Science Nonfiction?

1 Look at the pictures of different future technologies. Match them to the descriptions. When will these things happen?

1. Bendy phones  
2. Clever learning robots  
3. Mind-controlled computers  
4. Human colonies on Mars  
5. Self-flying vehicles  
6. Virtual meetings with avatars

2 Use the adjectives to compare the technologies in Activity 1.

- beneficial
- environmentally friendly
- expensive
- necessary
- technically feasible*
- useful

Fact

Wearable technology means that we can access technology using clothing and accessories. Smart clothes will be able to change color, regulate our temperature and charge the gadgets* we carry and they won’t need to be washed!
3 Compare your ideas with two other students.

4 Work in groups. Discuss the questions.
   How will future cities be different from contemporary cities? How will they deal with transportation, security, shopping, buildings, energy and food production?

5 Go to page 113 and compare your answers.
1 Label the pictures using the expressions. Explain what you know about the four technologies.

cloud-based technology  3D printing  graphene  mobile devices

2 Listen to the presentations and match the technologies in Activity 1 to the speakers.

<table>
<thead>
<tr>
<th>Expert</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rohit Patel</td>
<td>cloud-based technology</td>
</tr>
<tr>
<td>Carol Peterson</td>
<td>3D printing</td>
</tr>
<tr>
<td>Jun Lai</td>
<td>graphene</td>
</tr>
<tr>
<td>Victoria Torres</td>
<td>mobile devices</td>
</tr>
</tbody>
</table>

3 Listen to the presentations again and fill in the blanks with the phrases below.

certain  in my view  in our opinion  it’s obvious  not sure  sure  think  tremendously important

1. I believe that 3D printing will be ___________________________ in the future.
2. I am __________________ 3D printing will be the most important technology, but it will have an enormous impact.
3. I __________________ the cloud will be the most important technology in the future.
4. I am __________________ cloud technology will help businesses raise* productivity, efficiency and flexibility.
5. I am __________________ that mobile technology will benefit* large numbers of poor people.
6. __________________ that tablet technology will grow in the future.
7. __________________, graphene will be tremendously important in the future.
8. __________________, graphene will be like steel in the Industrial Revolution.
Listening and Speaking

4 Read the statements. Use the phrases from Activity 3 to agree or disagree with them and explain why.

1. Students won’t use paper books in school.
2. Cities will be greener and cleaner.
3. People will use smartphones for information, networking and entertainment.
4. Science will eliminate many diseases and illnesses.
5. No one will go to the movies or concerts; everyone will download movies and music.

5 Work in pairs. Read the text and discuss your opinion. Use the expressions in Activity 3.

Language Tip
When you are expressing a personal opinion, you can use expressions such as:
in my experience...; as far as I’m concerned...; in my opinion / view...; personally, I’m sure / convinced that...

In your opinion, will the future be better or worse? Why?

“I’m very pessimistic about the future. Humans are destroying all the planet’s resources and I believe things will get worse. Global warming is increasing and we continue to destroy rain forests for agricultural purposes. I am pretty sure the demand for products and resources will continue to cause huge problems to the environment.”

-Stacy Livermore, environmental expert

“Human ingenuity and new technology will help us solve the problems we have with resources. I am certain we can use technology to produce more energy from scarce resources and reduce damages to the environment. This is already happening in certain cities where electric transportation has reduced contamination and recycling is combating waste. I’m optimistic about the future.”

-Ian Matthews, President of the Price Foundation for Environmental Technology

Your Glossary

pessimistic
worse
optimistic
Starting Off  Future with Will

1 Read the sentences and questions and give your opinion about each.
   1. People won’t go to offices to work. They’ll work from home.
   2. Everybody will speak a common language.
   3. The weather on the planet will change in a few years.
   4. Will scientists find cures for all diseases?
   5. The world population will decrease in the coming years.
   6. What will the next social media trend be?

2 Study the sentences in Activity 1 and complete the language box.

   Future with Will
   We can use the future with will to talk about suggestions / predictions.
   This form of the future uses the modal auxiliary verb _______________ and the infinitive. The negative form is made by using the modal auxiliary verb _______________ and the adverb _______________. The contracted negative form of the auxiliary is _______________.
   To make a question, move the auxiliary to the _______________ of the statement and add a _______________ at the end. To make an information question, write the _______________ word _______________ the auxiliary. Don’t forget the _______________ mark at the end.

