前言

一、编写背景

改革开放特别是党的十八大以来，研究生教育快速发展，我国已成为世界研究生教育大国。随着中华民族伟大复兴事业的推进、国际形势的快速变化，各行各业对高层次创新人才的需求更加迫切，研究生教育的地位和作用更加凸显。

2017年教育部、国务院学位委员会印发《学位与研究生教育发展“十三五”规划》，提出学位与研究生教育改革发展的任务之一是“改革培养模式，提升创新和实践能力”。2020年教育部、国家发展改革委、财政部联合发布《关于加快新时代研究生教育改革发展的意见》，再次强调要“加强教材建设，创新教学方式，突出创新能力培养”。

在新时代、新形势下，培养具有国际视野和中国情怀、承担科技创新使命、服务国家发展战略、适应经济社会发展需求的创新型、复合型、应用型人才，有赖于研究生英语教学改革的支撑，而优质的教材是院校人才培养、教学改革的重要组成部分。针对研究生教材需求情况，外研社携外研在线深入调研高校研究生公共英语的教学现状、教学痛点和发展趋势，出版新形态、立体化研究生系列教材《新探索研究生英语》，为院校研究生英语教学改革保驾护航。

《新探索研究生英语》系列教材面向全体硕士研究生，包括学术学位硕士研究生和专业学位硕士研究生。教学目标定位为通用学术英语（EGAP）能力培养，为专业学术英语（ESAP）学习打好语言基础，培养学术技能，提升创新思维能力和学术实践能力，为学术创新培养良好的认知结构与思维习惯。教材定位与大部分院校的研究生人才培养目标和研究生英语教学的实际情况相符。同时，思政育人理念贯穿整个教材体系，隐性思政教学设计和显性思政板块相结合，寓价值观引领于知识传授和能力培养之中，培养德才兼备、全面发展的时代新人。教材充分体现信息技术与语言教学的融合创新，以线上线下混合的方式进行教学实践，课堂手册与数字课程互为补充，相得益彰。另外，教材符合“因材施教”的教育理念，主干教程模块与补充技能模块相互配合，低阶、高阶难度分级，读写、听说等技能分项，可支持院校针对本校研究生教学目标进行课程的个性化组合，满足多样的课型需求，也可满足本硕一体化人才培养模式下的学术英语教学需求。

二、编写依据

1. 在课程性质上落实思政育人的根本目标

《高等学校课程思政建设指导纲要》明确提出“全面推进课程思政建设是落实立德树人根本任务的战略举措”，“课程思政建设是全面提高人才培养质量的重要任务”，强调要“将课程思政融入课堂教学建设全过程”。《新探索研究生英语》特别设置了思政育人板块，从中西对比、文化传承、价值观塑造等层面深化单元主题，介绍社会主义核心价值观、中华优秀传统文化、社会主义建设成就，并通过实践任务落实育人目标，培养国际视野和文化自信。

2. 在教学方法和手段上体现线上线下融合的混合式教学模式

在信息化与智能化时代，多媒体技术以及大数据、人工智能等现代信息技术已成为外语教育教学的重要手段。教材积极创建多元的教与学环境，依据布鲁姆-安德森认知能力模型，线上学生通过U校园智慧教学云平台完成语言练习，训练记忆、理解、应用等低阶思维能力，并获取评价与反馈，教师则基于数据开展学情监测、进行学情分析；线下教师基于个性化学情、借助数字化工具创设互动式、研讨式课堂，培养学生分析、评价、创造等高阶思维能力，通过线上线下融合的混合式教学实践，使学生朝着主动学习、自主学习的方向发展，真正实现教学的立体化、个性化、智能化。

3. 在教学目标上体现多元能力培养

整套教材以学术主题为牵引，以学术能力为导向。教材以英国麦克米伦出版有限公司高品质教材*Skillful (Second Edition)*为蓝本，涵盖多学科话题，注重学术阅读、学术写作、学术听说等技能培养。同时，教材将思辨英语教学理念和原则融入教学活动设计中，专门设立思辨板块，进一步提升研究生的批判性思维能力和创新创造能力。

4. 在教师发展方面全方位提升教师信息化素养

《教育部等六部门关于加强新时代高校教师队伍建设改革的指导意见》指出，高校要“积极应对新科技对人才培养的挑战，提升教师运用信息技术改进教学的能力”。使用《新探索研究生英语》的教师可以通过U校园平台的大数据反馈、写作智能评阅引擎、语音自动评阅引擎、语音实时转写、师生互动和生生互评等创新功能，开展学情分析，辅助作业批阅，提供即时反馈，激发学生互动与参与。这些功能也可以为教学研究提供方法指导和数据支撑。

三、教材特色

1. 打造新形态教材模式，创设智慧式教学流程

《新探索研究生英语》由U校园数字课程和课堂手册构成，引领院校开展线上线下融合的混合式教学实践。新形态教材厘清线上、线下功能，突出混合式特色，明晰课前、课中、课后的目标、任务与实施手段。课下学生使用U校园数字课程自主学习，教师监管辅助。课上教师基于U校园平台学情分析及教学互动工具，利用课堂手册引导学生进行深度理解、思辨讨论等研讨活动，实现高效、便捷、智能的教、学、管过程。

2. 体现时代脉搏、国际视野，深化思政育人理念

教材基于英国麦克米伦出版有限公司高品质教材*Skillful (Second Edition)*，由国内著名教材编写专家进行改编。单元主题涉及心理学、美学、社会学等学科领域，围绕环境保护、疾病防治、法律与伦理道德、新兴科技发展等热门话题展开；阅读选篇以议论文、说明文为主要体裁；视听素材聚焦学术场景，以学术对话、学术研讨、学术讲座为主要形式。此外，教材巧妙融入思政素材，传递中华优秀传统文化与现当代社会主义建设成就，通过中西对比、实践产出等落实价值观塑造，培育文化自信与文化传播力。

3. 着重培养学术素养，提升思辨力、创新力、实践力

全套教材高度关注学术技能培养，勾勒出完整的学术技能图谱，涵盖学术读写、学术听说、学术思辨全场景。每单元基于素材选择2—4个技能点进行细致讲练，辅以U校园视频微课、交互式技能训练，帮助学生牢固掌握、熟练应用技能。同时，教材汲取英语思辨教学理念，研讨式课堂的教学设计着重训练分析、评价、创造等高阶思维能力，提升研究生的独立思考能力、创新创造能力。

4. 充分体现Unipus数字产品能力，大幅提升教与学效果

基于此套教材，Unipus为研究生公共英语教学全力保驾护航。教材引入丰富的数字化教学手段，如iWrite写作智能评阅引擎，提供写作任务的机器评阅、同伴互评、小组互评等功能，实现以评促教，以评促学；Unipus智慧云盒、智慧教室创新课堂展示效果，提升多资源协同的教学体验；语音实时转写功能激发学生主动性，帮助教师实施个性化教学，给予学生针对性指导。

四、教材构成

教材分为**主干教程**与**补充技能**两大模块。

- 主干教程模块共设两个级别（基础级和提高级），每个级别包括《读写教程》和《视听说教程》两个分册，每个分册含六个单元，《读写教程》与《视听说教程》单元主题呼应。每个分册由U校园数字课程、课堂手册构成新形态、立体化的教学体系。

《读写教程》
U校园数字课程

《读写教程》
课堂手册

《视听说教程》
U校园数字课程

《视听说教程》
课堂手册

- 补充技能模块为拓展学习资源，包括《学术词汇讲练》《学术论文写作》《学术英语交流》三门U校园数字课程，鼓励学生根据自身需求，自主选择学习。
- 配套资源包括混合式教学指导手册、助教课件、试题库等。

五、编写团队

《新探索研究生英语》系列教材主干教程的《读写教程》（基础级）由复旦大学季佩英教授主编，《视听说教程》（基础级）由西安交通大学陈向京教授主编，《读写教程》（提高级）由山东大学王俊菊教授、闫秋燕教授主编，《视听说教程》（提高级）由东南大学陈美华教授主编。

参与《新探索研究生英语》系列教材策划与编写的人员是来自复旦大学、西安交通大学、山东大学、东南大学等多所高校的外语教育专家和一线教师。美籍专家Ann Marie Ross教授参与了教材审读工作，在此谨表示衷心的谢意。

《新探索研究生英语》系列教材应新时代的人才培养需求而生，从筹划到出版历经数年，通过理念创新、模式创新、资源创新，将成为教学改革的有力抓手，为高校提供教学资源、教学手段和教学方法的全方位支撑，为提高人才培养质量打好基础、创造条件。同时我们希望教材在使用过程中得到广大院校师生的反馈意见与建议，以便我们不断完善教材，提供全面支持。

