

香港科學館 · 專題展覽 HONG KONG SCIENCE MUSEUM · SPECIAL EXHIBITION



教師指南
Teachers' Guide

超感官暴龍展

T-Rex REVEALED

THE AUGMENTED+VIRTUAL REALITY EXPERIENCE

2.12.2016 – 1.3.2017

簡介

「超感官暴龍展」是一個沒有珍貴化石和仿真模型的恐龍展覽。傳統的恐龍展覽只展出珍貴的化石和相關的圖像以及解說文字。現今科技的發展突破了傳統展覽的展示方式，讓觀眾進入虛擬國度，甚至與展覽的主角互動起來。「超感官暴龍展」是首個結合尖端科技和嶄新科研成果的展覽。展覽利用擴增實境(AR)及虛擬實境(VR)技術，帶領觀眾進入栩栩如生的恐龍世界，體驗一個創新及身臨其境的參觀經驗。

暴龍是史上最兇猛和最著名的肉食恐龍，牠帶有鋸齒的牙如牛扒刀一樣鋒利、咬合力比現今最強的鱷魚還要強超過三倍、而速度更堪比當今的百米飛人，暴龍絕對是史前世界的無敵霸王。這展覽透過多組以最新的 AR 及 VR 技術製作的互動展品，讓觀眾回到 6,600 萬年前的史前世界，翱遊在史前的天空尋找恐龍的足跡，近距離接觸兇猛的暴龍和認識牠的身體構造及生活習性，與及了解科學家如何透過研究其頭骨，推斷出暴龍擁有的超級感官等有趣課題。

主辦：康樂及文化事務署

聯合籌劃：香港科學館 及 Globe Creative Limited

媒體夥伴：國家地理頻道

技術夥伴：小米科技責任公司

聯繫課程：

小學常識科：「人與環境」

中一至中三科學科：「觀察生物」

中四至中六生物科必修部分：「生物與環境」

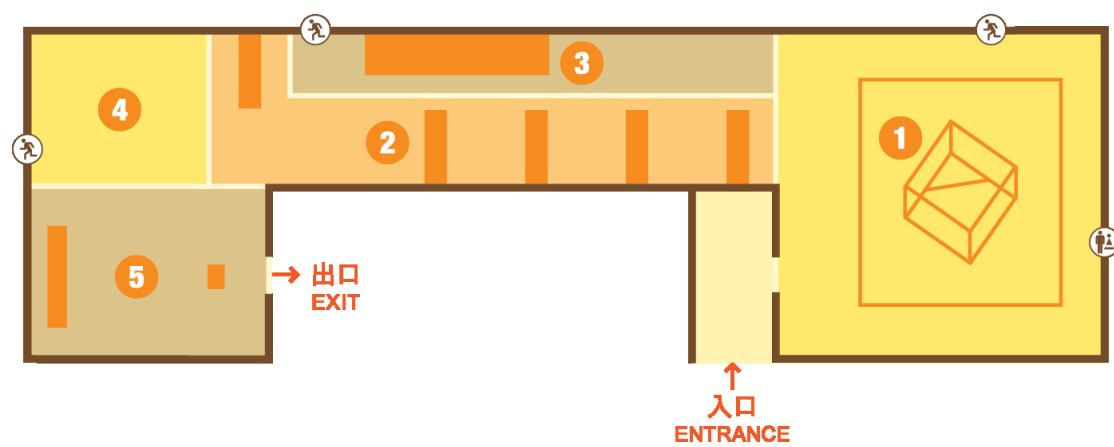
中四至中六組合科學科生物部分：「生物與環境」

參觀資料

展期：2016 年 12 月 2 日至 2017 年 3 月 1 日

地點：香港科學館特備展覽廳

展廳平面圖



1. 暴龍傳說
2. 暴龍新知
3. 飛越白堊紀 虛擬新體驗
4. 恐龍教室
5. 回到侏羅紀

展區介紹

暴龍傳說

這是一個巨型的擴增實境展品，觀眾可透過展覽提供的平版電腦認識暴龍的生活習性，如獵食和守護巢穴等行為，打破有關暴龍的傳言。

暴龍新知

這區的小型展枱會以立體動畫形式解構暴龍身體的秘密和最新研究，如身上長有羽毛及超强的感官等。

飛越白堊紀 虛擬新體驗

戴上虛擬實境眼鏡，即可在虛擬白堊紀年代的天空中翱翔，尋找恐龍的足跡。

恐龍教室

恐龍教室為一家大小提供一連串的活動，包括繪畫、拼圖和摺紙等獨特的學習經驗。

回到侏羅紀

在「回到侏羅紀」的大型屏幕前，觀眾可跟真實大小的巨型梁龍一起互動，或輕撫草食性禽龍，讓你有一個獨一無二的體驗。



參觀前準備

為讓學生在參觀前能對暴龍有更多認識，老師可鼓勵學生自行到圖書館或利用互聯網進行有關暴龍的資料搜集，然後嘗試完成由科學館製作的趣味習作，並在課堂上由老師帶領學生討論各條問題的答案。

