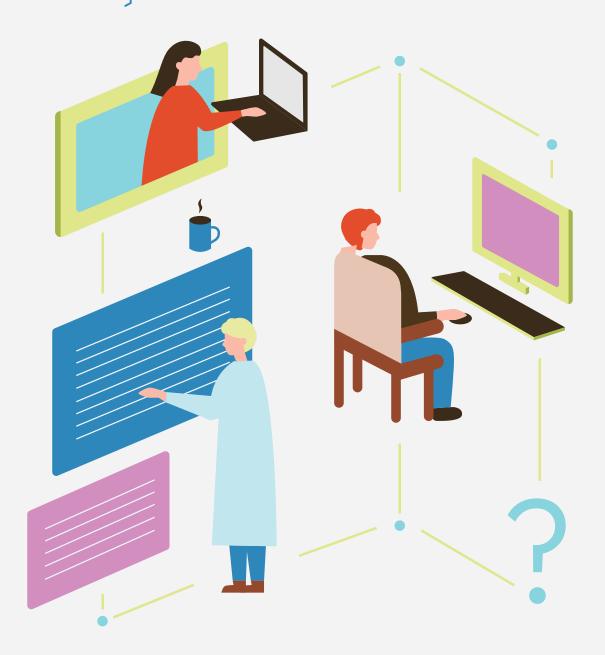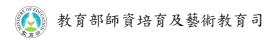國中科技領域

雙語教學資源手冊
資訊科技 英語授課用語

A Reference Handbook for Junior High School Bilingual Teachers in the Domain of Technology (Information Technology): Instructional Language in English

〔 國中九年級 〕

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單元一 數位資料基礎
Introduction to Digital Data

高師大軟體工程與管理學系 劉峻維、曾子軒

■ 前言 Introduction

科技的快速發展深刻改變了生活方式和學習方式。現在已經習慣以數位化的方式進行資料處理，例如檔案儲存、資訊分享以及數位學習。本章旨在深入了解數位技術的運作原理，並提供關於資訊科技基本概念的深入見解。舉例來說，數位資料是透過二進位系統中的 0 和 1 來表示，這不僅有助於理解電腦如何進行數位化處理，也有助於掌握資訊的呈現與儲存方式。

- 數位資料的基本概念

- 數位資料的呈現與儲存方式

- 數位化資料的實際應用範例

With the rapid advancement of technology, ways of living and learning have been profoundly transformed. Accustomed to handling data digitally, such as file storage, information sharing, and e-learning. This chapter aims to provide a deeper understanding of how digital technology functions and offers key insights into the fundamental concepts of information technology. For instance, digital data is represented through binary numbers (0 and 1), which not only help to understand how computers digitize data but also allows us to comprehend how information is stored and presented.

- Basic Concepts of Digital Data

- Representation and Storage of Digital Data

- Practical Examples of Data Digitization

■　詞彙 Vocabulary

單字	中譯	單字	中譯
advanced	(adj.) 先進的	compose	(v.) 組成
converting	(v.) 轉換	foundation	(n.) 基礎
process	(n.) 過程	practical	(adj.) 實際的
transmit	(v.) 傳遞	apply	(v.) 應用
engage	(v.) 參與	interaction	(n.) 互動
delve	(v.) 深入	enhance	(v.) 增強
intricacies	(n.) 複雜之處	comprehension	(n.) 理解

■　教學句型與實用句子 Sentence Frames and Useful Sentences

❶ _____ is key for_____.

例句：Understanding digital data **is key for** using modern technology.

　　　了解數位資料對於使用現代科技是關鍵。

❷ _____ helps us _____.

例句(1)：Knowing how computers handle digital data **helps us** use technology better.

　　　　知道電腦如何處理數位資料可幫助我們較好地使用科技。

例句(2)：Looking at real examples of digitizing data **helps us** use what we learn in real life.

　　　　查看資料數位化的實際案例幫助我們使用在真實生活中所學的知識。

❸ _____ not just _____, but _____.

例句：Getting used to changes from digitization is **not just** good, **but** necessary for our world.

