LOCATION:	TARGET AGE GROUP:
Classroom	KS2
TARGET GROUP SIZE:	**DURATION:**
10-20 (scale resources for larger group)	Min. 1 hour (ideally 1.5 hrs)

PLPS CITY SCIENCE STARS

Fixture 7: Survival of the Fittest

SUMMARY:

Pupils will learn about the role of physical and behavioural adaptations in the context of evolution. The pupils will learn the fundamental basis of how living things change over time and explore how they adapt to a range of environments by adapting their football players to different biomes. Pupils will also adapt their own football players in a 'Wild Cup' tournament that highlights how animals are adapted to their environments and natural communities through locomotor, sensory and dietary variations in order to survive and thrive.

LEARNING OBJECTIVES:

1. To learn what adaptations are and how they occur
2. To learn how animals have adapted to different habitats and apply these to football players
3. To learn how animals have adapted to natural communities through diet and defence

PRIOR LEARNING AND LINKS TO KS2 NATIONAL CURRICULUM:

- ✓ Pupils will be learning how life on Earth has changed over time.
- ✓ Pupils will be learning how animals and plants are adapted to suit their environments.

PREPARATION AND RESOURCES:

- ✓ This workshop works best with the use of a computer and projector or a computer-linked smartboard to display the 'SURVIVAL OF THE FITTEST' PowerPoint slides. If none are available, printouts could be used instead, but these will be less engaging and less environmentally friendly.
- ✓ Survival of the Fittest report sheet inside their lab book
- ✓ Habitat cards and small LCFC player cut-outs
- ✓ Blank 'adaptable' players
- ✓ Bags of player adaptations

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ACTIVITY PLAN:

Introductory activity 1

1. Show the pupils the different World Cup footballs that have been used through history and ask them to point out what has changed and what has stayed the same. Link this to natural selection, how some features are retained (shape) while others are replaced by 'better' versions (material).
2. Discuss the basis of evolution and how it is a theory that is supported by a lot of evidence, such as fossils that have been found by palaeontologists all over the world. Stress that evolution occurs naturally over huge periods of time and is not due to choice, whilst humans can choose to adapt objects at any time.

Main activity (small groups of 3/4 students)

1. Provide a habitat card and LCFC player cut-out to each group and ask them to think about what types of adaptations would be useful for the football player in that particular environment. They can then draw or list the adaptations in their lab book, before rotating the habitat cards between groups.
2. If the pupils are stuck for ideas, there are examples of animals that live in each habitat on the back of the corresponding card and they can see what types of adaptations these animals have and apply those to their player.
3. Once all groups have looked at all of the habitats, ask each group to say which adaptations they have given to their player in their current habitat. Discuss any interesting ideas or suggest some adaptations that they may have missed.

Plenary activity (as a class or in pairs)

1. Briefly explain that living things do not just acquire environmental adaptations, but also locomotor, sensory and dietary adaptations to help them survive. These are not choices. Animals better suited to an environment tend to survive better, are more likely to produce offspring with these characteristics and therefore changes to populations occur over long periods of time.
2. Hand out the blank 'adaptable players' and the bags of adaptations.
3. Explain the rules of the Wild Cup tournament to the 'team managers', (children) which are as follows:
   a. Managers can adapt their players with a total of three adaptations, one of each type: dietary, sensory and locomotor.
   b. Each round consists of a match with three 'events' that will benefit certain adaptations and gain the managers 5 points for each appropriate adaptation. When you read out the event, ask the managers which adaptation they think will be appropriate for that event. While each adaptation has a corresponding event, managers may argue that other adaptations are also beneficial, and this will be worth points if the manager has a valid and rational reason.
   c. Dietary adaptations get points depending on the other player's adaptations, namely which dietary adaptation is the most common in the room.
      i. Armoured herbivores get 5 points if carnivores are most common (due to protection)
      ii. Fast herbivores get 5 points if armoured herbivores are most common (due to out-competition)
      iii. Carnivores get 5 points if fast herbivores are most common (due to predation)

TAKE HOME CHALLENGE IDEAS:

- Prompt pupils to pick an animal that they see in the real world (e.g. pet cat, birds, insects etc.) and think about the adaptations that these possess and how these might benefit their survival in the wild.
- Prompt pupils to research about the achievements of evolutionary biologists and palaeontologists (e.g. Charles Darwin and Mary Anning) with their parents/family.

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TASK/ASSESSMENT DIFFERENTIATION:

✓ **Minimum student goals:**

- Copy the adaptations from the animals on the habitat cards into their lab books

✓ **Target student goals:**

- Think about adaptations without flipping the habitat cards and revealing the animals

✓ **Further goals:**

- Discuss what adaptations might benefit life in habitats such as urban cities or on Mars

PUPIL MONITORING AND EVALUATION:

- During the main activity, monitor the pupils' adaptation notes and/or drawings and offer help if needed.

DELIVERY NOTES AND ADDITIONAL SCIENTIFIC INFORMATION::

Vocabulary:

- Evolution, adaptation, natural selection, echolocation, locomotion, dietary, carnivore, herbivore, omnivore, sensory, species, taxonomy, out-competition, palaeontology.