3 Unscramble the sentences. Give your opinion about each.
   1. doctors / diseases? / will / serious / treat / how
   2. universal electronic / will / translators / people / using / communicate
   3. need / cancer patients / chemotherapy / won’t / traditional
   4. protect / you / climate-controlled / will / from / clothes / extreme weather
   5. machines? / read / people’s minds / doctors / with / will
   6. expensive / gadgets / computer / be / won’t

4 Complete the sentences so they are true for you.
   1. In ten years, I think I will _______________.
   2. I’m not sure my family will _______________ next year.
   3. I definitely won’t _______________.
   4. I believe science will _______________.

5 Work in pairs. Student one, do Pairwork 1; student two, do Pairwork 14.
Exploring Environment and Technology

1 Work in pairs. Look at the photos and describe each place.

2 Look at the words and match them to the photos in Activity 1.
- allergens
- crops
- flooding
- infections
- pesticides
- anesthetic
- drugs
- fossil fuel
- injections
- pollution
- chemotherapy
- ethanol
- gasoline
- operating room
- side effects
- clean water
- fertilizer
- illness
- patients
- solar energy

3 Look at the words in Activity 2 and classify them according to their connotation.

<table>
<thead>
<tr>
<th>Positive</th>
<th>Neutral</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fact
According to the United Nations, 780 million people lack access to clean water, which is about one in nine people. And every 21 seconds, a child dies from a water-related illness.

4 Listen to the podcast and answer the questions.
1. What is the main cause of environmental and health problems according to Jack?
2. What options can replace the use of cars?
3. What are the two benefits of cycling and walking?
4. What is one result of buying too many things?
5. What reasons does Jack give for many health problems?
6. How can we solve these health problems?
7. Do you agree or disagree with Jack? Why?

5 Work in pairs. Student one, do Pairwork 5; student two, do Pairwork 9.
1 Work in pairs. Discuss the questions.
   Have you ever experienced side effects from medicine or treatments?
   What reactions did you have? Have you ever eaten genetically modified food?
   What kind? What did it taste like? What has been the most destructive natural
disaster in your country? When did it happen?

2 Skim the article and indicate which paragraph is associated with the
   following opinions.
   1. [ ] We should really reduce the amount of gasoline we use.
   2. [ ] I think hospitals have to find better ways to treat illnesses.
   3. [ ] Purifying water would make a huge difference in areas affected
      by natural disasters.
   4. [ ] GMCs could help increase food production.

3 Read the article carefully and answer the questions.
   1. What is one of the problems of chemotherapy?
   2. Why are ingestible devices a good way to treat illnesses?
   3. What is one drawback of using solar energy or wind power?
   4. How have scientists changed cyanobacteria so that it produces fuel?
   5. What are two advantages of GMCs?
   6. What are two disadvantages of GMCs?
   7. What inspired John Pritchard to invent his water purification system?
   8. What are some benefits of Pritchard's invention?

The Risks and Benefits of Scientific Advancement

This week, science correspondent Jane Hopkins looks at scientific discoveries and
advances that could change our lives.

1 Many medical treatments produce unwelcome * side effects. Chemotherapy
   is a perfect example. But some advances could change the way doctors treat
   illnesses. For example, polymers can deliver * medicine to specific parts of the
   body and then dissolve. Instead of external injections, ingestible devices can be used
   to give patients the drugs they need in a less aggressive way. Many medical
   professionals would like to be able to deal
   with * illnesses without causing serious
   problems because of the drugs they
   prescribe or the treatments they provide.

2 Most people would prefer alternatives to fossil fuels for their energy needs. We have
   to find cleaner types of renewable * energy for the future. Alternative forms
   of energy, such as solar and wind power, are still expensive, but there is another
   interesting option. Scientists in the U.S.
Reading and Writing

4 Work in groups. Discuss the questions.
Which of the scientific advances in the article will have the biggest impact on our lives? Why? What relationship is there between the advances and overpopulation in the world? What other global problems could be solved through scientific advances?

5 Write a summary of the article. Use the guide for help.
• Read the text and underline important information.
• Use wh- questions to determine main ideas.
• Keep your summary concise.
• Use your own words.
• Do not give your opinion.

are working with cyanobacteria, which use sunlight and carbon dioxide to produce energy. They have genetically modified the cyanobacteria to produce ethanol. Ethanol is normally obtained by fermenting corn, but this method could provide a cleaner and cheaper way of producing this important fuel.

