北京科技大学
UNIVERSITY OF SCIENCE AND TECHNOLOGY BEIJING

从工具到元能力：新工科学术英语的三维耦合育人模式与全球胜任力创新实践

北京科技大学外国语学院 王娜

2025年4月12日

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University of Science and Technology Beijing

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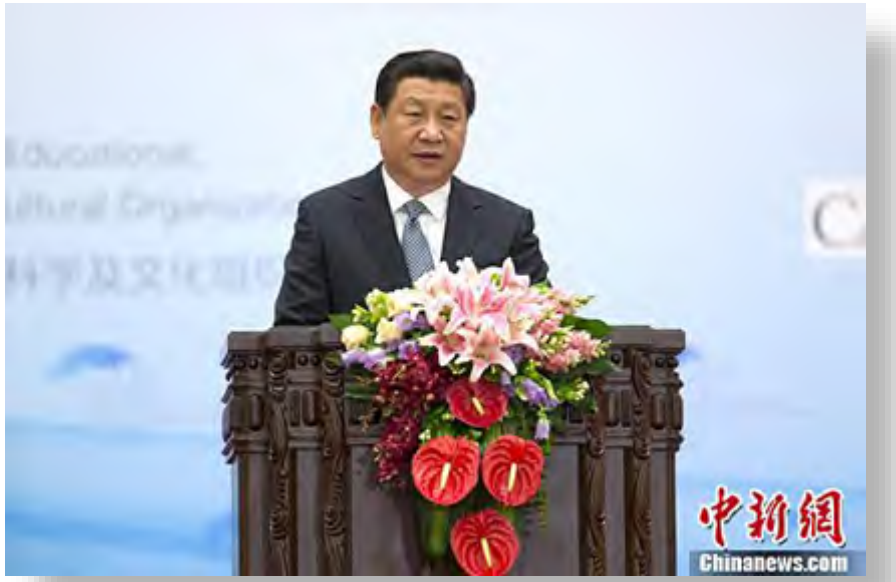
全球工程生态之变革

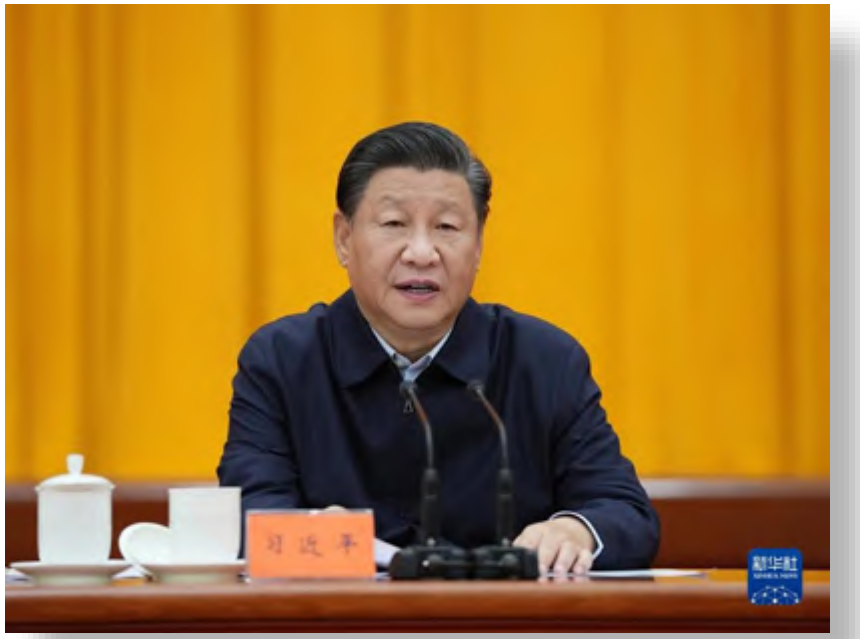
“工程科技与人类生存息息相关”



工程的历史是一部**人类文明进化史**。习近平总书记在**2014**年国际工程科技大会上的主旨演讲中讲到，**古代工程科技创造的许多成果至今仍存在着**，见证着**人类文明编年史**，是当时**人类文明形成的关键因素和重要标志**，对**人类文明发展**产生了重大影响，都对**世界历史演进**具有深远意义。

——习近平总书记**在2014年国际工程科技大会上的主旨演讲**

全球工程生态之变革



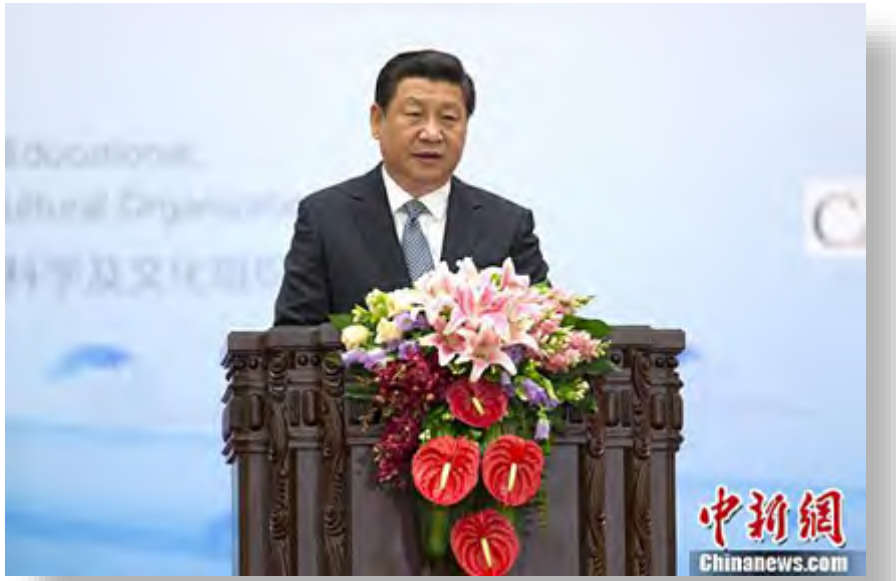
“百年未有之大变局”

当今世界正经历**百年未有之大变局**，这样的大变局不是一时一事、一域一国之变，是世界之变、时代之变、历史之变。能否应对好这一大变局，关键要看我们是否有识变之智、应变之方、求变之勇。

放眼全球，我们正面临**百年未有之大变局**。无论国际风云如何变幻，**中国维护国家主权和安全的信心和决心不会变，中国维护世界和平、促进共同发展的诚意和善意不会变**。

——习近平总书记**关于百年未有之大变局的重要论述**

全球工程生态之变革



“百年未有之大变局”

世界多极化、经济全球化深入发展，文化多样化、社会信息化持续推进。粮食不足、资源短缺、能源紧张、环境污染、气候异常、人口膨胀、贫困、疾病流行、经济危机等**诸多全球性难题，对人类生存和发展构成严峻挑战**。

