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TEACHING AND SCIENTIFIC TAXIDERMY FOR HIGH SCHOOL AND AGRICULTURAL TECHNICAL STUDENTS DURING THE COVID 19 PANDEMIC

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Abstract: The university extension project promotes the exchange of knowledge and experiences between academic and population communities, thus facilitating the learning process. The theoretical-practical course developed by the extension project of Taxidermy of domestic and wild animals brings innovation in science teaching, integrating teachers and students of the Agricultural Technical College "José Bonifácio" (CTA) with students and teachers of the Faculty of Agricultural and Veterinarians Sciences at UNESP in Jaboticabal (FCAV). A virtual room was created in Google Classroom, in which all class material and activities were available to students. Twenty-two students from the 1st, 2nd and 3rd years of CTA High School and 12 undergraduate students from FCAV participated in the theoretical-practical course on taxidermy, the activities carried out by the students were analyzed in order to understand the impact of the different didactic resources used in the student learning. At the end of the course, a questionnaire was applied so that students could evaluate their experiences with the course, strengths and areas for improvement. And in general, the students demonstrated good performance, showing that the classes were effective and the students achieved significant learning. The course was able to overcome the challenges of distance learning, by motivating and arousing students' interest in animal morphology.
Keywords: University extension, morphology, taxidermy.

INTRODUCTION

Extension, in its academic character, is the integration between research and teaching in which the knowledge generated by the university based on the needs of the community, is dialogued and built with the population so that society can improve through new knowledge and reflections.

Through this process, the social character of the extension is developed, by promoting the quality of life of individuals (CORRÊA, 2004; RODRIGUES et al., 2013).

Among the extension domains, there is the university extension project, and this is guided by four guidelines, they are the social impact relationship, bilaterality, interdisciplinarity and inseparability of research and extension teaching (CORRÊA, 2004). These programs promote the exchange of knowledge and experiences between academic and population communities, thus facilitating the learning process, making it more horizontal for both parties (RODRIGUES et al., 2013; FREIRE, 2014). This way, extension is an interdisciplinary work that favors an integrated view of the social and enables the transformative relationship between University and Society (D'OTTAVIANO and BASSANI et al., 2022).

The theoretical-practical course developed by the extension project of Taxidermy of domestic and wild animals, brings innovation in the teaching of Sciences, by disseminating mainly the area of Anatomy and performing the anatomical technique of Taxidermy, integrating teachers and students of Agricultural Technical College "José Bonifácio" (CTA) with the students and professors of the Faculty of Agricultural and Veterinary Sciences of UNESP de Jaboticabal (FCAV), facilitating access to scientific knowledge. By promoting meaningful learning, forming research habits and encouraging students to actively participate in situations in which their skills and competences are required, the project arouses curiosity and motivates public school students.

Anatomy is "the branch of knowledge that deals with the shape, arrangement and structure of the tissues and organs that make up the body" (DYCE, 2010), having a Greek origin which means "to cut into pieces" and is traditionally studied from the dissection of tissues. dead bodies. Taxidermy means separating the skin from the rest of the body and is an anatomical technique that preserves the skin of animals for study and/or exhibition. There are several techniques for taxidermy and they "vary according to the purpose, the type and size of the animal and also according to the taxidermist's preference, depending on the objective and the type of biological material to be worked". (REIS, 2011).

The taxidermized pieces can compose scientific (research), exhibition (Museum) or didactic (classes) collections, be used for teaching veterinary anatomy, environmental education, zoology, biology and ecology, raising awareness among students or the population about living beings. and the preservation of the environment in which they live. As many taxidermized animals were victims of being run over or trafficked, in addition to them "those obtained from zoos and recovery centers must whenever possible, be used in taxidermy depending on the quality of the material and the data obtained" (REIS, 2011)

As teaching in the area of anatomy must be dynamic and based on new practices that contextualize the teaching and learning process (FORNAZIERO et al., 2010), and didactics is the fundamental basis of all pedagogical practice (ARCAYA et al., 2010), the relevance of extension in the basic area and the need to reformulate teaching methodologies in public schools is highlighted.

The course brings innovation by taking the laboratory to the school from taxidermy practices, contributing with different approaches to the disciplines, arousing the curiosity and motivation of the students, and making the students perceive in their daily lives the subjects covered in the classroom. classroom.

