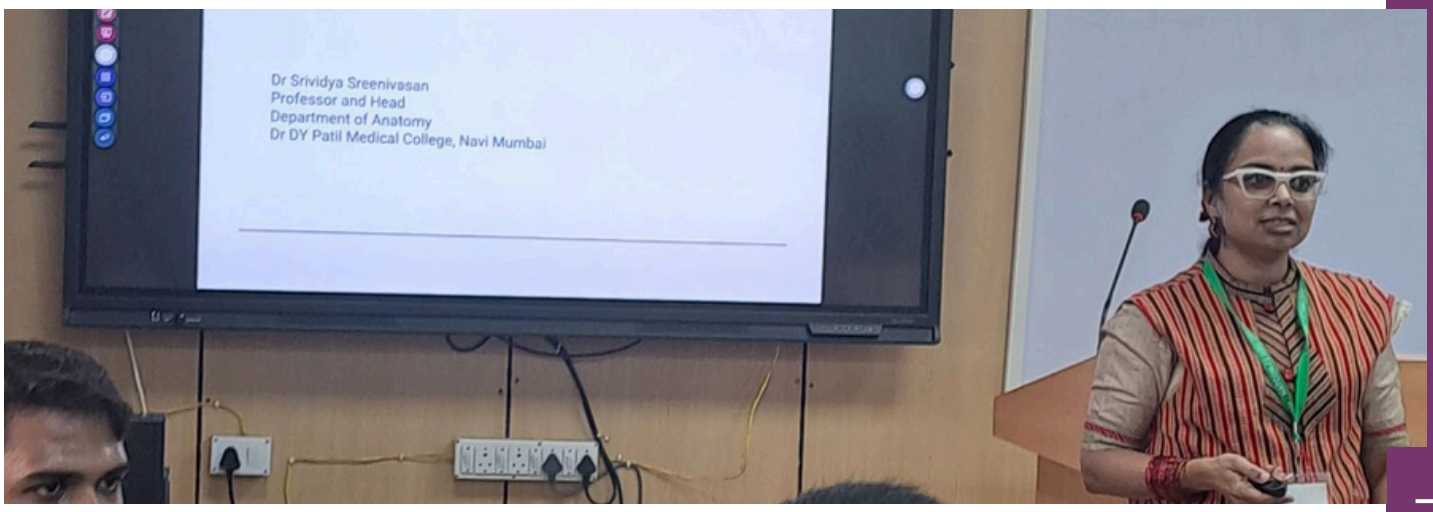
ABSTRACT



Introduction

The integration of technology into medical education has redefined the cadaveric path tomedical expertisebyintroducing innovative tools such asthe Virtual Dissection Table,CADAVIZ™.Understanding students' perceptions of such tools is essential to evaluate theireffectiveness, engagement, and role in complementing traditionalpedagogy. Thus,withthecurrentstudy,weaimed toassesslearners'experiences and attitudes towards CADAVIZ™

Methodology:

A cross-sectional study was conducted among 128 first-year MBBS studentsat the Departmentof Anatomy, DY Patil University School of Medicine. Informed consentwas obtained,and astructured Google Form questionnairewitha 5-point Likert scale('Strongly Agree' to'Strongly Disagree')was used to assessstudents'perceptionof learninggross anatomy,radiology, histology, embryology, and morewith CADAVIZ™

Results

Students reported highly positive experiences withCADAVIZ™. Overall,approximately94%agreed that it is an innovative learning tool. Visualization of anatomy improved forapproximately79%, while interactive 3D features facilitated understanding of spatialrelationships forapproximately88% of students. Regular classroom use was supported byapproximately80%. Radiology, histology, and embryology modules received high agreement,up toapproximately85%.CADAVIZ™was easy to use (approximately77%), engaging(approximately88%), and useful for exam revision (approximately76%). Confidence in learning improved forapproximately68%, with approximately 80% of students rating theiroverall experience above 4.

Statistical Analysis

Descriptive statistics summarized Likert scale responses to highlight trends in studentperceptions.

Conclusion

The study demonstrates that students perceive CADAVIZ™as a highly effective, interactive,and user-friendly tool that enhances understanding, engagement, and confidence in anatomylearning.