適應數位化帶來的改變，不僅有益，而且對我們的世界是必要的。

❹ **Knowing the importance of _____ shows _____.**

例句：**Knowing the importance of** e-learning in our education **shows** how digital tools shape our lives.

了解數位學習在我們教育中的重要性，可展現數位工具如何塑造我們的生活。

■　　對話 Dialogues

Teacher:	Hi, everyone! Today, we're going to learn a new topic about information technology, that is, understanding digital data. With our rapidly advanced technology, digitization has already changed the way we live and learn.
Student:	Teacher, what does digitization mean?
Teacher:	Great question! Digitization is the process of converting data into a form that computers can process. This allows us to save, transmit information, and engage in e-Learning, just like you often learn things online.
Student:	How do we understand the workings of digital data?
Teacher:	That's what we'll learn today. We'll delve into the fundamental principles of digital data, such as the numbers 0 and 1. We will know how computers store and display information.
Student:	Sounds interesting! What will we learn?
Teacher:	We'll start understanding the basic concepts of digital data, and then learn how it is represented and stored in computers. Finally, we'll look at some real-life examples to understand how data digitization is applied in practical situations.
Student:	Yeah! We are looking forward to learning this new knowledge.

老師： 嗨，大家好！今天，我們要來學習資訊科技的新主題，認識數位資料。
在快速科技進步之下，數位化已經改變了我們的生活和學習方式。

學生： 老師，數位化是什麼意思？

老師： 好問題！數位化是將資料轉換成電腦可以處理的過程，這樣，才能容許我們
用電腦存檔和傳遞資訊，並可數位學習，像你們常在網路上學東西一樣。

學生： 我們如何了解數位資料的運作的呢？

老師： 那就是今天我們將學習的。我們將深入探討數位資料的基本原理，例如，數
位資料的 0 和 1 兩個數字。我們將知道電腦是如何儲存和顯示資料的。

學生： 聽起來好有趣！我們將學到什麼呢？

老師： 我們將開始先認識數位資料的基本概念，然後，學習電腦如何顯示和儲存資
料。最後，我們將看一些實際的例子，去了解資料數位化是如何應用在實際
情境中的。

學生： 嗯！我們好期待學這個新知識。

單元二　多媒體小專家
Media Expert

高師大軟體工程與管理學系　劉峻維、曾子軒

■　前言 Introduction

本章專注於影音製作專題，學生將首先了解進行影音製作專案所需的準備工作，接著學習影片與影像的後期製作。通過這一過程，學生將練習如何利用雲端工具與小組成員協作，共同創作並共享資源，從而培養資訊整合與問題解決的能力。

● 學生將學會使用雲端工具進行協作

● 學生將理解影片處理的概念與方法

● 學生將掌握影像處理的概念與技術

本章的目標是幫助學生熟練運用雲端工具、影片編輯軟體及影像後期製作技術。以 Openshot 為例，學生將學習去除背景、進行合成等技巧，並與他人協作完成專案。在完成影片、照片、音樂等素材的收集後，學生將開始將原始影片剪輯成幾分鐘的精華片段。最後，為專案增添吸引人的影片封面，並最終完成 Vlog 製作。

This chapter focuses on video production projects. Students will first learn the preparatory work required for such projects and then move on to mastering video and image post-production techniques. Throughout the process, students will practice using cloud-based tools to collaborate with group members, creating and sharing resources collectively, while cultivating skills in information integration and problem-solving.

● Students will learn how to effectively use cloud-based tools for collaboration

● Students will gain an understanding of the concepts and methods of video processing

● Students will acquire the concepts and techniques of image processing

The goal of this chapter is to help students proficiently use cloud tools, video editing software, and image post-production techniques. For example, using Openshot, students will learn how to remove backgrounds, composite images, and work with others on their projects. After gathering all necessary materials such as videos, photos, and music, students will start editing the raw footage into concise highlights. To complete the project, they will create an engaging video cover and finalize the production of a Vlog.
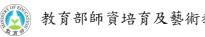
■ 詞彙 Vocabulary

單字	中譯	單字	中譯
digitization	(n.) 數位化	collaboration	(n.) 協作
planning	(n.) 規劃	creativity	(n.) 創意
compositing	(n.) 合成	content	(n.) 內容
editing	(n.) 剪輯	platform	(n.) 平台
effects	(n.) 效果	materials	(n.) 材料
background	(n.) 背景	creation	(n.) 創作
software	(n.) 軟體	integration	(n.) 整合

■ 教學句型與實用句子 Sentence Frames and Useful Sentences

❶ **We are _(V-ing)_ the _____ to _____ right now.**

例句：**We are** edit**ing the** video **to** add special effects **right now.**

我們現在正在編輯影片以增加特效。

❷ **Yesterday, we (V-ed) the _____.**

例句：**Yesterday, we** film**ed the** final scene of our project.