发展科学技术是人类**应对全球挑战**、实现可持续发展的**战略选择**。这一切，对工程科技进步和创新提出了**新的使命**。

——习近平总书记**在2014年国际工程科技大会上的主旨演讲**

全球工程生态之变革

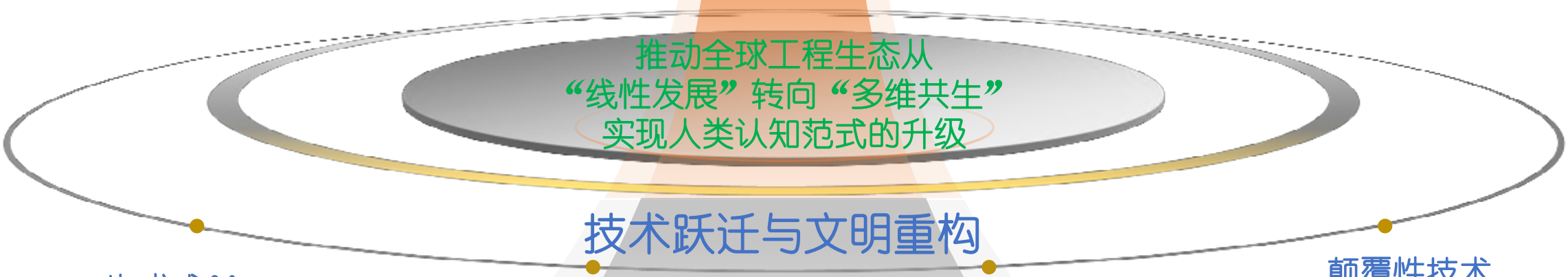
面对世界百年未有之大变局

创新性推动高等工程教育变革与发展，是各国面临的重大现实问题

人类命运共同体视角下工程人才的核心需求：国际胜任力与跨文化创新能力。

全球影响

工程师必须从“技术执行者”转变为“文明架构师”，工程师的价值不仅是解决问题，更是搭建文明互鉴的桥梁。



生成式AI
重构知识生产的边界

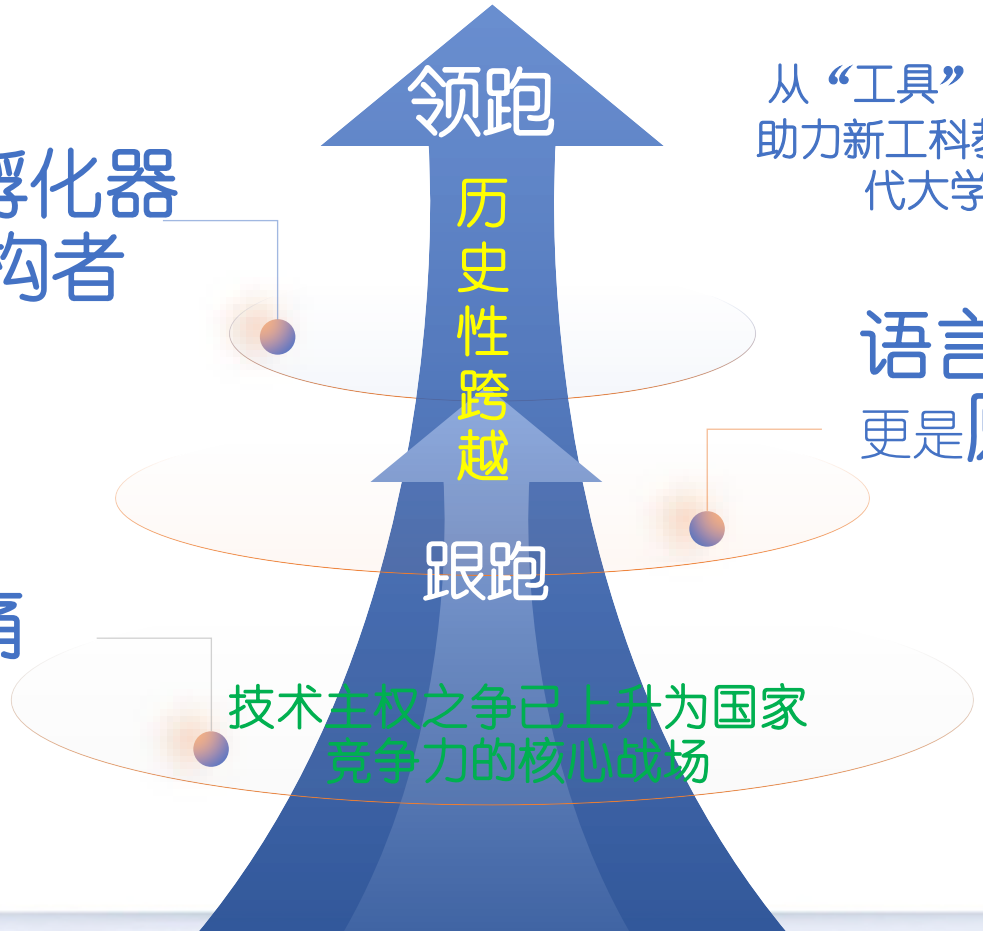
碳中和工程
重新定义人类与自然的关系

量子计算
突破经典物理的算力桎梏

颠覆性技术
不仅是工具的革命，
更是文明逻辑的重构

中国新工科建设的战略使命

国家战略



从“工具”升维为“元能力”的范式转变，助力新工科教育破解“卡脖子”困局是新工科时代大学英语教学必须承担的战略使命

教育不仅是技术的孵化器
更是创新生态的建构者

语言能力不仅是交流的桥梁
更是原创思想的载体

“卡脖子”之痛

技术主权之争已上升为国家竞争力的核心战场

校本人才培养新需求

北京科技大学

天津大学（原北洋大学） | 清华大学 | 唐山铁道学院 | 山西大学 | 北京工学院 | 西北工学院

北京钢铁工业学院	1952年	院系调整，六所院校矿冶系科组建成立
北京钢铁学院	1960年	成为全国重点高等学校
	1984年	**首批试办研究生院的22所高校之一**
北京科技大学	1988年	更名为北京科技大学
	1997年	**首批进入“211工程”重点建设院校行列**
	1998年	成为教育部直属高校
	2006年	**成为“985工程”优势学科创新平台建设高校**
	2014年	**入选国家“2011计划”**
	2017年	**入选国家“双一流”建设高校**
	2018年	获批国防科工局、教育部共建高校
	2022年	**布局雄安新区**

为社会培养各类人才**30万余人**

学科专业特色 | **人才培养模式特色** | **大学文化特色**

校本人才培养新需求

习近平给北京科技大学
全体巴基斯坦留学生的回信

北京科技大学全体巴基斯坦留学生：

你们好！来信收悉。得知你们到中国留学以来，既学到了丰富知识，也结识了不少中国朋友，我为你们取得的成绩感到高兴。

正如你们所感受到的，新冠肺炎疫情发生后，中国政府和学校始终关心在华外国留学生生命安全和身体健康，为大家提供了全方位的帮助。生命至上，不管是中国人还是在华外国人员，中国政府和中国人民都一视同仁予以关心和爱护。

我了解到，在抗击疫情期间，很多留学生通过各种方式为中国人民加油鼓劲。患难见真情。中国将继续为所有在华外国留学生提供各种帮助。中国欢迎各国优秀青年来华学习深造，也希望大家多了解中国、多向世界讲讲你们所看到的中国，多同中国青年交流，同世界各国青年一道，携手为促进民心相通、推动构建人类命运共同体贡献力量。

中华人民共和国主席　习近平
2020年5月17日

习近平给北京科技大学老教授的回信

北京科技大学的老教授们：

你们好，来信收悉。北京科技大学自成立以来，为我国钢铁工业发展作出了积极贡献，值此建校70周年之际，谨向你们并向全校师生员工、广大校友表示热烈的祝贺和诚挚的问候！

民族复兴迫切需要培养造就一大批德才兼备的人才。希望你们继续发扬严谨治学、甘为人梯的精神，坚持特色、争创一流，培养更多听党话、跟党走、有理想、有本领、具有为国奉献钢筋铁骨的高素质人才，促进钢铁产业创新发展、绿色低碳发展，为铸就科技强国、制造强国的钢铁脊梁作出新的更大的贡献！

习近平
2022年4月21日

两次收到习近平总书记重要回信

校本人才培养新需求

北京科技大学的老教授们：

你们好，来信收悉。北京科技大学自成立以来，为我国钢铁工业发展作出了积极贡献，值此建校70周年之际，谨向你们并向全校师生员工、广大校友表示热烈的祝贺和诚挚的问候！

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习近平

2022年4月21日

校本人才培养新需求


北京科技大学
University of Science and Technology Beijing
一生双师
百企千人计划
“一生双师百企千人”
计划介绍
贯彻落实中央人才工作会议精神和习近平总书记给学校老教授重要回信精神，坚持特色、争创一流，聚焦培养学生技术创新能力和解决复杂工程问题能力，深入推进产教融合，创新构建“一生双师百企千人”卓越工程人才培养模式，培养一大批听党话、跟党走、有理想、有本领、具有为国奉献钢筋铁骨的高素质人才。