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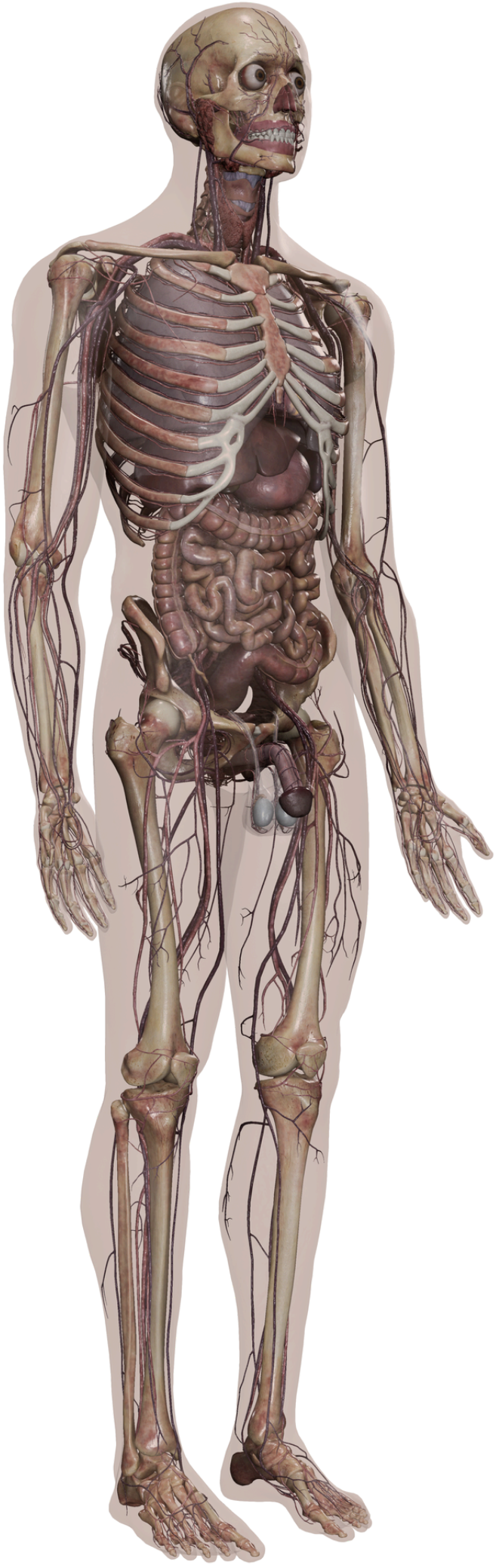


PROBLEM STATEMENT

Traditional methods of teaching anatomy, while foundational to medical education, face limitations such as restricted access to specimens, ethical considerations, and difficulty in visualizing complex three-dimensional and dynamic anatomical relationships—particularly in histology and embryology. Immersive digital platforms like CADAVIZ™ aim to address these gaps through interactive visualization; however, their educational value depends largely on student perception of usability, engagement, and their effectiveness as a learning supplement.[1]

RESEARCH HYPOTHESIS

The use of CADAVIZ™ as a supplementary educational tool significantly enhances students' anatomical visualization, spatial understanding, engagement, and learning confidence compared to conventional teaching methods alone.

AIM OF THE STUDY

To evaluate medical students' perceptions of CADAVIZ™ in enhancing anatomical visualization, 3D spatial understanding, integration with cadaveric dissection, learner engagement, and usability across anatomy-related disciplines.

OBJECTIVES OF THE STUDY

- To understand student perceptions of CADAVIZ™.
- Assess how CADAVIZ enhances anatomical visualization effectively.
- Evaluate spatial understanding through interactive 3D exploration.
- Examine CADAVIZ's effectiveness in supplementing cadaver dissection.
- Analyze student engagement, confidence, and learning motivation.
- Determine usability across anatomy, histology, and embryology.

RESEARCH METHODOLOGY

Study Design

A single-point, observational, cross-sectional feedback study.[2]

Study Setting

Department of Anatomy, DY Patil University School of Medicine, Navi Mumbai, Maharashtra, India.

Sample Size

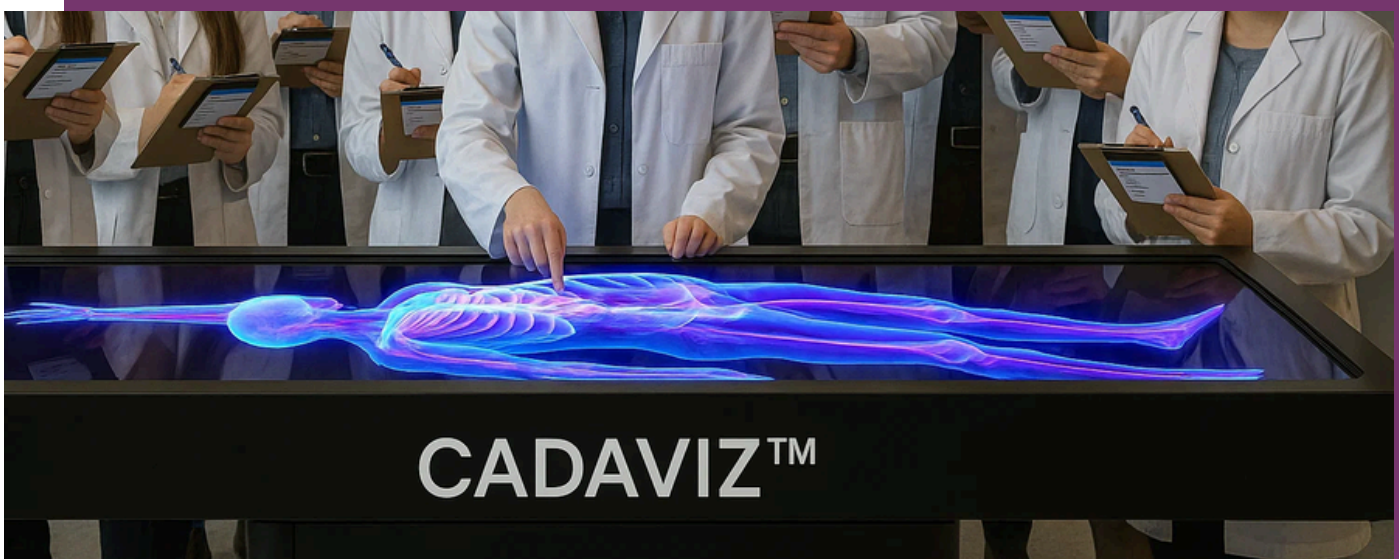
128 first-year MBBS students who provided informed consent and had previously learned anatomy using Cadaviz.

