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Students' Responses to Drawing Skills in Learning Veterinary Anatomy

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ABSTRACT

Drawing skills are the most valuable and widely used method for expressing biological science. This study was planned to evaluate the students' responses to drawing skills in learning veterinary anatomy. 115 first-year veterinary students were included in this descriptive study. They were requested to answer a previously prepared questionnaire regarding drawing skills in learning veterinary anatomy. Their responses were analyzed and presented in graphs with percentages. Students' responses to drawing skills in learning gross anatomy, microscopic anatomy, and developmental anatomy were 50%, 45%, and 5%, respectively. They need this skill as it helps in knowledge retention (37%) and explains the topic in detail easily (27%). Student can also apply their drawing skill in theory examinations (60%) and practical notebooks (25%). Sketch graphics (36%) and tutor instruction (34%) helped them learn drawing skills more efficiently. Almost 65% of students strongly preferred to receive instruction and notes on drawing from the tutor for future studies. Again, they also preferred (75%) to get special training in learning drawing skills. Drawing skills are essential in learning veterinary anatomy based on student responses as they help retain knowledge and explain complex topics easily. Using sketch graphics and tutors' instruction might help veterinary student improve their drawing skills.

1. Introduction

Drawing skills are the most valuable and widely used method for expressing biological science. It is the most engaging and effective learning method of anatomy [1]. A student can improve anatomical knowledge with drawing skills because it supports retention [2]. Thus, this skill may help students explain simple and complex anatomy topics easily. Again, using hand and digital drawing by a tutor in teaching anatomy is more enjoyable for the students [3]. So, this drawing skill is essential for the tutor to make the class interactive and encourage the student to learn anatomy.

Drawing is also essential in veterinary anatomy education [4], leading to a high understanding of any topic. From the first year of an anatomy course, students must draw different diagrams in their practical notebook [5], like human anatomy education.

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However, the student's learning is assessed by their drawing skill, especially in the theory examination in the veterinary anatomy course. Thus, the veterinary student must have the drawing skill to learn the anatomy.

Several studies [6,7] showed that drawing is an essential learning method of anatomy if it is well applied [8]. Again, a few studies of Krishnan, Kumar, and Rajprasath [9,10] described the importance of student drawing skills in learning anatomy.

However, the students' responses to drawing skills in learning veterinary anatomy were poorly documented. Responses from the students might provide an overview of drawing skills and help the tutor select the best technique for teaching students. Thus, this study was planned to evaluate the students' responses to drawing skills in learning veterinary anatomy so that tutor can select their teaching tools efficiently.

2. Materials and Methods

2.1 Study Population and Design

A total of 115 first-year veterinary students of Chattogram Veterinary and Animal Sciences University (CVASU), Khulshi, Chattogram, Bangladesh, were included in this descriptive study. All these students have completed their first year of the Doctor of Veterinary Medicine (DVM) degree. They are exposed to the knowledge of gross anatomy, microscopic anatomy, and developmental anatomy courses.

During these three major courses in veterinary anatomy, the selected students get exposed to drawing and drawing skills. They learn and apply their drawing skill throughout these courses (class, midterm, and final examination).

A questionnaire was developed to evaluate the student's response to drawing skills in learning veterinary anatomy. Seven questions (No: 1 - 7) in the questionnaire were reviewed and modified by other tutors to get the best possible results. Questions 1 - 5 contained four different options, and all the students were requested to choose only one option from these questions. Again, for questions no 6 and 7, students were asked to select the option of scoring according to the Likert scoring system (score range: 1 - 5, where 0 = Disagree, 1-2 = Not sure, 3 - 4 = Agree, and 5 = Strongly agree).

2.2 Ethical Statement

This study is classified as action research and does not require ethical approval. However, the first-year veterinary medicine students were aware of the purpose of this study and were willing to participate. We have requested that they not write their name or registration number on the questionnaire.

2.3 Data Collection and Analysis

Students' responses to drawing skills in learning veterinary anatomy were collected and tabulated in Microsoft Excel 2010. Data obtained from this study were analyzed and presented in graphs with percentages.