院揭牌仪式
北京科技大学
卓越工程师学院
School of Elite Engineering

北科大大学英语教学改革发展历程

- 教育部大学英语教学改革示范学校 2007年
- 精品课程、优秀教学团队、国家社科项目
  - **国家级精品课 2008年**
  - 北京市精品课、优质课 2008、2023年
  - 北京市优秀教学团队、优质育人团队 2008、2021年
  - **国家精品在线开放课程 2018年**
  - **国家级一流本科课程 2020、2023年**
  - **国家社科基金项目 2016、2019年**
- 名师、人才奖
  - 北京市教学名师、青年名师 2009、2022年
  - 教育部新世纪优秀人才 2010年
- 精品教材
  - 国家“十一五”规划教材 2010年
  - **国家“十二五”规划教材 2015年**
  - 北京市精品教材建设立项 2009年
  - 北京市精品教材 2011年
  - **北京市优质教材 2020、2024年**
- 教学成果奖
  - 北京市教育教学成果奖 一等奖 2008年
  - 北京市教育教学成果奖 二等奖 2012年
  - **北京市教育教学成果奖 二等奖 2017年**
  - **北京科技大学教育教学成果奖 2013-24年**

根据学生水平实施分级教学阶段 **2008年以前**

2014年以前 **基于现代教育技术辅助英语教学阶段**

信息技术与课程教学深度融合的教学阶段 **2015年至今**

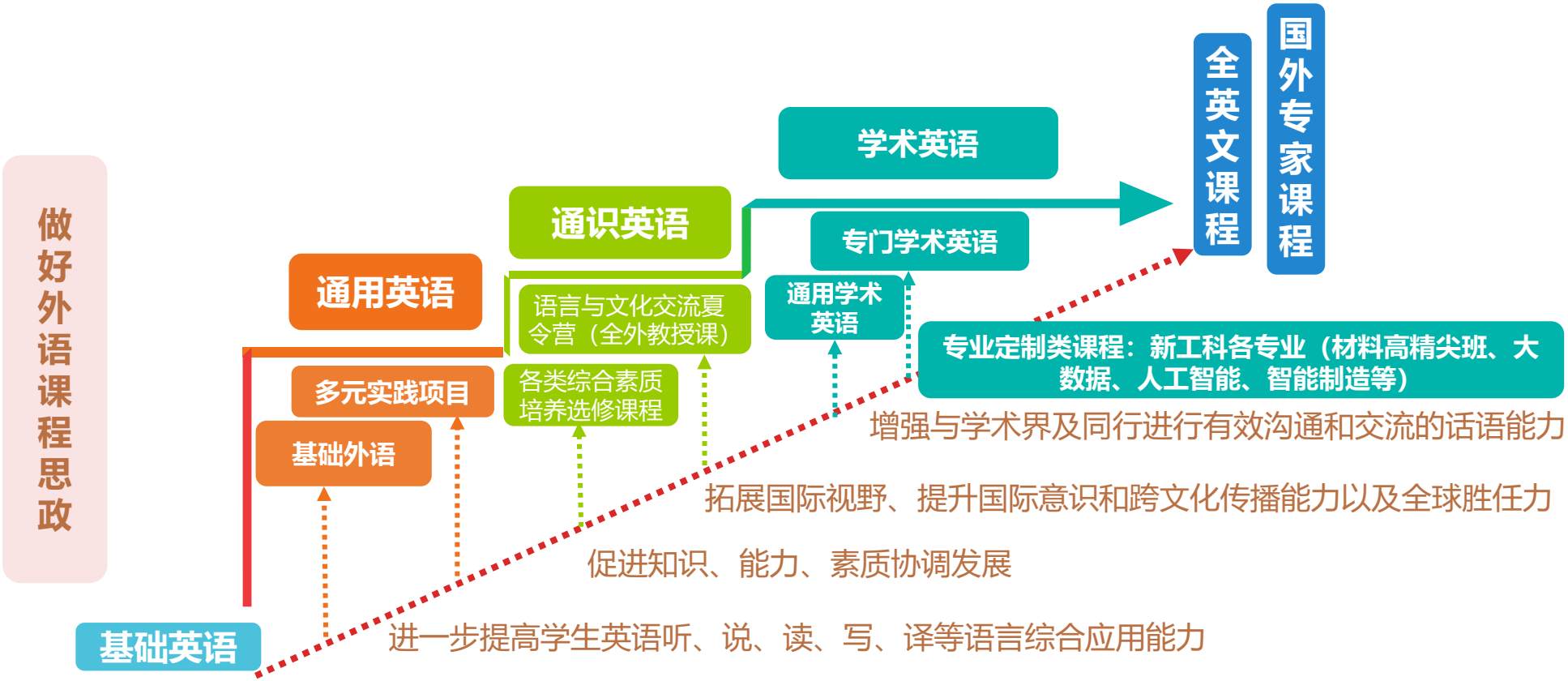
2012年始 **国际学术交流能力提升探索与实践**

国际组织后备人才培养 **2023年开始**

2024年开始 **AI赋能大学英语教学探索与实践**

北京科技大学大学英语课程体系

从“工具”升维为“创新元能力”的范式转变



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[“工具→元能力”的升维逻辑]
[“工程思维×语言思维×系统思维”三维耦合的工程师式外语教育模型]

北京科技大学
University of Science and Technology Beijing

“工具→元能力”的升维逻辑


认知跃迁
元能力
工具
升维
“工程师思维”与“全球话语权”的同步进化
“驱动技术”的内生基因
语言能力升维为创新驱动的核心素养
工具论与工程实践的割裂
“服务技术”的外挂工具
传统语言能力被视为“功能性工具”

