Science Booklet

Groups of Vertebrates

Grade 3

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Unit Objectives

Students will be able to:

1. Foundational Knowledge:

Students will actively acquire knowledge. By the end of this unit, students will be able to identify and classify animals into the major groups of invertebrates based on their characteristics and explain the unique features and behaviors of each group.

2. Application:

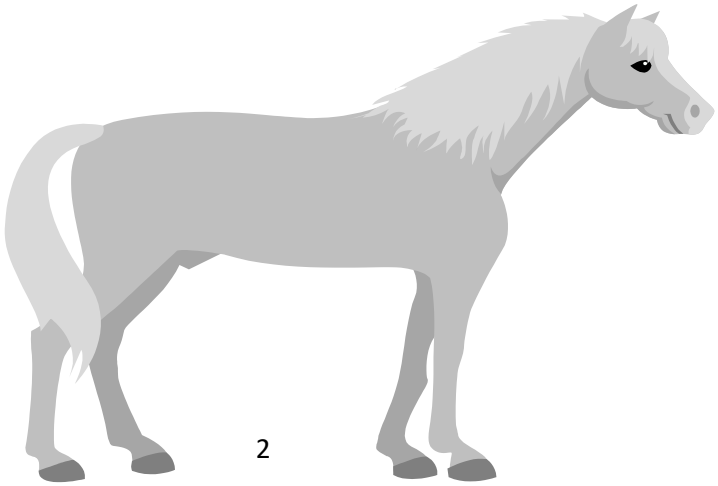
Using their knowledge of the major groups of animals, students will be able to identify and explain the unique characteristics of at least one animal from each group, and then design and present a creative project that demonstrates their understanding of how these adaptations help each animal survive in its environment.

3. Integration:

Students will learn how to apply the information they grasped in other lessons and disciplines.

4. Human Dimension:

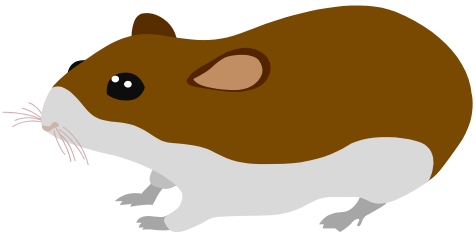
Through team-based learning, students will become effective at working collectively, will be sensitive, tolerant and able to listen to others as well. They will achieve consensus and will take responsibility for the information they gather, research, and acquire.



Learning Outcomes of the Unit

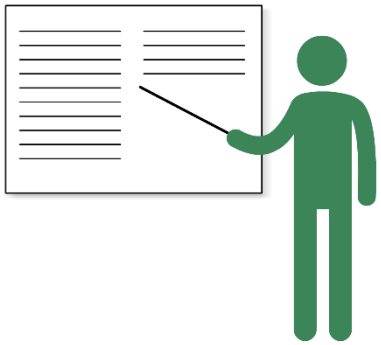
Students will be able to:

- Research about the different groups of vertebrates and create a mind map
- Write a report on their findings after watching a documentary.
- Identify the five groups of vertebrates: mammals, fish, birds, amphibians, and reptiles.
- Define the features of each group of vertebrates.
- Compare and contrast the different groups of vertebrates.
- Categorize animals based on their features.
- Devise a final project that comprises examples of animals of their choice and their features.



Teaching Methodology

1. Integrate technology in the learning process e.g., PowerPoint presentations, videos to support the material and to make the learning process entertaining and get the students involved.
2. Warm up activities to stimulate ideas and discussions.
3. Visual Aids
4. Student-centered learning / Interactive learning
5. Brainstorming to discover new ideas and thoughts.
6. Group discussions through integrating discussions on topics relevant to the topics, develop their critical thinking skills, exchange knowledge, and ensure their individual participation.
7. Group work for knowledge flow.
8. Online activities
9. Assignments/projects/ Quizzes and Tests as various assessment means.