《新探索研究生英语》编写团队

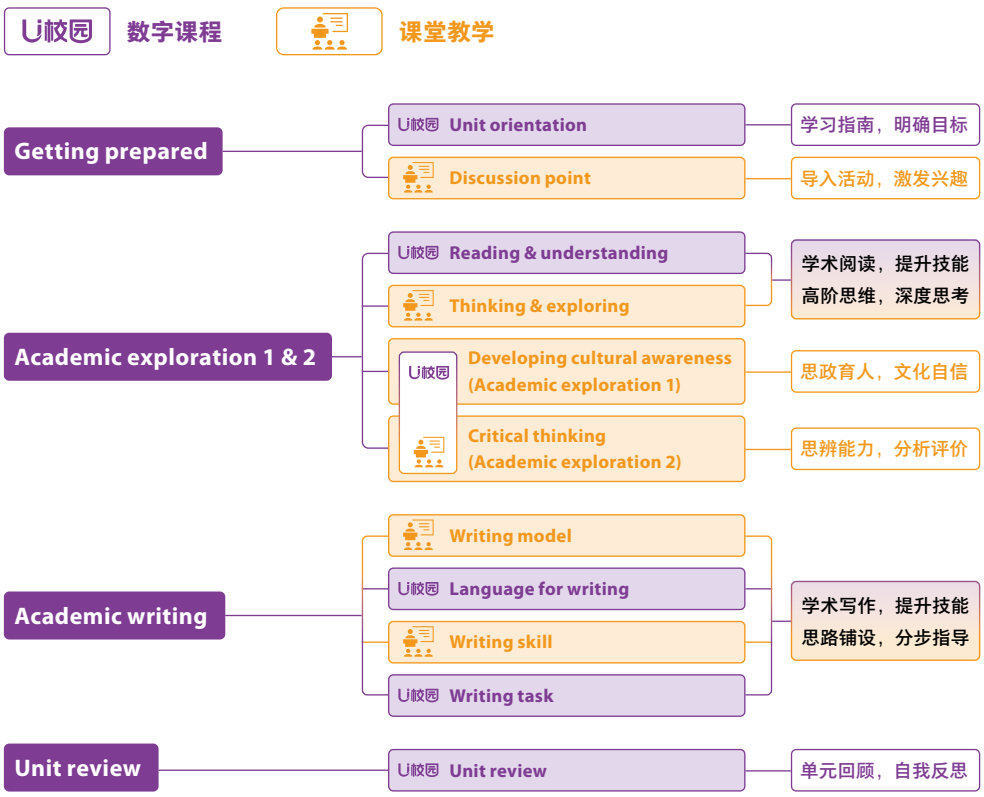
编写与使用说明

《新探索研究生英语 读写教程》的设计和编写充分考虑国内研究生人才培养目标和研究生公共英语的教学需求，教学内容符合研究生认知水平，学术特征突出；教学设计紧密围绕学术阅读、学术写作和学术研究能力培养；教学资源立体多元，包括学术技巧微课、思政视频素材、写作范文等，为教师因材施教、学生自主学习创造有利条件。

《新探索研究生英语 读写教程》遵循线上线下融合的混合式教学模式，线上学生自主研读文本，学习技巧，操练语言，进行写作训练；线下教师引导学生研讨互动，辨析文章深意，应用学术技巧，鉴赏写作范文，掌握写作要领。U校园智慧教学云平台将线上、线下环节进行有机融合，大数据分析即时反馈学情，帮助教师反拨课堂教学；线上讨论、小组任务教师评阅、生生互评消除线上学习的迷航与孤独，促进师生互动交流。

单元结构与教学场景

《读写教程》共设“基础级”与“提高级”两个级别，每级包括6个单元。单元结构与教学场景具体如下：



板块介绍

Getting prepared

Unit orientation

指导单元学习，引入单元主题，介绍学习内容，发布本单元写作任务与实践任务，帮助学生明确学习重点，指引学习路径。

学生线上自主预习，观看单元导入微课视频。

Learning objectives

从学术技能、思辨能力、语言能力等方面明确单元学习目标，使学生在学习中做到有的放矢。

Discussion point

通过小组讨论、头脑风暴等活动，激发学习兴趣，激活知识储备，为学习单元内容作好准备。

课堂进行小组讨论等活动。

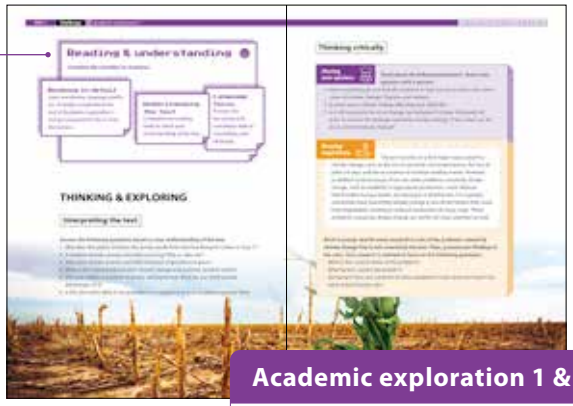
Academic exploration 1 & 2

Academic exploration 1 & 2各含一篇课文，以议论文、说明文为主要体裁，通过Reading & understanding和Thinking & exploring两个层次的阅读任务帮助学生全面理解文章主旨、重要细节，准确领会作者意图，并能联系自我、社会与世界，就相关话题进行论证、推理和思辨。此外，Academic exploration 1 设有Developing cultural awareness思政板块，培养家国情怀，树立文化自信。Academic exploration 2设有 Critical thinking思辨板块，系统讲解思辨技巧，培养逻辑论证方法，提升思辨能力，为学术读写打好基础。

Reading & understanding

侧重识记、理解、应用等低阶认知能力训练，由学生利用U校园数字课程进行课前自主学习。

学生线上自主学习。



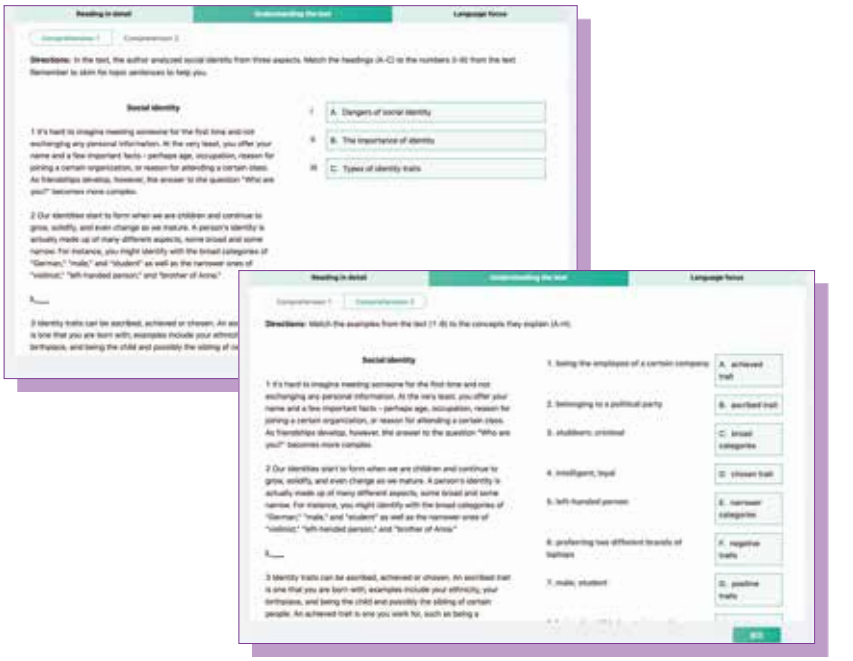
- Academic exploration 1 & 2
  - Reading & understanding
    - Reading in detail
      - Reading in detail
    - Understanding the text
      - Comprehension 1
      - Comprehension 2
    - Language focus
      - Vocabulary learning
      - Words in use
      - Translation

