

DESIGNING TOMORROW

Science, Society, and the Future We Are Building



Brian Harrison

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Designing Tomorrow: Science, Society, and the Future We Are Building

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Introduction

To all students

Welcome to *Designing Tomorrow: Science, Society, and the Future We Are Building*, where you will improve your reading skills while exploring some of the most pressing issues of our time. This textbook has been carefully designed to help you develop your English proficiency while deepening your understanding of environmental, social, scientific and technological challenges and solutions. Remember, English is a key tool for accessing a wealth of information and connecting with people from different cultures and backgrounds. Along the way, you'll gain valuable insights and tools that will be useful not only in the fields covered in this book, but also in many other areas of your life and future career.

By learning about the topics in this book in English, you will connect with the wider world, gaining access to international discussions, resources, and perspectives. The reading, vocabulary, and critical thinking strategies you develop here will be valuable for engaging with a wide range of topics - from science and technology to business, culture, and beyond.

Each unit of this textbook focuses on a specific environmental, social or technological issue. You will begin by reading an introductory passage that explains the topic in clear and accessible English. These passages include key vocabulary and expressions to help you build your language skills. Following the reading, you'll complete a variety of activities, including comprehension questions, vocabulary exercises, and critical thinking tasks. These activities are designed to help you not only understand the content but also apply your English skills in different contexts.

The language skills you gain by studying this book will help prepare you for a wide range of situations. Whether you are reading academic materials, writing reports, communicating with international colleagues, or simply traveling abroad, the English proficiency you develop here will serve you well. Language is a tool for connection, and this course will help you use it effectively and confidently.

In addition, you will discover stories of hope and innovation. Around the world, people are finding creative solutions to build a sustainable future. By reading about these efforts, you'll not only improve your English but also gain inspiration to think critically and contribute to positive change in your own way.

Remember, learning a language is a process that takes time and effort. It's natural to encounter challenges, but each challenge is an opportunity to grow. Work with your classmates, ask questions, and don't be afraid to make mistakes - these are all part of learning. This textbook is here to guide you step by step, and your teachers are here to support you.

By the end of this course, you will have enhanced your English reading skills, expanded your vocabulary, and developed a greater understanding of some of the issues our society faces today. More importantly, you'll be equipped with language tools that can be applied in any field, opening doors to new opportunities and experiences.

学生の皆さんへ

『*Designing Tomorrow: Science, Society, and the Future We Are Building*』へようこそ。本書では、現代社会が直面する重要な課題を探求しながら、英語の読解力を向上させることができます。この教科書は、環境的・社会的・科学的・技術的な課題やその解決策についての理解を深めると同時に、英語力を伸ばせるよう、丁寧に設計されています。英語は豊富な情報にアクセスし、異なった文化や背景を持つ人々とつながるための重要なツールです。学習を通じて、本書で扱う分野だけでなく、生活や将来におけるさまざまな場面で役立つ有益な知識やスキルを得ることができるでしょう。

本書のトピックを英語で学ぶことで、国際的な議論や情報、視点にアクセスし、より広い世界とつながることができます。ここで身につける読解力、語彙力、批判的思考力は、科学技術、ビジネス、文化など、幅広いトピックに対応する際に役立つはずです。

この教科書の各ユニットは、特定の環境的・社会的、または技術的な問題に焦点を当ててい

ます。最初に、そのトピックについて分かりやすい英語で説明した導入パラグラフを読みます。この導入文には、英語力を伸ばすために役立つ重要な語彙や表現が含まれています。読解の後には、内容理解の問題、語彙練習、批判的思考を促すタスクなど、さまざまな活動に取り組みます。これらの活動は、内容を理解するだけでなく、異なる文脈で英語を活用する力を養うことを目的としています。

本書を通して身につける英語力は、幅広い場面で役立ちます。学術的な資料を読んだり、レポートを書いたり、国際的な同様な専門分野の仲間とコミュニケーションをとったり、または海外旅行をしたりする際など、ここで培った英語力はきっと役立つでしょう。言語は人と人をつなぐツールです。本書は、そのツールを効果的かつ自信を持って使えるようになるための手助けをします。

また、本書を通して、希望と革新に満ちた物語にも出会うでしょう。世界各地では、持続可能な未来を築くために、創造的な解決策を見出しています。こうした取り組みについて読むことで、英語力を向上させるだけでなく、批判的に考え、自分なりの方法でよりよい変化に貢献しようとする意欲も得られるでしょう。

