

本文理解の深さを問う発問活動(各パート Q&A 活動) Can-Do 尺度例

「教科書本文を読んで、本文の流れを踏まえて重要な内容を理解することができる」

- | | |
|------------------------------------|-----------|
| ① 前提となる背景的事実や出来事について答えることが難しい。 | |
| ② 前提となる背景的事実や出来事について答えることができる。 …… | ② 「前提」 発問 |
| ③ 中心の命題(イイタイコト)について答えることができる。 …… | ③ 「命題」 発問 |
| ④ 背後の理由や詳細情報などの展開について答えることができる。 …… | ④ 「展開」 発問 |

※ Teacher's Manual ⑦ 「Can-Do リスト解説書」(pp.6-8, p.35, pp.37-38) 参照

Lesson 4 “Gorillas and Humans” 発問シナリオ概要

発問を通して本文の理解確認を行い、授業に慣れ、理解や考えを深めることを目的としている。教科書の脚注質問を、中心の命題(イイタイコト)発問と位置づけ、その前提となる背景的事実や出来事を引き出す発問と予想される生徒の回答をシナリオ化している。パートごとに、発話内容ごとにラベリングをしているので、発話の流れと内容を確認できるようになっている。レッスン全体を通して、教師が TM 補助資料集に基づく補足的情報を提示しながら、より深い理解を促す発問展開例になっている。また、文法的気づきを促す発話展開例も提示しているので参考にしてほしい。パート4の最後においては、脚注自由発問 “What can we do to save gorillas?” にかかる、発展的なディスカッション例を提示しているので、実際の授業時のディスカッション指導の参考にしてほしい。

Lesson 4 “Gorillas and Humans” 【Part 1】

【イントロダクション】

T: Today, we start to study “Lesson 4 Gorillas and Humans”. Have you ever seen gorillas in the zoo or on TV? I guess many of you have. What do you know about gorillas?

S: They are big animals. They have long arms and long black hair.

S: They live in Africa. They like bananas.

T: Do you know where gorillas live in Africa? Do they really live on bananas? First of all, let's check where they live.

T: Look at the map on the worksheet. (TM 補充資料集③, p.23) As you can see, there are 3 main areas where gorillas live in Africa. They are Nigeria, the western part of the Congo, and the eastern part of the Congo near Lake Edward. Gorillas cannot eat bananas in these countries. Lesson 4 is about an interview with Professor Yamagiwa. Let's see what he says about gorillas.

【山極教授について】

T: Now take a look at the first line spoken by the interviewer. Where does Professor Yamagiwa work for?

S: He is a professor at Kyoto University.

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T: That's right. He was a professor in the Graduate School of Science at Kyoto University and now he is the president of Kyoto University. Kyoto University is famous for its Primate Research Institute (霊長類研究所), where researchers study monkeys, chimpanzees, gorillas, and so on. In fact, Prof. Yamagiwa used to work there as a research assistant when he was young. Now he is an expert on gorillas. Can you guess what the word "expert" means?

S: I think an expert knows a lot of things.

T: Exactly. An expert is a person who has a lot of special knowledge. Professor Yamagiwa is an expert on gorillas. He writes many books on gorillas. He often lived with groups of gorillas. While living with them, he learned how gorillas communicate each other, how to greet them, and the rules of their society. *[showing his books to the students]*

【ゴリラと人間との類似性①】

T: Let's study further the interesting things about gorillas that Prof. Yamagiwa introduced to us. Look at the pictures and the Gorilla Facts. ②Do gorillas look similar to us? Did you find anything similar between them and us when you read the interview?

S: They have bigger bodies and scary faces, but they are similar to humans.

T: Right. They don't look like us. Their bodies and faces are not similar to ours. So ③how are gorillas similar to humans? What do they do that is just like what we do? (What about their actions? Do they make body contact with each other?)

S: They make eye contact with each other.

T: Yes, that's right. Just like us. ④Why do they do so? What is the purpose of their eye contact?

S: To greet each other and to invite others to play with them.

T: Correct. ④Could you explain a little further? Why is it important for them to greet each other or invite others to play?

S: Because they want to keep good relationships through face-to-face communication instead of body contact.