Reading in detail

精读课文，点读重点词汇，查看课文难点解析与中文翻译，掌握语言知识，突破语言难点。

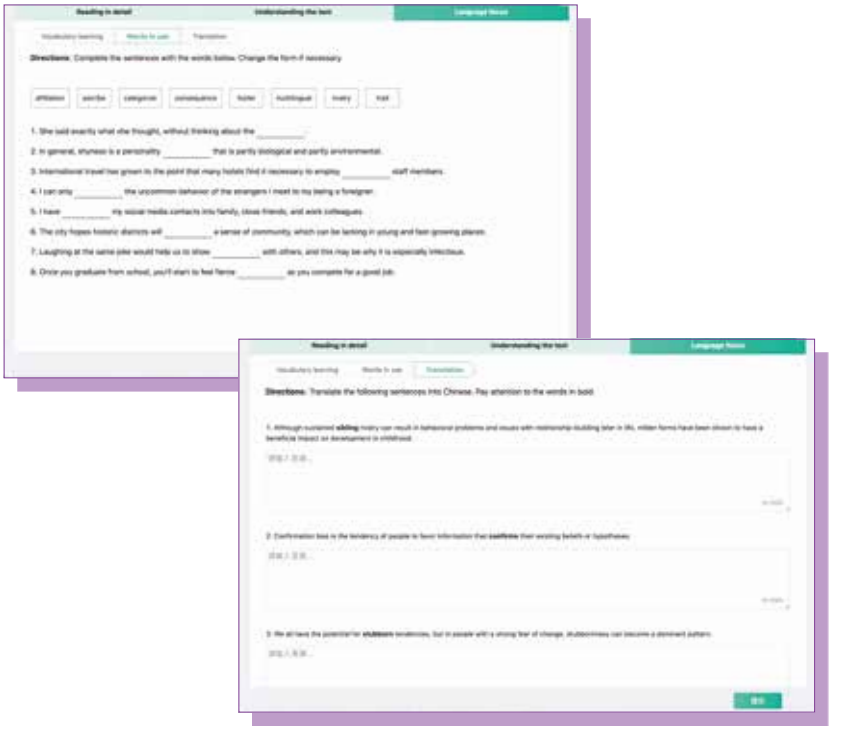
Understanding the text

提供阅读理解练习，帮助学生梳理文章脉络，掌握重点细节，提升阅读理解能力。



Language focus

聚焦重点词汇与翻译，提供多元丰富的语言练习，帮助学生夯实语言基础，提升语言运用能力。



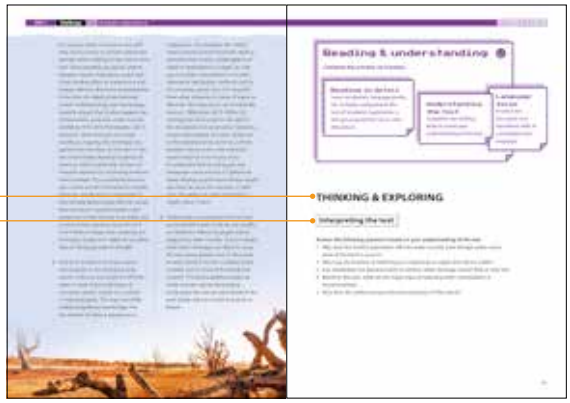
Thinking & exploring

师生开展课堂研讨，应用学术技能，锤炼学术思维，提高分析、评估、创造等高阶认知能力。

师生课堂研讨，开展同伴、小组讨论等活动。

Interpreting the text

深度解析课文，挖掘文章深意，分析语篇特征和重要修辞手段。

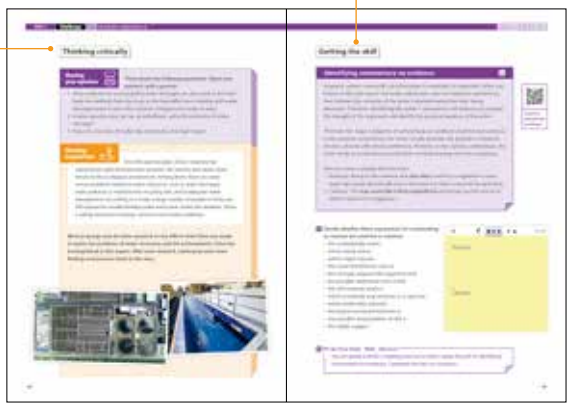


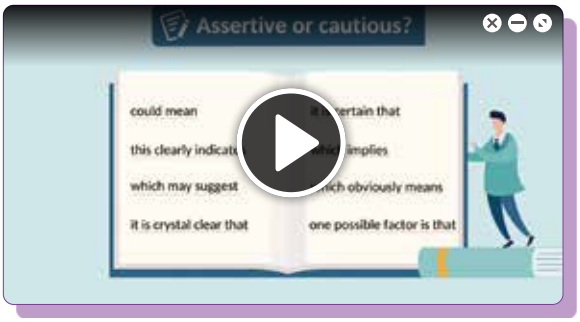
Thinking critically

围绕课文内容进行多角度的内容挖掘与话题延伸，设置课堂讨论活动，分析评价作者观点，启发学生联系自身的生活经历与知识积累探讨话题，联系社会现实，思考解决问题的方法。

Getting the skill

学习课文中的典型学术阅读技巧，辅以视频微课，讲练结合，并通过该技巧在其他学术语篇中的应用练习，帮助学生牢固掌握、熟练应用。





Developing cultural awareness

Academic exploration 1

从文化、价值等层面拓展课文 1 话题，培育文化自信。

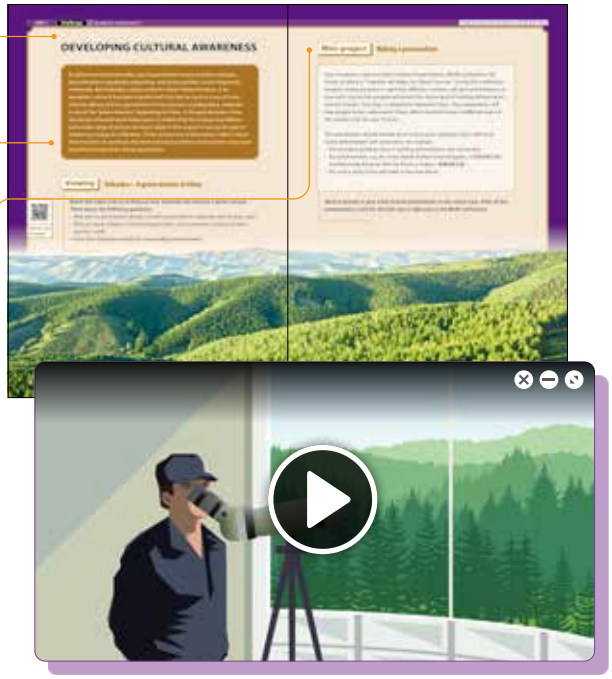
教师可在课堂给予学生指导，明确任务要求；学生可在课下观看视频并完成小型实践任务，在下一节课中进行作品展示，并在数字课程中上传作品，进行小组互评。

Viewing

观看具有思政、人文内涵的视频素材。选材突出中国优秀传统文化和社会主义先进文化，或中国建设成就、发展大势等主题，实践立德树人教学目标。

Mini-project

根据视频主题，设置讨论、展示、演讲、报告等小型实践任务，实现“价值培养”与“能力提升”的双重作用。



Critical thinking

Academic exploration 2

从思维层面拓展课文 2 话题，提升思辨能力。

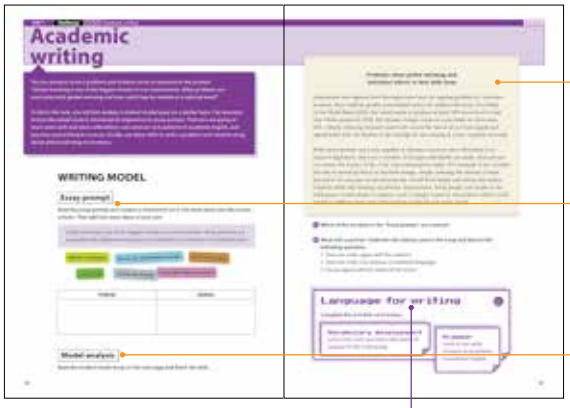
教师在课堂讲解思辨技巧重难点，学生可在课前自主学习技巧微课，也可在课后利用微课进行巩固拓展。

Getting the skill

系统教授思辨技巧，配备 U 校园视频微课与应用练习，培养学生批判性分析、评价观点和论据等思维能力。

Academic writing

学术写作板块以课堂面授为主，通过范文分析搭建脚手架，点拨学术写作技巧，辅以线上学习任务，帮助学生积累完成单元写作任务所需语篇知识、语言知识与写作技巧，最终通过详细的步骤指导，独立完成写作任务。



Writing model

范文学习与分析。

教师课堂面授，进行师生研讨。

Essay prompt

分析与本单元写作任务类似的范文题目。

Model analysis

分析该范文语篇模式、修辞手段等，让学生掌握完成写作任务需要的相关语篇知识，为学生提供脚手架。

Language for writing

拓展学习语言知识。学生依托范文，拓展词汇、句法和语法知识，为完成写作任务作进一步准备。

学生线上自主学习。

Vocabulary development

学生以范文为依托，拓展学习相关词汇，如主题词、功能词等，并通过练习提升语言运用能力。

Academic writing

- **Language for writing**
  - Vocabulary development
    - Vocabulary for describing personality types
  - Grammar
    - Reflexive pronouns