“工具→元能力”的升维逻辑

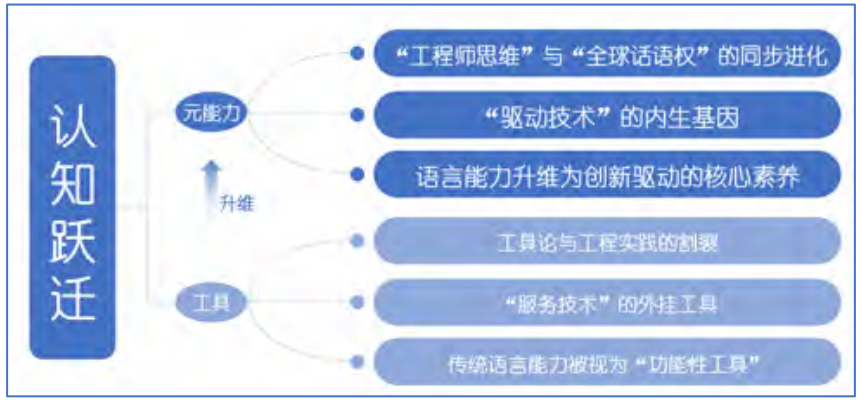
升维逻辑的本质

终极目标

培养能用英语**定义技术问题**、**争夺话语权**、**引领全球创新**的工程师

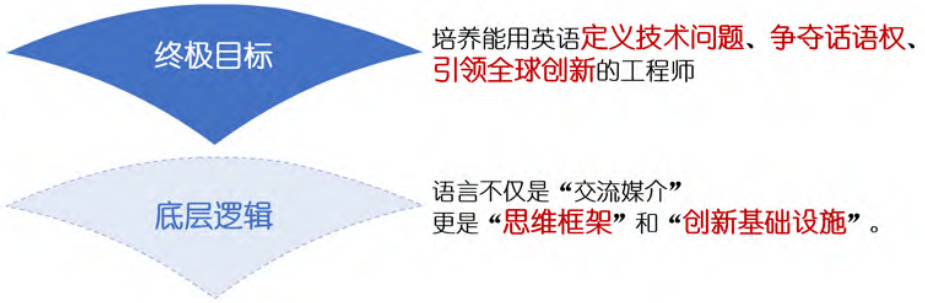
底层逻辑

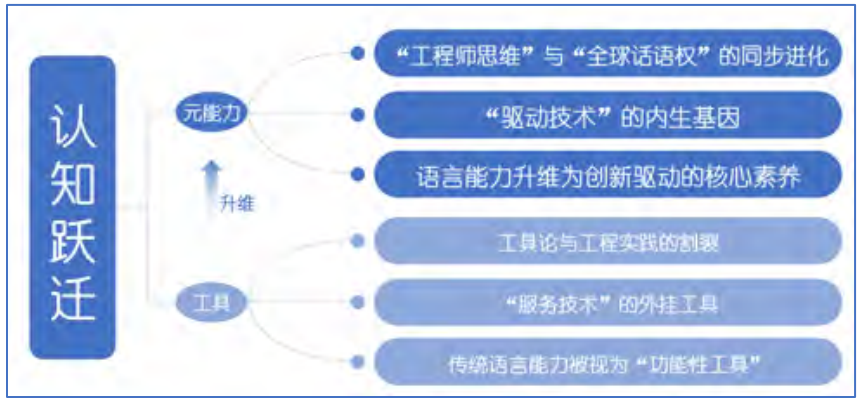
语言不仅是“交流媒介”
更是“**思维框架**”和“**创新基础设施**”。



“工具→元能力”的升维逻辑

升维逻辑的本质





“工具→元能力”的升维逻辑

以真实工程问题为起点，重构语言学习逻辑，
让语言能力内生于工程创新全过程

“工具→元能力”的升维逻辑

升维逻辑的本质

终极目标

培养能用英语**定义技术问题**、**争夺话语权**、**引领全球创新**的工程师

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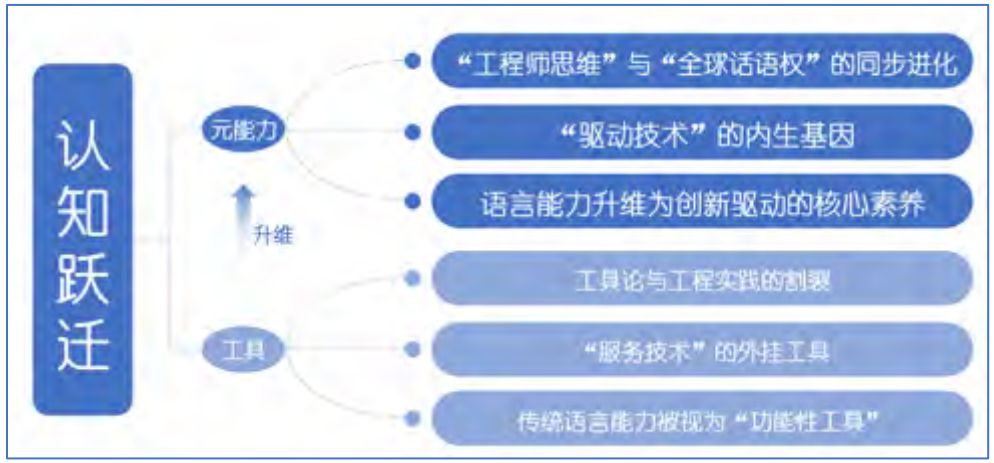
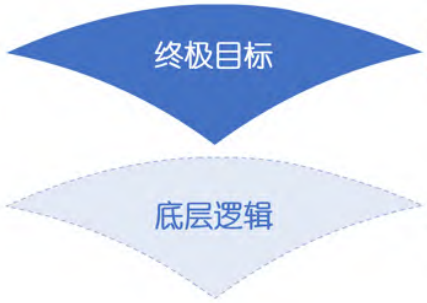


“工具→元能力”的升维逻辑


能力升级
跨文化创新：能熟练运用国际学术英语阐释“中国方案”，是参与全球标准制定的前提
系统思维：语言表达倒逼技术逻辑的严谨性
语言
翻译者
定义者
升维的价值

“工具→元能力”的升维逻辑

升维逻辑的本质



培养能用英语**定义技术问题**、**争夺话语权**、**引领全球创新**的工程师

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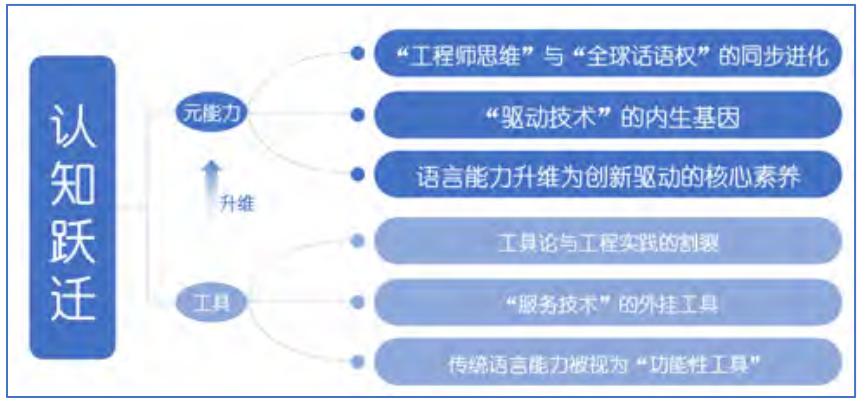


“工程思维×语言思维×系统思维”三维耦合的工程师式外语教育模型

耦合机制——能力融合的化学反应

工程认知：技术逻辑的深度解构

语言发展：学术话语的赋能跃迁

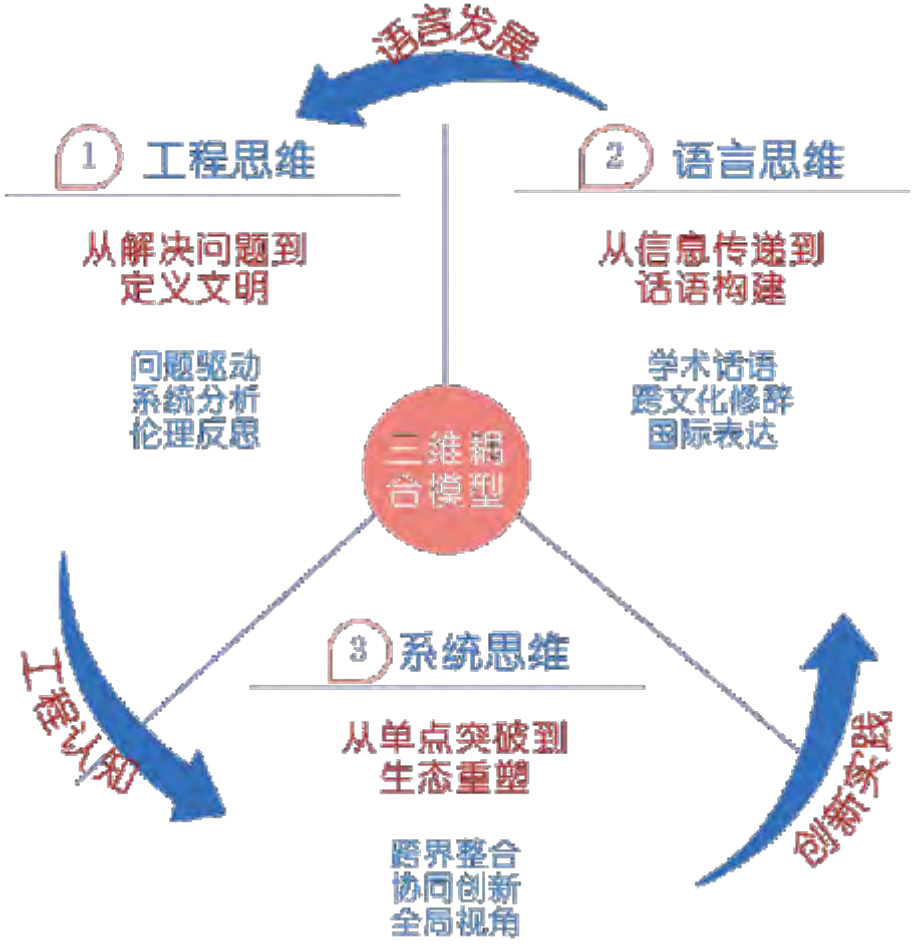
创新实践：多维能力的终极检验

模型价值——定义未来工程师的DNA

破解“技术失语症”

孕育“颠覆性创新”

塑造“负责任创新”



未来的工程领袖，必须同时是技术专家、语言战略家与系统架构师。

“工程思维×语言思维×系统思维”三维耦合的工程师式外语教育模型

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塑造“负责任创新”

