SARS may have dominated the headlines in the spring of 2003, but it wasn’t the only weird disease on the World Health Organization’s radar screen. In central Africa, there was an outbreak of the dreaded Ebola fever. In Belgium and the Netherlands, a new strain of bird flu was wiping out entire chicken farms. The bird flu has spread to several provinces and “jumped from poultry to pigs and even people,” according to a news report.

The parade of frightening new maladies—SARS, Ebola, bird flu—continues, confirming that our species lives at the mercy of the microbes. It didn’t seem that way 30 years ago—not with smallpox largely defeated, AIDS still undreamed of, and medical science evolving at a fast clip. But even as optimists proclaimed victory over the germ, our big cities, factory farms, jet planes, and blood banks were opening new avenues for infection. The dark side of progress is now unmistakable; many of the advances that have made our lives more comfortable have also made them more dangerous. Some 30 new diseases have cropped up since the 1970s—causing tens of millions of deaths. Do we know enough about the origin of new diseases to prevent them? Could we avoid the next SARS or the next AIDS?

We don’t hold all the cards in this game. Most new diseases begin when a person catches something from an animal—a disease transmission shaped by chance or even the weather. However, as ecologists study the causes of disease emergence, they’re finding that human enterprise is a far more significant force. Almost any activity that disturbs a natural environment can enhance the mobility of disease-causing microbes. For example, in 1999, Malaysian pig farmers started pushing back the forest to expand their operations. As barns replaced forestland, displaced fruit bats started living in the rafters, bombarding the pigs’ drinking water with the now-known Nipah virus. According to one report, “The pigs developed an explosive cough that became known as the ‘one-mile cough’ because you could hear it from so far away.” The virus soon spread from the pigs to their keepers, causing extreme brain inflammation and killing 40 percent of the affected people. The outbreak ended when Malaysian authorities closed eight farms and slaughtered a million pigs. The threat was overwhelming and could never be taken seriously enough. However, the point is not that rain forests are dangerous. It’s that blindly rearranging ecosystems can be hazardous to our health.

When a microbe succeeds in leaping from one species to another, the new host is often a dead end. However, the infections we get from apes and pigs are a whole different story. When the Ebola virus jumps from an ape into a person, it often races
through a family or a hospital before burning itself out. And HIV is still spreading steadily after three decades of person-to-person transmission. It has infected some 60 million people since crossing over from chimpanzees. What turned it into a deadly disease was not just a new infectious agent but also a rapid increase of roads, cities, and airports, a breakdown of social traditions, and the start of blood banking and needle sharing. We placed ourselves in the path of the virus, we moved it around the world, and we're well ready to do it again.

SARS is only the latest reminder of how powerful those connections can be. The novel corona virus that causes the syndrome emerged from Guangdong Province, China. Pigs, ducks, chickens, and people live closely together on the district's primitive farms, exchanging flu and cold germs so rapidly that a single pig can easily develop human and bird viruses simultaneously. The double infections can generate hybrids that set off a whole new chain of human infection. The decisive factor is that these farms sit just a few miles from Guangzhou, a city that mixes people, animals, and microbes from the countryside with travelers from around the world. One could hardly design a better system for turning small outbreaks into big ones.

How can we lessen the danger? A long-term strategy would have to include modernizing the world's farms, improving basic health care, and stockpiling vaccines and antiviral drugs. As science illuminates the ecology of infectious disease, it may also inspire wiser and safer approaches to land use and wilderness preservation. Until then, surveillance will be doubly important. The good news is that the forces making microbes so mobile are also making them easier to track. Today even the most remote surveillance stations are tied into the Web-based Program for Monitoring Emerging Diseases. The world’s largest health agencies have created similar systems for sharing scientific research. If anything good has come of the SARS scare, it is a renewed commitment to ecological maintenance and environmental protection. The cost may be high, but such a significant commitment is always worth keeping.

The difficult level of lesson plan:

Basic  Elementary  Intermediate  Upper-Intermediate  Advanced

Text Structure: cause and effect
Teaching focus: cause and effect writing

Introduction

With the advance of new technology, people live a prosperous and convenient life. However, new viruses emerge at the same time as a result of human enterprise. Any human activity that disturbs the ecosystem can
enhance the mobility of microbes which pose a great threat to humans’ lives. To make matters worse, the rapid increase of roads, cities, and airports, a breakdown of social traditions, and the start of blood banking and needle sharing all contribute to the quick spread of the deadly diseases. Once again, we humans need to stop and think about what we have done to Mother Nature and what measures to take next.

I. Create Background

Directions:
(1) The teacher lets the students view the film “Outbreak” (1995) to help them have a general picture of how human beings might get infections from animals.
(2) Then the teacher can ask the students the following questions to help them recall their experiences of being threatened by SARS, which broke out in the spring of 2003.
1. What does SARS stand for? What kind of symptoms will a patient who gets infected by SARS have?
2. Remember the time when SARS broke out in Taiwan!? What was most people’s reaction to it? Did it affect the way you led your life or the relationship between you and others? How did you feel at that time?
3. What kind of lessons have you learned from the SARS outbreak?
4. In what way can human beings be able to stop such life-threatening diseases as SARS from breaking out?
(3) After the discussion of the questions, the teacher asks the students to do group discussion on the possible causes that might have triggered the outbreak of SARS by using the following graphic organizer.
II. Establish New Information

Directions: The teacher asks students to listen to the reading and then has students use the scanning strategy to find out the main idea of each paragraph. The following cause and effect graphic organizers can help them generalize the main idea of each paragraph better.

