The Science Behind PIXAR

彼思動畫的科學秘密 Behind

PIXAR

30.7 - 1.12.2021

教師指南

Teachers' Guide

展覽簡介
Exhibition Introduction

1995年，全球首部全電腦動畫製作的電影《反斗奇兵》上映。自此，彼思動畫製作室不斷創作多部具突破性的電影。究竟彼思員工如何以創造力與想像力，結合藝術和電腦科技來建立說故事的新形式？

「彼思動畫的科學秘密」展覽由波士頓科學博物館與彼思動畫製作室共同策劃製作，讓你從前所未有的角度認識這些電影如何巧妙地融合科學、技術、工程、美術和數學（STEAM）概念，創造出你在銀幕上欣賞到的生動角色和逼真的場面。

展覽展出50多組有趣和吸引的互動展品，分別介紹彼思動畫製作的八個技術程序。展覽除了資訊豐富和富啟發性的影片之外，還包括多項互動展品，讓你仿如身歷其境般體驗製作流程中的不同崗位。另外，不要錯過與你最喜愛的彼思電影角色，包括巴斯光年、多莉等，合照留念！

康樂及文化事務署主辦
香港科學館籌劃
展覽由波士頓科學博物館與彼思動畫製作室共同策劃製作
華特迪士尼（香港）有限公司全力支持

The world's first entirely computer-animated feature film, *Toy Story*, was created and shown in 1995. Since then, Pixar Animation Studios has been creating many groundbreaking popular films. But how do people at Pixar use their creativity, imagination, artistry and computer technology to introduce a new medium for storytelling?

"The Science Behind Pixar" exhibition, developed by the Museum of Science, Boston, in collaboration with Pixar Animation Studios, offers you an unparalleled insight into how science, technology, engineering, art and maths (STEAM) concepts are ingeniously merged together to create the lively characters and realistic scenes you see on screen.
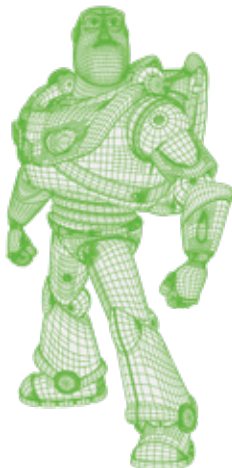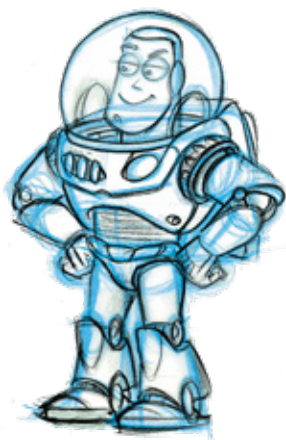
With more than 50 fun and engaging interactive exhibits, the exhibition is organised into eight sections, each focusing on a step of Pixar's technical process. Besides informative and enlightening videos, you will experience different roles within the production pipeline, through interactive elements providing a behind-the-scenes immersive look at these processes. And don't forget that many of your favourite Pixar film characters are here, including Buzz Lightyear and Dory, waiting to take a picture with you!

Presented by the Leisure and Cultural Services Department
Organised by the Hong Kong Science Museum
Produced by the Museum of Science, Boston in collaboration with Pixar Animation Studios
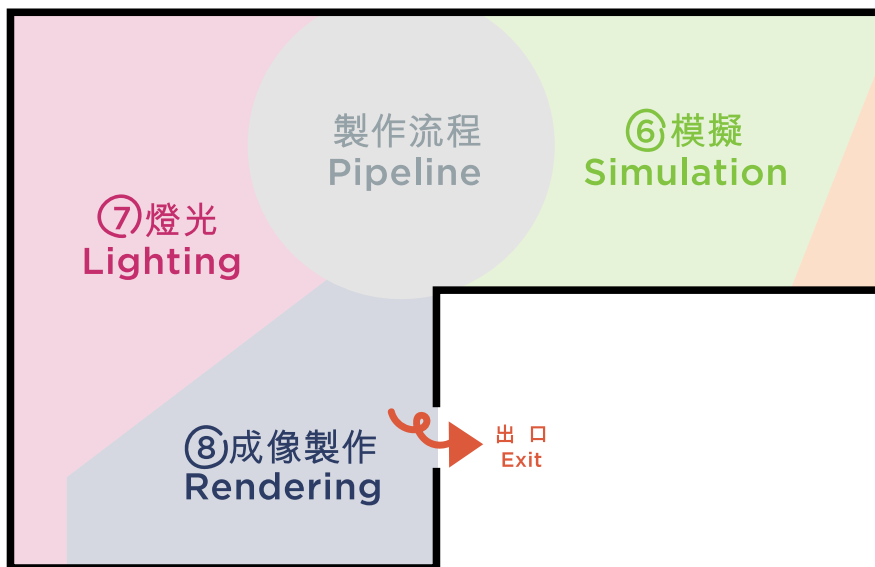Fully supported by The Walt Disney Company (Hong Kong) Limited