3. Result

3.1 Are Drawing Skills Required for Anatomy Courses?

Figure 1 shows the students' responses to the requirement of drawing skills in learning gross anatomy, microscopic anatomy, and developmental anatomy, which were 50%, 45%, and 5%, respectively.

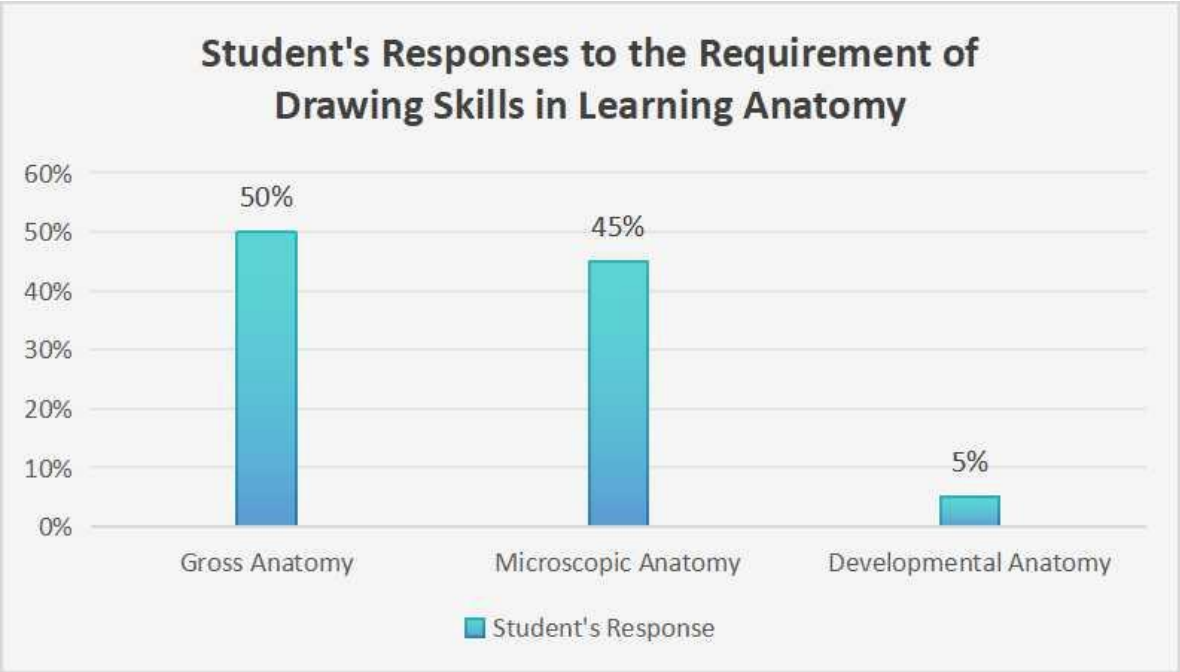

Fig. 1. Student's responses to the requirement of drawing skills in learning anatomy

In gross and microscopic anatomy courses, students' responses to drawing skills were more (50% and 45%, respectively). This is because the drawing can easily explain every single topic of gross and microscopic anatomy.

Previously, the use of progressive drawing has shown positive outcomes in students' anatomy learning [11]. Again, drawing was an effective strategy for learning basic and applied anatomy in another study of Beach *et al.,* [12]. So, the previous study's findings support our recent study on drawing skills for learning veterinary anatomy.

3.2 How Drawing Skills Help in Learning Anatomy?

The second section of the questionnaire related to how drawing skills help learn veterinary anatomy. Students' responses to this question are presented in a graph with percentages in Figure 2.