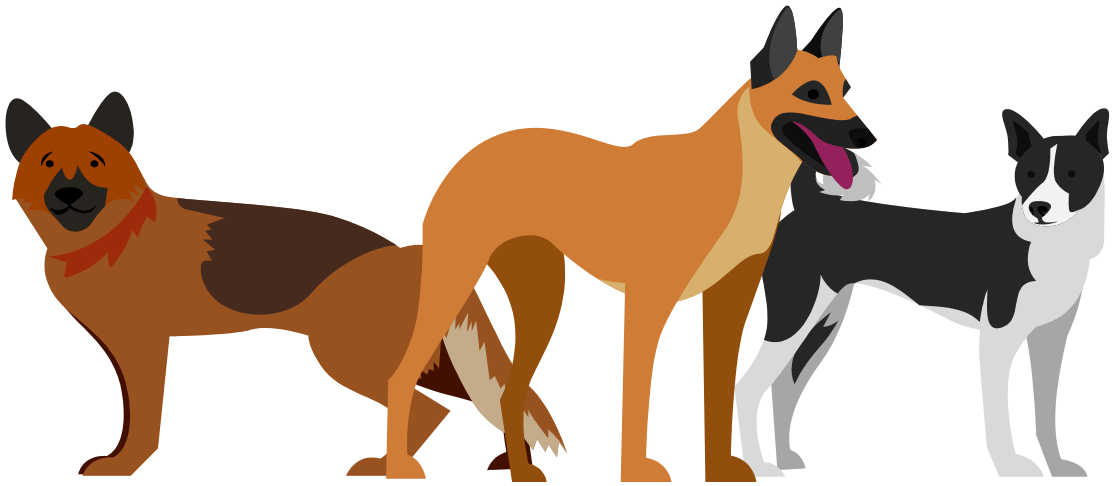
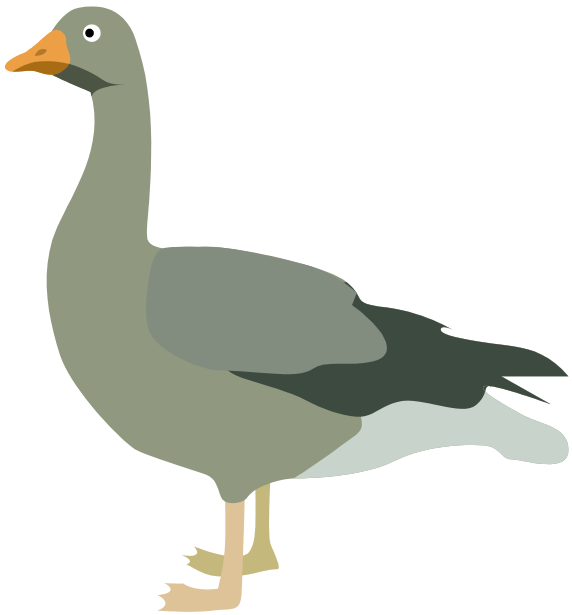


Table of Content

Lessons	Objectives	Tools	Methods	Time
1. Introduction to Different Groups of Vertebrates - Mammals	-Research the topics and create a mind map. -Fill in a questionnaire after watching a video about the different groups of animals. -Identify the five groups of vertebrates: mammals, fish, birds, reptiles, and amphibians. -Define the features of each group of vertebrates. -Compare and contrast the different groups of vertebrates. - List and identify the features of mammals thoroughly. - Recognize mammals based on their features. - Define why dolphins, whales, and bats are mammals. - Compare between the features of animal mammals and human beings.	-Links -Videos -PowerPoint Presentations -Handouts	-Individual Work - Groupwork - Collaborative work - Online Discussions - Quiz	3 sessions/ 150 minutes
2. Birds	-List and identify the features of birds thoroughly. - Recognize the birds based on their features. - Compare and contrast the features of mammals and birds. - Label the main parts of a bird. - Sort animals according to their groups.	-Links -Videos -PowerPoint Presentations -Handouts	-Individual Work - Groupwork - Collaborative work - Online Discussions - Quiz	1 session/ 50 minutes