言語学習は、時間と努力を必要とします。困難に直面するのは自然なことです、それは成長のチャンスでもあります。クラスメートと協力し、質問し、そして間違いを恐れなくてください。これらはすべて学びの一部です。この教科書は、皆さんを一步一步導くためのものであり、先生方も皆さんをサポートしてくれます。

本書を終える頃には、英語の読解力が向上し、語彙が拡大し、現代社会が直面する課題に対する理解が深まっていることでしょう。それ以上に、あらゆる分野で応用できる英語力を手に入れ、新たな機会や体験への扉を開くことができるようになります。

Brian Harrison

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Unit 3

How to stop drowning in a sea of plastic waste

[プラスチックごみの海に溺れない社会へ]

1

Key Vocabulary

 1-21

Match the words (1-8) with the correct definitions (a-h).

- | | | |
|-----------------|---------|--|
| 1. construct | () | a) to say what you believe the cost, size, or value might be, although you do not know exactly |
| 2. estimate | () | |
| 3. floating | () | b) to suffer or die from lack of food |
| 4. landfill | () | c) enough |
| 5. malnutrition | () | d) a place where large amounts of waste are buried underground |
| 6. restriction | () | e) a condition caused by not getting enough vitamins and minerals etc. |
| 7. starve | () | f) to build |
| 8. sufficient | () | g) limit |
| | | h) when something stays on or near the surface of a liquid |

2

Reading

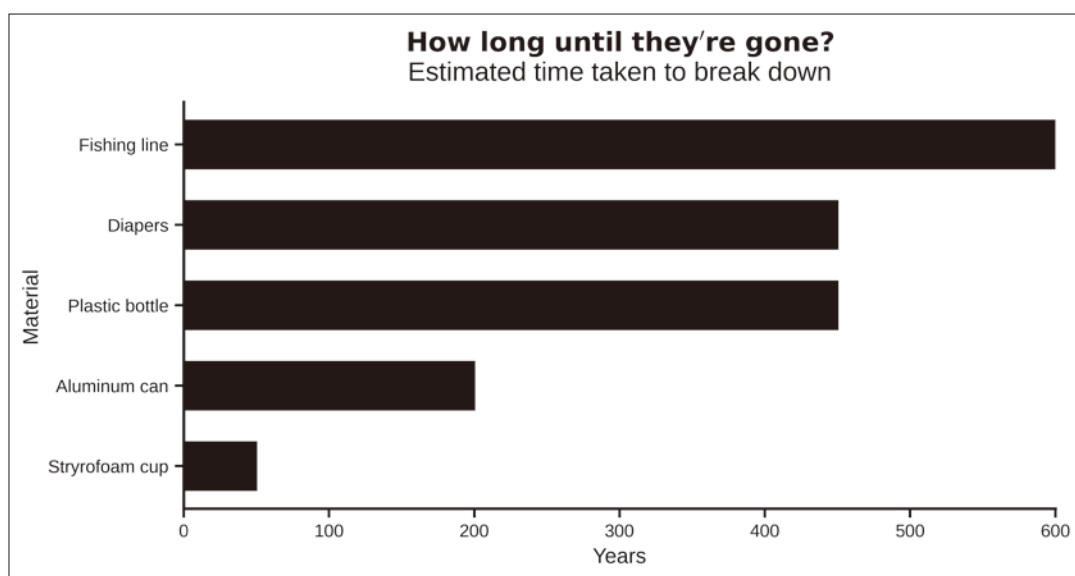


1-22~32

Read this passage carefully and do the exercises that follow.