昨天，我們拍攝了我們專案的最後一景。

❸ **We will _____.**

例句：**We will** share the completed video with our classmates next week.

我們下週將與同學分享完成的影片。

❹ **You (can, should, could) _____ to _____.**

例句：**You can** use cloud-based tools **to** collaborate on the project.

你可以使用雲端工具來協作專案。

❺ **_____ is more _____ than _____.**

例句：Making a video **is more** fun **than** writing a report.

製作影片比寫報告更有趣。

■ **對話 Dialogues**

Teacher: Good morning, class! Today, we will embark on an exciting journey in our information technology course, focusing on video production projects. This will involve everything from preparation to post-production.

Student: What kind of preparation work is needed for a video production project?

Teacher: Great question! First, we need to gather our ideas and plan the content using tools like Xmind. Then, we will collect all necessary materials, such as videos, photos, and music.

Student: How about the post-production process? What does it involve?

Teacher: In post-production, we use software like Openshot for video editing. This includes cutting, adding effects, and compositing. For images, we use GIMP for tasks like background removal.

Student: That sounds challenging. Will we also learn how to collaborate using cloud-based tools?

Teacher: Absolutely! Collaborating on cloud platforms like Google Drive and Google Docs is an essential part of this project. It's a great way to share resources and ideas with your team.

Student: I'm excited to start! When do we begin the actual video production?

Teacher: We'll start next week. We'll firstly brainstorm our ideas and then be ready to delve into the world of video production.

老師： 早安，同學們！今天，我們將在我們的資訊科技課程中開始興奮的旅程，重點是影音製作專題。這將涵蓋從準備到後製的所有內容。

學生： 老師，影音製作專題需要哪些準備工作呢？

老師： 好問題！首先，我們需要收集我們的想法，並使用像 Xmind 的工具來規劃內容。然後，我們收集所有必要的材料，如影片、照片和音樂。

學生： 那後製過程呢？它涉及哪些內容？

老師： 在後製中，我們使用像 OpenShot 的軟體進行影片編輯。這些包括剪輯、添加效果和合成。至於影像，我們使用 GIMP 執行任務，如去除背景。

學生： 聽起來挺有挑戰性的。我們也將學習如何使用雲端工具進行協作嗎？

老師： 當然！在 Google 雲端硬碟和 Google 文件等雲端平台協作是專案的重要部分。那是和團隊共享資源與想法的好棒的方法。

學生： 我很興奮要開始了！什麼時候我們開始實際的影片製作呢？

老師： 我們將於下週開始。我們將腦力激盪自己的想法，並準備好投入影片製作的世界。

<div align="center">

單元三 程式小專家

Programming Expert

</div>

高師大軟體工程與管理學系 劉峻維、曾子軒

■　前言 Introduction

本章將結合程式設計與資料處理，透過實際案例，讓學生深入了解如何使用程式碼進行資料處理。在 Scratch 程式設計中，將學習如何匯入文字檔案，經由程式進行資料處理，並將處理後的資料重新匯出。本節課將特別聚焦於檔案清單的匯入與匯出，並透過程式設計練習加以應用。

● 　程式設計與資料處理的基礎概念

● 　實作練習─遊戲獎勵清單的設計與實現

This chapter will integrate programming with data processing and providing hands-on examples to let students understand how to manipulate data using code. Using Scratch programming, learn to import text files, manipulate the data through programming, and then export the modified data. This section will focus on the import and export of lists, and apply programming exercises.