3. Fish	-List and identify the features of fish thoroughly. - Recognize the fish based on their features. - Compare the features of mammals, birds, and fish.	-Links -Videos -PowerPoint Presentations -Handouts	-Individual Work - Groupwork - Collaborative work - Online Discussions - Quiz	1 session/ 50 minutes
4. Amphibians and Reptiles	-List and identify the features of amphibians and reptiles thoroughly. - Recognize the features of amphibians and reptiles based on their features. - Compare the features of mammals, birds, fish, amphibians and reptiles. -Produce a digital project about an animal of their choice to present it to their friends during the final session.	-Links -Videos -PowerPoint Presentations -Handouts	-Individual Work - Groupwork - Collaborative work - Online Discussions - Students' Projects	3 sessions/ 150 minutes



This is an online science course that covers a unit about the five groups of vertebrates. It is run on Google Classroom platform. The unit is divided into four lessons that encompass one group or two groups of vertebrates each. Each lesson requires one to three sessions, and the average session lasts for 50 minutes.

This guideline will guide the instructor to deliver scientific knowledge and facts through effective learning, good questioning techniques, and interactive, exciting resources. The guideline will also give the instructor an insight on how to encourage the students to think, reason, and research, which would make them independent learners who can interpret and comprehend new information quickly. The lessons are delivered through PowerPoint presentations filled with an exciting range of pictures and images that align with the explanations; in addition, a wide variety of activities are structured to encourage individual work, groupwork, and cooperative work. Handouts that complement each lesson will be posted on Google Classroom after the sessions for individual application. There are two online interactive assessments that take place at the end of the first and third lessons. At the end of the fourth lesson, revision handouts are provided to help the students review and reflect on what is covered throughout the whole chapter. The summative assessment consists of a final project; the students are required to devise a project that integrates both science and English subjects, which is a good opportunity for the students to demonstrate their comprehension of the lessons through manifesting their creativity.

Lesson Plans

During this instructional unit, the students will engage in a comprehensive review of the various groups of vertebrates and their corresponding characteristics. They will sort the animals into groups using their features and describe the similarities and differences between the different groups.

Lesson Plan 1

Section: 3A	**Periods:** 3 Sessions	**Time:** 150 minutes
Unit 1: Different Groups of vertebrates	**Lesson 1:** Introduction to Different groups of Vertebrates and Mammals	
Supplies/Tools - PowerPoint Presentations - Handouts - Links - Mind Map - Questionnaire - Video		

Learning Outcomes

-Research the topics and create a mind map.

-Fill in a questionnaire after watching a video about the different groups of animals.

-Identify the five groups of vertebrates: mammals, fish, birds, reptiles, and amphibians.

-Define the features of each group of vertebrates.

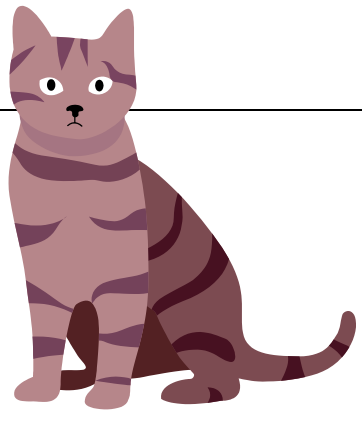
-Compare and contrast the different groups of vertebrates.

- List and identify the features of mammals thoroughly.