3Genetically modified crops (GMCs) are controversial, but a lot of us could be eating even more genetically engineered food in the future. Experts say that, today, 60% to 70% of processed food in U.S. supermarkets has genetically modified ingredients. GMCs have increased pest and disease resistance, are more tolerant to drought* and can increase the food supply in poorer countries. Critics, however, say genetically modified science could introduce allergens and toxins in food, change the nutrition of crops and create “super weeds”.

*Some scientific discoveries respond to situations caused by natural disasters. When the tsunami hit Southeast Asia in 2009, British water-treatment expert Michael Pritchard saw that the damage caused by this kind of disaster destroyed the systems that produced clean water. Water was everywhere, but no one could drink it. As a result, illness and disease spread* and water had to be brought in from outside the affected areas. This inspired Pritchard to invent a simple purification system using a very fine membrane and pump in a bottle, which filtered the dirty water and produced clean, drinkable water.

It is a cheap, practical solution to a serious problem that will help people in areas affected by natural disasters.

Your Glossary
advances
prescribe
drinkable
1. Work in pairs. Make a list of things you could do on a Friday night.

2. Draw lines to connect the parts of the conversation. Then listen to check.

1. Hi, Carol. **Would you like to go to a movie tomorrow night?**
2. Oh, that's too bad. **You shouldn't work so much!**
3. Perfect! **Afterward, we could have dinner.** There's this new Italian restaurant nearby.
4. I can meet you outside the theater at 7:00. **Does that work for you?**

a. I know. **But I could go on Thursday.**
b. That sounds like a plan! **See you Thursday!**
c. Oh, that sounds delicious! **d. I would love to, Andy, but I have to work late.**

3. Study the highlighted sentences in Activity 2 and complete the language box.

**Language Tip**

*Have to* is a phrasal verb. Use the auxiliary *do-does* / *did* to make questions and *don’t-doesn’t* / *didn’t* to make negatives. The negative form means: It's not necessary to do something.

- You don’t have to wash the car. The car is clean.
- He didn’t have to get up early. He was on vacation.

**Modal Auxiliary Verbs**

Modal auxiliary verbs are used before the past / base forms of other verbs to add certain meanings to the main verbs of sentences.

An affirmative / interrogative statement is made up of subject + modal auxiliary verb + base form of verb + complement. In the negative form, the adverb *not* is used before / after the modal auxiliary verb. To make questions, the modal auxiliary verb is moved to the end / beginning of the statement and a question mark is added at the beginning / end of the statement.
Modal Auxiliary Verbs

4 **Match the sentences from Activity 2 with the language functions.**
   - a possibility
   - an invitation
   - a recommendation
   - an obligation

5 **Read the e-mail and choose the correct modal auxiliary verbs.**

   Hey Dave,
   I hope things are going well. I got that summer job I was telling you about. It’s pretty cool!
   But I could / have to work until eight almost every evening, so my social life isn’t great at the moment. I would / should love to work here permanently, but I guess I could / should finish my studies first. There’s a great concert next weekend and I don’t have to work!
   Would / Could you like to go with Rachel and me? I shouldn’t / couldn’t spend so much money on the tickets, but I would / have to see Katy Perry once in my life! We could / have to have dinner after the concert. Let me know what you think.
   Well, I have to / could run. Take care and write when you can.
   Mandy

   **Your Glossary**
   - hope ___________________________
   - studies _________________________
   - once ____________________________

6 **Work in pairs. Student one, do Pairwork 7; student two, do Pairwork 19.**
1 Look at the photos of food businesses and discuss the questions.
Which of the food businesses would you prefer to start? What are the pros and cons of each option? Besides money, what else do you need to start your own business?

2 Watch the video and indicate if the statements are True or False.
1. Francesca Evans runs a food business*. T F
2. Francesca and Rani sell food in a restaurant. T F
3. Her business is more expensive than a restaurant. T F
4. There are four essential aspects to consider in a business. T F
5. Prices should be reasonable. T F
6. Location isn’t important for a business T F
7. A good location can provide convenience. T F
8. Highly advanced technology is required to run a business. T F

3 Watch the video again and take notes. Then use them to complete the summary.
Francesca Evans has her own ____________ based in New York City. She decided to have a food ____________, instead of a restaurant, because _____________. and she can _____________. Francesca learned a guide known as the ____________, which refer to _____________. of any business.
The first P stands for* _____________. One thing Francesca recommends is to ask yourself: _____________. The second P Francesca states* that you should _____________. The third P it refers to location. Before starting your operation, Francesca warns that you _____________. The final P stands for _____________. Francesca says these materials should be _____________. Finally, Francesca suggests using ____________ to run a business. She believes that having her own business _____________.