【“seem”の言語的ニュアンス(文法的気づき)】

T: You are right. OK class, look at lines 14-15. It says that they “seem to” keep good relationships through face-to-face communication. It doesn't say that they keep good relationships through face-to-face communication. What is the difference between these two expressions? Why did Professor Yamagiwa say that they seem to keep good relationships through face to face communication?

T: Suppose you join an eco-tour and go to a forest where gorillas are living. Do you think you can watch gorillas greeting each other by making eye contact?

S: Yes, I think we can.

T: How about inviting others to play?

S: Yes, we can watch them inviting others to play.

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T: That is right. We can watch or observe these actions of gorillas. How about the keeping of good relationships through face to face communication?

S: We can watch gorillas do face to face communication.

T: Yes, we can watch gorillas do face-to-face communication, but can we really observe with our own eyes that face-to-face communication is useful for keeping good relationships?

S: No, I don't think so.

T: That's right. Let me make this point clear. If we saw with our own eyes gorillas greeting each other, or inviting others to play, would we know that those actions are facts or opinions?

S: We would know they are facts.

T: Correct. How about gorillas keeping good relationships? Is that a fact or is it Prof. Yamagiwa's opinion?

S: It is his opinion.

T: That's right. So, I would like you to understand the reason why he used "seem" in his speech. "Seem" is used when the speaker or the writer wants to express his or her own idea.

【ゴリラと人間の類似性②】

T: For gorillas, face-to face communication is important to keep good relationships. According to Professor Yamagiwa, what style of communication is an important base in human conversation?

S: Face-to-face communication is.

T: Good. Now, class, think again about the similarities between gorillas and humans. Although humans and gorillas are different in appearance, such as in their body sizes, gorillas and humans show some similar communication patterns, right?

T: Monkeys such as ニホンザル, on the other hand, don't make eye contact: They look away. Gorillas and humans are different from monkeys in this aspect of the communication. In fact, both gorillas and humans belong to the same animal group. What are gorillas and humans called? Does anyone know?

S: Both gorillas and humans are apes.

T: That's right. Both gorillas and humans belong to apes, but monkeys don't. You can see that the same animal group members, such as gorillas and humans, have similar communication patterns. So, gorillas and humans are "relatives".

【ゴリラと人間のコミュニケーション比較】

T: All right, then. Let's think about communication patterns we have that are similar to those of gorillas. When do you use eye contact?

S: We usually use eye contact when we don't want to speak. We can send a message through eye contact.

T: Good answer. Do you think that eye contact can be a means of communication?

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S: Yes, I think so.

T: Eye contact is not actually a type of language, you know. The way of communicating in which we don't use language is called "non-verbal communication". We can express a lot of things through eye contact or gestures.

【人間の言語はどのように発達したのか】

T: Thank you. All right. Let's go back to the last opinion of Professor Yamagiwa. In his opinion, how did human languages develop?

S: They developed from the style of communication like face-to-face communication.

T: Yes, that's what he said. Let's think more about how human languages developed then. As we learned, gorillas are similar to humans in the way they make eye contact with each other. Is there any difference between the eye contact of gorillas and humans? *[showing the pictures of eye contact by gorillas]*

T: Look at how close they are when they make eye contact. Compared with humans, are they closer or do they stay further away from each other?

S: I think they are closer to each other. Humans do not get as close to each other as gorillas.

T: Good observation. So, why do gorillas get closer to each other compared with humans? What is it that humans have, and gorillas don't have?

S: I think it is language.

T: Exactly. Prof. Yamagiwa wrote in his book that humans developed languages so we don't have to get close to make eye contact.

Lesson 4 "Gorillas and Humans" 【Part 2】

【イントロダクション】

T: Look at the picture on page 61. What are the gorillas doing?

S: They are beating their chests. (They are doing chest beating)

T: Exactly. In Japanese, chest beating is called ドラミング. Gorillas beat their chests like a drum. The chest of a male gorilla is just like a drum. When they breathe in, their chests swell (become larger) like a drum. Can you demonstrate chest beating like a gorilla?

S: *[demonstration of chest beating]*

T: Good job. One thing you should notice is that gorillas do not beat their chests with their fists, but with their open hands, their palms. This is the same way we humans beat drums, right?

【ゴリラについてのイメージ】

T: What was your impression of gorillas' behavior before reading the textbook?

S: I thought that gorillas were scary.

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T: I can imagine that. And what was the interviewer's first impression of the chest beating by gorillas?