Grammar

学生以范文为依托，拓展学习相关句式、语法知识，巩固语言基础，完成写作任务。

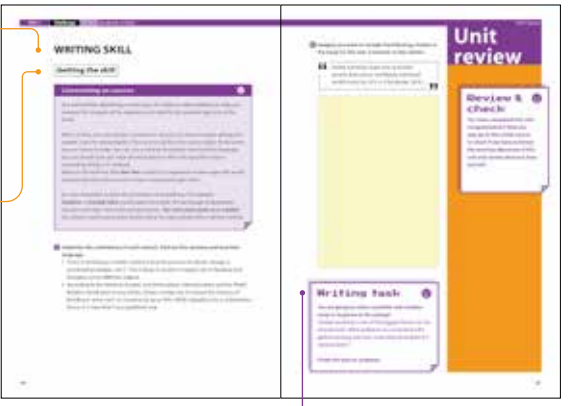
Writing skill

学习学术写作技巧。

教师课堂面授，进行师生研讨。

Getting the skill

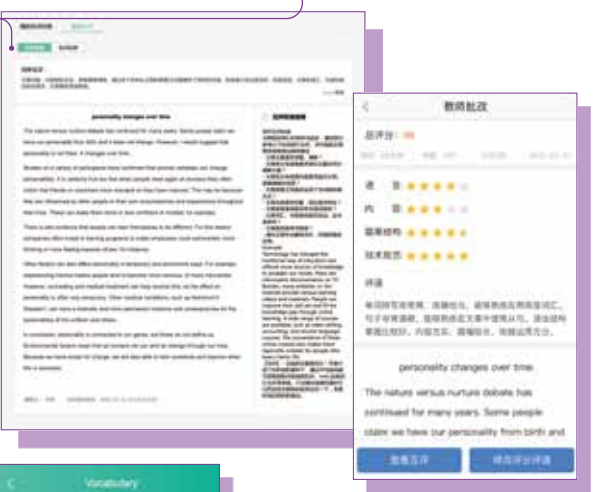
掌握完成写作任务需要具备的相关写作技巧，通过形式多样的练习，提升技巧应用能力。



Writing task

通过详细的步骤指导，运用本单元掌握的语篇知识、语言知识、写作技巧，完成写作任务。

学生线上完成写作任务，进行智能评阅与同伴互评。



Unit review

自我反思、自主提升，培养终身学习能力。

Review & check

从语言知识与技能等方面引导学生进行自我反思，帮助学生自我检测、复习巩固。如果某板块学习效果不理想，学生可点击相应板块进行复习。

学生课后进行线上自我反思与复习巩固。

学习分析报告

学生可通过查看学习分析报告了解学习时长、成绩排名、学习进度与技能掌握情况等信息，促进自我反思，实现自主提升。

Map of the book

Unit	Academic exploration 1 & 2		
	Reading	**Reading skills**	**Developing cultural awareness**
1 **Challenge** *p2*	**Reading 1** Environment ***Climate change 101*** *p6* **Reading 2** Environment ***Thirstier than ever*** *p14* **Reading & understanding** **Thinking & exploring** *p10; p17*	Using headings to predict content *p9* Identifying commentary on evidence *p19*	**Viewing** Saihanba—A green miracle in China *p12* **Mini-project** Making a presentation on China's efforts to tackle deforestation and soil erosion *p13*
2 **Expanse** *p26*	**Reading 1** Sociology ***The benefits of urbanization*** *p30* **Reading 2** Sociology ***Overpopulation: A problem or a myth?*** *p38* **Reading & understanding** **Thinking & exploring** *p33; p41*	Understanding emotive language *p35* Identifying persuasion techniques *p43*	**Viewing** China's new model for urbanization *p36* **Mini-project** Making a presentation on the topic of "innovation-based urbanization in China" *p37*
3 **Behavior** *p50*	**Reading 1** Criminology ***Born criminal?*** *p54* **Reading 2** Neuroscience ***Is your brain ready yet?*** *p62* **Reading & understanding** **Thinking & exploring** *p57; p65*	Identifying in-text referencing *p59* Identifying cause and effect *p67*	**Viewing** Chinese moral education *p60* **Mini-project** Designing an e-poster to introduce famous Chinese quotes of moral education *p61*

Academic writing			
Critical thinking	**Language for writing**	**Writing skills**	**Tasks**
Evaluating supporting data *p20*	**Vocabulary development** Verb and noun collocations **Grammar** Verb patterns: verb + preposition + gerund; verb + object + *to* + base form	Commenting on sources *p24*	Writing a problem-and-solution essay on global warming *p25*
Assessing the logic of an argument *p44*	**Vocabulary development** Adjective and noun collocations **Grammar** Appositive clauses	Paraphrasing *p48*	Writing a persuasive essay on why education for all children is necessary in the fight against overpopulation *p49*
Strengthening an argument *p68*	**Vocabulary development** Vocabulary for describing cause and effect **Grammar** Inverted conditionals: unreal past	Anaphoric and cataphoric referencing *p72*	Writing a cause-and-effect essay to analyze delinquent behavior in teenagers *p73*

Unit	Academic exploration 1 & 2		
	Reading	**Reading skills**	**Developing cultural awareness**
4 **Change** *p74*	**Reading 1** Industry ***Rust Belt dystopia*** *p78* **Reading 2** Business ***Leadership and change management*** *p86* **Reading & understanding** **Thinking & exploring** *p82; p89*	Asking questions while reading a text *p81* Recognizing analogies to understand concepts / ideas *p91*	**Viewing** China's high-speed railway *p84* **Mini-project** Delivering a speech on China's high-speed railway *p85*
5 **Energy** *p98*	**Reading 1** Technology ***The oldest energy source*** *p102* **Reading 2** Technology ***Fracking—the future?*** *p110* **Reading & understanding** **Thinking & exploring** *p105; p114*	Creating flow charts *p107* Annotating the text using the Cornell system *p113*	**Viewing** China's global leadership in renewable energy *p108* **Mini-project** Designing an exhibition panel to introduce China's achievements in developing renewable energy *p109*
6 **Conflict** *p122*	**Reading 1** Psychology ***Groupthink*** *p126* **Reading 2** Business ***Successful teams and conflict*** *p134* **Reading & understanding** **Thinking & exploring** *p129; p137*	Identifying citation functions *p131* Identifying and evaluating good quality sources *p139*	**Viewing** China's democratic centralism *p132* **Mini-project** Writing a radio script to introduce the "two sessions" *p133*

Academic writing			
Critical thinking	**Language for writing**	**Writing skills**	**Tasks**
Inferring criticism *p92*	**Vocabulary development** Attributive language **Grammar** Participle clauses	Integrating sources in your writing *p96*	Writing a summary of the text "Leadership and Change Management" *p97*
Identifying bias *p116*	**Vocabulary development** Vocabulary for describing energy production **Grammar** Using verbs correctly	Defining technical terms *p120*	Writing a process description on how hydroelectric energy is produced *p121*
Critical thinking review *p140*	**Vocabulary development** Adverbs of stance **Grammar** Subordinating conjunctions	Writing a reference list *p144*	Writing an argumentative essay on the role of coorperation and conflict in team performance *p145*

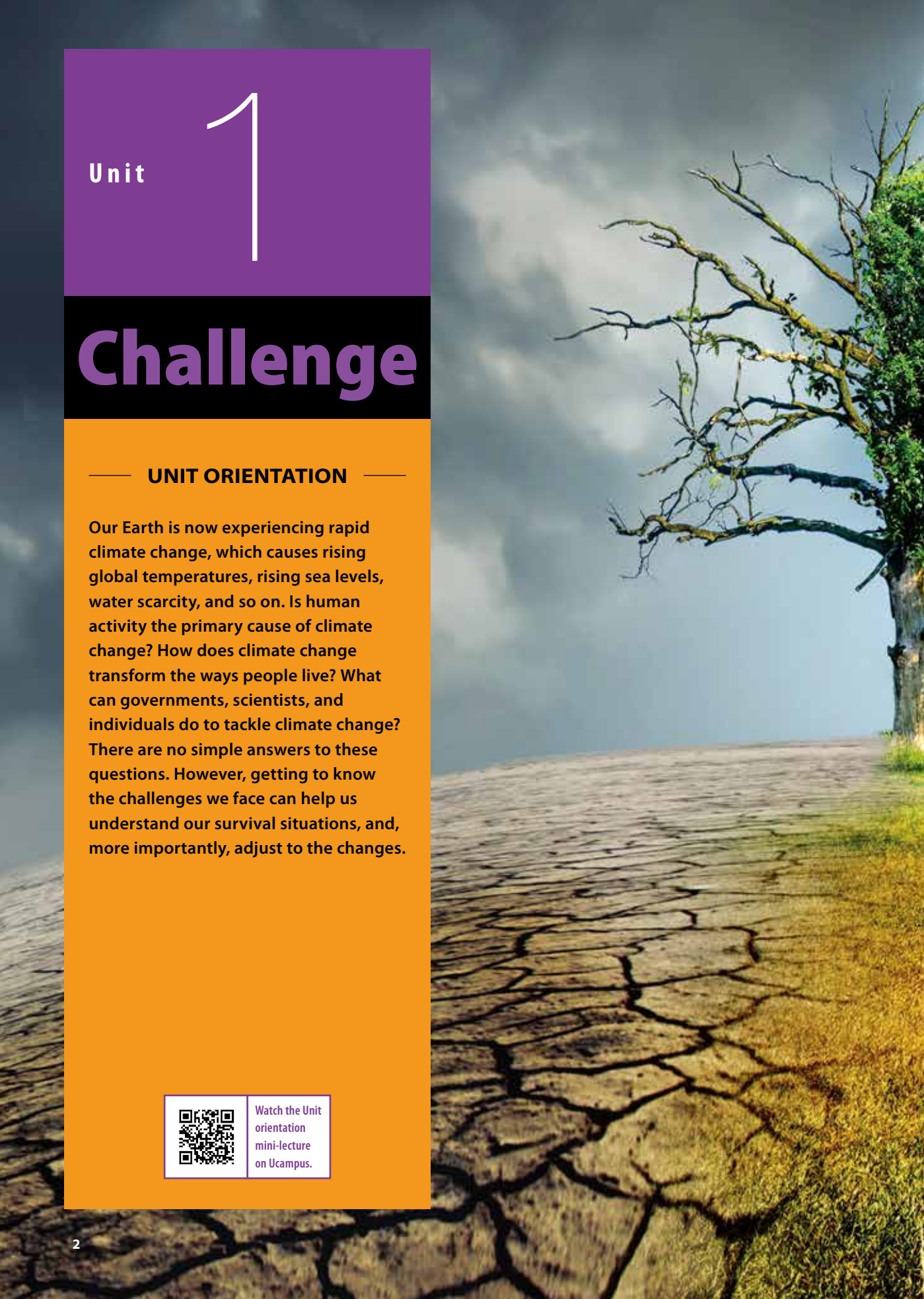
Unit 1

Challenge

UNIT ORIENTATION

Our Earth is now experiencing rapid climate change, which causes rising global temperatures, rising sea levels, water scarcity, and so on. Is human activity the primary cause of climate change? How does climate change transform the ways people live? What can governments, scientists, and individuals do to tackle climate change? There are no simple answers to these questions. However, getting to know the challenges we face can help us understand our survival situations, and, more importantly, adjust to the changes.

Watch the Unit orientation mini-lecture on Ucampus.