● 　Programming and Data Processing

● 　Practical Exercise - Game Rewards List

■ 詞彙 Vocabulary

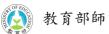| 單字	中譯	單字	中譯
integration	(n.) 結合	manipulate	(v.) 操作
programming	(n.) 程式設計	export	(v.) 匯出
data processing	(n.) 資料處理	experience	(v.) 體驗
skill	(n.) 技巧	list data	(n.) 清單資料
Scratch programming	(n.) Scratch 程式設計	practical exercise	(n.) 實作練習
text files	(n.) 文字檔	design	(v.) 設計
import	(v.) 匯入	game rewards list	(n.) 遊戲獎勵名單
theory	(n.) 理論	hands-on practice	(n.) 親自動手實踐
exciting	(adj.) 令人興奮的	fantastic	(adj.) 極好的

■　教學句型與實用句子 Sentence Frames and Useful Sentences

❶ ＿＿＿ teach(es) us＿＿＿.

例句：This chapter **teaches us** how to process data using computer programming.

這一章教我們如何用電腦程式處理資料。

❷ ＿＿＿ import ＿＿＿ into ＿＿＿.

例句：We can **import** text files **into** Scratch programming to manipulate data.

我們可以用 Scratch 程式匯入文字檔，以便處理資料。

❸ **After _____, _____.**

例句：**After** processing the data through programming, we export the modified data.

經過程式處理資料後，我們匯出修改過的資料。

❹ **_____ focuses on _Ving_.**

例句：This section **focuses on** import**ing** and exporting lists.

這一節專注於清單的匯入和匯出名單。

❺ **_____ apply _____ to _____.**

例句：We will **apply** programming exercises **to** reinforce what we've learned.

我們將進行程式實作練習，以加強我們學到的知識。

❻ **In _____, _____.**

例句：**In** the practical exercise, we will create a game reward list.

在實作練習中，我們將創建一個遊戲獎勵名單。

■　**對話 Dialogues**

Teacher:	Hi, students! Today, let's learn about an interesting topic, the combination of programming and data processing. This is a powerful skill that allows computers to help us handle data. Have you heard of Scratch programming?
Student:	Is this where you drag and drop blocks to write code?
Teacher:	Exactly! Scratch is precisely this kind of programming language. Today, we'll learn how to use Scratch to import data from text files, manipulate the data through code, and then export the processed data. This way, you can personally experience how to use programming to handle data. Can anyone guess what importing and exporting entails?
Student:	Importing is bringing data in, and exporting is sending out processed data.

Teacher: Very good. That's right. In this section, we'll focus on importing and exporting list data. After that, we'll engage in a fun practical exercise, that is, designing a game reward list. This way, you not only learn the theory but also get hands-on practice. Isn't that exciting?

Student: Sounds like a lot of fun! Let's get started!

Teacher: Fantastic! Let's dive into the practical exercise right now.

老師： 嗨，同學們！今天，讓我們一起來學一個有趣的主題，就是程式設計和資料處理的結合。這可是一個讓電腦幫我們處理資料的有力的技巧。你們聽過 Scratch 程式嗎？

學生： 是不是那個可以拖拉積木塊來寫程式的呢？

老師： 沒錯！Scratch 正是那種編程語言。今天，我們將學到如何用 Scratch 程式，把文字檔中的資料匯進來，然後，透過程式碼操作資料，最後，再把處理好的資料匯出。這樣一來，你們可以親身體驗如何運用程式來處理資料。有人能猜猜看，匯入和匯出的步驟是如何呢？

學生： 匯入是把資料引進來，匯出是把處理好的資料送出去。

老師： 很好，對。在這一節，我們將重點學習如何將清單資料匯入和匯出。然後，我們將進行一個有趣的實作練習，來設計遊戲獎勵名單。這樣一來，你們不但可以學到知識，還能親手實踐。是不是很有趣呢？

學生： 聽起來好像很有趣耶！讓我們開始吧！

老師： 太棒了！讓我們馬上實作練習。

單元四 網路發展與新興科技創新
Internet Development and Emerging Services

高師大軟體工程與管理學系 劉峻維、曾子軒

■ 前言 Introduction

本章的第一節將介紹電腦網路的基本概念，探討網路發展的起源，以及相關的網路傳輸技術與設備。第二節將聚焦於網路通訊服務、影音娛樂、網路金流和線上購物等日常網路應用。第三節則深入分析物聯網（IoT）與雲端運算的基本概念，並探討其在日常生活中的常見應用。