- Recognize mammals based on their features. - Define why dolphins, whales, and bats are mammals. - Compare between the features of animal mammals and human beings.	
Step-by-step Procedure	**Time**
<u>Session 1</u>	**6mns.**
-While waiting for the students to join the online session, start asking the students who join about whether they have pets or not and about their favorite animals in general.	
- When the majority of the students join, share the link of a mind map in the chat box; https://drive.google.com/file/d/1JEmGc7qjZdExlIuOXa70SpTiqOakIARQ/view?usp=sharing	**12mns.**
-The students are required to fill in the mind map with prior information about the different groups of vertebrates. They can definitely google for information or seek help from their parents.	
- After they finish, elicit ideas from them and discuss their findings.	
- Inform the students that you will share a link on the chat box of a video about the different groups of vertebrates; https://www.google.com/search?client=firefox-b-d&q=a+video+about+the+different+grous+of+vertebrates+for+kids+#fpstate=ive&vld=cid:7dc9a512,vid:HQdiSMUZEDA	**10mns.**
- Ask the students to rejoin the session after they finish watching the video.	
- After they finish watching the video, elicit some ideas from the students regarding the video through a classroom discussion. Then share the link of a questionnaire in the chat box; https://www.liveworksheets.com/worksheets/en/Science/Vertebrates_and_invertebrates/Vertebrates_Test_ic1274724oj	**7mns.**
- Divide the students into groups of three and ask them to fill in the questionnaire collaboratively.	**12mns.**
<u>Session 2:</u>	
-Start the session with a quick recap on the previous session and correct the questionnaire collaboratively with the students.	**7mns.**

- Share the following PowerPoint presentation on the screen and start introducing the five groups of vertebrates by navigating through the slides of the PowerPoint; https://docs.google.com/presentation/d/1xRrTmmehwzpXFHSuRtpm4U6OmEhh7F64/edit?usp=sharing&ouid=115282094424727161924&rtpof=true&sd=true	**25mns.**
- Pick the students by turns according to the class roster and ask them to either read the information or to do the activities in the slides. Pause before you name a student to give you the answer in order to give the whole class the opportunity to think of the answer.	
- Divide the students into groups of three to do the exercises in slides 14 and 17. Once done, correct the exercises collaboratively.	**10mns.**
- Wrap up the session with a quick recap on what is covered during the session through questions and answers. Follow the class roster to ensure that all the students have the chance to participate in the session.	**8mns.**
Session 3:	
-While waiting for all the students to join, start the session with a quick recap on the previous session.	**10mns.**
- Elicit some ideas from students about mammals through collaborative brainstorming in the chat box.	
-Ask students to show on their cameras some stuffed toy mammals, their pet mammals, or some pictures they have about mammals.	
- Share on the screen the PowerPoint presentation about mammals; https://docs.google.com/presentation/d/1Bypi3wIGTygrumaKfKBA5UPzSFT1x_4_/edit?usp=sharing&ouid=115282094424727161924&rtpof=true&sd=true	**28mns.**
- To progress through the slides, students will take turns based on the class roster.	
- As part of group work, slides 7, 12, and 13 will be completed by dividing the class into groups of three. The answers will be discussed collaboratively afterwards.	
- For slides 10 and 11, students will work individually on a piece of paper, and some students will be asked to type their answers in the chat box.	
- Finally, for slides 15 to 19, the students will be picked according to the class roster and are expected to respond quickly and spontaneously to the questions.	

Summative Assessment At the end of the third session, students will sit for the following interactive assessment on Liveworksheets: https://www.liveworksheets.com/ov3424241yj **Answer Key** https://drive.google.com/file/d/1KgV_BM5xLyPARW_lSKfVUlDiy_NBEdwR/view?usp=sharing	**12mns.**
Assignments: **Upload the following on Google Classroom at the end of the second session.** -Click on the link to go over the PDF file of the PowerPoint presentation of lesson 1 covered during the second session: https://drive.google.com/file/d/16XZqu7Uq6FLwtsuVneVLyNI8Zv2qOwT7/view?usp=sharing -Click on the link to review **Chapter 1 Handout**: https://drive.google.com/file/d/1ub75nIJgt8M01dcauHy2CsX0VJQ_eBa3/view?usp=sharing **Upload the following on google Classroom at the end of the third session** Click on the link to go over the PDF file of the PowerPoint presentation of lesson 1 covered during the third session: https://drive.google.com/file/d/1ULrAtrmH8XcqEx7sGAEhbqclsZhAwpe_/view?usp=sharing -Click on the link to review **Lesson 1_Mammals_Handout**: https://drive.google.com/file/d/1PZ2AMKl6tDnt4UyEXJKBd3TurO4ikAsl/view?usp=sharing	
Personal Reflection	