Getting prepared

LEARNING OBJECTIVES

In this unit, you will:

Knowledge & thinking

- understand how human activity causes climate change and how our environment is affected; think about how to reduce the damage caused by climate change
- understand how vegetarianism, desalination, cloud seeding, etc. might relate to solving water shortages; think about what else people can do to solve the problem of water shortages
- learn about a green miracle in China—Saihanba

Language & skills

Reading skill
- use headings to predict content
- identify commentary on evidence

Critical thinking skill
- evaluate supporting data

Academic writing skill
- comment on sources

Language development
- use verb and noun collocations
- use verb patterns: verb + preposition + gerund; verb + object + *to* + base form

Mini-project

make a presentation on China's efforts to tackle deforestation and soil erosion

Writing task

write a problem-and-solution essay on global warming

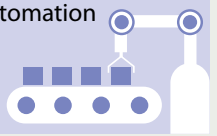
DISCUSSION POINT

Top 5 challenges facing humanity

1 Lack of fresh water
Globally, the agricultural sector consumes over 70% of the planet's accessible fresh water.

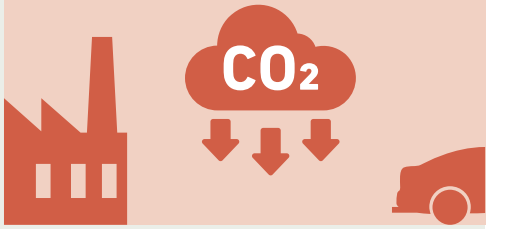
2 Food production
It is estimated that farmers will have to produce 50% more food by 2050 to meet the demands of the projected nine-billion-strong population.

3 Invasive technology
Nearly 40% of US jobs will be at risk of automation by the early 2030s.



4 Increasing economic divide
In the 38 member states of the OECD, the richest 10% of the population earns almost 10 times the income of the poorest 10%.

5 Climate change
The IPCC recently recommended reducing carbon emissions by 40%–70% by 2050 in order to prevent irreparable damage to the environment.



OECD: Organization for Economic Cooperation and Development 经济合作与发展组织
IPCC: Intergovernmental Panel on Climate Change 联合国政府间气候变化专门委员会

What are your ideas about the following questions? Discuss them with a partner.

1 Of the threats listed in the infographic, which do you think poses the greatest challenge? Why?
2 Which sectors do you think will be most affected by increased automation? Why?
3 What practical measures could be implemented to address the growing economic divide?

Academic exploration

Climate change has already made considerable impacts on our environment. Now scientists have concurred in the prediction that human activity is the primary cause. How is each of the following affected by climate change: oceans, polar regions, and extreme weather events? Read the text and you may gain some insights into the challenges we face that are caused by climate change.

Climate change 101

1 Multiple studies published in peer-reviewed journals show that 97% of scientists agree that the effects of climate change are due to human activity. Yet in a recent survey conducted by the Pew Research Center, less than 50% of US adults agree with the scientific consensus. So is this half of the population justifiably skeptical or does the research support the experts? To help you decide for yourself, we've used the latest evidence to address the big questions.

Q1 Is there any evidence for global warming?

2 In short, yes. Since global temperature records began in the late 19th century, the planet's average surface temperature has risen by approximately 2.0°F (1.1°C), with 16 of the 17 hottest years on record occurring over the last 35 years. Eighty percent of this additional heat is absorbed by the world's oceans, the surface of which has increased in temperature by 0.13°F per decade since 1901 (NASA, n.d.).

Q2 Hasn't the Earth's climate always fluctuated?

3 Yes. Changes in the Earth's climate are a natural and frequent phenomenon. Ice ages—driven by slow variations in the Earth's orbit that alter the distribution of the Sun's energy—have occurred, on average, every 100,000 years. These climatic events have led to mass extinction, the migration of populations, and dramatic changes in the landscape, so why is modern climate change such an issue? While ice ages are cyclical, the pace at which the planet has warmed since the end of the last ice age is unprecedented—making adaptation virtually impossible. According to the Royal Society, the increase in the Earth's temperature over the 7,000–18,000-year period since the end of the last ice age is approximately 4°C, 25% of which occurred in the last 200 years.

Q3 Is human activity the primary cause?

4 A blanket of greenhouse gases—carbon dioxide, water vapor, nitrous oxide, and methane—in the Earth's atmosphere absorb heat and warm the planet's surface, a natural phenomenon known as



the greenhouse effect. Measurements of the atmosphere and air in ice indicate a 40% increase in CO_2 levels in the 200-year period to 2012 (The Royal Society and the US National Academy of Sciences, 2014). This rapid increase is almost certainly a consequence of human activity. Over the last century, burning of finite resources such as coal and oil, deforestation for agriculture, and industrial expansion have all greatly increased the concentration of CO_2 in the Earth's atmosphere. Increased levels of other greenhouse gases are also directly attributable to human activity. The cultivation of domestic livestock and the expansion of landfills have increased levels of methane, while nitrous oxide is largely generated by soil cultivation. The bottom line is that while the greenhouse effect is a natural phenomenon, its expansion (and global warming by extension) is largely due to human activity.

Q4 How does climate change affect our oceans?

5 The Earth's oceans absorb about 80% of the additional heat generated by global warming. When water heats up, it expands, causing sea levels to rise. Over the past century, global sea levels have risen by four to eight inches (10 to 20 centimeters), and approximately 50% of this increase is directly attributable to thermal expansion. As with the greenhouse effect, this is a natural phenomenon. However, recent data suggests that over the past 20 years, sea levels have risen by 0.13 inches (3.3 millimeters) a year—roughly twice the speed of the preceding 80 years. Such a rapid increase can have devastating consequences for coastal inhabitants such as erosion, flooding,

and soil contamination. Not only are sea levels rising, but the ocean's chemical composition is also changing. Carbon dioxide is not only released into the Earth's atmosphere, but also dissolved into our oceans, causing higher levels of acidity. Since the early 1800s, ocean acidity has increased by around 25%, depressing the metabolic rates of some species, lowering the immune responses of others, destabilizing marine ecosystems, and causing the bleaching, and possibly the eventual death, of the world's coral reefs.

Q5 How have the polar ice caps been affected?

6 Data from NASA's Gravity Recovery and Climate Experiment (n.d.) shows Greenland and Antarctica lost a combined 300 to 450 cubic kilometers of ice annually between 2002 and 2006. One hundred and eighteen billion metric tons of ice is lost from Antarctica alone each year. Over the past 20 years, Arctic sea ice has declined rapidly. Glaciers from the Andes to the Alps lose approximately 400 billion tons of ice every year. Events that typically happen in geologic time are happening in the human lifespan. The disappearance of Himalayan glaciers is forecast within the next two decades. Not only do global ice sheets help to counteract the greenhouse effect, but their disappearance is also a primary contributor to rising sea levels.

Q6 Can it be blamed for the rise in extreme weather events?

7 According to research conducted at the University of Illinois, a rise in sea level of 5–10 centimeters could double the frequency and intensity of coastal flooding, potentially having devastating effects on major global cities. In addition, rising temperatures have increased the amount of water vapor in the Earth's lower atmosphere, creating favorable conditions for more intense rain and snowstorms, both of which have been occurring with greater regularity in the US over the past 50 years. Other extreme weather events, such as drought, are caused by changes in planetary waves—patterns of wind that encircle the northern hemisphere from the tropics to the poles. Under certain temperature conditions, movement of the wave can be halted, effectively prolonging periods of hot weather that may result in drought. However, while scientists have long suspected these events are a direct result of increased emissions of greenhouse gases, their relative infrequency makes it difficult for the scientists to evaluate reliably and we therefore cannot conclusively state that climate change is the cause.

Q7 Can we reverse the damage?

8 Unfortunately, no. Although the recent resolution reached in Paris is hugely significant, many claim it is too little, too late. Even if legislation were introduced to immediately stop the emission of greenhouse gases, the CO_2 that has already been absorbed by the atmosphere and oceans would take thousands of years to be reabsorbed by deep ocean sediments. Sea levels would continue to rise, ice caps would continue to melt, and extreme weather would occur at an increasingly devastating rate. The damage to our planet is irreparable. The only question is: Can we adapt?

Getting the skill

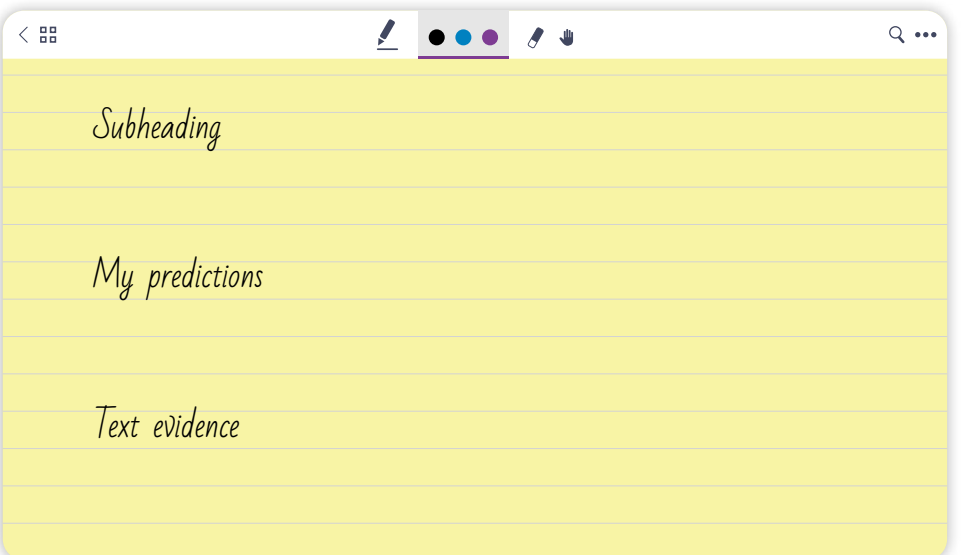
Using headings to predict content

When reading, you may find that books and articles contain a variety of text features, including headings, subheadings, pictures, and highlights. Proficient and thoughtful readers usually use these text features as well as personal experience to make predictions about what they read. Making predictions has multiple benefits. It helps to keep your mind engaged, activate your prior knowledge, and make connections between new information and what you already know.