Your Glossary
requirements ____________
__________
__________
weddings ____________
__________
guests ____________
__________
4. Read the definitions and write the missing letters. 
   Watch the video again to correct your answers.

1. to manage your own company
   r ____ ____

2. services or goods
   p ____ ____ ____ ____ ____

3. the cost to the consumer
   p ____ ____ ____

4. good for competition
   g ____ ____ ____ ____ ____ ____

5. location
   p ____ ____ ____

6. something used to advertise a product
   p ____ ____ ____ ____ ____ ____

7. a financial plan to operate a business
   b ____ ____ ____ ____ ____

8. money earned through selling
   i ____ ____ ____

9. money paid by a company
   e ____ ____ ____ ____ ____

5. Value: Respect. Read the text and discuss the questions.

What three groups of people with special dietary needs are mentioned in the text? Where can these people find the food they can eat?

How can we show respect for people’s dietary requirements? If you invited someone over for dinner and, at the last minute, found out the person had special dietary needs, what would you do?

Many people have special dietary requirements. Between 10 and 15% of people in the world are vegetarians, but do they get the respect and attention they need? In many countries, there are now vegetarian restaurants. But on many occasions, like at business lunches, parties or weddings, there are no alternatives for vegetarians. This problem is similar for diabetics or for people who are gluten intolerant. However, in their cases, many stores and supermarkets have special sections with sugar and gluten-free food. Keep in mind* that if you are inviting guests over to eat, you should check if they have any special dietary requirements beforehand* and make any necessary accommodations*.
1 Work in pairs. Discuss the questions.
Would you prefer to be an employee or run your own company? Explain why.
What are the advantages and disadvantages of each option?

2 Read the e-mail and complete the chart.

<table>
<thead>
<tr>
<th>Strengths of Plan</th>
<th>Issues to Be Solved</th>
</tr>
</thead>
</table>

To: cchristens@quickmail.com
From: rcurtis@mailservice.com
Subject: My Project

Dear Cherie,

Per our discussion, here is an overview of my mobile food business project.

I’ve always loved cooking, especially baking. I trained as a chef and worked in a restaurant, but I want to be independent and run my own company. My idea is to provide customers with healthy food for breakfast, lunch and/or an afternoon snack. I’ve already started producing and selling boxed lunches and desserts and have established a small, but loyal, customer base. And the feedback has been very positive! I think I have quality products, but I don’t really know much about my competition. Also, I want to expand the business, so I need volume.

My idea is to cook and bake from my home because that’s what makes my food special. I can sell items from the truck I just bought. Right now, I am promoting the business with brochures and through the yellow pages. Normally, I leave the brochures in offices, libraries and schools. However, I think I should try to find better promotion methods since the business is growing slowly.

I have two people who help me with the food preparation and one driver/cashier. They’re all part-time but could become full-time if sales increase. Every month, I make a small profit, but I don’t have a clear idea of either my income or my expenses. My sister helps me with the bookkeeping, but she is not a trained accountant.

At the moment, I’m looking to hire one and have budgeted $2,500 per month for that person’s salary. Finally, I don’t know much about hygiene regulations and I suppose I could have an inspection from the authorities anytime.

Please let me know any feedback you have. I would greatly appreciate it.

Sincerely,
Roger
Set to Work

3 Look at the map and read the example report. Then brainstorm ideas to write two other similar reports.

4 Review each accountant candidate’s profile. Discuss and determine the best option. Support your decision.

1 Matilda Williams, 28. Studied accounting at Yale. Worked as a junior accountant for the city of Boston for five years and as an accountant for Walmart for three years. Has excellent references. Would like to earn around $3,000 a month and receive health insurance.

2 Henry Jacobs, 21. Studied business administration at the University of Colorado. Currently an intern in the finance area at Organic Foods, a chain of health food stores and restaurants. Ambitious and energetic and wants more responsibility. Would like to earn around $2,000 per month plus benefits.

3 Stacey Turner, 65. Studied finance at NYU and worked most of her career for McDonald's. Can handle budgets, salaries and tax questions. Recently retired, but looking for a part-time position and would like to earn around $2,600/month. No benefits requested.

5 Work in groups. Review all the information in the previous activities. Make a list of recommendations for Roger using the “Four P’s” on page 16 as a guide.

