SUPER CLASS-PISCES (VERTEBRATES) ANIMAL KINGDOM

TIME [2 Hours]

OVERVIEW

This lesson plan reveals the characteristics of Pisces a super class of vertebrates, where Google Earth voyager stories will assist in better understanding of the concept.

On the basis of presence or absence of jaw the subphylum Vertebrata is further divided into two sub-groups: Super class Agnatha- The Jawless Vertebrates Super class Gnathostomata- The Jawed Vertebrates.

Gnathostomata has further two super classes: Pisces and Tetrapoda: Class Amphibia, Reptiles, Aves and Mammals.

Super Class Pisces: This super class includes true fishess. Class – Chondrichthyes cartilagenous fishes. Class- Osteichthyes –bony fishes.

BIOLOGY/ SUPER CLASS-PISCES (VERTEBRATES) ANIMAL KINGDOM	**AGE LEVEL- Grade 11 (15- 17 years)**
Learning Objectives Students will be able to- **1.** Define the super class Pisces and its catagories **2.** Describe its sub divisions and their characteristics **3.** Classify a bony and a cartilaginous fish **4.** Ennumerate the importance of fishes .	**Inquiry**
Materials Needed 1. Internet connection for learner 2. Google Earth access 3. Textbook NCERT Grade 12 4. Notebook and stationary items to make notes.	**Lesson Summary** • Engage: Learners will do the Daniels model of concept learning. • Explore: Each team will be exploring one sub class of Pisces • Explain: Each team will explain their findings to the rest of the class • Revise: A quick quiz will be taken to review the concepts done Apply: Learner will describe the measures to reduce the deleterious impact of fish species extinction from nature.

Sustainable Development Goals

Culminating Task/Assessment

Learners will identify and explain the four sub classes of super class Pisces.

They will also explore the reasons for extinction of fish species and how can we reduce the deleterious impact of their extinction from nature.

Textbook Chapter

This topic is covered in NCERT Grade 11 Unit- I Chapter 4 Animal Kingdom- Super class Pisces.

Same concept of Animal Kingdom- Super class Pisces is also found in the NCERT Grade 9 Diversity of Living organisms.

Engage (25 minutes)

- Session begins with a question-

  Which one of the following is a cartilaginous fish - Silver fish, Dog fish, Cray fish or Star fish

  They will be surprised to know that among these fishes, only dog fish is a true fish.

- Then Images of known fishes like shark, whale, dolphin will be shown and students will be asked ennumerate the characters and adaptations of fishes and fill the daniel's 4 boxes model https://docs.google.com/document/d/1CCndsujzJ416XdeGa5CwnPJ3hSQd6Z4uL-RNWIdHkrY/edit
- They will be asked HOT questions like - Fishes come in the category of vertebrates, do they have vertebral column?
- On the basis of presence or absence of jaw the subphylum Vertebrata is further divided into two sub-groups: Super class Agnatha- The Jawless Vertebrates Super class Gnathostomata- The Jawed Vertebrates.

  Gnathostomata has further two super classes: Pisces and Tetrapoda: Class Amphibia, Reptiles, Aves and Mammals.

  Super Class Pisces: This super class includes true fishes. Class – Chondrichthyes cartilagenous fishes. Class- Osteichthyes –bony fishes.
- Class will be divided into 4 teams, each team will be assigned one class of super class for presentation, which should include the following – name of class, important characters and examples.

Explore (25 minutes)

1. Teacher will display the Google Earth story of different fishes in their natural habitat
2. https://earth.google.com/web/@80.62585324,55.43082248,-2.88815828a,757658.23600164d,35y,7.53429724h,0t,0r/data=CiQSIhIgZTA4ZjRiNGNiY2IyMTFlNmFmOTA3NTUxZTIzNDZiNjQ

   https://earth.google.com/web/@34.7325599,-94.20828246,312.21005962a,12000000d,35y,0h,0t,0r/data=CjASLhIgMDk1MTIzMTk0NzQzMTFlODg3NzgwNTY1YzNkZmNkYWUiCnZveV9zcGxhc2g

Explain (20 minutes)

1. All four crews can present their work on each class of the superclass Pisces.
2. They will explain their work to the whole class in the form of PPT or video, worth 20 minutes.
3. Each crew will divide the work among the members.
4. At end, they will ask random questions from the rest of the class to judge their understanding.
5. This will be followed by doubt session from the other crew members, where rest of the class will ask questions and get their doubt, if any answered.

Revise (20 minutes)

Students will begin a relay race, with each student vocalizing any one concept learned in this lesson plan, turning to second one, third one and so on…….

Apply (30 minutes)

1. Students will now have known that vertebrates come under the category of chordate, vertebrates further classified into gnathostomata, which is further classified into pisces and tetrapoda.
2. Pisces have 4 sub-classes. Now learners have understood that fishes are an important part of aquatic ecosystems. They are occupying two to three levels in ecological pyramid. Their extinction or reduction in number seriously disturbs the ecosystem and will have deleterious effects on environment. Therefore man should learn to live in harmony with nature and avoid poaching these living creatures.
3. Learners can explore NGOs and institutes working to preserve fishes.
4. They can also suggest measures to be adopted to protect them.

Evaluate: Exemplar Response and/or Rubric

Students will be assessed on their ability to answer multiple choice questions related to fishes, at the following address.

https://www.studyadda.com/question-bank/neet/biology/kingdom-animalia/class-pisces/1689

https://quizizz.com/join/quiz/5ed7e308388f78001bab7f28/start

https://quizizz.com/join/quiz/5e95fde7151584001becc1c9/start.

The whole class will begin the test at once like a class fun and interactive challenge.

Additional Resources

- Youtube links- https://www.youtube.com/watch?v=fFNKhenpIVU
- https://www.youtube.com/watch?v=QRC7ySD-_BY
- https://www.youtube.com/watch?v=YRvkK7HlJaU
- https://www.youtube.com/watch?v=xVVFEfD562w
- Information https://www.bioscience.com.pk/topics/zoology/item/697-classificaton-of-pisces-fishes
- http://www.biozoomer.com/2011/11/pisces-classification-super-class.html
- https://www.slideshare.net/AshokkumarBollapalli/pisces-general-characters-and-classification-copy

Options for Differentiation
Learners will be shared the information regarding the fish research centers across the world and career options in this field.

Credits
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