IEC and Informed Concent

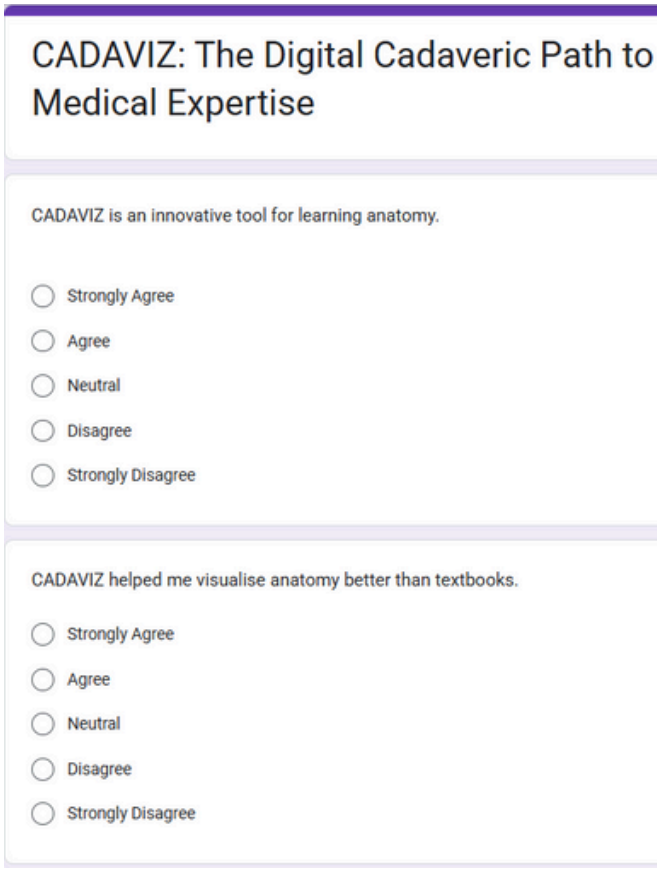
The study was conducted after obtaining IEC and informed consent from all participants.

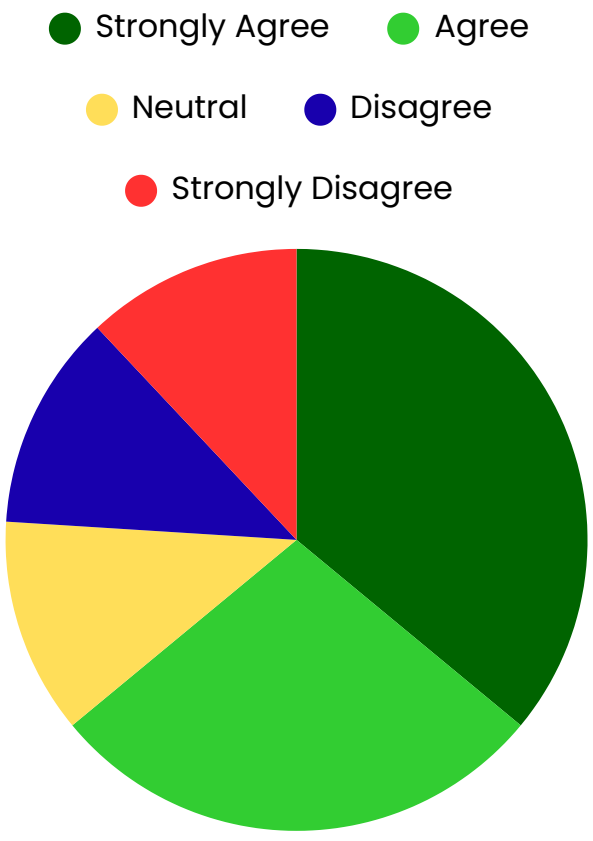
Data Collection and Analysis

The study employed a 5-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree.”



RESEARCH METHODOLOGY





- Descriptive statistics were used to summarize perception trends across five key domains:

→ Visualization & Spatial Understanding

Evaluates the effectiveness of CADAVIZ™ in improving three-dimensional anatomical visualization and spatial comprehension.

→ Integration with Traditional Teaching

Assesses the role of CADAVIZ™ as a complementary tool alongside conventional anatomy teaching and cadaver dissection.

→ Discipline-Specific Learning

Examines the usefulness of CADAVIZ™ across anatomy-related disciplines, including histology, radiology, and embryology.

→ Engagement & Learning Confidence

Measures the influence of CADAVIZ™ on student engagement, learning motivation, and confidence.

→ Usability & Overall Perception

Evaluates ease of use, perceived innovation, and overall student acceptance of CADAVIZ™.

- Results reflect overall patterns in student perceptions of CADAVIZ™ across visualization, integration with traditional teaching, discipline-specific learning, engagement, and usability.

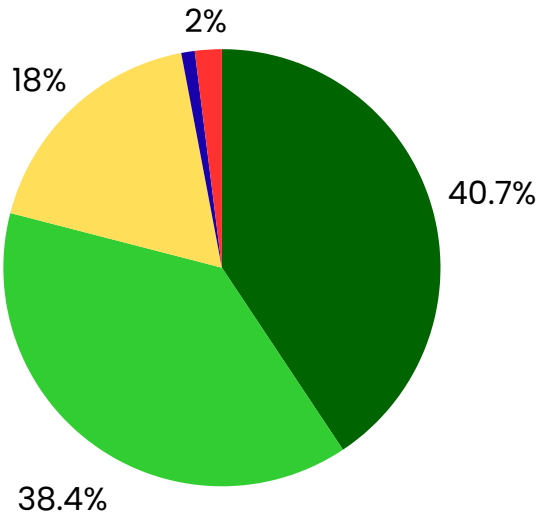
RESULTS

Strongly Agree Agree Neutral Disagree Strongly Disagree

Results for the five domains are shown below using pie charts, with combined "Agree" and "Strongly Agree" responses reported as positive feedback.