S: The interviewer thought that gorillas were very violent and dangerous.

T: Yes, that's right. The interviewer also got scared when they beat their chests. How does it make you feel? Do you feel the same way?

【ゴリラのイメージの背景的理由】

T: I think that most of us think of gorillas as violent or aggressive. Why do you think we have such an image of gorillas?

S: I think people think gorillas are aggressive because of their big bodies and their chest beating.

T: Good point. In fact, when people coming from Europe and America first saw the chest beating of gorillas, they thought that gorillas must be aggressive animals. Have you heard of the movie titled "King Kong"? It was originally produced in 1933. That movie helped give such an image of gorillas to people all over the world. King Kong was a giant gorilla, which was as big as a monster. In the movie, King Kong climbed up a building in New York, and beat his chest like a gorilla.

T: Thanks to this movie, the image that gorillas are aggressive and violent has been fixed in the minds of people. The movie also taught us wrongly that gorillas beat their chests with their fists, not with their open hands. I guess most of you also thought that gorillas beat their chests with their fists.

【ドラミングが伝えるもの】

T: So, class, I would like you to remember what we have learned in Part 1. Gorillas are similar to humans in their actions. They try to communicate with each other, right? Through their chest beating, there must be something that the gorillas want to convey. When humans have some ideas to convey, what do we use? Or what do we do?

S: We speak and have a conversation.

T: Exactly. We use language and our voices to communicate. So, while we use language as a communication tool, gorillas use chest beating as a way of communication. Chest beating is like a conversation between gorillas.

T: Now, according to Professor Yamagiwa, ② **what does the chest beating mean? Does it mean gorillas are angry?**

S: It doesn't always mean that they are angry.

T: Right, gorillas beat their chests not only when they are angry, but also when they have something to tell others. Then ③ **why do they beat their chests or when do they beat their chests?**

S: (They do so) When they want to catch others' attention, show excitement, or give warnings.

T: Right. Gorillas beat their chests for three purposes: to catch others' attention, to show excitement,

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and to give warnings. It seems that gorillas beat their chests in several different situations. It must be an important communication tool.

T: In the last lesson, I showed you the pictures of gorillas playing. Do you remember the young gorillas playing? ④Do young gorillas beat their chests when they are playing?

S: Yes, they often beat their chests in turns when they are playing.

T: Why do you think they do so? What do they want to do by beating their chest? To catch others' attention, to show excitement, or to give warnings? Before answering the question, let's think about human children. What do they do when they play?

S: They shout at each other.

T: Correct. When playing, young gorillas beat their chests, while human children shout at each other.

④Are these two behaviors similar?

S: Yes, I think so.

T: How are they similar? Do both of the behaviors have a similar or the same purpose?

S: Both young gorillas and young children want to communicate.

T: Good answer. What do young gorillas and young children want to show?

S: I think they want to catch others' attention, and show excitement.

【人間の子供とゴリラの子供の類似性】

T: Are there any other similarities between young gorillas and young children? I will give you an example. Young children, especially babies, try to catch others' attention. What do they do? Please give me an example.

S: For example, babies cry when they are hungry.

T: Why do they cry?

S: Because they can't speak a language.

T: Right. Gorillas also do not have a language like ours. They use other ways to communicate. Chest beating is a means of communication, right? Young babies use crying as a means of communication simply because they can't speak. Can you find the similarities between these two behaviors?

S: Yes. They both use a communication tool other than speaking a language.

【警告のためのドラミング及び“can”の言語的ニュアンス(文法的気づき)】

T: OK,④can you think of another example of chest beating?

S: I think that the adult male gorillas of the group beat their chests to give warnings.

T: ④When do they give warnings?

S: They beat their chests when two groups of gorillas are approaching each other.

T: Correct. ④What can happen when two groups of gorillas meet?

S: Trouble can happen.

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T: That's right. Does trouble always happen? Trouble "can" happen doesn't have the same meaning as trouble happens. Any volunteers?

S: I think trouble doesn't always happen.

T: Good guess! It means that it is possible that trouble happens.

T: Why do you think trouble might happen when two different groups approach each other? OK. Look at Gorilla Facts on page 61. It says that gorillas live in groups of around 10. If they get too close to each other, it means that one group is intruding on the territory of the other group. Do gorillas always beat their chests to express that they want to fight with other gorillas?