● 學生將了解網路發展的起源，並掌握相關的網路傳輸技術與設備。

● 學生將獲得對日常生活中常見的網路服務的深入洞察。

● 學生將習得物聯網與雲端運算的基本概念，並了解其在生活中的應用場景。

The first section of this chapter introduces the fundamental concepts of computer networks, exploring the origins of network development and relevant network transmission technologies and equipment. The second section focuses on Internet services such as communication, audio-visual entertainment, online financial transactions, and e-commerce. The third section delves into the basic concepts of the Internet of Things (IoT) and cloud computing, examining their common applications in daily life.

● Students will understand the origins of network development and gain knowledge of related network transmission technologies and equipment.

● Students will gain insights into Internet services commonly encountered in everyday life.

● Students will acquire a solid understanding of IoT and cloud computing concepts, along with their common applications in life.

■ 詞彙 Vocabulary

單字	中譯	單字	中譯
computer Network	(n.) 電腦網路	internet	(n.) 網路
basics	(n.) 基本概念	social media	(n.) 社交媒體
origin	(n.) 起源	video	(n.) 影片
tool	(n.) 工具	service	(n.) 服務
technology	(n.) 技術	IoT (Internet of Things)	(n.) 物聯網
router	(n.) 路由器	cloud computing	(n.) 雲端運算
switch	(n.) 交換機	concept	(n.) 概念
application	(n.) 應用	smart homes	(n.) 智能家居
storage	(n.) 儲存	everyday	(adj.)日常的
network protocol	(n.) 網路協定	digital twin	(n.) 數位分身
blockchain	(n.) 區塊鏈技術	VR (Virtual Reality)	(n.) 虛擬實境

■ 教學句型與實用句子 Sentence Frames and Useful Sentences

❶ Proficiency in _____ is _____.

例句：**Proficiency in** coding languages **is** crucial for developing innovative software solutions.

掌握程式語言的能力對開發創新軟體是至關重要的。

❷ _____ is essential for _____.

例句：Effective time management **is essential for** balancing academic and extracurricular commitments.

有效的時間管理對平衡學業和課外活動是必須的。

❸ _____ is crucial for _____.

例句：A strong foundation in mathematics **is crucial for** excelling in scientific and engineering disciplines.

有很強的數學基礎對在科學和工程領域卓色表現是關鍵的。

❹ _____ is fundamental for _____.

例句：Adopting computational thinking skills **is fundamental for** overcoming challenges and fostering continuous personal development.

熟練運算思維技巧是克服挑戰和促進持續個人發展的基石。

■ 對話 Dialogues

Teacher:	Good morning, everyone! Today, we're starting Chapter 1, which is about computer networks. In the first part, we'll learn the basics of computer networks, where they came from and the tools and technologies used. Any questions so far?
Student:	What tools and technologies are we talking about?
Teacher:	We'll talk about things like routers and switches, the stuff that makes computers networks work.
Student:	Cool! What's the second part about?
Teacher:	Great question! In the second part, we'll talk about everyday internet stuff. Social media, videos and online shopping which are the things we all use regularly.
Student:	Will we learn how to be safe online?
Teacher:	Absolutely! We'll discuss how to stay safe while using these services.
Student:	Nice. And what's the last part?

Teacher:　In the last part, we'll explore the basic concepts of IoT and cloud computing, and see how they're used in everyday life.

Student:　Can you give an example?

Teacher:　Sure! Let's think about smart homes or cloud storage. We'll talk about how these things make life easier.

Student:　Sounds interesting! Let's get started!