The lack of motivation and interest of students in different subjects during the pandemic is one of the biggest difficulties encountered by schools, "among the main reasons for school dropout, the most frequent were the need to work (39.1%) and lack of interest (29.2%)" (IBGE, 2020). In critical situations, such as those experienced, of social isolation due to the Covid-19 pandemic, the development of the extension is compromised due to the greater complexity of establishing dialogue with the community. Therefore, alternative measures are important so that even on these mishaps there is the execution of extension practices (SERRÃO, 2020). Despite the increase in the number of schools and teachers that approach science in an integrated way, most Brazilian schools teach science in a decontextualized way, with a theoretical approach without association with history and society, which makes students have difficulties in relating the content with their daily lives, which consequently diminishes their interest. Therefore, science becomes something inaccessible to the population, as it is understood as irreversible, immutable and uninteresting (AULER; BAZZO, 2001; DOS SANTOS, 2008), and through extension, it is possible to change this panorama. This way, the extension project worked on the taxidermy technique for High School and Agricultural Technician students with the objective of dynamizing the learning of anatomy, evolution and environmental conservation.

MATERIALS AND METHODS

After a partnership between CTA and FCAV, a diagnostic evaluation of the profiles of High School and Agricultural Technical students was carried out with the objective of directing the way to approach the content of interest in Anatomy. A virtual room was created in Google Classroom, in which all class material and activities were available to students. In the theoretical-practical course on taxidermy, 22 students from the 1st, 2nd and 3rd year of CTA High School and 12 undergraduate students from FCAV (3 students from the veterinary medicine course and 9 students from the biological sciences).

All classes, shifts and practices were recorded. The following subjects were addressed: Basics of evolution, unique health, external anatomy of vertebrate animals divided into Anapsids, Synapsids and Diapsids, internal anatomy of these groups (Locomotor, Digestive, Respiratory, Urinary and Cardiovascular Systems) and taxidermy practices in animals that represent these groups tortoise (Anápsido), owl devil (Diápisdo) and a mouse (Sinapsido. In total, 26 classes were taught, 22 of which were available for online access and 4 were expository dialogued in synchronous time, 12 activities were carried out to fix the contents, being 3 about Evolution (1 word search, 1 crossword and virtual visits to museums associated with open questions), 2 about Testudines (1 closed question questionnaire and 1 crossword), 6 about Mammals (1 questionnaire with questions closed questions on Evolution and External Anatomy, 1 open question and a schematization of the cardiorespiratory system, 1 crossword on main characteristics of the group, and 1 crossword on the urogenital system, 1 activity of relating columns on the digestive system and 1 activity of true or false on the genital system) and 3 on birds (3 questionnaires with closed questions, 1 on the cardiovascular and respiratory, another on the digestive and urogenital system and the last on the urinary system). In addition to 3 sessions of doubts and 3 taxidermy practices, 1 on Testudine (1 tortoise), 1 on Mammals (2 rats) and 1 on Ave (1 devil owl), and the sessions of doubts regarding evolution lasted around 1 hour

and a half, totaling 40 hours.

The 12 activities carried out by the students were analyzed in order to understand the impact of the different teaching resources used in the students' learning. At the end of the course, a questionnaire was applied so that students could evaluate their experiences with the course, strengths and areas for improvement.

RESULTS AND DISCUSSION

Regarding the Evolution exercises, all students were successful in the "word search" activity, 15 students (68.18%) correctly answered all the crosswords and 14 (63.63%) did the virtual visit activity. to Museums. The students showed satisfaction and interest in Science after the experience of visiting the Museums virtually, correlating the zoological collections with the subjects covered in class. The Museum that most aroused the curiosity of the students was the Museo Nacional de Ciencias Naturales in Madrid. In the Testudines activities (Figure 1), only 5 students (22.72%) got less than 50% of the exercises right, with their percentage of correct answers being 12.5%, 25.9%, 30%, 33.5% and 46.4%, and 7 students (31.81%) almost answered, among them, 6 got 90% right and 1 93.4% of the exercises, and 13 (59%) correctly answered all the crosswords.