S: No.

T: Good. OK class, I would like you to remember how gorillas beat their chests. Gorillas don't use their fists; they use their open hands. If gorillas beat with their fists, it means that they are ready to fight. Chest beating with open hands shows that gorillas have a different purpose. ④ **What do the gorillas beat their chests for?**

S: To warn each other not to come any closer to avoid trouble.

T: Very good. They want to tell other gorillas, "I don't mean to fight. Let's separate from each other." Remember the picture I showed you? *[showing the picture again]*

T: When gorillas beat their chests, they stand up. This is not a good position for fighting. Prof. Yamagiwa explained that gorillas beat their chests in order to suggest that each of the gorillas is as strong as the other, and that they should move away from each other without fighting.

【平和的な動物】

T: As you have learned in Part 2, gorillas are not violent animals. Chest beating looks scary, but it is a very useful means of communication to express what the gorillas want to do. More importantly, they beat their chests to give warnings so that trouble does not happen. Has this changed your image of gorillas?

S: Yes, it has.

T: What kind of image do you have now?

S: I think they are peaceful animals.

Lesson 4 "Gorillas and Humans" 【Part 3】

【これまでの流れのまとめ】

T: In Parts 1 and 2, we learned some surprising facts about gorillas. What did you learn so far?

S: We learned that gorillas use eye contact to keep good relationships.

T: That's right. What else?

S: They beat their chests.

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T: Do you remember why they beat their chests? Do they beat their chests because they are angry?

S: No, not always.

T: That's right. Then why do they beat their chests? Are there other reasons?

S: They do so when they want to catch others' attention, show excitement, or give warnings.

T: Correct. Young gorillas beat their chests. Do you remember when they beat their chests?

S: They do so in turns when they are playing.

T: Good. Do you also remember the other example of chest beating?

S: Gorillas beat their chests when two groups of gorillas are approaching each other.

T: Are they young gorillas or adult gorillas?

S: Adult gorillas.

T: What do they beat their chests for? What is the purpose of their chest beating?

S: Each group warns the other not to come closer.

T: What can happen if each group comes closer?

S: Trouble can happen.

T: Do gorillas in each group want trouble to happen?

S: No. They don't.

T: That's right. They give warnings and avoid fighting by chest beating. Gorillas use chest beating as a means of communication, just as they use eye contact. Before you learned about them in Parts 1 and 2, what was your impression of gorillas?

S: I thought gorillas were aggressive animals because they have big bodies and scary faces.

T: You mean you thought of gorillas as aggressive animals because of their appearance?

S: Yes.

T: Any other opinions?

S: I thought they were aggressive animals because they beat their chests.

T: OK. Their actions made you think that gorillas are aggressive, right? Then how have your impressions of gorillas changed?

S: Now I think that gorillas are peaceful animals.

S: I now know that gorillas have good communication tools such as eye contact and chest beating. I thought chest beating was an aggressive action, but I learned it has a different meaning.

T: I'm very impressed with your opinions.

【イントロダクション】

T: In the beginning of the interview in Part 3, how does the interviewer describe gorillas? What does she think about them?

S: She thinks gorillas are peaceful animals.

T: Right. Gorillas seem to be peaceful animals. How do they live? Class, please look again at Gorilla Facts on page 61. What does it say?

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S: Gorillas live in groups of around 10 members. Each group has a male and a few females and children.

【仲裁役としてのメスゴリラ・子供のゴリラ】

T: Right. They seem to live in harmony with the other group members, avoiding physical contact and fighting. But are they always peace-loving animals? ②Don't they fight each other at all?

S: They sometimes fight among their group for food.

T: Does this mean that gorillas are not peace-loving animals?

S: Gorillas sometimes fight for food, but I still think they are usually peaceful animals.

T: That's right. Gorillas sometimes fight for food. ②When two gorillas fight for food, do they keep fighting each other until one of them gets the food?

S: No, they don't.

T: OK. ③Do gorillas stop fighting naturally, or do other gorillas act as peace-makers by stopping them fighting and making peace between them?

S: Other gorillas usually try to stop the fight.

T: Correct. Other gorillas stop the fight from continuing. When humans are fighting, who stops the fight?

S: I think stronger or more powerful people may stop the fight.