老師：　大家早安！今天，我們要開始學習第一章有關電腦網路。在第一部分，我們將了解電腦網路的基本概念，它們的起源，以及工具和技術的使用。目前有沒有任何問題呢？

學生：　我們會談論哪些工具和技術呢？

老師：　我們將談論像路由器和交換機，讓電腦網路運作的工具。

學生：　好酷！那第二部分是關於什麼呢？

老師：　好問題！在第二部分，我們將談論日常使用的網路服務。社交媒體、影片、線上購物，都是我們經常使用的東西。

學生：　我們將會學如何安全上網嗎？

老師：　當然！我們將討論在使用這些服務時如何保持安全。

學生：　好的。那麼最後的部分是什麼呢？

老師：　在最後部分，我們將探討物聯網和雲端運算的基本概念，並了解它們在日常生活中的應用。

學生：　你能舉個例子嗎？

老師：　當然可以！讓我們想想智能家具或雲端儲存。我們將談論這些事物如何讓生活變得較輕鬆。

學生：　聽起來很有趣！讓我們開始吧！

單元五　資訊科技與社會
Information Technology and Society

高師大軟體工程與管理學系 劉峻維、曾子軒

■　前言 Introduction

在這個數位化時代，資訊科技已經深刻影響並改變了生活方式。本章將深入探討資訊科技在食、衣、住、行、育、樂等各方面的應用，包括電子貨幣、智慧家居、穿戴式裝置以及智慧校園等領域的發展。這些科技不僅讓生活更加便利，還帶來了全新的體驗與互動方式。然而，隨著科技的迅速發展，我們也面臨著一系列挑戰。

我們將討論資訊科技對就業機會的影響，深入剖析科技文明病的現象，並探討在數位時代如何在享受科技便利的同時保護個人隱私權之間的平衡。此外，還會介紹硬體、軟體與網路等技術主題，幫助學生了解資訊科技的技術基礎。

透過全方位的討論與分析，我們期望激發學生對資訊科技的思考，並培養他們對未來科技發展的洞察力，從而更好地應對未來數位社會所帶來的機遇與挑戰。

In this digital age, information technology has profoundly influenced and transformed the way we live. This chapter will provide an in-depth exploration of the application of information technology in various areas such as food, clothing, housing, transportation, education, and entertainment, covering developments from electronic money, smart homes, wearable devices to smart campuses. These technologies not only enhance convenience in daily life but also introduce new experiences and interaction methods. However, the rapid development of technology also presents a series of challenges.

We will discuss the impact of information technology on employment opportunities, analyze the phenomenon of technology-induced conditions, and explore the balance between enjoying the convenience of technology and protecting personal privacy in the digital age. Additionally, we will introduce topics related to hardware, software, and networks to help students understand the technical foundations of information technology.

Through comprehensive discussions and analyses, we aim to inspire students to reflect on the role of information technology, develop insights into future technological trends, and better prepare them to face the opportunities and challenges brought by the digital society of tomorrow.

■ 詞彙 Vocabulary

單字	中譯	單字	中譯
daily lives	(n.) 日常生活	Smart Technology	(n.) 智慧科技
integrate	(v.) 整合	efficiency	(n.) 效率
security	(n.) 安全性	exploring	(n.) 探討
challenge	(v.) 挑戰	issues	(n.) 問題
understand	(v.) 了解	hardware	(n.) 硬體
software	(n.) 軟體	insight	(v.) 洞察
foundation	(n.) 基礎	stimulate	(v.) 激發
data privacy	(n.) 資料隱私權	data accessibility	(n.)資料存取權
data property	(n.) 資料財產權	data accuracy	(n.)資料正確權

■ 教學句型與實用句子 Sentence Frames and Useful Sentences

❶ _____ plays a crucial role in our daily lives.

例句：Information technology plays a crucial role in our daily lives.

　　　資訊科技在我們的日常生活中扮演著重要的角色。

❷ _____ **is a way of integrating technology to enhance** _____.

例句：Smart home **is a way of integrating technology to enhance** efficiency and security in living spaces.

　　智慧家居是一種整合科技的方式，以提高生活空間的效率和安全。

❸ **While exploring** _____, **we must also be mindful of** _____.

例句：**While exploring** technology, **we must also be mindful of** associated challenges and issues.

　　在探討科技的同時，我們也必須注意到相對應的挑戰和問題。

❹ **By gaining a deeper understanding of** _____, _____, **and** _____, **we can better grasp the foundations of** _____.

例句：**By gaining a deeper understanding of** hardware, software **and** networks, **we can better grasp the foundations of** technological advancements.