2.1 The first two paragraphs

→ How do weird diseases emerge in modern times?
Graphic organizer type: multiple causes leading to one effect

Effect
Weird diseases
(Ebola fever, bird flu, SARS, AIDS)

Cause #1
Cause #2
Cause #3
Cause #4
2.2 The third paragraph

→ How did human enterprise lead to the emergence of Nipah virus in 1999?
Graphic organizer type: chain of events

Students' production:

- Farmers pushed back the forest to expand their farms.
- Fruit bats started living in the rafters.
- Displaced bats contaminated pigs' drinking water.
  - Pigs coughed. The virus spread from pigs to farmers.
    - Forty percent of the affected people died.
    - Eight farms closed and one million pigs were killed.
2.3 The fourth paragraph
→How does HIV virus spread quickly from apes to humans and then from one person to another?
Graphic organizer type: multiple causes leading to one effect

Students’ production:

Cause #4
The increase of roads and cities

Cause #3
The start of needle sharing

Cause #2
The start of blood banking

Cause #1
A breakdown of social traditions

Effect
The quick spread of HIV
2.4 The fifth paragraph

→How did SARS emerge in the spring of 2003?

Graphic organizer type: multiple causes leading to one effect

Event: SARS emerged in the spring of 2003.

Because:

Because: There were primitive farms in Guangdong Province, where animals could easily develop human and bird viruses simultaneously.

Because: The double infections generated hybrids that set off a new chain of human infection.

Because: The big city, Guangzhou, mixed people, animals, and microbes from the countryside with travelers from around the world.
What can people do to stop deadly diseases from breaking out?

**Graphic organizer type: problem/solution**

**Cause**
Humans disturb Mother Nature.

**Effect**
New deadly diseases emerge.

**Solution 1**
Modernizing the world’s farms

**Solution 2**
Improving basic health care

**Solution 3**
Stockpiling vaccines

**Solution 4**
Wiser and safer land use

**Solution 5**
Surveillance

Students’ production:
III. Practice and Personalization

Directions:
3.1 In this part, the teacher asks the students to write about their own personal problems, for example, getting bad grades in English. Then the teacher asks the students to write down every possible factor that might contribute to their problems (multiple causes leading to one effect). The following graphic organizer will be of much help.
3.2 The teacher then asks the students to do pair work to discuss their problems and to give each other advice by using the following graphic organizer.
IV. Extension Activities and Application

Directions:
4.1 Group brainstorming

In this part, the teacher asks the students to do group brainstorming to discuss other types of cause and effect. When doing the practice, the teacher should give the following graphic organizers to the students first. What students have to do is give examples to illustrate the different types of cause and effect.
(A) One cause leading to multiple effects

Students’ production: skipping classes

- Scolded by teachers.
- Grounded by parents.
- Having no close friends in school.
- Not willing to study.
- Having no confidence.
- Bad grades in every subject.
(B) Cycle of events

Students’ production: drinking too much coffee
4.2 Writing practice
The teacher asks the students to expand their problems and advice they receive into a complete passage with two proper paragraphs. When writing the first paragraph, it is suggested that the causes of their problems should be listed in terms of their importance or time sequence. The second paragraph can focus on the advice they receive to improve the situation. Students can
start their first paragraph with” My biggest problem is ……….” and start the second paragraph with” The following ways can help me………….”

4.3 Complement (學生作品)
(A) 文華高中 318  6 號

My biggest problem is that I quarrel with others easily. It has bothered me for a long time. Although I don’t mean hurting others, it happens. When other people and I have awfully different opinions, I always think that I am definitely right. I’m too stubborn to tolerate different opinions. Moreover, I don’t have enough patience to wait for their explanation. Therefore, without enough patience, I can’t control my temper and then quarrel with others. Because of this, I don’t have many close friends. However, friendship plays an important role in my life, and I should figure out some ways to solve this problem.

The following tips that my friend gives me can help me solve my problem. First, I need to stand on others’ side and listen to their opinions entirely to know more about their situation. What’s more, I can take a deep breath, being friendly before I discuss issues with others instead of shouting at them. With these tips, I believe my life will be more colorful in the future.

(B) 文華高中 318  23 號

Since I graduated from junior high school, my biggest personal problem has been the weight problem. I have gained nearly six kilograms since then. I figure out three causes for this. One is that I seldom exercise. I only play basketball in my P.E. class. Another is that I like to eat chocolate. Trying to taste every kind of chocolate is my interest. The other is that I can’t control my appetite. Even though I am not hungry, when I see something tasty, I still want to have it. These are the reasons why I am heavier than I was before.

To solve the problem, I think the following ways offered by my classmate will help me a lot. First, I have to exercise at least thirty minutes a day. Going jogging will be a good choice. Another way is that I have to reduce the amount of chocolate I eat every day. I can bring little money when I go out. Besides, I should control my appetite, telling myself to eat only three meals a day. By doing these, I think I can become as thin as I was before.