Regarding the exercises on mammals, 10 students (45.45%) answered the Evolution and External Anatomy questionnaire (Figure 2), 6 (27.27%) got only 1 question wrong (90.9% of the questions were correct) and only 2 students got less than half of the exercises right, 27.27% got it right, 12 students (54.54%) performed the cardiorespiratory device activity, 15 (68.18%) correctly answered all the crosswords of the general characteristics, 20 (90.90%) did the digestive system activity, 14 (63.63%) correctly answered all the urogenital crosswords and in the true or false activity about the genital system (Figure 3) 5 students (22, 72%) answered correctly and 4 (18.18%) got less than half right.

In the activities about birds, in the questionnaire about the cardiovascular and respiratory system (Figure 4) 6 students (27.27%) answered and 4 (18.18%) answered less than half, while in the questionnaire about the digestive and urogenital system (Figure 5). 4 students (18.18%) answered the question and only 1 (4.54%) got less than half right, 11 students (50%) answered the questionnaire about the urinary system and all did very well in the activities as shown in figure 6.

Regarding the activities proposed after the classes regarding each topic addressed, in general, the students showed good performance, showing that the classes were effective and the students achieved significant learning. Since meaningful learning is a basic concept of Ausebel's theory and in it "there is interaction between new and existing knowledge, in which both are modified" (MOREIRA, 2012).

Regarding the final evaluation questionnaire on the course answered by the students, among the 4 blocks, the ones they liked the most were the Synapsids (Mammals), followed by the Diapsids (Birds and Reptiles - Squamates and Crocodilians), Evolution and by last the Anapsids (Testudines) (Figure 7).

Regarding activities such as exercises, quizzes, word searches, diagrams and crosswords (Figure 8), students were more interested in mammals and reptiles followed by evolution (45%) and Testudines (36%).

Among the three taxidermy practices, birds were the one they liked the most, in which the technique was performed on a devil owl (Asio stygius), followed by mammals (Wistar rat) and Testudines (tortoise) (Figure 9).

Descriptive questions were also asked about the division of themes, ways of learning and perception of practical classes. In general,

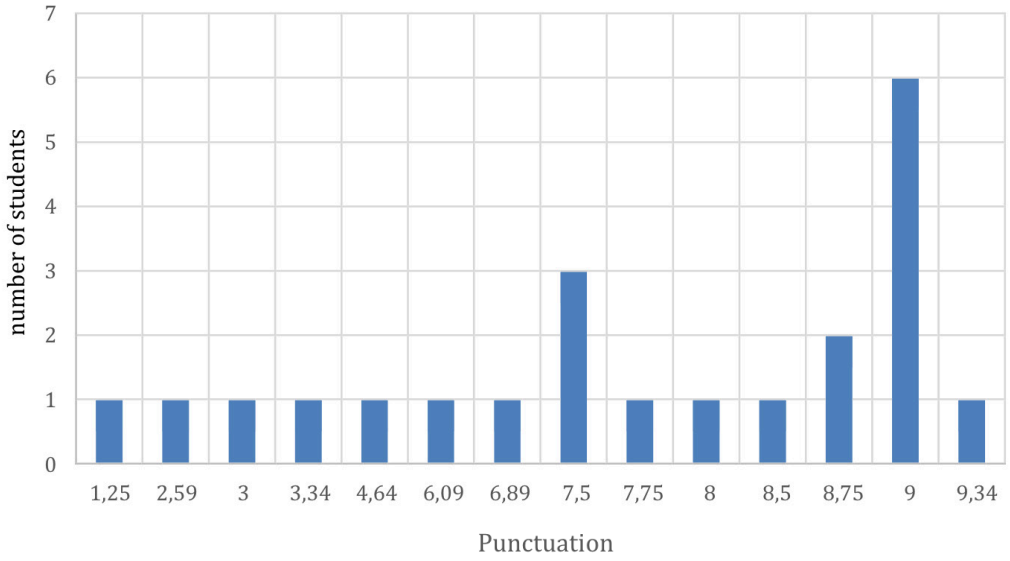

Figure 1. Questionnaire carried out by google forms to evaluate the learning of CTA students about Testudines.