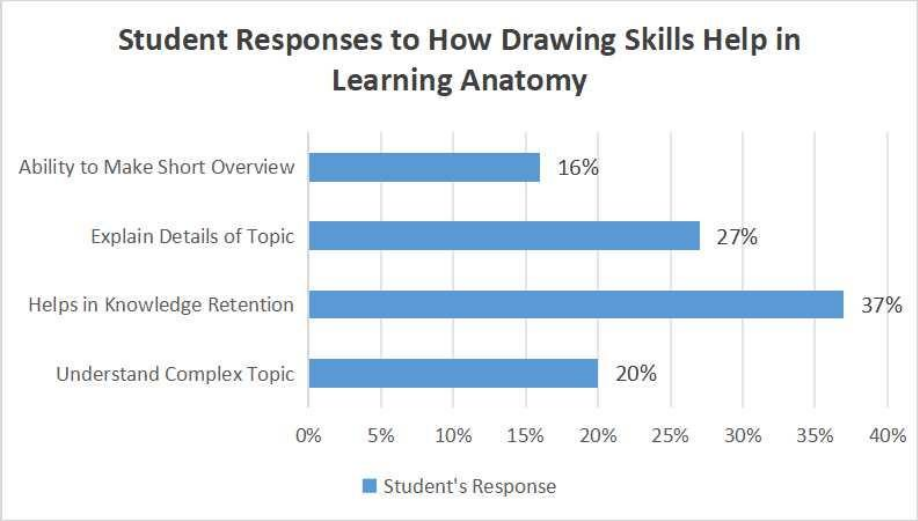

Fig. 2. Student responses to how drawing skills help in learning anatomy

Students of veterinary anatomy need drawing skills as they help in knowledge retention (37%) and explain the topic in detail easily (27%). This may be because drawing skills can improve the deep understanding of the specific topic of veterinary anatomy.

Previous studies of Weiss and Casazza [13] showed that medical drawing enhances anatomy learning. Again, different authors in different studies [2, 14,15] showed that actual drawings of anatomical images improve knowledge retention, which supports our study.

Thus, the student and teacher have drawing skills that can explain the details of any complex topic easily and acquire the ability to make a short overview of the specific topic of veterinary anatomy.

3.3 When Student Apply Their Drawing Skill?

Figure 3 shows the application of the drawing skill in four selected areas by the studied students during their anatomy courses.

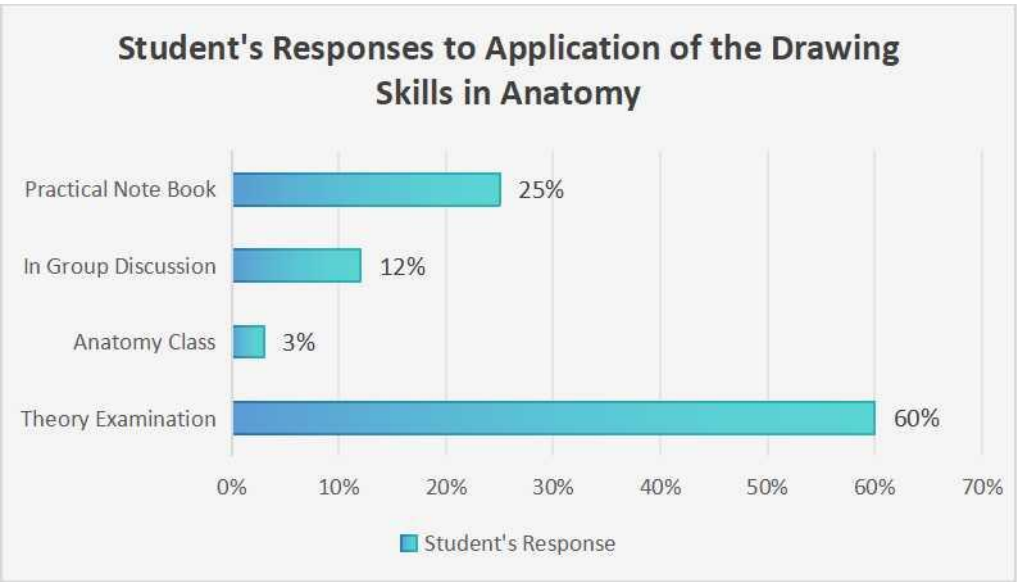

Fig. 3. Student's responses to application of the drawing skills in anatomy

The study showed that students could apply their drawing skills in theory examinations (60%) and practical notebooks (25%). In veterinary anatomy, students are directly or indirectly asked to draw and label the different organs or structures in their theory examination. Again, Ponraj [5] stated that students are compelled to draw different diagrams in their practical notebooks, like human anatomy education.