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实践路径：新工科学术英语创新教材体系

[教材设计的三大支柱] [工程问题驱动型外语学习理念]
[“思政-工程-语言”三维融合育人内容体系] [“输入-产出”双轮驱动的评价系统]

北京科技大学
University of Science and Technology Beijing

教材设计的三大支柱

能力与价值的双轨校准

技术维度：创新性、可行性
价值维度：文化适配性、伦理合规性（如数据隐私保护）

CDIO框架的任务链革新

四阶闭环：构思（Conceive）–设计（Design）–实施（Implement）运作（Operate）
能力跃迁：从“纸上谈兵”到“实战创新”，培养工程师的全球胜任力

以真实挑战点燃学习动机

设计逻辑：“感知生活场景”→“聚焦全球工程挑战”→“提出中国方案”
教学价值：让语言学习始于“解决问题”的紧迫感，而非语言知识的机械记忆与操练

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

- **突破**传统语言教学的交际工具论局限
- 基于内容与语言整合学习（**CLIL**）理念，**构建**“工程认知-语言发展-创新实践”**三元互动模型**
- 将**学术英语能力**培养**深度嵌入工程创新实践全过程**，通过**工程问题驱动重构语言学习逻辑**，建立**“工程问题即语言情境”的认知框架**
- 以真实工程挑战为语言学习起点，通过**“问题情境构建→跨学科知识整合→多模态方案呈现→工程伦理反思”四阶循环**，将**CDIO**工程教育模式转化为语言学习任务矩阵，形成**“语言赋能工程创新，实践反哺语言进阶”**的生态化外语学习闭环
- 促使学术英语**从表层“交际工具”升维至深层“创新元能力”**，有效塑造“工程思维×语言思维×系统思维”三维耦合的工程师式语言认知模式

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

UNIT 1

BECOMING AN ENGINEER OF THE FUTU

UNIT 2

EMPOWERING EDUCATION WITH AI

UNIT 3

MAKING SOLAR ENERGY ECONOMICAL

UNIT 4

ENGINEERING BETTER MEDICINES

UNIT 5 106

ENGINEERING AGAINST POVERTY

UNIT 6 130

SECURING CYBER SPACE

UNIT 7 156

PROVIDING ACCESS TO CLEAN WATER

UNIT 8 182

DEVELOPING CARBON SEQUESTRATION METHODS

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

单元主题

BOOK I

- Unit 1 Becoming an Engineer of the Future
- Unit 2 Empowering Education with AI
- Unit 3 Making Solar Energy Economical
- Unit 4 Engineering Better Medicines
- Unit 5 Engineering Against Poverty
- Unit 6 Securing Cyber Space
- Unit 7 Providing Access to Clean Water
- Unit 8 Developing Carbon Sequestration Methods

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

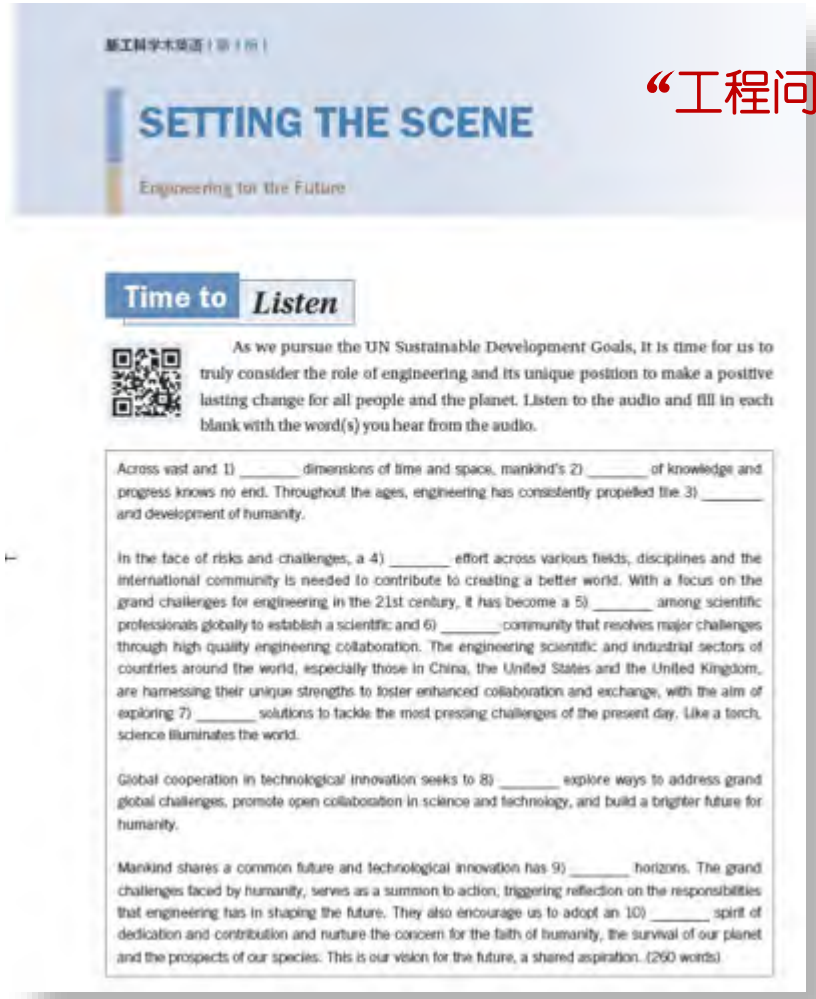
单元主题

BOOK II

- Unit 1 Engineering the Tools of Scientific Discovery
- Unit 2 Engineering materials for a greener planet
- Unit 3 Engineering Better Infrastructure
- Unit 4 Managing the Nitrogen Cycle
- Unit 5 Advancing Health Informatics
- Unit 6 Enhancing Virtual Reality
- Unit 7 Preventing Nuclear Terror
- Unit 8 Engineering for Sustainable Development

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战



SETTING THE SCENE

Engineering for the Future

Time to *Listen*

As we pursue the UN Sustainable Development Goals, it is time for us to truly consider the role of engineering and its unique position to make a positive lasting change for all people and the planet. Listen to the audio and fill in each blank with the word(s) you hear from the audio.

Across vast and 1) _____ dimensions of time and space, mankind's 2) _____ of knowledge and progress knows no end. Throughout the ages, engineering has consistently propelled the 3) _____ and development of humanity.

In the face of risks and challenges, a 4) _____ effort across various fields, disciplines and the international community is needed to contribute to creating a better world. With a focus on the grand challenges for engineering in the 21st century, it has become a 5) _____ among scientific professionals globally to establish a scientific and 6) _____ community that resolves major challenges through high quality engineering collaboration. The engineering scientific and industrial sectors of countries around the world, especially those in China, the United States and the United Kingdom, are harnessing their unique strengths to foster enhanced collaboration and exchange, with the aim of exploring 7) _____ solutions to tackle the most pressing challenges of the present day. Like a torch, science illuminates the world.

Global cooperation in technological innovation seeks to 8) _____ explore ways to address grand global challenges, promote open collaboration in science and technology, and build a brighter future for humanity.

Mankind shares a common future and technological innovation has 9) _____ horizons. The grand challenges faced by humanity, serves as a summon to action, triggering reflection on the responsibilities that engineering has in shaping the future. They also encourage us to adopt an 10) _____ spirit of dedication and contribution and nurture the concern for the faith of humanity, the survival of our planet and the prospects of our species. This is our vision for the future, a shared aspiration. (260 words)

“工程问题即语言情境”的认知框架

“问题情境构建”感知生活场景

听力素材提供情境信息（素材来源优先选取学术论文引言部分），体现中国立场、中国成就

BECOMING AN ENGINEER OF THE FUTURE UNIT 1

VOCABULARY

Affixation in Academic Texts

Affixation, a fundamental morphological process in the English language, involves the addition of prefixes or suffixes to a base or root word to create new words or alter word classes.

Prefixes are affixed at the beginning of root words and typically modify meaning by denoting negation, degree, or direction. Suffixes, on the other hand, are appended to the end of root words and often change the word class.