迷你劇場：學生可透過有趣和引人入勝的影片開始他們的展覽體驗，這影片會介紹彼思將概念轉化成電影的過程。

離開劇場後，學生可按他們的喜好隨意參觀展覽。展覽會介紹圍繞彼思動畫製作流程中的八個步驟。

製作流程
Pipeline

⑥模擬
Simulation

⑦燈光
Lighting

⑧成像製作
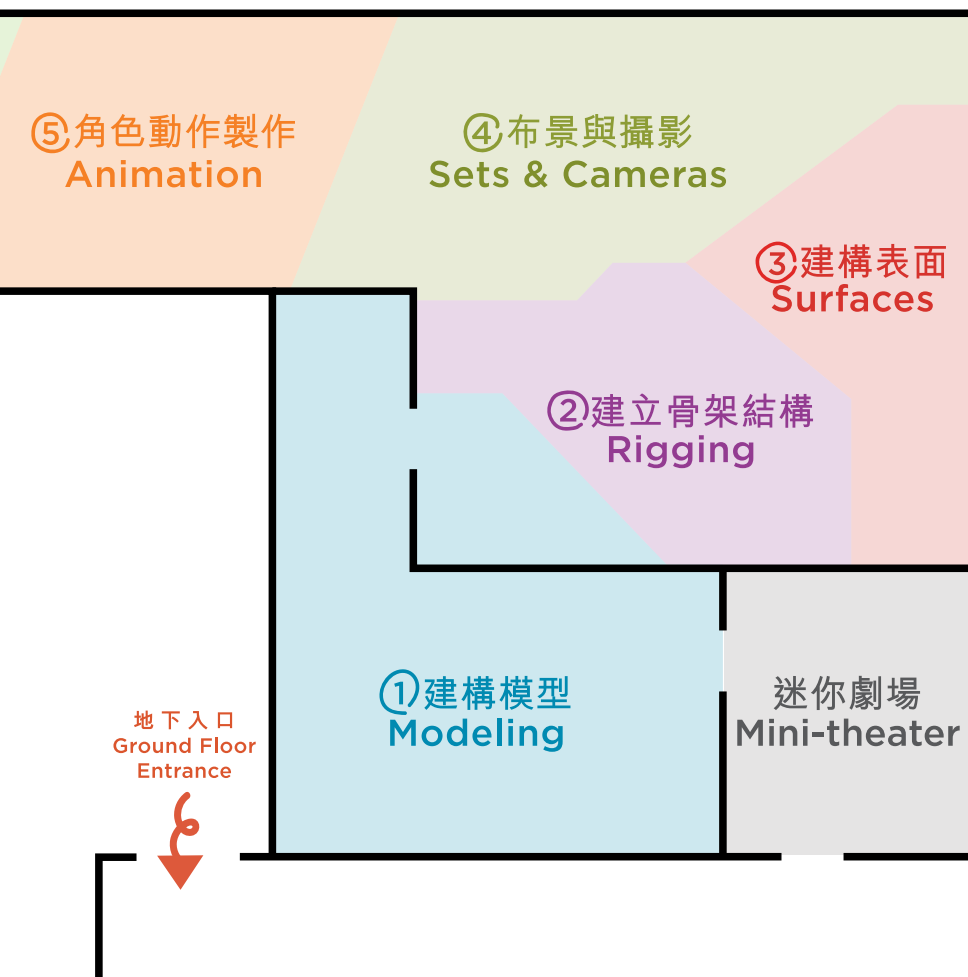**Rendering**

出 口
Exit

每個展區包括：
- 電腦活動 — 讓學生有機會發掘彼思動畫製作團隊所面對的真實挑戰。
- 實體互動展品 — 讓學生獲得觸感體驗，有助理解彼思動畫內的虛擬世界。
- 影片故事 — 彼思的員工分享在製作深受大眾歡迎的電影時，如何克服所遇到的複雜挑戰。更有訪問影片介紹彼思動畫製作室的各種職業，以擴闊學生對融合STEAM範疇工作的認識。