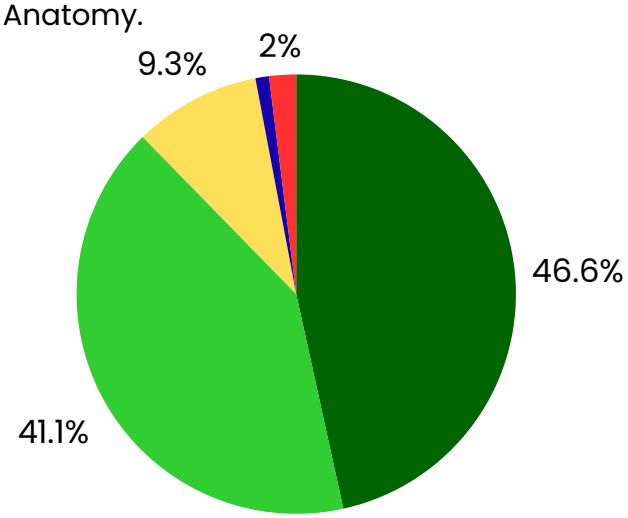
Visualization & Spatial Understanding

1. CADAVIZ helped me visualise anatomy better than textbooks.



79.1% of participants stated that CADAVIZ enhanced their ability to visualize anatomical structures more effectively than traditional textbooks.

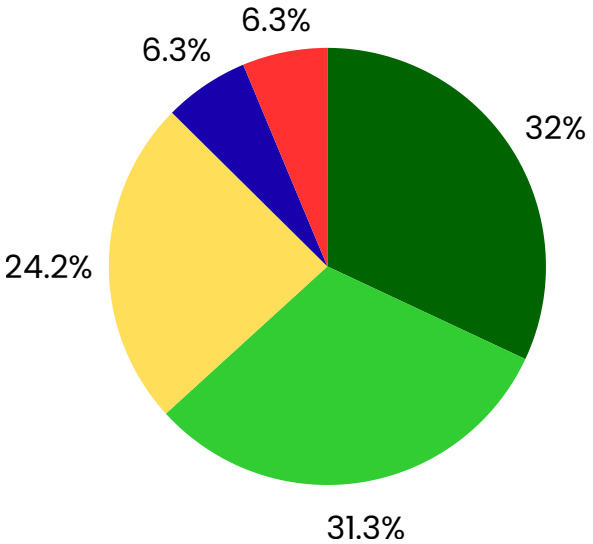
2. The interactive 3D features made it easier to understand spatial relations in Gross Anatomy.



87.7% of participants reported that the interactive 3D functionalities facilitated a clearer understanding of spatial relationships in Gross Anatomy.

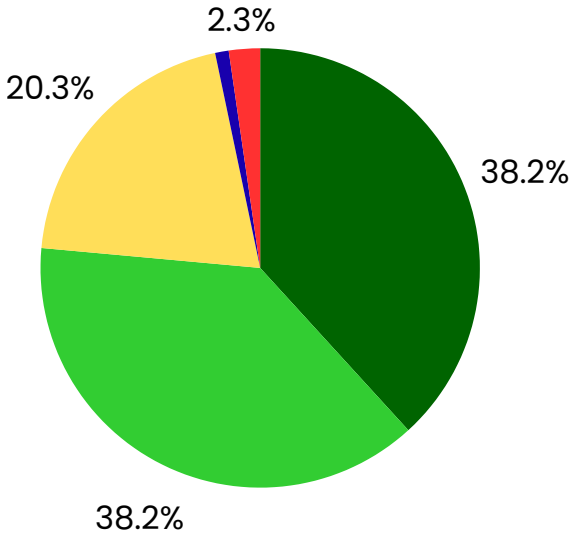
Integration with Traditional Teaching

3. CADAVIZ is an excellent supplement to cadaver dissection.



63.3% of participants perceived CADAVIZ as a highly effective adjunct to conventional cadaver-based dissection.

4. After working with the block dissection module in CADAVIZ, understanding an actual dissection becomes significantly easier.



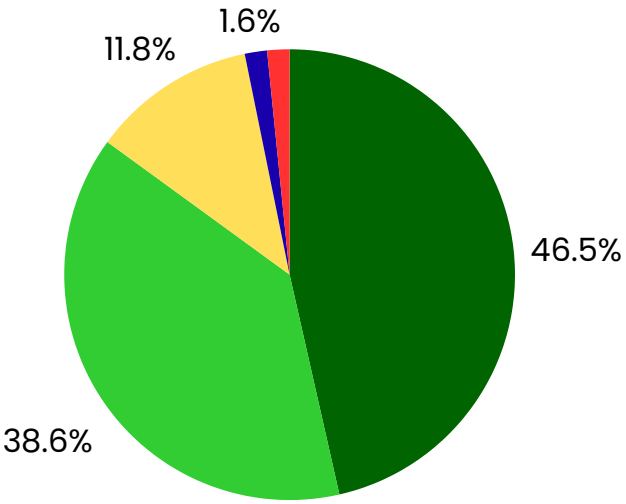
76.4% of participants indicated that engagement with the block dissection module in CADAVIZ substantially improved their comprehension during real-life dissection exercises.