For example, the prefix "un-", indicating not or the opposite of, combined with the root "waver", meaning to fluctuate or sway, and the suffix "-ing", denoting an ongoing action or state.

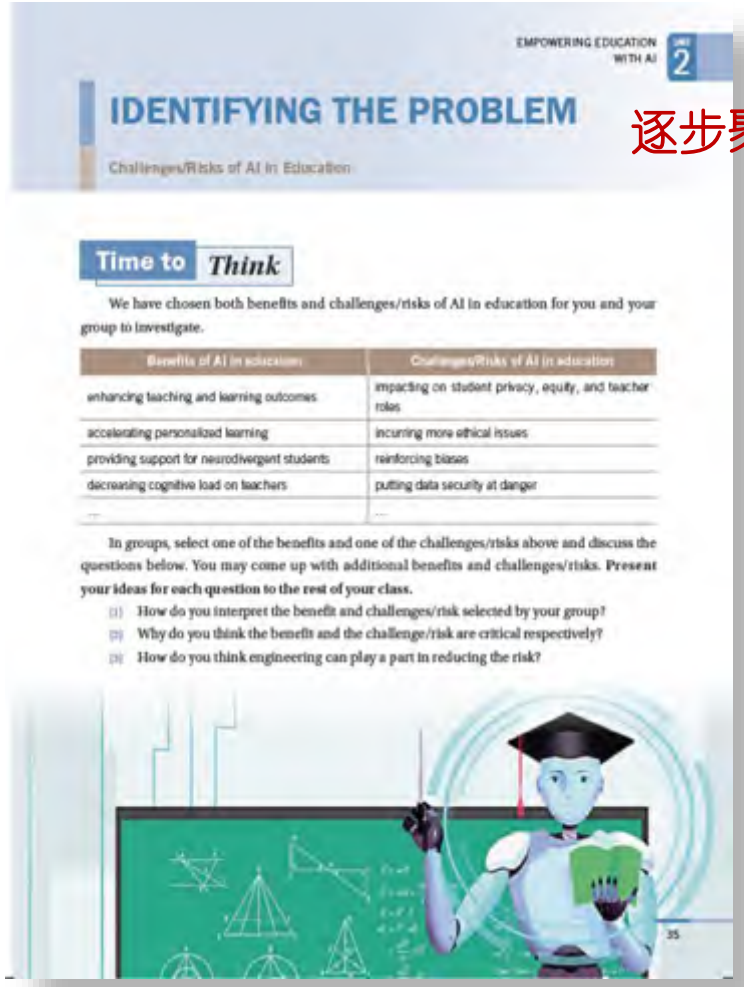
This process plays a crucial role in expanding the lexicon and adapting language to new concepts and ideas. It is key to mastering academic English and can help develop skills in word analysis, enhancing vocabulary retention and reading comprehension. Learn to identify prefixes and suffixes, creating word families based on common roots, and discuss the nuances in meaning that different affixes bring to words.

根据素材语言特点输入词汇知识学习要点/策略

将学术英语能力培养深度嵌入工程创新实践全过程

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战



EMPOWERING EDUCATION WITH AI 2

IDENTIFYING THE PROBLEM

Challenges/Risks of AI in Education

Time to *Think*

We have chosen both benefits and challenges/risks of AI in education for you and your group to investigate.

Benefits of AI in education	Challenges/Risks of AI in education
enhancing teaching and learning outcomes	impacting on student privacy, equity, and teacher roles
accelerating personalized learning	incurring more ethical issues
providing support for neurodivergent students	reinforcing biases
decreasing cognitive load on teachers	putting data security at danger
...	...

In groups, select one of the benefits and one of the challenges/risks above and discuss the questions below. You may come up with additional benefits and challenges/risks. **Present your ideas for each question to the rest of your class.**

(1) How do you interpret the benefit and challenge/risk selected by your group?
(2) Why do you think the benefit and the challenge/risk are critical respectively?
(3) How do you think engineering can play a part in reducing the risk?

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逐步聚焦工程问题

促发学生思维、引领学生思考

新工科学术英语 | 第1册 |

设置学术思辨技能

思辨技能与任务相辅相成

CRITICAL THINKING

Evaluating Information

Collecting, analyzing, and evaluating information is an important skill in life, and a highly valued asset both in the research field and in the workplace. Evaluating information involves challenging the information and rationalizing its arguments through reasoning approaches (induction, deduction, analogy, etc.) to judge an argument and determine its merits.

To do this, it's essential that you can determine the significance and validity of an argument to put it in the correct perspective. Once you have considered all of the arguments and options rationally, you can finally make an informed decision. Afterward, take time to reflect on what you have learned and what you have found challenging. Step back from the detail of your decision or problem and look at the bigger picture.

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

跨学科知识整合，输入学术文本

Time to *Read*

Read the following extracts from two research articles about AI in education to get more information about the benefits and risks of AI in education. Then complete the tasks that follow.

READING SKILL 输入学术阅读技能

Taking Notes while Skimming a Text

As a crucial reading skill, taking notes while skimming enhances comprehension and retention by combining speed with purposeful engagement. Unlike passive reading, this method requires active interaction with the text, prompting readers to identify and summarize key ideas, main arguments, and supporting details. Effective note-taking during skimming involves recognizing topic sentences, headings, subheadings, and keywords that signal the core message of each section. By doing so, readers create a mental map of the material, which aids in locating specific information later and ensures that essential points are not overlooked. This technique is especially beneficial in academic and professional settings, where time efficiency and the ability to extract relevant information are paramount.

阅读部分的学术文本，既符合主题，又为前后聚焦的工程问题做好铺垫和衔接，利于设置多元任务

EMPOWERING EDUCATION WITH AI UNIT 2

READING A **AI in Medical and Dental Education** 800字左右

[1] Artificial Intelligence (AI) has been increasingly integrated into medical and

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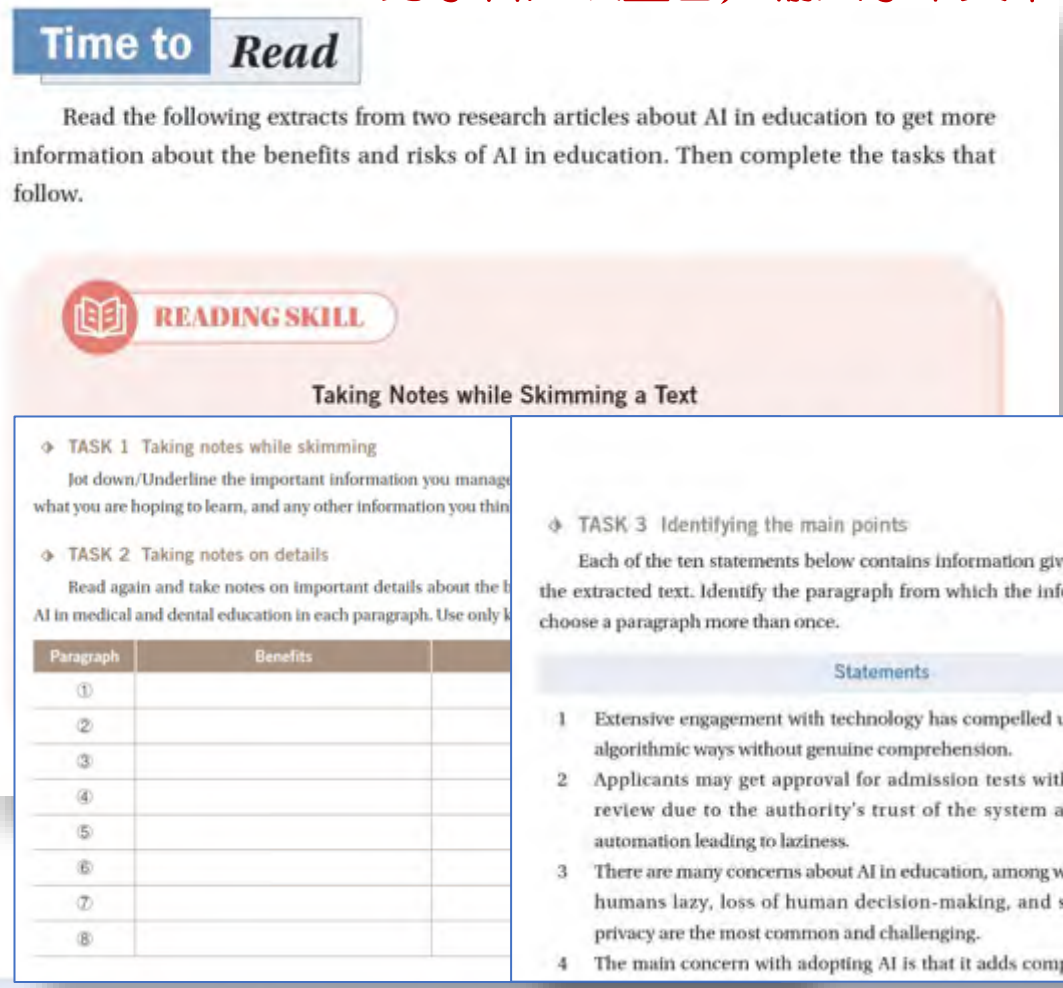
READING B **Impact of AI on Education** 1200字左右