T: Good answer. Then how about gorillas? ③Who stops the fight in the gorillas' world?

S: Smaller gorillas such as females or younger ones do.

T: Exactly. It is quite different from the way humans usually try to stop fights, isn't it? Female gorillas or younger gorillas usually stop the fight between angry male gorillas, whose bodies are larger.

T: ④But how do the smaller gorillas stop a fight?

S: By making eye contact.

T: What happens then? After the smaller gorillas make eye contact with the fighting gorillas, what do they do next?

S: They approach the larger gorillas and stare at them. Then, the angry gorillas move away from each other.

T: That's right. Can you guess why the angry gorillas move away from each other? Any volunteers?

S: I think the smaller gorillas make eye contact and try to say, "Fighting is not good. Why don't you be friends again?" and the angry gorillas understand that.

T: Good. Then, what happens to the angry gorillas after they understand the smaller gorillas?

S: They are not angry anymore.

T: Good answer. They calm down. The angry gorillas can understand that the smaller gorillas are trying to persuade them to stop fighting.

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【力による解決の弊害】

T: ④What would happen if other larger gorillas used force to stop a fight?

S: If other large gorillas used force to stop a fight, frustration would remain and another fight may happen.

T: So, what happens if smaller gorillas stop a fight?

S: The angry gorillas stop fighting. There is no more fighting and no frustration remains.

T: ④Why does no frustration remain when smaller gorillas stop the fight?

S: Smaller gorillas don't use force. They use eye contact instead.

T: Good point. Smaller gorillas use eye contact instead of force. Gorillas will willingly stop fighting thanks to the peacemaking actions of the smaller gorillas. The larger gorillas, who are more powerful than females or younger gorillas, accept the wishes of the less powerful gorillas and can calm down their excitement and control their own actions. Since the larger, angry gorillas stop fighting through their own choice, no frustration remains.

【ニホンザルについて】

T: For your further information, do you remember what I told you about ニホンザル? For *nihonzaru*, staring at each other is a kind of threat. Only stronger monkeys can stare at others. Weaker monkeys have to look away. If a weaker monkey looks back at a stronger one, it will be attacked by the stronger one. You can see the difference in the use of eye contact between these two types of animals, apes and monkeys.

T: Now, class, so far in Part 3 we have learned about another good way that gorillas use eye contact. Smaller gorillas, who are usually less powerful, make eye contact to stop fights between larger gorillas. This way, they can keep further trouble from happening within their group. In other words, they can solve problems in a peaceful way without using force.

【人間の紛争解決手段】

T: Class, I would like you to think about what humans do. What do we usually do to stop people fighting?

S: We use force.

T: We often use force to control other people. Sometimes countries use force. What kinds of force do countries use? I mean, what do countries do?

S: I think countries start wars.

T: Good answer. They use great military force to stop fights between countries. There is another kind of force that countries can use. What do you think it is? Any volunteers?

S: I think it is economic power.

T: Exactly. It is true that some countries send their military forces (troops) to other countries who are at war to try and stop them fighting. For example, some countries sent military troops to

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Afghanistan to stop the war there. However, the United Nations also uses economic force, or 'economic sanctions', on countries such as Iraq which are thought to be a threat to the international community to force them to change their policies. Using economic sanctions, some groups or countries such as the United States try to damage the economies of countries that are at war to make living conditions worse for the people in order to encourage them to stop fighting. When do you think people feel their lives are getting worse?

S: When they don't have enough food and goods.

T: Good. So, how do countries use their economic power to harm people's lives? Any volunteers?

S: They stop exporting the goods that people need for their daily lives.

T: That's right. Some countries stop exporting goods that people use in their daily lives. On the other hand, sometimes they stop importing goods such as oil from the countries at war. By doing this, the countries lose an important way of making money. That makes the lives of their people worse. Do you think that military or economic force can solve all the problems in the world?

S: No, I don't think so.

【人間が学ぶべきこと】

T: That's right. Take countries in the Middle East, for example. Wars have been breaking out there one after another. Why can't we stop the wars there? Think again about the gorillas. Why can gorillas stop fights?

S: Because they don't use force.

T: Exactly. That's what I want you all to think about. Why can gorillas stop fights, but humans find them difficult to stop? Any ideas?

S: I think we have trouble stopping wars because we continue to use force.