Each area includes:
- Screen-based activities that will give students an opportunity to explore real-world challenges faced by the Pixar production team.
- Physical interactives that will allow students to gain tactile experiences to help them better understand what happens in the virtual world created by Pixar.
- Video stories in which Pixar employees share insight into the complex challenges Pixar has overcome in the development of its ground-breaking films. Additional video interviews highlight the variety of careers at Pixar and will broaden students' views of what it means to work in a STEAM field.

Mini-theater: Students will begin their exhibition experience with a fun and engaging video on the process that Pixar uses to turn an idea into a film.

Upon leaving the Mini-theater, students may approach the exhibition in any order they choose. The exhibition is organised around eight steps of the Pixar production pipeline.

⑤角色動作製作
Animation

④布景與攝影
Sets & Cameras

③建構表面
Surfaces

②建立骨架結構
Rigging

①建構模型
Modeling

迷你劇場
Mini-theater

地下入口
Ground Floor
Entrance

知識、意識和理解
- 學生會對電腦動畫製作技術中STEM的主要知識內容有更深入的理解。
- 學生會覺察到藝術和STEM之間的相互關係。
- 學生能夠將複雜的難題和挑戰分拆成容易處理的部分,以便有系統地應付。

態度
- 學生對學習STEM和電腦科學的正面態度會有所提升,並懂得欣賞這些行業相關職位的創意。

技能
- 學生會能夠展示彼思所使用的STEM和電腦科學技能。

Knowledge, awareness, and understanding
- Students will demonstrate increased knowledge and understanding of the core STEM content that underlies computer animation.
- Students will demonstrate awareness of the interdependence of art and STEM at Pixar.
- Students will be able to systematically approach complex problems and challenges by breaking them down into manageable parts.

Attitude
- Students will have an increased positive attitude that they can learn about STEM and computer science, and they will gain appreciation for the creativity of careers in those fields.

Skills
- Students will demonstrate engagement in STEM and computer science process skills that are used at Pixar.

參觀前，老師可以：

• 找出展覽與課程之間的聯繫。

• 為學生確定學習目標。

參觀後，老師可以：

• 探索 *Pixar in a Box* 這個由彼思和可汗學院共同製作的網上資源，以展覽中的影片為基礎，對相關課題提供更深入的課程。

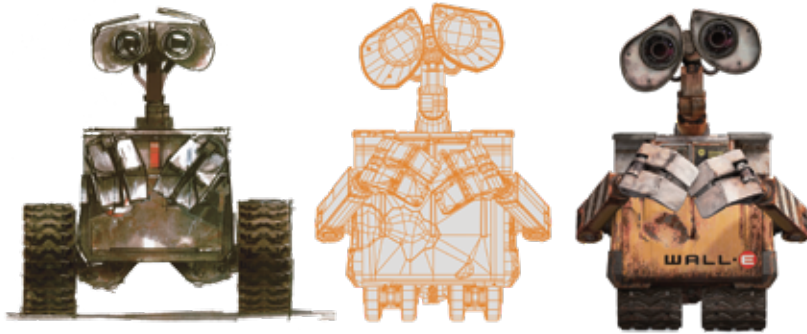• 利用與電影製作科學有關的活動，加強學生在展覽中的體驗。

• 學生透過他們喜愛的彼思動畫，分享他們對製作不同場景的感受。

Before visiting, teachers can:

• Identify connections between the exhibition and your curriculum.

• Determine the learning goals for your students.

After visiting, teachers can:

• Explore *Pixar in a Box*, a collaboration between Pixar and Khan Academy that builds on videos from the exhibition and provides in-depth lessons on related topics.

• Reinforce students' experience in the exhibition with activities related to the science of film making.

• Let students share their feelings on how different scenes were produced using their favourite Pixar film.

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Leisure and Cultural
Services Department

LCSD
edutainment
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HONG KONG
SCIENCE MUSEUM

展覽製作
Produced by

Museum of Science.