Again, the students with drawing skills can apply it effectively in group discussions. This is due to having a clear concept of the specific topic of veterinary anatomy.

3.4 How does the student learn drawing skills?

In first-year veterinary anatomy courses (3 major courses), the student used to learn drawing skills from their tutors and other different sources. Figure 4 shows these students' responses on how they learn drawing skills.

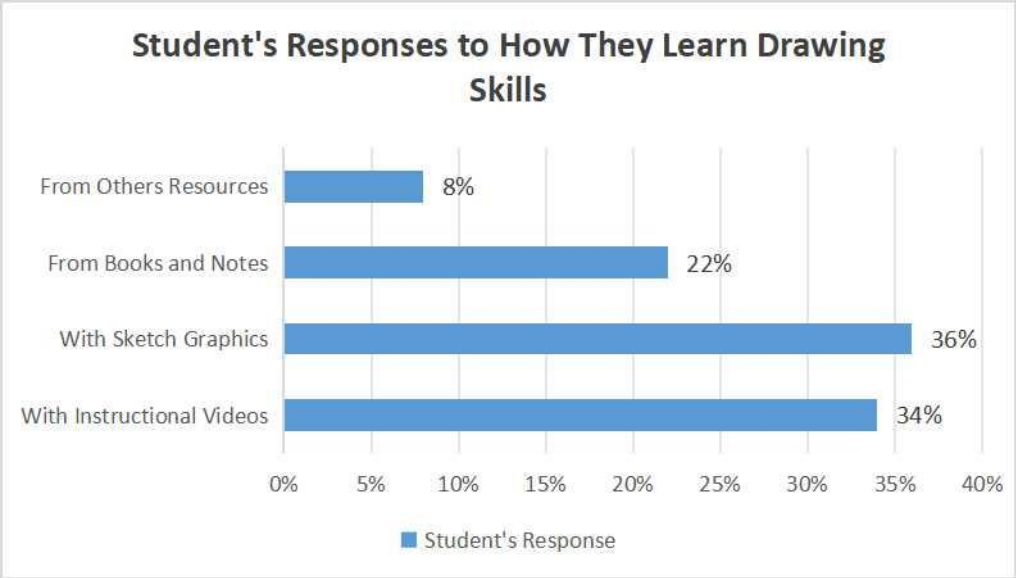

Fig. 4. Student's responses to how they learn drawing skills

Sketch graphics (36%) and tutor instruction (34%) helped them learn drawing skills more efficiently. Simple sketching graphics is the preferable method of learning drawing skills as they help students to draw an anatomical diagram perfectly in less time.

In previous studies, authors showed that the sequence graphic [9], tablet-based drawing [1], and 3D art drawing [16,17] have the best impact on learning anatomical drawing.

Again, the tutor instructional video (34%) was preferable to learning from the book and notes (22%). This may be due to the more precise and interactive ways of teaching drawing skills to students by tutors.

3.5 What type of resource does a student usually use to learn drawing skills?

Sketch graphics (36%) and tutor's instruction (34%) helped students to learn the drawing skill more efficiently. Figure 5 shows the students' responses to the resources they usually use to learn the drawing skill.