Lesson Plan 2

Section: 3A	**Periods:** 1 session	**Time:** 50 minutes
Unit 1: Different Groups of vertebrates	**Lesson 1:** Birds	
Supplies/Tools - PowerPoint Presentations - Handouts - Links - Questionnaire		

Learning Outcomes -List and identify the features of fish thoroughly. - Recognize the fish based on their features. - Compare the features of mammals, birds, and fish.	
Step-by-step Procedure - Start the session with a general knowledge questionnaire; https://www.educationquizzes.com/ks2/science/classification/?q=vertebrates - Share the questions on the screen and ask the students to type their answers in the chat box. - After discussing the answers with the students, have them guess what group of animals will be covered in the session. Then share the PowerPoint on the screen and praise the students who were able to make the right guess; https://docs.google.com/presentation/d/1sYuL9xU2lsIH43OQcTtyu19NB7Q2TagV/edit?usp=sharing&ouid=115282094424727161924&rtpof=true&sd=true - Proceed with the slides by asking students, according to the class roster, to read the explanations. Discuss each slide by eliciting ideas from students based on their prior knowledge related to birds, or by showing their pet birds or toy birds.	**Time** **10mns.** **18mns.**

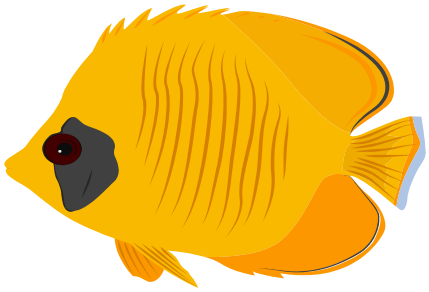
- Break the class into groups of three and ask them to work on slides 5, 6, and 7. Afterward, discuss the answers with the class and praise the students for their correct answers. - Slide 13 should be done individually. Ask students to type their answers and upload them on Google Classroom as part of a graded formative assessment. Finally, do a quick recap on the session through questions and answers and remind the students to check the assignment on Google Classroom.	**10mns.** **10mns.** **2mns.**
Summative Assessment No summative assessment will take place during this session.	
Assignments: **Upload the following on Google Classroom at the end of the session.** -Click on the link to go over the PDF file of the PowerPoint presentation of lesson 2 https://drive.google.com/file/d/1MdUqE1IymMH4-wuenWpgkvnIx79l0WwT/view?usp=sharing -Click on the link to review **Lesson 2_Birds_Handout** https://drive.google.com/file/d/1bC-Ckrn6GCG0WVoM-JeA2gv681bhuo36/view?usp=sharing	
Personal Reflection	

Lesson Plan 3

Section: 3A	**Periods:** 1 session	**Time:** 50 minutes
Unit 1: Different Groups of vertebrates	**Lesson 1:** Fish	
Supplies/Tools - PowerPoint Presentations - Handouts - Links		

Learning Outcomes - List and identify the features of birds thoroughly. - Recognize the birds based on their features. - Compare and contrast the features of mammals and birds. - Label the main parts of a bird. - Sort animals according to their groups.	
Step-by-step Procedure	**Time**
-To begin the session, ask the students to draw a fish and display it on camera. -After praising their fish, check the students' prior knowledge regarding the different parts of the fish by eliciting ideas from them.	**10mns.**
- Share the PowerPoint presentation on the screen and navigate through the slides with the students; https://docs.google.com/presentation/d/10MmQ358IsPt8UB5VoxUQX-VICun4sYl9/edit?usp=sharing&ouid=115282094424727161924&rtpof=true&sd=true - As you go along, the students would read or answer the questions by taking turns. In order to cover slides 6 and 7, break the class into groups to encourage collaborative work.	**18mns.**
- Slide 7 should be done individually, and students should upload their answers on Google Classroom.	**10mns.**