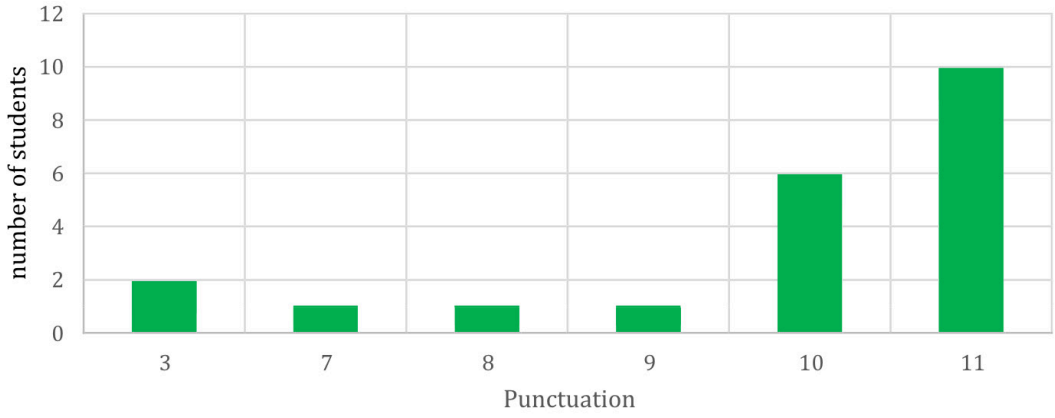

Figure 2. Quiz to assess CTA student learning about evolution and external anatomy.

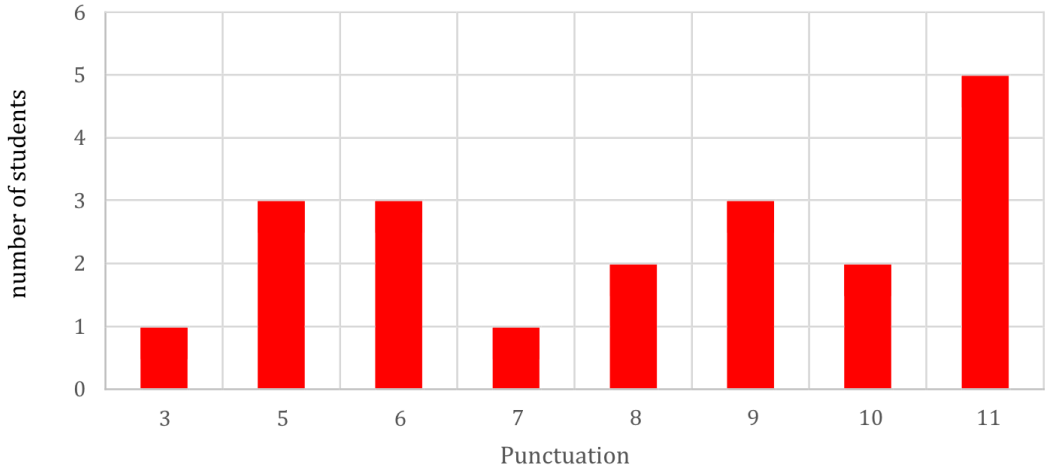

Figure 3. Quiz with "True" or "False" questions to assess CTA student learning about the male and female genital system.

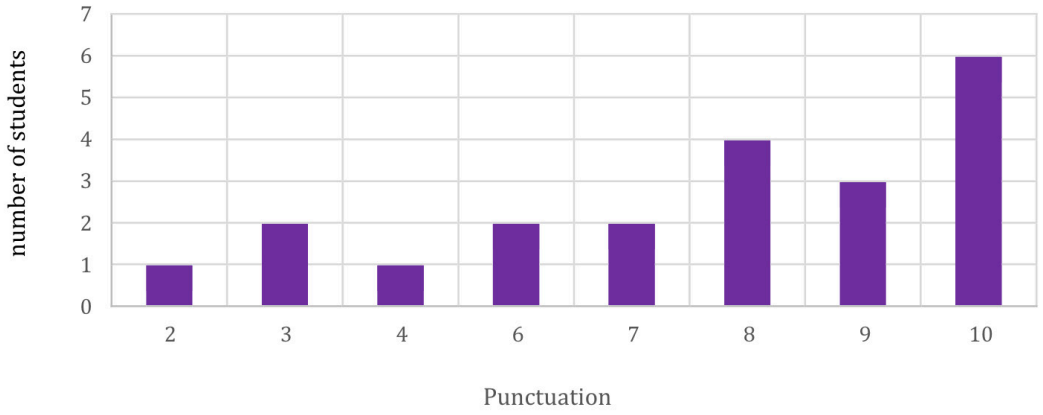

Figure 4. Questionnaire to assess the learning of CTA students about the cardiovascular and respiratory systems of birds.