[1] It is evident that AI technology has many concerns (Stahl B. C., 2021a, 2021b), and like other sectors, the education sector is also facing challenges (Hax, 2018). If not all the issues/problems directly affect education and learning, most directly or indirectly impact the education process. So, it is difficult to decide whether AI has a positive ethical impact on education or negative or somewhat positive or negative. The debate on ethical concerns about AI technology will continue from case to case and context to context (Petousi and Sifaki, 2020). This

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

跨学科知识整合，输入学术文本



Time to *Read*

Read the following extracts from two research articles about AI in education to get more information about the benefits and risks of AI in education. Then complete the tasks that follow.

READING SKILL

Taking Notes while Skimming a Text

TASK 1 Taking notes while skimming

Jot down/Underline the important information you manage
what you are hoping to learn, and any other information you thin

TASK 2 Taking notes on details

Read again and take notes on important details about the b
AI in medical and dental education in each paragraph. Use only k

Paragraph	Benefits	
①		
②		
③		
④		
⑤		
⑥		
⑦		
⑧		

EMPOWERING EDUCAT
WIT

TASK 3 Identifying the main points

Each of the ten statements below contains information given in one of the paragraph
the extracted text. Identify the paragraph from which the information is derived. You
choose a paragraph more than once.

	Statements	Paragraphs
1	Extensive engagement with technology has compelled us to think in algorithmic ways without genuine comprehension.	Para.
2	Applicants may get approval for admission tests without human review due to the authority's trust of the system and the task automation leading to laziness.	Para.
3	There are many concerns about AI in education, among which making humans lazy, loss of human decision-making, and security and privacy are the most common and challenging.	Para.
4	The main concern with adopting AI is that it adds complexity to the	Para.

Translate the following abstract of a research article titled "Beijing's Central Role in Global Artificial Intelligence Research" into English.

Abstract: Nations worldwide are mobilizing to harness the power of Artificial Intelligence (AI) given its massive potential to shape global competitiveness over the coming decades. Using a dataset of 2.2 million AI papers, we study inter-city citations, collaborations, and talent migrations to uncover dependencies between Eastern and Western cities worldwide. Beijing emerges as a clear outlier, as it has been the most impactful city since 2007, the most productive since 2002, and the one housing the largest number of AI scientists since 1995. Our analysis also reveals that Western cities cite each other far more frequently than expected by chance, East–East collaborations are far more common than East–West or West–West collaborations, and migration of AI scientists mostly takes place from one Eastern city to another. We then propose a measure that quantifies each city's role in bridging East and West. Beijing's role surpasses that of all other cities combined, making it the central gateway through which knowledge and talent flow from one side to the other. We also track the center of mass of AI research by weighing each city's geographic location by its impact, productivity, and AI workforce. The center of mass has moved thousands of kilometers eastward over the past three decades, with Beijing's pull increasing each year. These findings highlight the eastward shift in the tides of global AI research and the growing role of the Chinese capital as a hub connecting researchers across the globe.

设置阅读技能相关知识精讲，精炼包括：
（1）**READING A** 文后任务与阅读技能应用相关；（2）**READING B**后的任务所有表述内容基于**READING B**，训练学术理解学术表达能力（四六级快速阅读）；
（3）语言练习任务部分的词汇与短语出自**READING A & B**，所有句子均选自学术论文，且主题相关；
（4）翻译任务针对学术论文摘要，第一册英文译为中文，第二册中文译为英文；素材为与主题相关，讲述中国故事/方案/研究的内容

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

跨学科知识整合，输入学术文本

新工科学术英语 | 第1册 |

Time to *Rethink*

TASK 5 Classifying the Challenges and Risks

You have read extracts from two research articles about AI in education and identified the challenges and risks humans must overcome to ensure that artificial intelligence is reliable, safe, trustworthy, and compatible with human values. In groups, classify the challenges and risks into different categories by completing the figure. Present your categorization to the rest of your class.

- 读后围绕工程问题再思考
- 任务设计目的：让学生清晰表述后面提出的解决方案所针对的具体问题
- 本教材除阅读部分的语言知识、技能相关任务外，都要精心设计，在设计中包含为学生完成任务需要的脚手架、导航等线索/路径

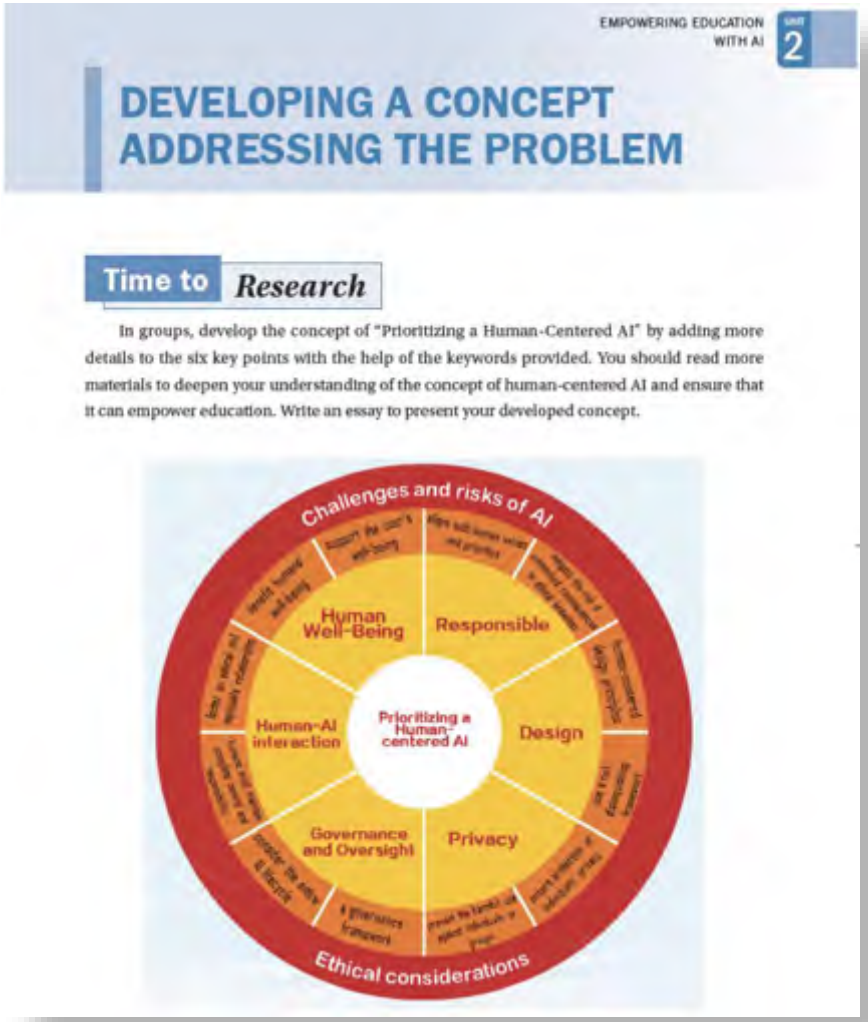
TASK 6 Stating the Problem

In groups, produce a statement of the problem you have identified after reading and thinking. Present your problem statement to the rest of your class.