　　透過較深入了解硬體、軟體和網路，我們可以較好地理解科技發展的基礎。

❺ **The purpose of this discussion is to stimulate critical thinking about** _____ **and cultivate insights into future** _____.

例句：**The purpose of this discussion is to stimulate critical thinking about** information technology **and cultivate insights into** future technological developments.

　　這次討論的目的，是激發大家對資訊科技的批判性思考，並培養對未來科技發展的洞察力。

■　**對話 Dialogues**

Teacher: Hello, everyone! Today, we're delving into the influence of information technology on our lives. In this digital age, significant changes have occurred. Let's explore how information technology affects various aspects of our daily routines, covering everything from what we eat and wear to how we live and learn.

Student: Can you provide examples of how technology is changing our daily lives?

Teacher: Certainly! Take electronic currencies, for instance. They've transformed our payment methods, making transactions more convenient. Additionally, smart homes integrate technology for improved efficiency and security in our own living spaces.

Student: What is the impact on education? Are there smart campuses?

Teacher: Good question! Smart campuses involve technologies like virtual classrooms and personalized learning experiences, fundamentally altering how we approach education.

Student: Are there any challenges associated with these advancements?

Teacher: An excellent point! With rapid technological development, certain challenges arise. We'll discuss how technology affects job opportunities, explore the concept of technological civilization diseases, and address the delicate balance between enjoying the convenience tech offers and safeguarding personal privacy.

Student: Will you cover technical aspects like hardware and software?

Teacher: Certainly! We'll introduce topics, such as hardware, software, and networks, providing insights into the technical foundations behind these advancements. Understanding these elements is crucial in navigating our tech-driven world.

Student: How does this discussion benefit us?

Teacher: By the end of our exploration, we hope to encourage students to critically think about information technology, and foster insights into future technological developments. Ready for today's discussion?

老師：　哈囉，大家好！今天，我們要深入探討資訊科技對我們生活的影響。在此數位時代，發生了重大的變化。讓我們探索資訊科技如何影響我們日常作息的各方面，從而發現從我們的飲食穿著，到如何居住與學習的每件事。

學生： 你能否提供一些科技如何改變我們日常生活的例子呢？

老師： 當然！以電子貨幣為例，它們已經改變了我們的支付方式，使交易較方便。此外，智慧家居整合了科技，來提高我們居住空間的效率和安全。

學生： 教育的影響是什麼呢？有智慧校園嗎？

老師： 很好的問題！智慧校園涉及像虛擬教室和個性化學習經驗等技術，從根本上，改變了我們如何實現教育。

學生： 有任何挑戰伴隨著這些進步嗎？

老師： 十分優秀！隨著科技的快速發展，帶來了一系列的挑戰。我們將討論科技如何影響就業機會，探索科技文明疾病的概念，並解說享受科技便利與保護個人隱私之間的微妙平衡。

學生： 您會涵蓋像硬體和軟體等技術方面的內容嗎？

老師： 當然！我們將介紹例如硬體、軟體和網路等主題，提供這些進展背後的技術基礎的洞察力。理解這些元素對於我們航行在科技主導的世界中是至關重要的。

學生： 這次討論對我們有什麼好處呢？

老師： 通過我們的探討後，我們希望能夠鼓勵大家對資訊科技的批判性思考，並培養對未來科技發展的洞察力。大家準備好今天的討論了嗎？

單元六 程式小專家
Programming Expert (Advanced)

高師大軟體工程與管理學系 劉峻維、曾子軒

■　前言 Introduction

本章第一節將介紹如何在 Scratch 程式中進行文字檔案的匯入與匯出，並進行基礎的資料處理。第二節則透過實作練習，指導學生設計一個簡單的遊戲程式，以應用所學知識。

● 學生將掌握匯入與匯出文字檔案的基本方法

● 學生能夠運用 Scratch 進行資料處理

● 學生將運用所學知識設計並開發一個簡單的遊戲程式

The first section of this chapter introduces how to import and export text files for basic data processing within Scratch programming. The second section focuses on hands-on practice, guiding students to design a simple game program to apply their acquired knowledge.

● Students will learn the fundamental methods of importing and exporting text files.

● Students will perform data processing using Scratch.