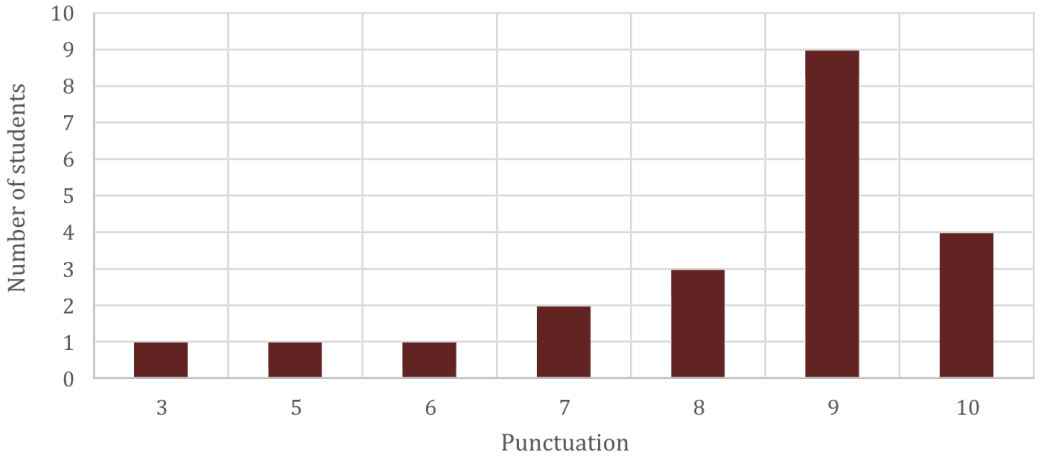

Figure 5. Questionnaire to assess the learning of CTA students about the digestive and urogenital systems of birds.

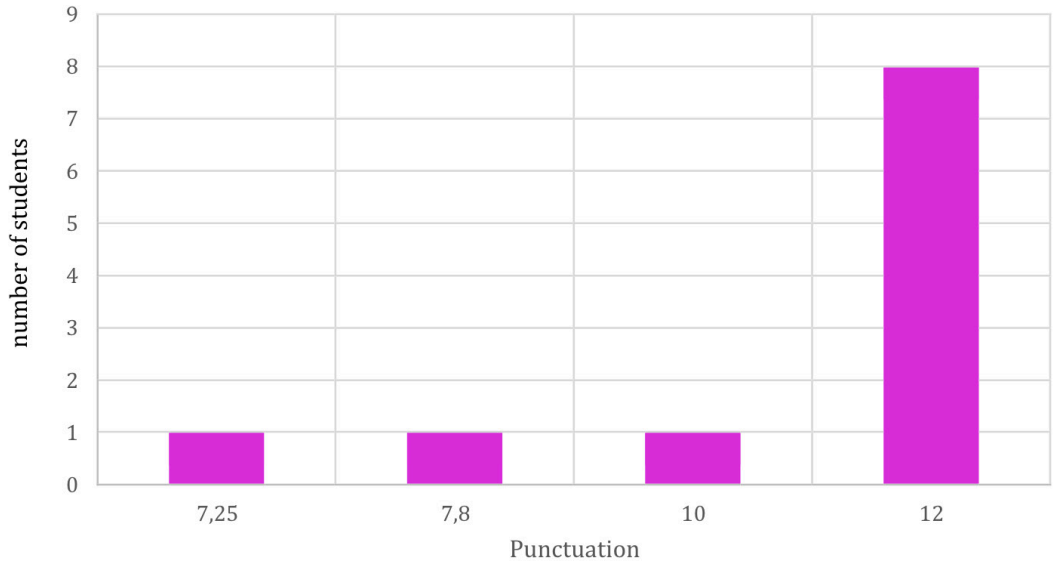

Figure 6. Questionnaire to assess the learning of CTA students about the urinary system of birds.