After completing these slides, proceed with the remaining slides by asking the students to either read or answer the questions by turns. This approach would help to maintain student engagement and participation throughout the session.	
Summative Assessment At the end of the session, students will sit for the following interactive assessment on Liveworksheets: https://www.liveworksheets.com/un3424456la **Answer Key** https://drive.google.com/file/d/1eJOAwQPpPdSx4jCMPSmrU0I27LvJufsV/view?usp=sharing	**12mns.**
Assignments: **Upload the following on Google Classroom at the end of the session.** -Click on the link to go over the PDF file of the PowerPoint presentation of lesson 3 https://drive.google.com/file/d/13_vpn3gwaxbxWYySZyAr3r1s--5KUYjB/view?usp=sharing -Click on the link to review **Lesson 3_Fish_Handout** https://drive.google.com/file/d/1tZZp925hDWwdnWwsSbN3xLQf89FLkwTS/view?usp=sharing	
Personal Reflection	



Lesson Plan 4

Section: 3A	**Periods:** 3 sessions	**Time:** 150 minutes
Unit 1: Different Groups of vertebrates	**Lesson 1:** Amphibians and Reptiles	
Supplies/Tools - PowerPoint Presentations - Project - Handouts - Links		

Learning Outcomes
- List and identify the features of amphibians and reptiles thoroughly. - Recognize the features of amphibians and reptiles based on their features. - Compare the features of mammals, birds, fish, amphibians and reptiles. -Produce a digital project about an animal of their choice to present it to their friends during the final session.

Step-by-step Procedure	**Time**
Session 1	
- While waiting for the whole class to join, do an oral recap on all the previous lessons of the unit through questions and answers.	**7mns.**
- Break the class into groups of 3 and share the following link in the chat box; https://drive.google.com/file/d/1Xsx5ntHQZBFDPiDft4jMh9ttg9Fufyac/view?usp=sharing - The students read the content and answer the questions. Once done, the students join the main meeting and discuss their answers collaboratively. -Encourage your students to tell you personal stories about an incident they had with a reptile or an amphibian and let them express their feelings about it.	**18mns.**

- Share the Amphibians PowerPoint presentation; https://docs.google.com/presentation/d/14aotTLpRSLG_3Eb0PZZU7_S6hB-1-JaY/edit?usp=sharing&ouid=115282094424727161924&rtpof=true&sd=true - Go through the presentation and instruct the students to take turns either by reading the explanations on the slides or answering the questions. - Continue this process until you reach slides 15 and 16. At this point, provide each student with some time to answer the questions individually on their notebooks. - After discussing the answers with the students, summarize the main points covered in the session using slide 17.	**20mns.** **5mns.**
Session 2 -Start the session by sharing slides 11 and 12 from the amphibians PowerPoint and ask one of the students to explain the cycle to the whole class. - Share on the screen the reptile PowerPoint; https://docs.google.com/presentation/d/1jl0tJaMgBHBmIYz9Iv7P2-DVuHiYVw6N/edit?usp=sharing&ouid=115282094424727161924&rtpof=true&sd=true - Proceed with the presentation and direct the students to read the slide explanations. - Break the class into groups of 3 and ask them to do slide 8. Once done discuss the answers collaboratively. - Explain the final project to the students and inform them that they will find all the necessary details on Google Classroom. https://drive.google.com/file/d/14LkwOyPOA68nYCLl_qdT1_q-qorKEu0n/view?usp=sharing	**10mns.** **30mns.** **10mns.**
Session 3 **Summative Assessment** Students' presentations of the final project.	**50mns.**

Assignments:

Upload the following on Google Classroom at the end of session 1.

-Click on the link to go over the PDF file of the amphibians PowerPoint presentation.

https://drive.google.com/file/d/1T0A39o4WP3pFRzwJ1kmNn3nsfMdh1hYM/view?usp=sharing

Upload the following on Google Classroom at the end of session 2.