Problem Statement: _____.

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战


EMPOWERING EDUCATION WITH AI

UNIT 2

DEVELOPING A CONCEPT ADDRESSING THE PROBLEM

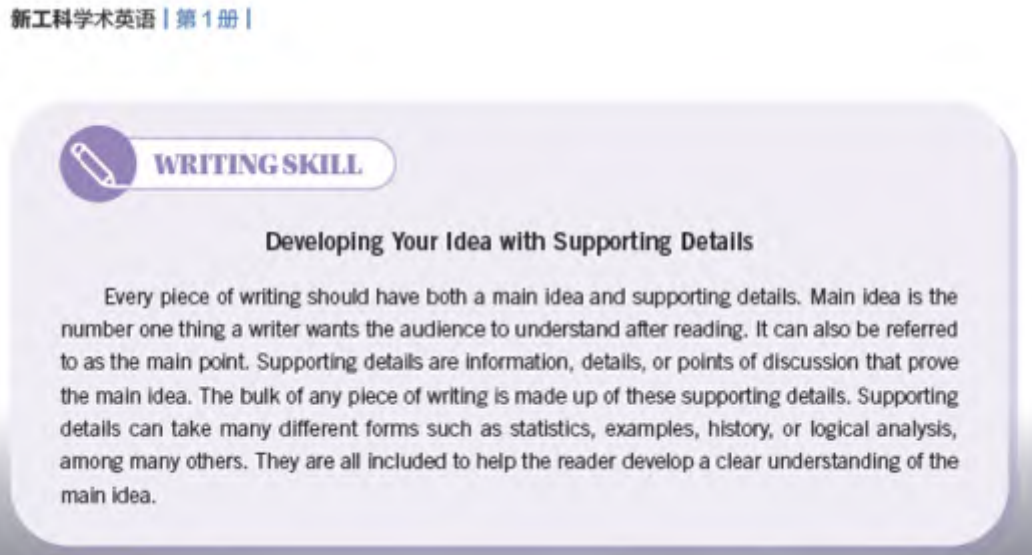
Time to *Research*

In groups, develop the concept of "Prioritizing a Human-Centered AI" by adding more details to the six key points with the help of the keywords provided. You should read more materials to deepen your understanding of the concept of human-centered AI and ensure that it can empower education. Write an essay to present your developed concept.

跨学科知识整合，赋能问题解决

需要编者阅读大量相关文献，设计脚手架/引导性信息，帮助学生完成任务

设置学术写作技能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WRITING SKILL

Developing Your Idea with Supporting Details

Every piece of writing should have both a main idea and supporting details. Main idea is the number one thing a writer wants the audience to understand after reading. It can also be referred to as the main point. Supporting details are information, details, or points of discussion that prove the main idea. The bulk of any piece of writing is made up of these supporting details. Supporting details can take many different forms such as statistics, examples, history, or logical analysis, among many others. They are all included to help the reader develop a clear understanding of the main idea.

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

Conceive

构思（Conceive）
设计（Design）
实施（Implement）
运作（Operate）

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战


EMPOWERING EDUCATION WITH AI

UNIT 2

DESIGNING A SOLUTION TO THE ADDRESSED PROBLEM

Time to *Transform*

As a group of AI engineers, you advocate the concept of "prioritizing human-centered AI" to address the challenges and risks of AI in education. Work in groups to transform the concept into alternative solutions. AI engineers can develop systems that effectively cater to the needs of individuals and communities. Therefore, make sure your solutions can address the identified challenges and risks of AI in education in one way or another.

TASK 1 Transforming the Concept into a Solution Design

Choose one from the four solutions to design and complete the two sentences in the box below.

Design

构思（Conceive）
设计（Design）
实施（Implement）
运作（Operate）

工程创新设计：言说与践行中国方案、中国智慧

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

工程创新设计：言说与践行中国方案、中国智慧

DESIGNING A SOLUTION TO THE ADDRESSED PROBLEM

TASK 1

Transforming the concept to a solution design

Choose one from the four solutions to design and complete the two sentences in the box below.

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

Implement

构思（Conceive）
设计（Design）
实施（Implement）
运作（Operate）

工程问题驱动型外语学习理念 (Engineering Problem-Driven Language Learning, EPDLL)

覆盖全球工程领域面临的16项挑战

EMPOWERING EDUCATION WITH AI

UNIT 2

PRESENTING THE PRODUCT

Time to *Present*

PRESENTING SKILL

Presentation Medium

The selection of the presentation medium mainly depends on the context and topic of your

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TASK 1 Presenting Your Product

In groups, present your designed solution to the rest of your class. You can make use of PPT or self-made video. Remember to inform your class of the design criteria your group has established and be willing to receive comments and suggestions from your class. Make sure each member in your group takes a specific role in the presentation work.

GLOBAL CROSS-CULTURAL COMMUNICATION

Inclusive Communication

How we communicate and what we communicate can have a huge impact on our communities. The language we use can make someone feel welcome or seen or make someone feel excluded or unwelcome. Inclusive language supports a safe, welcoming workplace culture where people feel that they belong and are accepted as who they are. Here are some examples:

Not Inclusive (not Recommended)	Inclusive (Recommended)
mankind	humankind
chairman	chair

Operate

构思（Conceive）

设计（Design）

实施（Implement）

运作（Operate）

“思政-工程-语言”三维融合育人内容体系

- 该体系**从价值观培育的认知逻辑**出发，通过**双重转化机制**将思政教育目标**具象化**为**“工程实践-语言应用”复合能力矩阵**，进而建构**基于真实项目的情景化任务链式学习路径**，使学生在解决真实问题的过程中，**自然习得用英语阐释中国方案、以工程智慧服务人类命运共同体的综合素养**
- 该体系的核心在于**超越传统“思政独立渗透”的单维模式、消解“语言-工程二元割裂”的线性结构，构建“价值引领为魂、工程实践为体、语言能力为用”的三元耦合育人生态系统**，通过工程问题情境的具象化建模和语言任务的参数化设计，使**价值塑造内生于专业能力培养过程**，实现知识传授（**knowing**）、能力培养（**doing**）与价值引领（**being**）的有机统一，形成“成才”与“成人”相统一的能力评价体系，为新时代工程人才培养提供了理论范式与实践路径

“输入-产出”双轮驱动的评价系统

- 建立涵盖**语言表现、工程思维、创新能力**的多元评价指标
- 教材素材均源自**真实工程学术论文**，**教材素材**选取遵循**“全球共性议题+中国特色实践”**原则，既包含**国际工程经典案例**，又**精选中国工程典范**，确保教学内容**兼具国际视野与中国底色**，构建双重认知视角。如：“问题情景构建”模块的素材优选**学术论文引言部分**，特别选取**体现中国立场、中国贡献的内容**；甚至**所有语言知识评价任务素材也均选自工程学术论文**
- 教材**突破传统“单向输入考核”**（如词汇测试、阅读理解）或**“结果导向评估”**（如论文评分）的局限，**构建“输入能力奠基-产出实践验证”双向互哺的评价模型**

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04

结语展望

语言为舟工程为桥赋能全球胜任力

[教学研究成果][与全国大英人共勉]

北京科技大学
University of Science and Technology Beijing

结语展望

在当今技术定义文明的新时代，工程师的使命早已超越了单纯的技术突破。**语言如同舟楫，承载着思想与智慧跨越文明的鸿沟；工程则如桥梁，将创新实践与人类共同价值紧密相连。**

处于中华民族伟大复兴和百年未有之大变局的时代，外语教育在服务国家战略的大背景下发生着巨大变化，我们必须**立足新时代，在服务国家战略需求和学校人才培养目标中自我革命，主动变革、主动创新，获得新发展。**与各位老师共勉！

北京科技大学
University of Science and Technology Beijing

结语
展望

教得更得法

教得更起劲

学得更充实

学得更有效

北京科技大学
University of Science and Technology Beijing

THANKS !

北京科技大学外国语学院 王娜

2025年4月