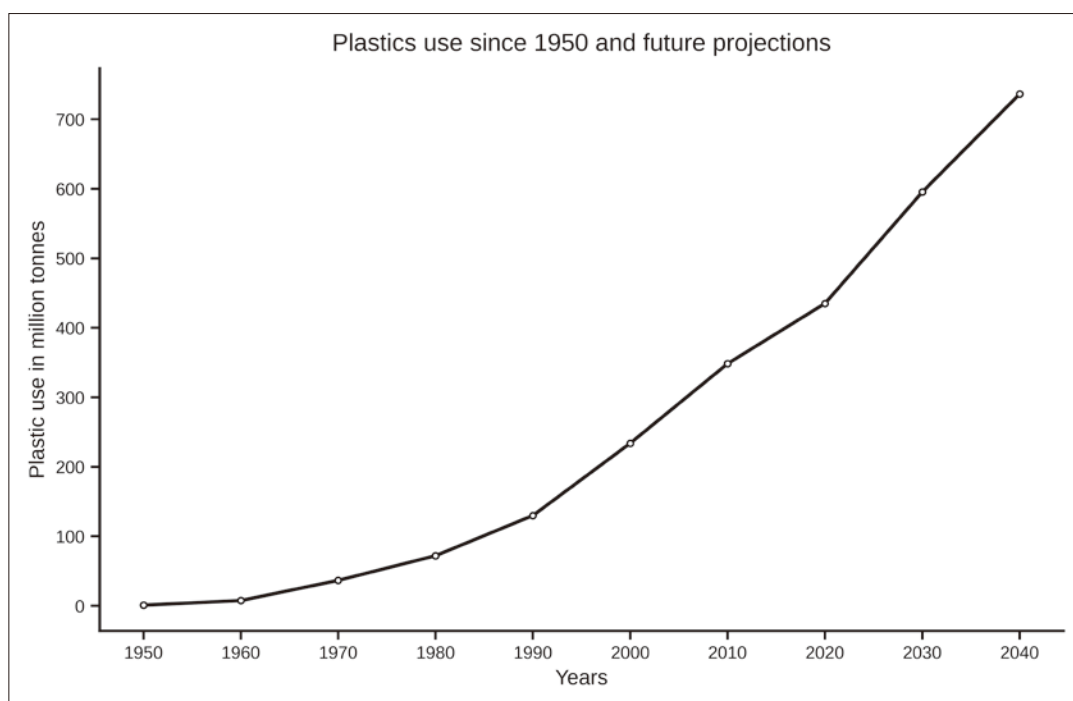
01 **1** A number of years ago, one sailor went across the Pacific following a route seldom travelled, and was shocked to find himself surrounded day after day by plastic floating just below the surface. This area, now known as “The Great Pacific Garbage Patch,” had not been recognized before because it could not be
05 seen by satellites.

2 The problem of plastic waste has received considerable attention because of its effect on the environment. It can remain in the environment for many years, and can be consumed by living creatures, causing harm.



(Adapted from BBC)

3 In 2016 the World Economic Forum noted that in half a century, the
10 amount of production of plastics increased 20-fold. If no action is taken, it is believed that by 2050 the weight of plastic in the oceans will be greater than the weight of fish.



(Source = OECD)

01 **4** The United Nations Ocean Conference in 2017 stated that every year plastic kills an estimated one million seabirds and 100,000 marine mammals. The seabirds starve to death as their stomachs become full of plastic. Adult birds may give plastic to their chicks, mistaking the plastic for food, so the babies
05 may die from malnutrition. Also, plankton consume microplastics and can die; this in turn means there is not sufficient food for fish, which also may decrease in number. (**1**), although plastic breaks up into small pieces due to the action of sunlight, it does not biodegrade.

5 Can we avoid having so much plastic in the environment?

10 **6** Plastic waste can be put into landfills. However, this takes up a lot of space, and landfills are rapidly becoming full. (**2**), it is very difficult to find new sites because people usually object strongly to one being constructed near where they live – the so-called NIMBY attitude (“not in my backyard”).

7 The waste problem can be mitigated by using bioplastics (biodegradable
15 plastics made from biological materials), although they are expensive. The news site Mongabay reported the development of a type of wrapping that is made from seaweed, which both reduces the amount of plastic used and is also good for local fishermen whose businesses were doing badly.

8 In marathons, runners drink water from plastic bottles and then throw

01 them away – often with a lot of water still inside. This causes a terrible mess. At
the London marathon in 2018 an estimated 47,000 plastic bottles were thrown
away. However, in later years, small containers were made from seaweed,
making it possible to swallow both the water and the container (which does no
05 harm), or drink the water and throw away the container, which is biodegradable.

9 In Japan people often have to buy designated bags in shops to put their
garbage in, and the more bags they use, the greater the cost. This makes the
environmental costs visible and will hopefully change people's behavior. In
Denmark people pay a large deposit for plastic bottles which can be refunded
10 from automated "bottle banks" when they return the bottles. This encourages
people to not throw away bottles and instead recycle them.