RESULTS

Strongly Agree Agree Neutral Disagree Strongly Disagree

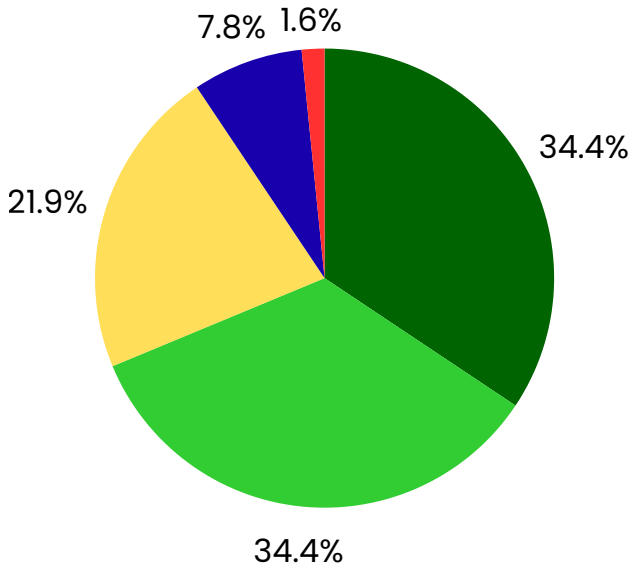
Discipline-Specific Learning

5. The Radiology module helped me understand Radiological Anatomy better.



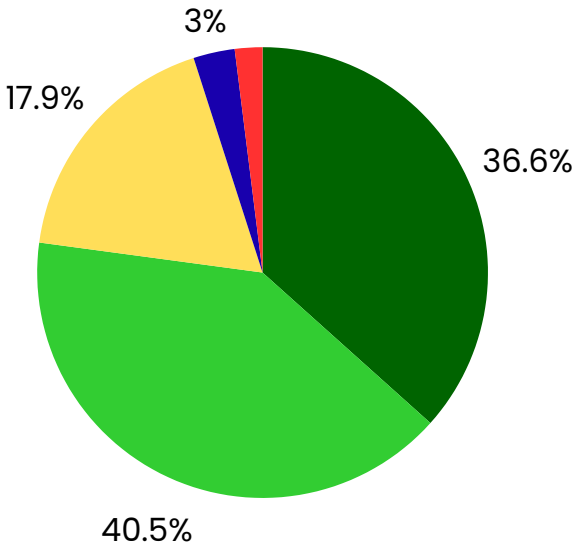
85.1% of participants reported that the radiology module enhanced their understanding of radiological anatomy.

6. The histology module in CADAVIZ improved my ability to identify histology slides.



68.8% of participants stated that the histology module in CADAVIZ strengthened their ability to accurately identify histological slides.

7. The Embryology videos in CADAVIZ helped with better visualisation of abstract concepts in Embryology.



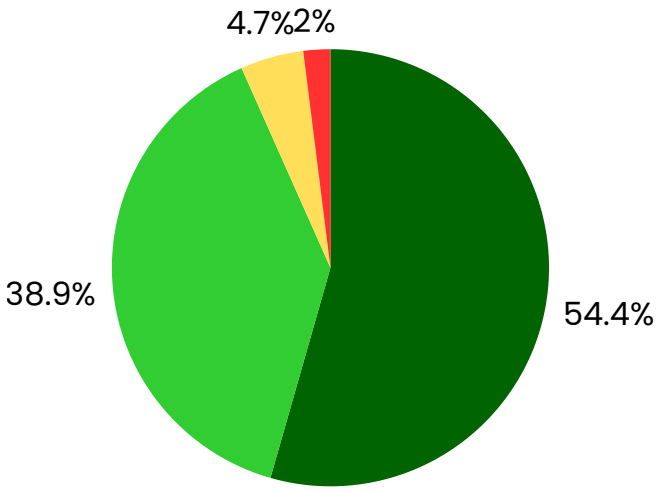
77.1% of participants indicated that the embryology videos in CADAVIZ improved their visualization of abstract embryological concepts.