T: Good point. If we use force, whether it is military or economic, we might start another war. The more force we use, or the more often we use force, the more we hate each other.

T: Actually, some countries have used their military or economic power to stop wars. However, other wars still remain in the world. Some countries start to hate each other and new wars break out. A peaceful world has yet to be achieved. In contrast, in the gorillas' world, fights are avoided without the use of force, right?

T: So, in this lesson, what can we learn from gorillas?

S: Smaller gorillas use eye contact to stop fights among larger gorillas. Instead of force, they use eye contact as a peaceful means of communication. This is the lesson we can learn from gorillas.

Lesson 4 "Gorillas and Humans" 【Part 4】

【これまでの流れのまとめ】

T: In Parts 1-3, we learned some interesting and surprising facts about gorillas. They are similar to

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us humans in the way they communicate with each other. However, we humans mostly use language as a means of communication. In contrast, gorillas have their own way of communicating using their bodies, such as eye contact and chest beating. I should remind you that the methods of communication that gorillas use are an importance basis for human conversation. Our language developed from these kinds of communication. We also learned that gorillas are not aggressive animals; they are peaceful animals. By communicating through eye contact and chest beating, they can prevent fighting without the use of force.

【ゴリラの生息地の確認】

T: In Part 4, we are going to learn about something very serious which is happening in the regions where gorillas live. Before we begin to study Part 4, let's make sure we know in which African countries most gorillas live. Look at the map on the worksheet again. (Look at the map on p.58 of the textbook.) As you can see, there are three main areas where gorillas live. They are Nigeria, the western part of the Congo, and the eastern part of the Congo near Lake Edward.

【ゴリラの現在の状況】

T: Now, let's learn what is happening in areas where gorillas live in Africa. ②What is the present situation of gorillas? How many gorillas live in Africa now?

S: About 200,000 gorillas live there.

T: What is happening to them? Are they increasing in number? (Or are they under the threat of extinction?)

S: Their numbers have been decreasing and they are dying out.

T: Right. Actually, gorillas are in a very dangerous situation. They are threatened with extinction. How much have their numbers been decreasing?

S: In some areas, their numbers have become less than half in a few decades.

T: That's right. It is said that if we do not change this situation right now, they may be extinct in the near future.

【絶滅危惧種補足】

T: Now gorillas can be called an endangered species. Can you guess what that means?

S: I think it means gorillas are decreasing in number.

S: It means gorillas will disappear from the earth.

T: Good guesses. An endangered species is an animal which is in danger of dying out. Gorillas are therefore endangered. In other words, they are becoming extinct.

T: As you can see in the handout, the gorilla is an endangered species categorized as CR in the Red List. CR stands for "Critically Endangered". It means that gorillas are very likely to be extinct in the wild in the very near future.

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【ゴリラ絶滅の危機の原因】

T: ③What are considered to be the causes of this situation then?

S: People have been destroying the forests in the areas where gorillas live.

T: ④Why have people been destroying the living areas of gorillas?

S: To collect rare metals.

T: Yes, Africa is an important area for producing rare metals. So ④what else is happening in the areas where gorillas live?

S: Hunting gorillas for their meat has been increasing.

T: Correct. Can you guess the reason? Does hunting gorillas have something do with mining rare metals?

S: When people work to find rare metals in the forest, they need food. So they hunt wild animals in the area for their food.

T: Exactly. You are right. While working in the habitat of gorillas, they hunt gorillas for their food. People eat gorillas. They call it “bush meat”. (Not just gorillas, though, they also eat elephants and rhinos.) The mining of rare metals has led to the destruction of the areas where gorillas live and the hunting of gorillas for food.

【レアメタル採掘事例：コンゴ】

T: OK. Let's study a little bit further about the countries where rare metals are produced. Look at the supplementary material 補充資料 written in Japanese. (TM 補充資料集③, p.26) Can you see which part of Africa produces rare metals?

S: The Congo does.

T: Correct. The Congo is one of the areas where gorillas live. The Congo is an important habitat for gorillas. At the same time, the Congo produces rare metals. In the Republic of Congo, they dig for, or mine, rare metals.

T: Look at the 補充資料 again. Can you see what kind of rare metals are produced in that area?

S: Yes, it is coltan.

T: That's correct. Coltan is also called tantalite. The Congo is one of the main areas in which tantalite is produced.