Headings and subheadings organize content to guide readers. A heading or subheading appears at the beginning of a page or section and briefly describes the content that follows. With the help of headings and subheadings, readers could easily get the main idea and the structure of that article. Before reading in detail, making predictions through looking quickly at the headings and subheadings can help you to decide whether to read an article or not, and which section to focus on.

Learn more about this skill on Ucampus.

1 **Select one paragraph from Paras. 4–7 in the text of "Climate Change 101." Before reading, write down its subheading and your predictions. While reading, provide text evidence for your predictions. Finally, compare your predictions to the text evidence.**



2 **Practicing the skill**

You are going to finish a reading exercise to better apply the skill of using headings to predict content. Complete the task on Ucampus.

Reading & understanding

Complete the activities on Ucampus.

Reading in detail
Learn vocabulary, language points, etc. to better comprehend the text of Academic exploration 1, and get prepared for the in-class discussions.

Understanding the text
Complete two reading tasks to check your understanding of the text.

Language focus
Practice the key words and translation skills to consolidate your language.

THINKING & EXPLORING

Interpreting the text

Answer the following questions based on your understanding of the text.

1 Why does the author mention the survey results from the Pew Research Center in Para. 1?
2 Is modern climate change naturally occurring? Why or why not?
3 How does human activity cause the increases of greenhouse gases?
4 What is the relationship between climate change and extreme weather events?
5 This text adopts a question & answer writing format. What do you think are the advantages of it?
6 Is this text more likely to be published in a magazine or in an academic journal? Why?

Thinking critically

Sharing your opinions

Think about the following questions. Share your opinions with a partner.

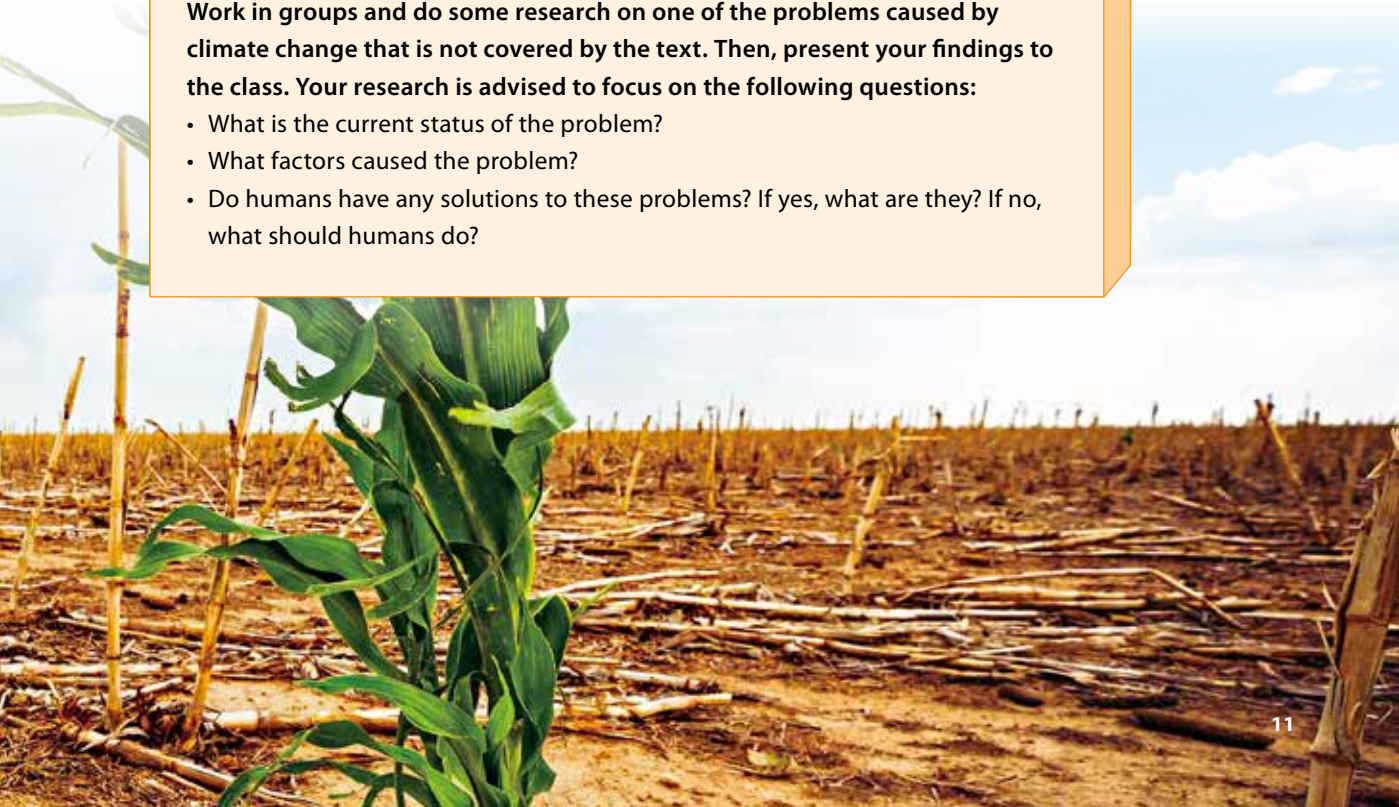
1 How compelling do you find the evidence is that human activity is the main cause of climate change? Explain your reasons.
2 In what way is climate change affecting your daily life?
3 Is it still necessary for us to change our behavior if it takes thousands of years to reverse the damage caused by climate change? If yes, what can we do to combat climate change?

Showing inspirations

The text touches on a few major issues raised by climate change, such as the rise of sea levels and temperatures, the loss of polar ice caps, and the occurrence of extreme weather events. However, in addition to these issues, there are other problems caused by climate change, such as instability in agricultural production, some diseases that threaten human health, and decrease in biodiversity. For example, researchers have found that climate change is one of the factors that cause land degradation, leading to reduced production of many crops. These problems caused by climate change are worth our close attention as well.

Work in groups and do some research on one of the problems caused by climate change that is not covered by the text. Then, present your findings to the class. Your research is advised to focus on the following questions:

- What is the current status of the problem?
- What factors caused the problem?
- Do humans have any solutions to these problems? If yes, what are they? If no, what should humans do?



DEVELOPING CULTURAL AWARENESS

As global warming intensifies and inappropriate human activity continues, desertification is gradually expanding, and dusty weather occurs frequently worldwide. But Saihanba, a place in North China's Hebei Province, is an exception, where it has been transformed from barren land to a sea of trees, with the efforts of three generations of tree planters working there. Saihanba is one of the "green miracles" happening in China. In the past decades, China has always attached great importance to addressing the ecological problems and a wide range of actions has been taken in this respect to pursue its goal of achieving ecological civilization. These actions and achievements reflect China's determination to eradicate the environmental problems and to build a clean and beautiful homeland for future generations.

Viewing Saihanba—A green miracle in China

Watch the video on Ucampus.

Watch the video and try to find out how Saihanba has become a green miracle. Think about the following questions.

- Why did our government decide to build a forest farm in Saihanba over 50 years ago?
- Why are many children of that first generation of tree planters carrying on their parents' work?
- How does Saihanba benefit the surrounding environment?

Mini-project Making a presentation

Your university is going to hold a Model United Nations (MUN) Conference, the theme of which is "Together, We Make Our Planet Greener." During the conference, students, being assigned to represent different countries, will give presentations on how each country has progressed toward the shared goal of tackling deforestation and soil erosion. Your class is assigned to represent China. Your presentation will help people better understand China's efforts to plant forests in different parts of the country over the past 70 years.

The presentation should include three to four parts showing China's efforts to tackle deforestation and soil erosion, for example,

- the principles guiding China in tackling deforestation and soil erosion
- the achievements, e.g. the Three-North Shelter Forest Program (三北防护林工程) and Returning the Grain Plots to Forestry Project (退耕还林工程)
- the action plans China will make in the near future

...

Work in groups to give a five-minute presentation to the entire class. After all the presentations, vote for the best one to take part in the MUN Conference.

Academic exploration

Water scarcity is becoming an increasingly serious problem in many countries. According to the UN World Water Development Report 2020, 2.2 billion people around the world do not have access to safely managed drinking water. What can people do to solve water shortage problems? Read the text and find out how vegetarianism, desalination, cloud seeding, and reducing water consumption in manufacturing sector might relate to solving the problem.

THIRSTIER THAN EVER

1 Water covers approximately 75% of the Earth's surface, yet only 3% of it is drinkable; the rest is salt water. Of the little that is fresh, a staggering 99% is inaccessible, buried deep beneath the world's glaciers. According to Kummu et al. (2010), roughly a third of the world's population is at risk from water scarcity, and population growth is only exacerbating the issue. Not only does our species need water to survive, we also rely heavily on it to water our crops and sustain our livestock—people typically drink around five liters of water per day, while agriculture accounts for the majority of global fresh water consumption. In some parts of the world, water scarcity severely limits food production capabilities. Coumou and Rahmstorf (2012) have also forecast that climate change will increase precipitation variability (i.e. the frequency of rain), raising the risk of flooding and drought that blight food production. So, what solutions are available to ensure a consistent and stable fresh water supply?