RESULTS

Strongly Agree Agree Neutral Disagree Strongly Disagree

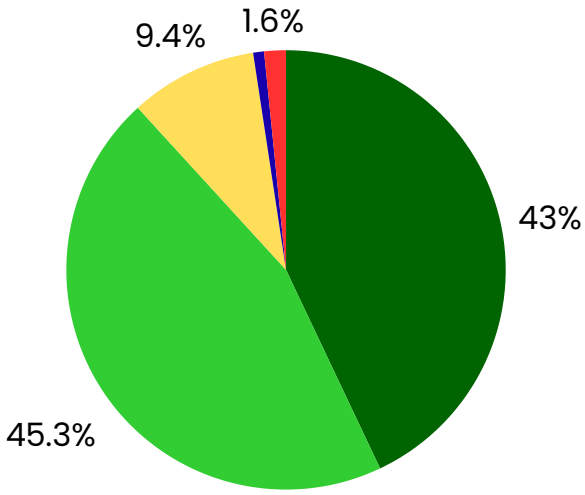
Engagement & Learning Confidence

8. CADAVIZ is an innovative tool for learning anatomy.



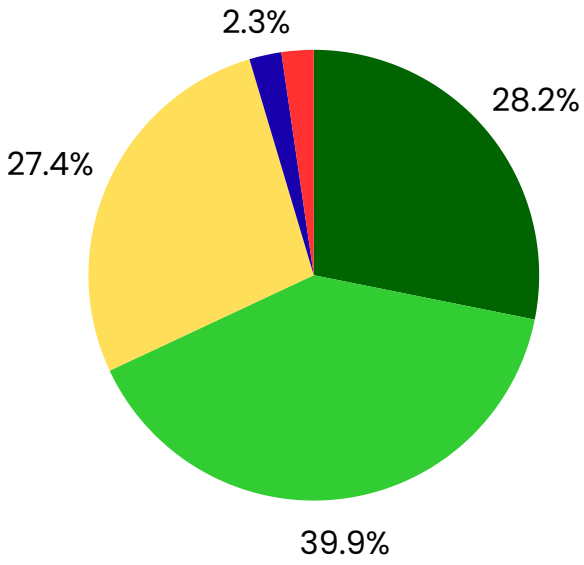
93.3% of participants identified CADAVIZ as an innovative platform for anatomy learning.

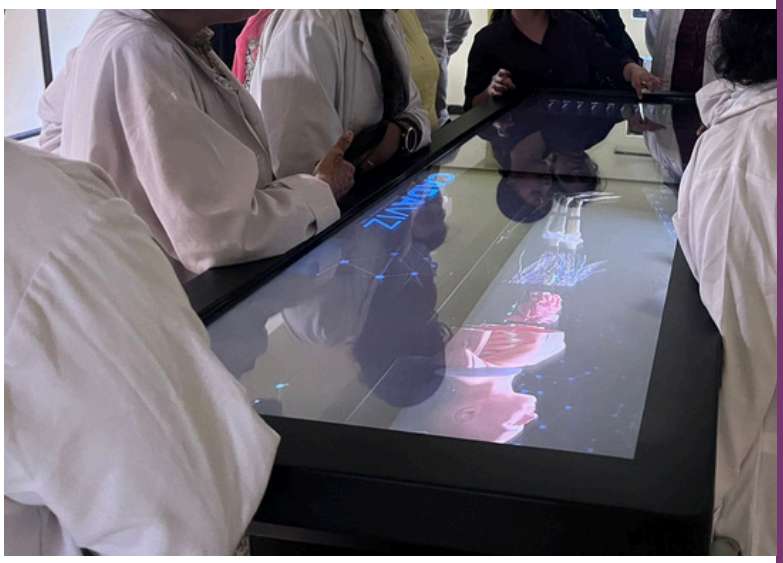
9. With CADAVIZ anatomy learning is more interesting and engaging.



88.3% of participants indicated that learning anatomy with CADAVIZ was more engaging and stimulating.

10. CADAVIZ improved my overall confidence in learning anatomy.





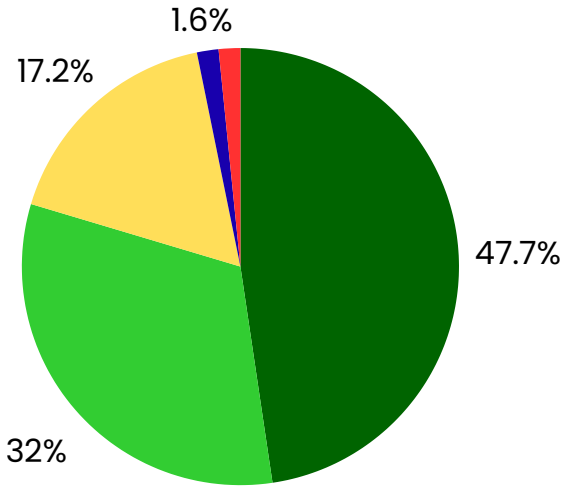
68.1% of participants reported an overall increase in their confidence in learning anatomy after using CADAVIZ.