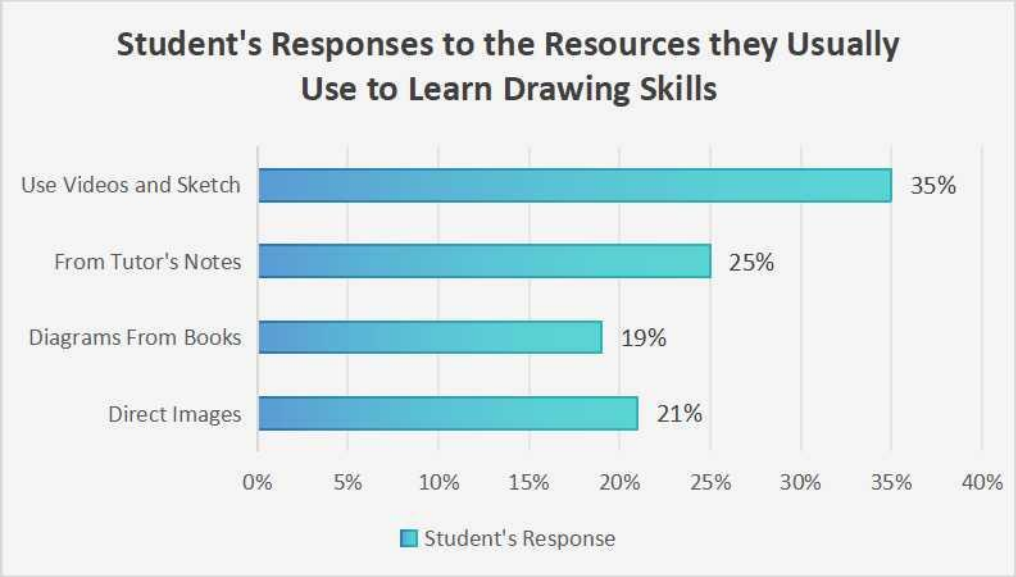

Fig. 5. Student's responses to the resources they usually use to learn drawing skill

This study showed that students preferred videos (35%) or other technology-based resources to learn drawing rather than direct diagrams from books (19%). This is because students always prefer technology-enhanced learning resources to achieve the best outcome [18]

Again, the students can pause and utilize the instructional video to learn drawing skills effectively. According to Krishana *et al.,* [9] the anatomical instruction's video format enhances visual memory and knowledge retention.

3.6 Drawing Notes or Instruction Provided by Tutors

Almost 65% of students strongly preferred to receive instruction and notes on drawing from the tutor for future studies. Figure 6 shows the students' preferences for the drawing notes or instruction guide provided by the tutors.

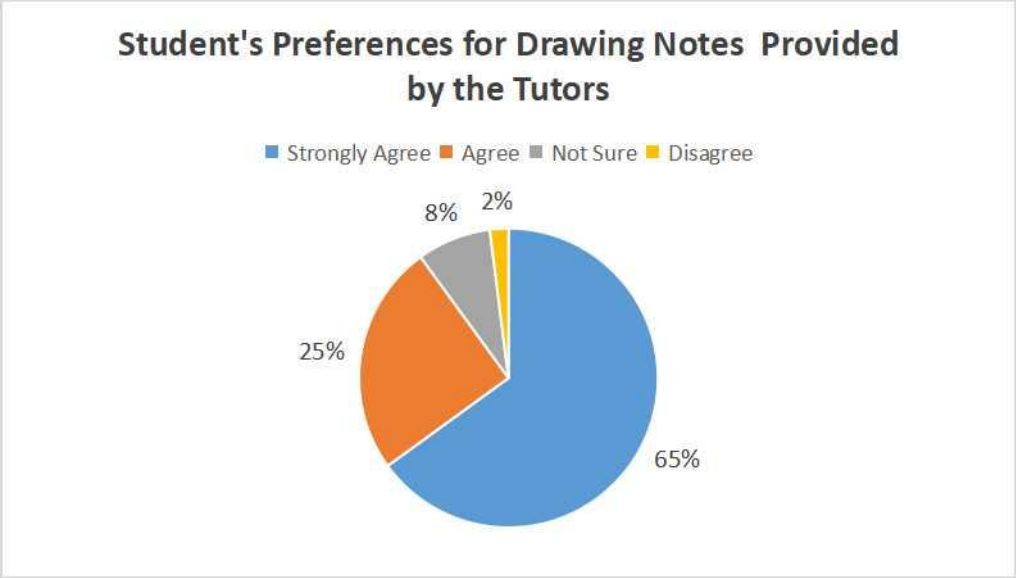

Fig. 6. Student's preferences for drawing notes provided by the tutors

Almost 65% of students strongly preferred to receive instruction and notes on drawing from the tutor for future studies. The instruction and notes on drawing provided by the tutor always enhance the student's learning. Again, these resources for learning drawing skills are best for students as the tutor briefly explains the step-by-step process in a short time. Previous study of Pickering [19] has shown that screencast and paper-based resources enhance student learning significantly.