2 The agricultural sector accounts for approximately 70% of global fresh water consumption—double that of industrial and domestic use combined. While more efficient irrigation practices could reduce this volume by an estimated 30%–70%, cutting consumption of animal products for less water-intensive crops would also have a perhaps unexpectedly significant impact. Some people advocate a switch to a vegetarian or vegan diet on the basis that the production of meat is much more water-intensive than the production of grains and vegetables. Mekonnen and Hoekstra (2012) estimated

that on average, 10,412 liters of water are required for the production of one kilo of lamb. Goat requires around 5,521 liters per kilo, poultry 4,325 liters per kilo, and beef approximately 15,400 liters per kilo. The variations in water consumption are largely due to the animal feed required. Some animals are much more water-intensive to produce and thus their water footprint is higher. When we compare these meats to a range of vegetables we can see that, in general, the cultivation of vegetables is far less water-intensive—cabbage requires 237 liters per kilo, and tomatoes a mere 214 liters per kilo. Based on this evidence, it is clear that a switch to a vegetarian or even vegan diet would dramatically reduce the amount of water consumed by agriculture. However, in virtually every country apart from India, the percentage of vegetarians equates to less than 10% of the total population. This casts some doubt as to whether this solution could work as there would need to be huge cultural shifts in dietary attitude.

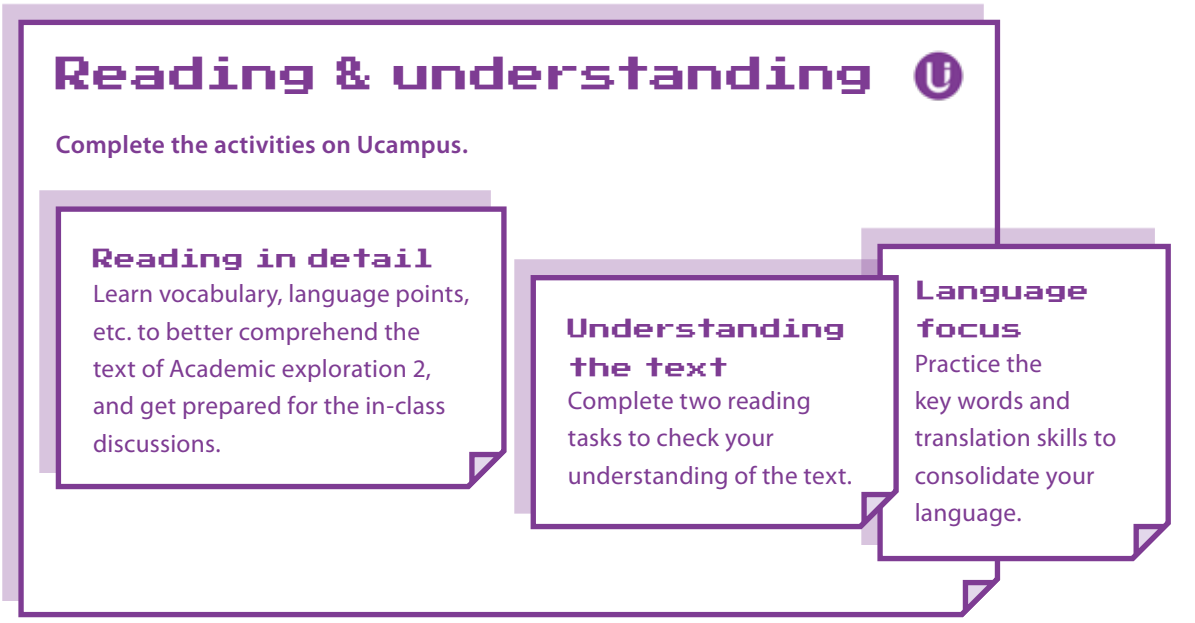
3 In areas regularly stricken by water shortages, but wealthy enough to address the issue, desalination—the removal of salt from seawater—offers a viable solution. The most common method of desalination is reverse osmosis. Salt water is forced through an ultrathin, semi-permeable membrane, trapping salt molecules and other toxins on one side. The result is fresh, drinkable water, yet the sheer volume of pressure required makes it an energy-intensive process. In addition, despite claims to the contrary, desalination is fairly inefficient. According to the International Desalination Association, 18,426 desalination plants produced a mere 86.8 million cubic meters of water per day in June 2015, only enough water to meet the needs of 1% of the world's population. Desalinated water also comes at a high price. At $3 per cubic meter, it costs around double that of traditional purification methods such as sedimentation. However, according to Professor Raphael Semiat, the costs vary greatly depending on location (Johnston, 2015). For example, it can be far more expensive and energy-intensive to pump fresh water from 200 kilometers away, than it would be to desalinate and use water on the coast. While desalination is arguably a necessary solution in some countries, in others, such as northern Europe, it would make much more sense to focus on reducing the volume of wastewater. As droughts are rarely an issue in these regions, such an expensive and energy-intensive method of water purification makes little sense.

4 Another new, and perhaps more controversial, solution to the fresh water crisis is a form of weather-modification known as cloud seeding, a technique that aims to boost rainfall by stimulating production of ice crystals in clouds. Essentially, particles of potassium chloride, sodium chloride, or silver iodide are fired into passing clouds where they attract existing water vapor. The vapor bonds with the chemical particles to form

ice crystals, which increase in size until they are too heavy to remain suspended and fall, often melting on the way to form rain. Cloud seeding can also be used to dissipate clouds. Proponents argue that cloud seeding offers an inexpensive and energy-efficient alternative to desalination. In the UAE, Dr. Habib of the National Center of Meteorology and Seismology recently argued that studies suggest rain enhancement programs could increase rainfall by 10%–30% (Pennington, 2017). However, while research into cloud seeding is ongoing, the technique has garnered its fair share of criticism. In fact, the United States National Academy of Sciences (2003) stated that 30 years of research showed no convincing evidence that it worked. This is primarily because you cannot use the technique to actually generate clouds and it is impossible to conclusively demonstrate that the clouds that have been treated wouldn't have produced rainfall anyway. Essentially, you cannot extract moisture from the air if it isn't there to begin with, meaning the technique simply isn't viable on cloudless days or during periods of drought.

5 One final solution is to reduce water consumption in the manufacturing sector. In the US, just under 5% of fresh water is used in the production of consumer goods, usually as a coolant or cleaning agent. This may sound like a fairly insignificant percentage, but the volume of water it equates to is staggering—for example, the United States Environmental Protection Agency estimates that it takes 39,090 gallons of water to manufacture a single car. One way to reduce consumption is to seek alternative sterilization methods such as CO_2 cleaning, which uses CO_2 recycled from other industries in place of water to allow for "dry-cleaning in an eco-friendly manner" (Wikstrom, 2015). While CO_2 cleaning has been used for decades in the aerospace and automotive industries, it has unfortunately not been rolled out to the manufacturing sector as a whole. Another way to reduce the industrial water footprint is to recycle more. It's estimated that recycling just one newspaper saves around 3.5 gallons of water. Buying second-hand clothes would also help because, for example, it takes over 100 gallons of water to produce a single cotton T-shirt.

6 Global water consumption has reached unsustainable levels. If we do not modify our behavior, billions of people will be plagued by water scarcity. To put it simply, fresh water shortages are likely to cause the next great global crisis. In the words of Jean Chrétien, former Canadian prime minister and co-chair of the InterAction Council, "The future political impact of water scarcity may be devastating … using water the way we have [done] in the past simply will not sustain humanity in future."



THINKING & EXPLORING

Interpreting the text

Answer the following questions based on your understanding of the text.

1 Why does the world's population still face water scarcity even though water covers most of the Earth's surface?
2 Why may the solution of switching to a vegetarian or vegan diet not be viable?
3 Can desalination be applied widely to address water shortage issues? Why or why not?
4 Based on the text, what are the major ways of reducing water consumption in manufacturing?
5 How does the author increase the persuasiveness of this article?

Thinking critically

Sharing your opinions

Think about the following questions. Share your opinions with a partner.

1 What methods for solving global water shortages are discussed in the text? Rank the methods from the most to the least effective in dealing with water shortage issues in your city's context. Compare your order in pairs.
2 In your opinion, how can we, as individuals, solve the problems of water shortage?
3 How can your area of study help solve water shortage issues?

Showing inspirations

Over the past decades, China's industry has experienced rapid development; however, this process also poses some threats to the ecological environment. Among them, there are some severe problems related to water resources, such as water shortages, water pollution, a relatively low recycling rate, and inadequate water management. According to a study, a large number of people in China are still exposed to unsafe drinking water every year. Under this situation, China is taking strong and strategic action to solve water problems.

Work in groups and do some research on the efforts that China has made to tackle the problems of water resources and the achievements China has accomplished in this aspect. After your research, summarize your main findings and present them to the class.

Getting the skill

Identifying commentary on evidence

Academic writers commonly cite information to exemplify an argument. Often just before or after the source, the writer will include a line of evaluative commentary that indicates the certainty of the writer's attitude toward the topic being discussed. Therefore, identifying the writer's commentary will help you to evaluate the strength of the argument and identify the personal opinions of the writer.

There are two major categories of commentary on evidence: assertive and cautious. In the assertive commentary, the writer usually presents the attitude or interprets the facts directly with strong confidence. However, in the cautious commentary, the writer tends to avoid expressing absolute certainty, leaving room for exceptions.