RESULTS

Strongly Agree Agree Neutral Disagree Strongly Disagree

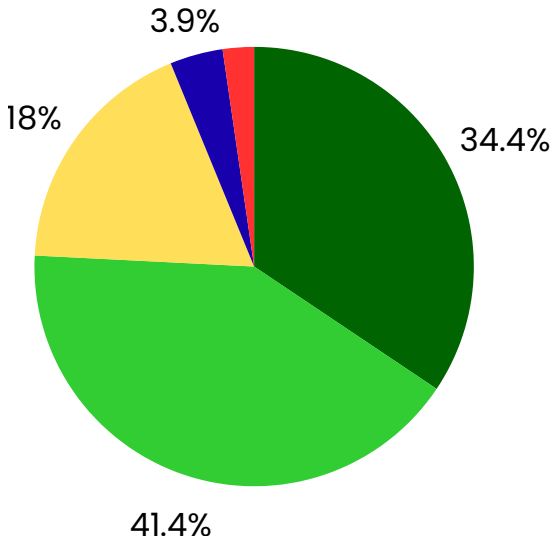
Usability & Overall Perception

11. I would like CADAVIZ to be used regularly in anatomy classes.



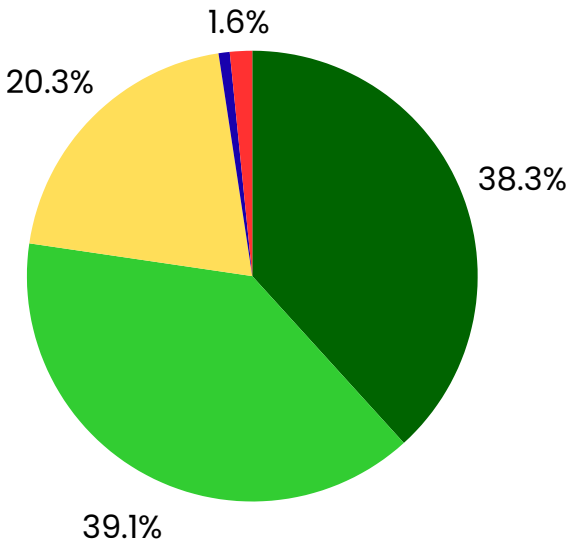
79.7% of participants expressed a preference for the regular integration of CADAVIZ into anatomy teaching sessions.

12. CADAVIZ is a useful tool for revision before exams.



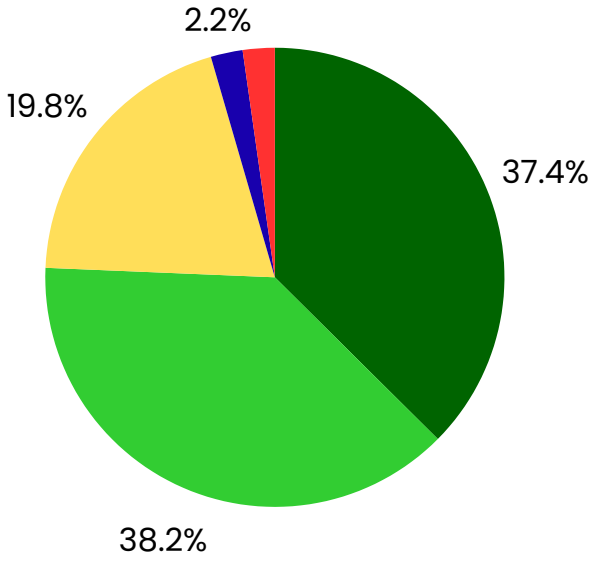
75.8% of participants indicated that CADAVIZ was a valuable resource for exam-oriented revision.

13. I found CADAVIZ easy to use and navigate.



77.4% of participants reported that CADAVIZ was easy to use and navigate.

14. I would recommend CADAVIZ to other students.



75.6% of participants stated that they would recommend CADAVIZ to fellow students.