老師亦可在課堂上進行以下活動以加強學生對恐龍的認識：

幼稚園： 展示不同恐龍的相片，並引導學生認識牠們的身體特徵及食性。

小學： 搜集關於暴龍的資訊，例如身體特徵和習性。

中學： 搜集不同暴龍科恐龍的資料，比較牠們的身體特徵及認識這些特徵與牠們的習性之間的關係。

參觀後延伸活動

幼稚園： (1) 引導學生列出暴龍的特點，如身體構造及生活習性。
(2) 引導學生分辨肉食性和草食性恐龍及牠們在外表上的分別。

小學： (1) 引導學生討論捕獵動物和食腐動物的分別，以及牠們在生態平衡上所扮演的角色。
(2) 列舉更多現代捕獵動物及食腐動物的例子。

中學： (1) 討論暴龍與鳥類之間的異同。
(2) 討論恐龍如何演化成鳥類。

網上資源

<http://nationalgeographic.org/encyclopedia/scavenger/>
<http://www.africa-wildlife-detective.com/hyena.html>
<http://idahoptv.org/sciencetrek/topics/predators/facts.cfm>
<http://www.dili360.com/nh/article/p5350c3d9a0e6837.htm>
http://news.xinhuanet.com/science/2015-12/16/c_134923504.htm
<http://www.factmonster.com/dk/science/dinosaurs/hunter-or-savenger.html>
<http://creation.com/feathered-dinosaurs-not-feathers-chinese-traditional>
<http://www.bbc.co.uk/nature/14343366>
<http://www.ucmp.berkeley.edu/diapsids/dinosaur.html>
<http://www.fossilguy.com/gallery/vert/dinosaur/tyrannosaurus/tyrannosaurus-dinosaurs.htm>
<http://dinosaurs.about.com/od/typesofdinosaurs/a/tyrannosaurs.htm>

Introduction

“T-Rex Revealed – The Augmented + Virtual Reality Experience” is a dinosaur exhibition with an entirely virtual experience. In traditional dinosaur exhibitions, only precious fossils, relevant illustrations and text could be seen. Advanced technology has made new presentation techniques possible, immersing visitors in a virtual world and even allowing them to interact with the featured elements of the exhibition. “T-Rex Revealed – The Augmented + Virtual Reality Experience” is the first exhibition that integrates cutting-edge technology with the latest scientific research. Making use of Augmented Reality (AR) and Virtual Reality (VR) technologies, the exhibition creates an immersive and adventurous experience, taking visitors into the vivid world of the dinosaurs.

Tyrannosaurus was the most ferocious carnivorous dinosaur and is certainly the most famous one. It had serrated teeth as sharp as a steak knife; its crushing bite was over three times stronger than crocodile’s, which has the most powerful bite among animals today; and it could run as fast as the fastest man alive. *Tyrannosaurus* was a matchless predator in the prehistoric world. In this exhibition, various interactive exhibits employing the latest AR and VR technologies and video programmes take visitors back to the prehistoric world 66 million years ago. Visitors can fly through the sky looking for dinosaur footprints or even have a close encounter with the ferocious *Tyrannosaurus*. Learn about its body structure, living habits and other interesting topics say how scientists deduced the super senses they had from the study of their skulls.

Presented by Leisure and Cultural Services Department

Jointly organised by Hong Kong Science Museum and Globe Creative Limited

Media Partner: National Geographic Channel

Technology Partner: Xiaomi Inc.

Curriculum Links:

Primary School General Studies: “People and Environment”

S1-3 Science: “Looking at Living Things”

S4-6 Biology compulsory part: “Organisms and Environment”