3.7 Demand for Special Training in Drawing Skill

Students also responded positively to the special training on drawing skills. Figure 7 shows the students' responses to special drawing skill training for exclusive learning.

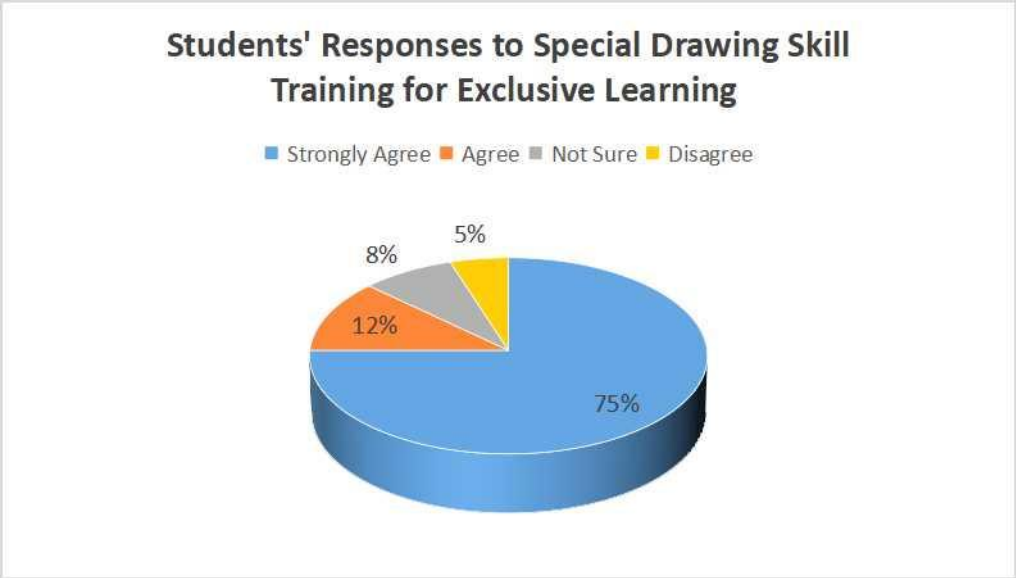

Fig. 7. Students' responses to special drawing skill training for exclusive learning

Again, they also prefer (75%) to get special training in learning drawing skills. Special training in drawing skills may provide new techniques and considerable opportunities to practice. Again, it can improve the students' visual perception, cognitive skills, and creative thinking abilities.

A previous study of Abdullah *et al.,* [20] showed that drawing practice increases opportunities and has a potential benefit in higher education.

4. Conclusion

Based on students' responses, drawing skills are essential in learning gross, microscopic, and developmental anatomy. This skill helps in knowledge retention and explains the complex topic of veterinary anatomy. If the students have drawing skills, they can apply their skills in theory examinations and practical notebooks of veterinary anatomy courses.

However, students must learn sketch graphics and follow tutors' instructions to improve their drawing skills. Most students of veterinary anatomy courses prefer to receive instruction and notes on drawing individual topics like organs, structures, parts, and others from their class tutors.

The students of veterinary anatomy also like to receive special training in drawing so that they can perfectly apply it during their study period.

From this study, any tutor can get an overview of drawing skills, their importance, problems, and possible solutions based on students' perceptions. Thus, the tutor can choose new or suggested

teaching techniques or materials to improve students' drawing skills and ensure better veterinary anatomy education in the future. Furthermore, future studies can be done on the impact of drawing skills in the specific subject of anatomy learning.

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