-Click on the link to go over the PDF file of the reptiles PowerPoint presentation.

https://drive.google.com/file/d/12HBoBiHKtM57m7YQvmkxaUaczeuDxS1k/view?usp=sharing

-Click on the provided link to learn more about the graded project that you have to prepare in order to present it to your classmates in the upcoming session.

https://drive.google.com/file/d/14LkwOyPOA68nYCLl_qdT1_q-qorKEu0n/view?usp=sharing

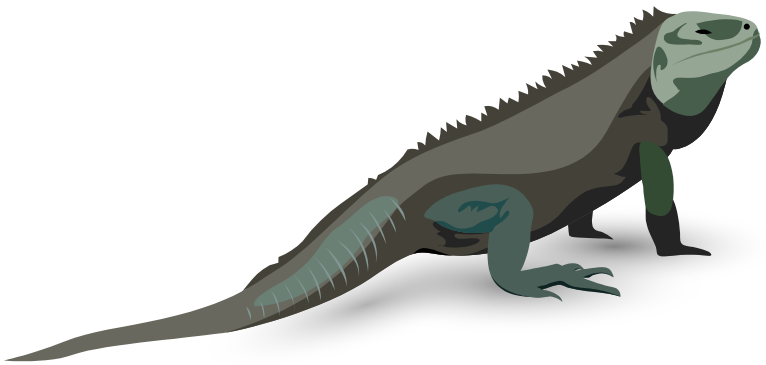
Upload the following on Google Classroom at the end of session 3.

-Click on the provided link to do the revision sheet **Chapter 1_Recap_Handout.**

https://drive.google.com/file/d/1QEKEhSeIDL9QEIfq5SJf3-R1Q4BzTgv8/view?usp=sharing

Upload your answers on Google classroom.

Personal Reflection



Explanation of the Guide (Part 3)

The guideline provided is highly effective in helping teachers teach online a science unit about the five groups of vertebrates. It encompasses well-structured strategies, techniques, and methods that abide by various learning and teaching theories to ensure that effective learning is taking place. Students are required to drill after the instructor to fully grasp some of the information that requires drilling. The students are praised by their instructor for following the instructions and providing correct answers. From a Behaviorist perspective the human mind can be molded to produce desired responses and behaviors under certain conditions. Reinforcement immediately after a behavior is more likely to increase its frequency (Brown & Green, 2016). In addition, the teacher provides plenty of guidance and support through oral and written instructions and directions within the students' zone of proximal development. Scaffolding is an effective technique for teachers to provide information and complete portions of tasks for students, allowing them to focus on the aspect of the task they are trying to master within the (ZPD) (Schunk, 2012). To enhance learning and avoid distractions, plenty of colorful visual aids and images are provided based on the dual code theory, taking into consideration the fact of decreasing extraneous cognitive load. Multimedia is also highly enhanced through videos, PowerPoint presentations, and online research. Mayer (2017) states that to overcome the limited capacity of working memory and encourage active processing, the instructor reduced the extraneous cognitive load processing that did not aid the instructional objective. Constructivism is applied through loads of group work-based activities, where students have the chance to research, share ideas and analyze them collaboratively, fill in mind maps, and present them as groups. Learners are actively involved with the teacher through hands-on experiences and social interaction. The instructor in this case should act as facilitator rather than a dictator, providing the necessary resources and guidance to help learners construct their own knowledge (Schunk,

2012). The summative assessment that takes place at the end of the unit is a project-based assessment. This project is significant because it allows students to apply the knowledge and skills they have acquired throughout the unit. It encourages the students to gather information from a variety of sources and analyze the data they collect to create a coherent and well-structured project. The project is an application of the connectivism theory as it promotes creativity and self-expression. This guideline provides a comprehensive approach that enables effective learning for students while taking into consideration various learning and teaching theories. According to Kolb (2017), effective teaching involves finding the appropriate balance between content, pedagogy, and technology, and understanding how they relate to each other.