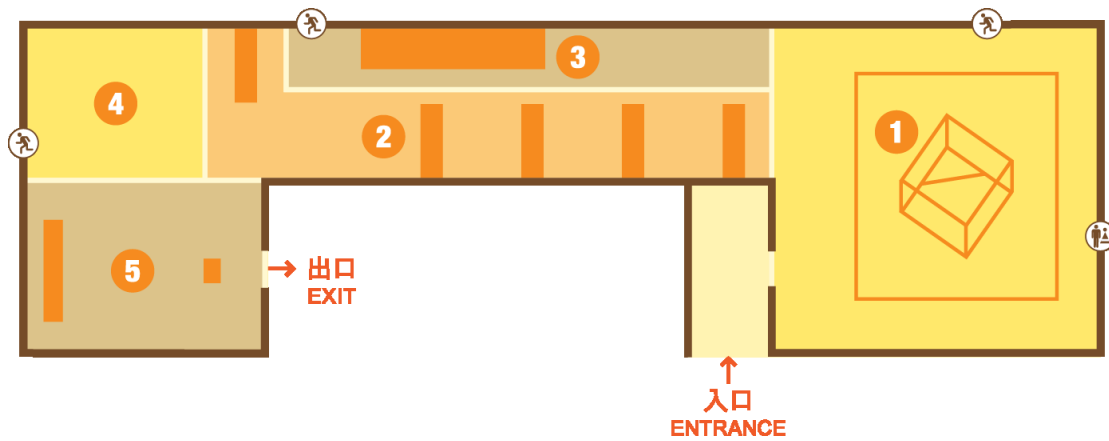
S4-6 Combined Science Biology part: “Organisms and Environment”

Information on Visits

Exhibition Period : 2.12.2016 – 1.3.2017

Venue : Special Exhibition Hall, Hong Kong Science Museum

Floor Plan



1. Myths of *T. rex*
2. New Discoveries of *T. rex*
3. Fly with Dinos – VR Experience
4. Dino Academy
5. Back to the Jurassic

Exhibit Zones

Myths of *T. rex*

This is a large exhibit equipped with the latest augmented reality (AR) technology. Visitors can use the tablets in the exhibit to learn how *T. rex* lived, hunted and protected its home, busting some of the myths about *T. rex*.

New Discoveries of *T. rex*

In these mini exhibition stations, 3D animation is used to explain little known information and the latest scientific research about *T. rex*, such as its feathers and super senses.

Fly with Dinos – VR Experience

Put on a VR headset and fly through the sky in a virtual Cretaceous world, following dinosaur footprints.

Dino Academy

Dino Academy provides a series of unique learning experiences suitable for all family members, such as painting, jigsaw puzzles and paper folding.

Back to the Jurassic

In front of the large “Back to the Jurassic” screen, visitors can interact with an actual-sized, giant *Diplodocus* or stroke a plant-eating *Iguanodon*, providing a unique interactive experience.



Pre-visit Preparation

To enrich students' knowledge in *Tyrannosaurus*, teachers can encourage students to research on information of *Tyrannosaurus* through the public libraries or the Internet. They may complete the activity sheets prepared by the Hong Kong Science Museum in the classroom prior to their visit to the exhibition. Teachers can lead a discussion with the students on the questions.

Teachers can also enhance student's knowledge of dinosaurs through the following preparations:

- Kindergarten:** Show students some photos of dinosaurs and guide them to learn their body features and eating habits.
- Primary Schools:** Search for information about *T. rex*, such as body features, and habits.
- Secondary Schools:** Search for information of different types of Tyrannosaurids. Compare their body features and study how these features correlated with their habits.

Post-visit Extension Activities

- Kindergarten:**
- (1) Guide students to list out the characteristics of *T. rex*, such as body features and habits.
 - (2) Guide students to identify carnivorous and herbivorous dinosaurs, and their differences in physical appearance.
- Primary Schools:**
- (1) Guide students to discuss the differences between predator and scavenger, and their roles in maintaining the balance of ecosystems.
 - (2) List out more examples of modern predators and scavengers.
- Secondary Schools:**
- (1) Discuss the similarities and differences between the *Tyrannosaurus* and birds.
 - (2) Discuss how dinosaurs evolved into birds.

Online Resources

<http://nationalgeographic.org/encyclopedia/scavenger/>

<http://www.africa-wildlife-detective.com/hyena.html>

<http://idahoptv.org/sciencetrek/topics/predators/facts.cfm>

<http://www.dili360.com/nh/article/p5350c3d9a0e6837.htm>

http://news.xinhuanet.com/science/2015-12/16/c_134923504.htm

<http://www.factmonster.com/dk/science/dinosaurs/hunter-or-scavenger.html>

<http://creation.com/feathered-dinosaurs-not-feathers-chinese-traditional>

<http://www.bbc.co.uk/nature/14343366>

<http://www.ucmp.berkeley.edu/diapsids/dinosaur.html>

<http://www.fossilguy.com/gallery/vert/dinosaur/tyrannosaurus/tyrannosaur-dinosaurs.htm>

<http://dinosaurs.about.com/od/typesofdinosaurs/a/tyrannosaurs.htm>