10 One place taking the problem of container waste to an extreme was a store
in Austin, Texas, called "In.gredients." Here, they not only banned plastic bags,
but also did not provide any containers or packaging. Customers would bring
15 clean containers from home, weigh and label them, fill their containers, take
them to the checkout, re-weigh them, and pay.

11 Since the turn of the century, many countries have introduced penalties
for using plastic bags or actually banned single-use products (Japan did not
introduce restrictions until 2020). Some multi-national companies have stopped
20 using single-use items such as plastic straws and reusable cups. In 2002 when
Ireland started charging for plastic bags, the number of bags used decreased by
94%. (3), the most extreme penalties were those introduced in Kenya in
August 2017, where in theory the maximum punishment for using plastic bags is
four years in prison and/or a fine of up to \$40,000.

Notes

World Economic Forum 世界経済フォーラム

20-fold 20 倍に

United Nations Ocean Conference 国連海洋
会議

chick ヒナ

biodegrade 生物分解する

mitigate 軽減する

seaweed 海藻

designated 指定された

Choose the correct answer for each question.

1. **Paragraph 4** What best fits blank (1)?
 a) As a result b) Despite this c) Luckily d) Unfortunately
2. **Paragraph 6** What best fits blank (2)?
 a) Also b) Although c) Consequently d) Surprisingly
3. **Paragraph 11** What best fits blank (3)?
 a) Because of this b) However c) In addition d) Fortunately

Read the following sentences and decide whether each one is true (T) or false (F).

1. () Plastic in the ocean can break into very small pieces, but even this can harm living things.
2. () Seaweed products may become a replacement for some plastics.
3. () At the In.gredients store in Texas, customers had to provide their own containers.
4. () Japan was one of the first countries to charge for using plastic bags in shops.
5. () When Ireland introduced paying for plastic bags, the policy was not very successful.

Write answers to the following questions in English.

1. Why is plastic waste in the oceans a big problem?

2. Why is it difficult to find possible new sites for landfills?

3. Why do people in Denmark not object to high prices for drinks in plastic bottles?

4

Vocabulary in Context

Choose the correct word to complete each sentence.

fine	malnutrition	marine	object	theory
------	--------------	--------	--------	--------

1. In poor African countries, _____ is often a major problem.
2. He had to pay a _____ of ¥10,000 for a driving offense.
3. In _____, remote work leads to a better work-life balance.
4. Many non-smokers were pleased when smoking was banned in restaurants because they used to _____ strongly to breathing cigarette smoke.
5. She enjoyed not only sports on land but also _____ sports.

5

Rearrangement

Change the order of the words in parentheses to make a correct sentence.

1. 海洋には非常に多くのプラスチックがあり、その重量は今世紀半ばまでに魚の重量を超えると予想されています。

There is a huge amount of plastic in the oceans and (than / to / weight / be / greater / expected / its / is) that of fish by the middle of this century.

2. マラソンで大量のプラスチックボトルが捨てられますが、対策としてプラスチックの代わりに海藻製品を使用することがあります。

Huge numbers of plastic bottles are thrown away at marathons, but one (seaweed / use / products / solution / to / is) instead of plastic.

3. ごみが多すぎて、埋立地が急速に満杯になりつつあります。

There is so much (are / landfills / that / waste / becoming) rapidly full.

Listen to the short talk and fill in the blanks.

- 01 Plastic waste can cause great harm in the ocean, resulting in the death of huge numbers of seabirds and other creatures. Over time the sunlight can break the plastic into extremely small bits, but it does not break down due to the action of (1) () (). Indeed, by 2050 it is expected that the
- 05 weight of plastic might be more than (2) () () of all the fish. One solution is to put the plastic waste into landfills, but there is a problem in that there are not enough landfills and it is difficult to find new sites because people do not (3) () () () near where they live. Another, and probably better solution is to find something
- 10 that can replace the plastic. One candidate for this may be to use products (4) () () (), which will break down naturally. Another thing we can do is to (5) () () () of plastic bags, and various countries have started to charge for these bags in order to encourage us to not use them.
- 15 In addition, a number of countries have banned (6) () () ().

Read and discuss the following questions and write your opinion.

1. Which measure described in the text do you think is the most effective way to reduce plastic waste (for example, deposits on bottles, paid garbage bags, bans, or new materials such as seaweed containers)? Why do you think this approach works better than the others, and which would work well in Japan?
2. How many ways can you think of to reduce the amount of plastic you use in your everyday life?