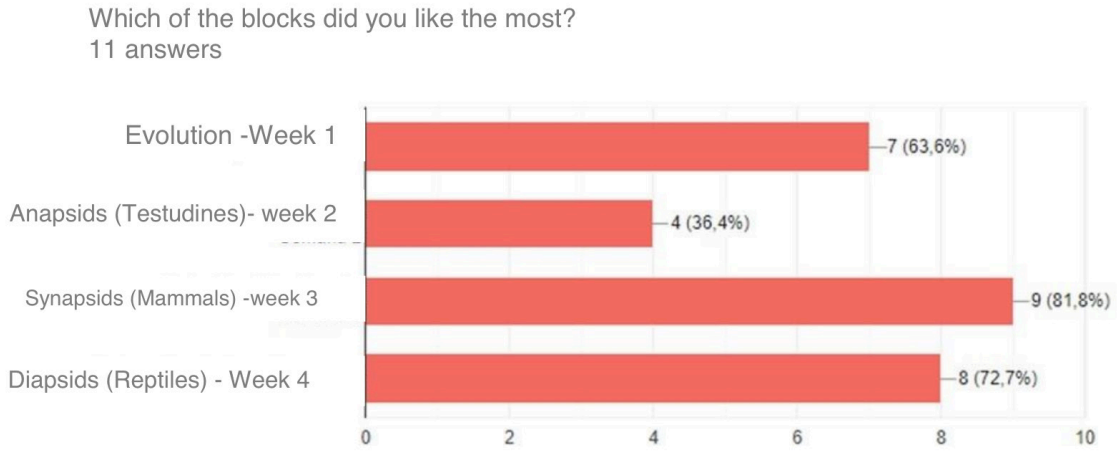

Figure 7. Feedback from CTA students regarding the realization of the theoretical-practical taxidermy course as a whole, organization, coherence, explanations, activities, strengths and points to be improved (part 1).

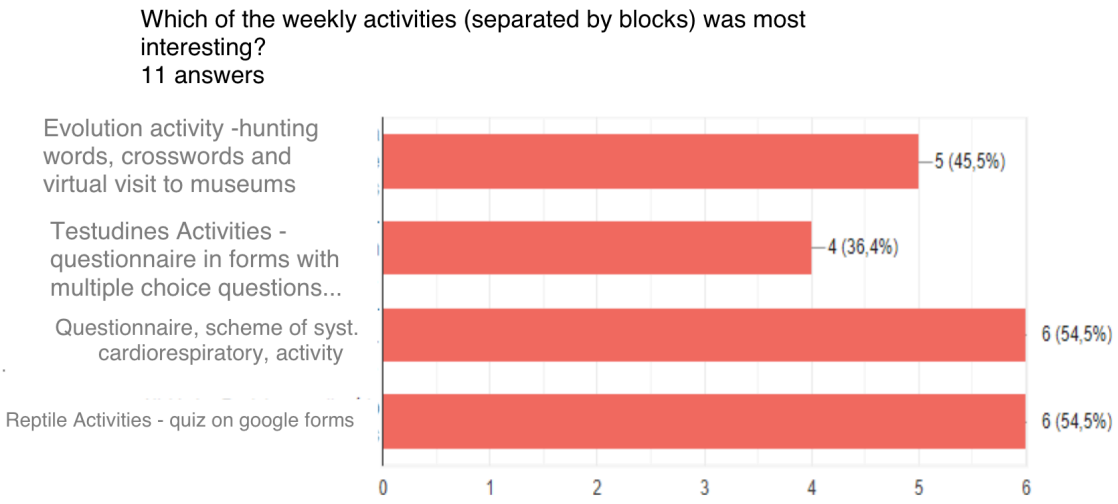

Figure 8. Feedback from CTA students regarding the realization of the theoretical-practical taxidermy course as a whole, organization, coherence, explanations, activities, strengths and points to be improved (part 3).

Figure 9. Feedback from CTA students regarding the realization of the theoretical-practical taxidermy course as a whole, organization, coherence, explanations, activities, strengths and points to be improved (part 4).

the students observed the correlations between the systems, and one of the students pointed out that the cardiorespiratory could be more difficult to understand. Most mentioned that the proposal was clear and that it met the students' expectations.

CONCLUSION

The course was able to overcome the challenges of distance learning, by motivating and arousing students' interest in animal morphology, generating greater interaction between School and University and enabling significant learning about anatomy, evolution, the environment and environmental conservation.

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