Here are some examples from the texts:

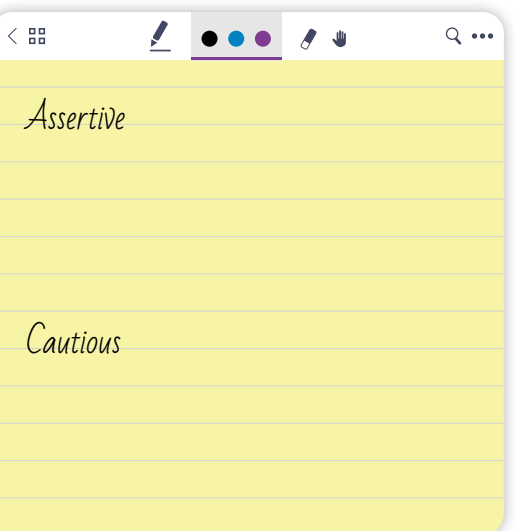
1 Assertive: *Based on this evidence, **it is clear that** a switch to a vegetarian or even vegan diet would dramatically reduce the amount of water consumed by agriculture.*

2 Cautious: *This **may sound like a fairly insignificant** percentage, but the volume of water it equates to is staggering …*

Learn more about this skill on Ucampus.

1 Decide whether these expressions for commenting on sources are *assertive* or *cautious*.

- this undoubtedly means
- which clearly shows
- which might indicate
- this could therefore be seen as
- this strongly supports the argument that
- the possible implication here is that
- this will certainly result in
- which somebody may interpret as a sign that
- which undeniably indicates
- the logical conclusion from this is
- one possible interpretation of this is
- this might suggest



2 Practicing the skill

You are going to finish a reading exercise to better apply the skill of identifying commentary on evidence. Complete the task on Ucampus.

CRITICAL THINKING

Getting the skill

Evaluating supporting data

Learn more about this skill on Ucampus.

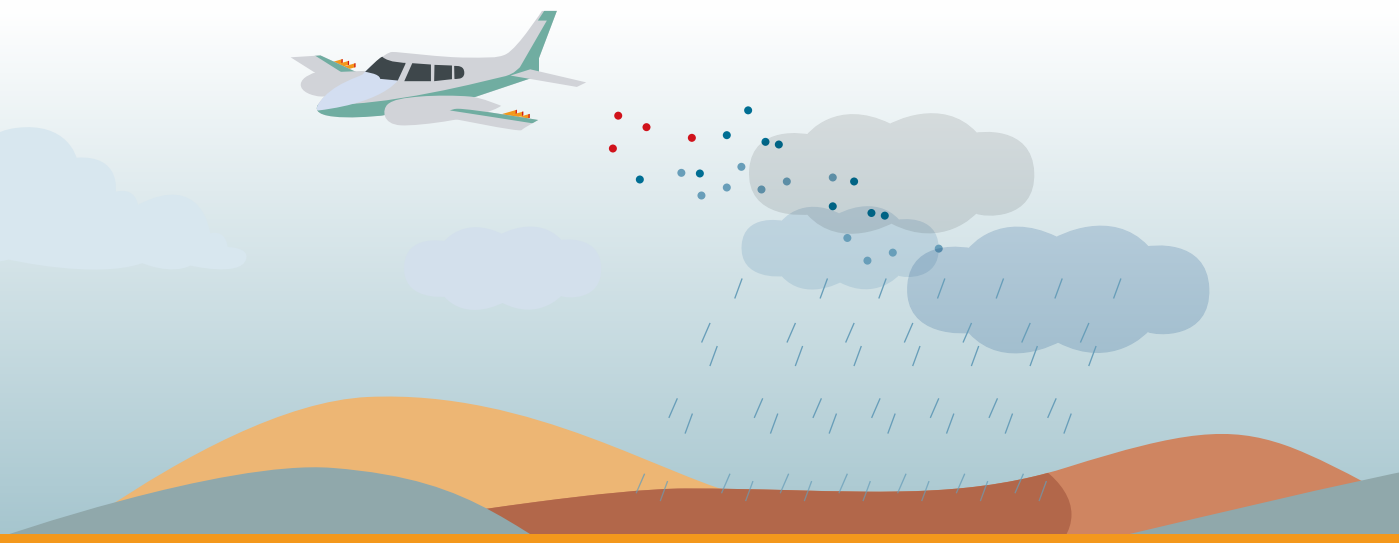
Data is usually seen as strong evidence to support a claim or argument, because it is often generated in a scientific way or has been tested. By evaluating data, we can find out whether it is sufficient enough to support an argument.

When we are evaluating the supporting data given by the writer, it is important to question whether any significant information has been omitted that would influence our assessment of the argument. We can raise questions from the following aspects: data source, date, coverage and accuracy. For example, *Research suggests that desalination plants could provide up to 35% of the UAE's fresh water needs. Therefore, desalination is the main method for UAE to tackle water problems.*

You may raise a number of important questions such as:

- Who conducted the research?
- When was the research conducted?
- How many desalination plants were included in this research?
- As "up to" implies a maximum estimate, what is the lowest estimate?

Identifying what you don't know can help you evaluate whether the data provided by the writer is sufficient to explain his or her argument.



1 **Read the argument and answer the following questions.**

> Cloud seeding has proven to be a successful technique for generating rainfall in five different countries and is, therefore, one of the best solutions for dealing with drought.

1 What is the main argument, and what data is used to support it?
2 What other information would help you to evaluate the significance of the data?

2 **Work with a partner. Discuss what data might strengthen the arguments and where they could be sourced.**

1 Carbon emissions have risen since the Industrial Revolution, clearly signifying a link between humans and climate change.
2 Countries that desalinate water use up to five times higher the level of energy consumption than those that use other methods.
3 A company producing new solar panels has data from a dozen countries to show that their panels are now the most efficient way of producing renewable energy.

3 **Work in groups. Discuss the following questions.**

1 Outside of academic writing, when else is it important to evaluate the significance of data used to support a claim?
2 Is it ever in the company's best interest to omit information from the data they present? Why or why not?

Academic writing

You are going to write a problem-and-solution essay in response to the prompt: "Global warming is one of the biggest threats to our environment. What problems are associated with global warming and how could they be tackled at a national level?"

To finish this task, you will first analyze a student model essay on a similar topic. Pay attention to how the model essay is structured to respond to its essay prompt. Then you are going to learn some verb and noun collocations, use common verb patterns in academic English, and practice commenting on sources. Finally, use these skills to write a problem-and-solution essay about global warming on Ucampus.

WRITING MODEL

Essay prompt

Read the essay prompt and conduct a brainstorm on it. Put these ideas into the correct column. Then add four more ideas of your own.

Global warming is one of the biggest threats to our environment. What problems are associated with global warming and how could they be tackled on an individual level?

dietary changes | focus on renewable energy | food shortages | recycling | rising sea levels | unpredictable weather

Problems	Solutions

Model analysis

Read the student model essay on the next page and finish the tasks.

Problems about global warming and individual efforts to deal with them

Intermittent and regional food shortages have been an ongoing problem for centuries; however, they could be greatly exacerbated unless we address the issue. According to the World Bank (2016), the world needs to produce at least 50% more food to feed nine billion people by 2050. But climate change could cut crop yields by more than 25%. Clearly, reducing demand could both secure the future of our food supply and significantly slow the decline to the damage we are causing in terms of global warming.

While governments can come together to allocate resources more efficiently or to improve legislation, there are a number of changes individuals can make. Each person can assess the impact of his or her own consumption habits. For example, if we consider the role of animal products in the food change, simply reducing the amount of meat and dairy we consume would increase the overall food supply and reduce the carbon footprint while still meeting our dietary requirements. Some people cast doubt on the willingness of individuals to embrace such a change; however, the positive effects could equate to millions more tons of food being produced and water saved.

1 **Which of the six ideas in the "Essay prompt" are covered?**

2 **Work with a partner. Underline the citation used in the essay and discuss the following questions.**

1 Does the writer agree with the citation?
2 Does the writer use cautious or assertive language?
3 Do you agree with the writer of the essay?

Language for writing

Complete the activities on Ucampus.

Vocabulary development
Learn some verb and noun collocations to prepare for the writing task.

Grammar
Learn to use some common verb patterns in academic English.

WRITING SKILL

Getting the skill

Commenting on sources

You learned that identifying commentary on evidence while reading can help you evaluate the strength of the argument and identify the personal opinions of the writer.

When writing, you should also comment on sources you have included, giving your readers clues for interpretation. You need to say how the source relates to the point you are trying to make. You can use a mixture of cautious and assertive language, but you should only use more assertive phrases when the quotation shows something clearly. For example,
*Based on this evidence, **it is clear that** a switch to a vegetarian or even vegan diet would dramatically reduce the amount of water consumed by agriculture.*

It is also important to show the limitations of something. For example,
***However**, in **virtually every** country apart from India, the percentage of vegetarians equates to less than 10% of the total population. **This casts some doubt as to whether** this solution could work as there would need to be huge cultural shifts in dietary attitude.*

1 Underline the commentary in each extract. Find out the cautious and assertive language.

1 There is increasing scientific evidence that the process of climate change is accelerating (Hedger, 2017). This is likely to result in a higher risk of flooding and droughts across different regions.

2 According to the National Oceanic and Atmospheric Administration and the World Weather Attribution Group (2016), climate change has increased the chances of flooding in areas such as Louisiana by up to 40%. While arguably only a contributory factor, it is clear that it is a significant one.

Unit review

2 **Imagine you want to include the following citation in the essay for this unit. Comment on the citation.**

> "Global warming could slow economic growth and reduce worldwide individual wealth levels by 23% in 2100 (Burke, 2015)."

Writing task

You are going to write a problem-and-solution essay in response to the prompt:
"Global warming is one of the biggest threats to our environment. What problems are associated with global warming and how could they be tackled at a national level?"

Finish the task on Ucampus.

Review & check

You have completed this unit. Congratulations! Now you may go to the online course to check if you have achieved the learning objectives of this unit and review what you have learned.