● Students will design and develop a simple game program by applying their learned skills.

■　**詞彙 Vocabulary**

單字	中譯	單字	中譯
programming	(v.) 程式設計	file	(n.) 檔案
Scratch	(n.) Scratch	block	(n.) 積木
import	(v.) 匯入	code	(n.) 程式碼
process	(v.) 處理	manipulate	(v.) 操作
data	(n.) 資料	store	(v.) 儲存
game	(n.) 遊戲	creation	(n.) 創作
design	(v.) 設計	future	(n.) 未來

■　**教學句型與實用句子 Sentence Frames and Useful Sentences**

❶ **You can _____ the data from the external source into the list for further analysis.**

例句：**You can** import **the data from an external source into the list for further analysis.**

　　　你可將資料從外部來源匯入清單，來進一步的分析。

❷ **After processing, you can _____ the results to a file for future reference.**

例句：**After processing, you can** export **the results to a file for future reference.**

　　　經過處理後，你可將結果匯出至檔案，供日後參考。

❸ **You can utilize the _____ of the list to access specific elements efficiently.**

例句：**You can utilize the** index **of the list to access specific elements efficiently.**

你可利用清單的索引，來有效存取特定元素。

❹ **You can generate a random value and _____ it to the list for a dynamic element.**

例句：**You can generate a random value and** add **it to the list for a dynamic element.**

你可生成一個隨機值並添加至清單，增加一個動態元素。

❺ **You can use list operations to _____ and organize the imported data effectively.**

例句：**You can use list operations to** manipulate **and organize the imported data effectively.**

你可使用清單操作來操作和有效組織匯入的資料。

■　　**對話 Dialogues**

Teacher:	Class, today we will learn how to process data in Scratch by importing and exporting text files. Can anyone tell me what a text file is?
Student:	A text file is a computer file that contains text data.
Teacher:	Well explained! Text files are a common file format for storing data. Why would we want to import data into Scratch?
Student:	To process or analyze it using coding blocks!
Teacher:	Great answer! Importing data allows us to manipulate it programmatically. And why do we export data from Scratch?
Student:	To save the results of our processing in order to use Scratch outside.
Teacher:	Precisely! Exporting files will let us work the data for future use. Now, let's start looking at code examples for importing and exporting files.

老師： 同學們，今天我們將學習如何通過匯入和匯出文字檔來處理 Scratch 中的資料。有人能告訴我文字檔是什麼嗎？

學生： 文字檔是包含文字資料的電腦檔案。

老師： 說得好！文字檔是存儲資料的一種常見檔案格式。為什麼我們要將資料匯入 Scratch 呢？

學生： 為了使用程式積木進行處理或分析！

老師： 非常好的回答！匯入資料可以讓我們以編程的方式進行操作。那為什麼我們要從 Scratch 匯出資料呢？

學生： 為了將我們處理的結果儲存下來，以供我們離開 Scratch 時使用。

老師： 正是如此！匯出檔案可以讓我們在未來使用資料。現在，讓我們開始看匯入和匯出檔案的程式碼範例。

國內外參考資源 More to Explore

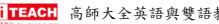|	
自造教育及科技輔導中心 這個網站以創新教育為主題，提供高級中等以下學校的教育資源，並透過系列課程、競賽專區及線上微課程等功能，推動教育界探索未來教學的新視野與可能性。 https://tech.k12ea.gov.tw/	
能源教育資源總中心 國中機構結構與能源相關教學活動的分享內容，包含木工製作、機械結構與動力實驗等範例。 https://learnenergy.tw/index.php?inter=digital&caid=1&id=295	
高雄市教育局國民教育輔導團-高雄國民教育各學科領域專頁 匯集高雄國民教育各學科領域的專頁資訊，提供多元學科資源及社群連結，方便教師和學習者快速找到相關支持與交流平台。 https://reurl.cc/M6yNan	

國中科技領域雙語教學資源手冊：資訊科技英語授課用語

國中科技領域雙語教學資源手冊：資訊科技英語授課用語
[9 年級]
A Reference Handbook for Junior High School Bilingual Teachers in the Domain of Technology (Information Technology): Instructional Language in English
[9th grade]