RESULTS

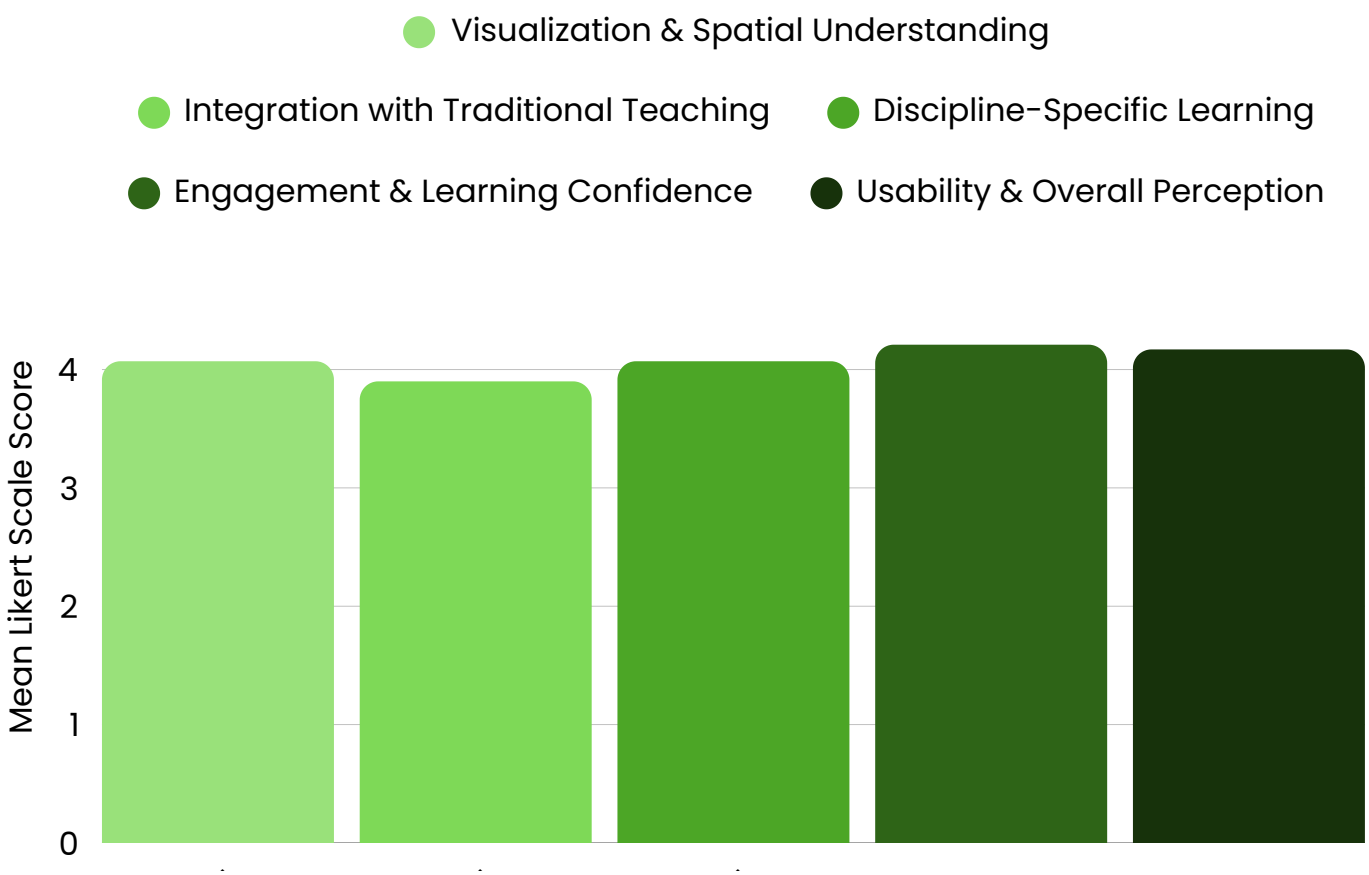


Figure : Mean Likert Scores Across Key Learning and Usability Domains for CADAVIZ

- Learners responded positively to CADAVIZ across all assessed domains, with mean Likert-scale scores ranging from 3.90 to 4.21, indicating agreement to strong agreement with the statements.
- Visualization & Spatial Understanding received a high rating (mean score: 4.07), suggesting enhanced comprehension of anatomical structures and spatial relationships.
- Integration with Traditional Teaching was rated favorably (mean score: 3.90), indicating that CADAVIZ effectively complements conventional anatomy instruction.
- Discipline-Specific Learning showed strong endorsement (mean score: 4.07), highlighting its relevance in reinforcing anatomy-focused concepts.
- Engagement & Learning Confidence scored highest (mean score: 4.21), reflecting increased interest, active participation, and confidence in learning.
- Usability & Overall Perception was viewed very positively (mean score: 4.17), indicating ease of use, user-friendliness, and overall acceptance.
- Overall, the consistently high scores demonstrate that learners largely agree or strongly agree that CADAVIZ is an effective, engaging, and user-friendly tool across multiple dimensions of anatomy education.

DISCUSSION

The present study was undertaken with the aim of evaluating the effectiveness of CADAVIZ in supporting learners' understanding of anatomical structures and systems, and to explore how students perceive its role in enhancing anatomy education. Understanding learner perception is crucial, as it provides insights into how educational tools influence comprehension, engagement, and confidence, and guides the integration of digital resources into traditional curricula.

VISUALIZATION & SPATIAL UNDERSTANDING

Learners rated the visualization and spatial understanding domain highly (Mean = 4.07), which may be attributed to CADAVIZ's ability to support rotation, zooming, and exploration of anatomical structures. According to Cognitive Load Theory (CLT), learning is optimized when instructional design minimizes extraneous cognitive load, enabling learners to focus on relational and structural understanding. In anatomy education, such design externalizes complex spatial information, facilitating more efficient processing and integration of anatomical relationships and supporting meaningful schema construction.[3]

INTEGRATION WITH TRADITIONAL TEACHING METHODS

The positive perception of integration (Mean = 3.90) may be understood through Constructivist Learning Theory, which posits that learners actively construct new knowledge by integrating it with existing understanding. By connecting interactive exploration with familiar curricular sequences—such as lectures and textbooks—CADAVIZ likely facilitates meaningful assimilation and accommodation of information. This synergy between traditional content and digital interactive experiences helps learners make sense of abstract content through experiential engagement, reinforcing understanding.[4]

DISCIPLINE-SPECIFIC LEARNING

CADAVIZ's strong score in discipline-specific learning (Mean = 4.07) reflects its ability to reinforce understanding across embryology, radiology, and histology. This may be due to the structured, context-rich content that scaffolds complex concepts and highlights functional relationships. According to First Principles of Instruction, learning is optimized when prior knowledge is activated, demonstrations are meaningful, and learners are guided to apply concepts. By sequencing content logically and integrating clinical context, CADAVIZ helps learners consolidate knowledge and strengthen conceptual understanding.[5]

DISCUSSION

ENGAGEMENT AND LEARNING CONFIDENCE

The high score in engagement and confidence (Mean = 4.21) may reflect principles of Self-Directed Learning (SDL), which emphasizes learner autonomy, initiative, and self-regulation in acquiring knowledge. When students can choose what to explore and how to interact with content, they exercise control over their learning pace and strategies, fostering intrinsic motivation and a sense of ownership. In digitally mediated environments, this autonomy correlates with increased confidence and sustained effort, particularly when learners feel capable of navigating content independently. [6]

USABILITY & OVERALL PERCEPTION

A mean score of 4.17 suggests that usability significantly influenced learners' overall perception. Information System Success Models (ISSM) integrated with constructivist principles suggest that ease of use, system quality, and user satisfaction are central to technology adoption. When interactive features are intuitive and easily navigable, cognitive barriers are minimized, allowing learners to engage more deeply with content. This user-centric design likely contributed to positive overall acceptance and sustained engagement. [7]

CONCLUSION

CADAVIZ represents a transformative digital cadaveric platform that guides learners along the path to medical expertise. By combining structured, system-focused content with clinically relevant visualizations and guided exploration, it enhances spatial understanding, reinforces discipline-specific knowledge, and promotes engagement and confidence. These features enable learners to integrate theoretical concepts with practical application, positioning CADAVIZ as a powerful complement to traditional anatomy education and a step toward deeper medical proficiency. [7]

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