6 Find three useful websites like the one suggested that can help people start their own business.

7 Work in groups. Follow the instructions.
   • Select a digital format to present all your findings to the class.
   • Decide which ideas are the best for Roger.
1. **Listen to a radio host talking about eyewear technology. Fill in the missing information.**

**Eyewear Technology**

1. It _______ possible to have a computer in your glasses.
2. How _______ this technology _______?
3. The glasses _______ _______ a miniature display for data in one of the lenses.
4. Eyewear technology _______ _______ all the features of smartphones.
5. If users are driving or working, _______ eyewear technology _______ them?

2. **Complete the predictions.**

1. In five years, I will definitely __________________________.
2. In the future, I think schools will __________________________.
3. In my opinion, I don’t believe science will __________________________.
4. Next summer, my family will __________________________.
5. Tomorrow, I won’t __________________________.

3. **Read the text and fill in the spaces using the words in the box.**

<table>
<thead>
<tr>
<th>drugs</th>
<th>fossil</th>
<th>illnesses</th>
<th>infections</th>
<th>purifying</th>
</tr>
</thead>
<tbody>
<tr>
<td>side effects</td>
<td>solar</td>
<td>treatment</td>
<td>water</td>
<td>wind</td>
</tr>
</tbody>
</table>

Technology has an impact on every area of science. In medicine, the focus is on the preventive _______ of illnesses to avoid the _______ _______ caused by more aggressive _______.

Production of _______ _______ fuels will gradually decrease, so we will need to look closely at the cost of cleaner alternatives like _______ _______ energy and _______. Possibly the biggest problem for many people is access to clean _______. Dirty water causes many preventable _______. Fortunately, today there are cheap and easy ways of _______ water.

4. **Read the text and circle the correct word for each blank.**

Several years ago, letters and faxes took time to arrive and people didn’t expect immediate responses. Today, smartphones and computers provide us with messages, e-mails and calls instantaneously and we often feel we _______ respond to senders right away. Experts say that this situation is stressful since we have forgotten how to _______ disconnect from technology. In the case of work-related communications, we _______ probably respond to senders as soon as possible. However, with friends, we _______ take our time in getting back to them, unless it’s a serious matter. To avoid stress, the same experts believe we _______ unplug from technology every now and then. In their opinion, this _______ help us relax. Remember, you _______ be connected 24/7!

1. a. would  b. have to  c. could
2. a. shouldn’t  b. should  c. don’t have to
3. a. could  b. would  c. shouldn’t
4. a. couldn’t  b. would  c. should
5. a. shouldn’t  b. could  c. has to
6. a. don’t have to  b. should  c. could
5 Unscramble the words and complete the hidden phrase.

purcdto

ieprc

tiemocipvet

cenpal

niotorpom

guebtd

miecon

xesespne

6 Look at the texts. What do they say? Circle the correct answer for each.

a. Parents need to reserve seats in advance.
b. Parents shouldn’t arrive late since the auditorium is small.
c. Parents shouldn’t attend the concert if they’re going to be late.

a. You have to discard the medicine one month after opening the bottle.
b. You have enough medicine for more than one month.
c. You have to discard the unopened bottle of medicine after one month.

a. Joanna’s class won’t be in the afternoon this week.
b. Joanna’s class will be on a different day at a different time.
c. Joanna’s class will be at the same time on a different day.
**Instructions:** Use the tip of a pencil to spin a paper clip. Advance the number of spaces and complete the task. All predictions and sentences with modal auxiliary verbs must be made using complete sentences. One-word answers are not valid.

To finish, spin the correct number to land on the last square. Otherwise, lose a turn.
1 **Work in pairs. Discuss the questions.**

2 **Listen to the conversation and answer the questions.**
   1. What problem are the employer and employee discussing?
   2. What excuses does the employee give?
   3. What does the employer say about the bus service?
   4. How does the employee react to constructive criticism?

3 **Read the constructive criticism tips. Listen to the conversation again and check off the tips Ellie followed.**

   **Receiving Constructive Criticism Tips**
   1. Listen carefully and take note of the criticism.
   2. Don’t interrupt the person while they are talking to you.
   3. Don’t get defensive and make excuses.
   4. Accept criticism if it is valid.
   5. Analyze and evaluate what you heard and make changes if these will help.

4 **Add one extra tip to the list above.**

**Self-evaluation**

- I can identify key words that express opinions.
- I can effortlessly express my opinion in a conversation.
- I can skim a text to get an overall meaning.
- I can write a focused, concise summary.
- I can express several language functions using modal auxiliary verbs and the simple future.
- I can recognize the connotations of vocabulary related to the environment and technology.
- I can explain about business administration and its related vocabulary.
- I can offer ideas and suggestions to start a business.

Three things I need to do to improve:

---

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