T: Because people are mining rare metals there, they have been destroying the forest areas where the gorillas live.

【レアメタル使用の目的】

T: OK. So ④what are rare metals used for? Why do we need them? Let me show you one example. Look at the picture on TM 補充資料集③, p.26. You can see how many rare metals are used in smartphones. And I would like you to pay attention to タンタル. That is tantalite, or coltan, which is produced in the Congo. Tantalite is very important for downsizing smartphones, that is, making

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smartphones become smaller, improving their performance and making them better. We especially need tantalite to make condensers for smartphones.

T: ④Do you know any other things which use rare metals?

S: Computers and game machines.

T: That's correct. Do you think smartphones, computers and game machines are necessary for our daily lives?

S: Yes, I think so.

T: Can we live without these devices?

S: No.

T: Why not?

S: Because we use our smartphones every day.

S: I love computer games. I cannot spend a single day without playing my favorite computer games.

S: Without computers, I cannot send e-mails. Without smartphones, I cannot use LINE and cannot talk with my friends over the phone.

S: Computers are closely connected to human lives. We cannot spend a single day without using them.

S: Computers make our daily lives comfortable and convenient.

T: All right. So, we can see rare metals play an important role in making our lives comfortable.

【レアメタル採掘・盗掘がもたらす影響】

T: As you can see, modern life would not be possible without rare metals.

Do you think that rare metals can bring a lot of money to the people in African countries?

S: Yes, I think so.

T: The governments in places in Africa such as the Congo continue to dig up rare metals, even though they have to cut down the trees and destroy the environment. Not only governments, but also ordinary citizens are trying to look for metals to make money. So how do they find rare metals?

Do governments allow all of their people to mine rare metals?

S: No, I don't think so.

【アフリカ諸国の内戦事情】

T: So what do the people do?

S: They dig rare metals secretly without permission.

S: They dig rare metals even though it is against the law.

T: Good answers. They mine rare metals illegally. These metals are often then illegally exported to countries that need rare metals.

T: Now, class. I want to ask you a further question: Can a government stop its people from digging for metals illegally? The answer is that it is difficult for governments to do so. I will tell you why.

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In some African countries such as the Republic of the Congo or Rwanda, there have been wars between different groups of people who live in the same country. This is called a “civil war”, 内戦. Wars between the government and groups of people who are against the government break out. Because of the confusion in civil wars, the government cannot control its citizens. They mine rare metals illegally. These metals are often then illegally exported to countries where rare metals are needed. What is more, in the Republic of the Congo, Rwanda, and Uganda, military groups which are against their governments mine rare metals illegally to make money. They buy weapons with the money they get. In these countries, there have been civil wars, wars between people of the same country. These wars have done serious damage to the areas where gorillas live.

T: Remember. These rare metals are produced in the same areas where gorillas live. Gorillas are becoming extinct because the areas where they live have been destroyed by humans. I would like you to understand that, although we live far away from Africa, the home of gorillas, our convenient modern lives are connected to the fact that gorillas are becoming extinct.

【ゴリラを絶滅から救うためにできること：リサイクル】

T: There must be something we can do to save their lives, though. What can we do for the gorillas? What should each of us do?

S: I think that we should recycle smartphones.

T: That’s a good point. Take the amount of tantalite used in electronic devices in Japan, for example. The total amount of tantalite used in these devices is 1,700 tons, which is equal to 16% of tantalite reserves. In other words, the cities in Japan are like rare metal mines. If we recycle smartphones, we will be able to reuse the rare metals.

【ゴリラを絶滅から救うためにできること：募金】

T: What else can we do?

S: We can collect (raise) money and send it to Africa to help protect gorillas.

T: Good idea. Talking about collecting, or raising money, I’d like to tell you about a famous woman who worked very hard for gorillas. Her name is Dian Fossey. She worked very hard to let people in the world know about gorillas and how difficult it is for gorillas to continue to live in their habitats. This is Dian Fossey. *[showing her photo]*

T: You might remember that Dian wrote a book, “Gorillas in the Mist”, and the book was made into a movie. This is the DVD. The title is, “GORILLAS IN THE MIST: The Adventure of Dian Fossey”. *[showing the DVD]*

T: Dian died in 1985, and it is said that she was killed. Her death is still a mystery. We still don’t know who killed her. She was and still is famous for her efforts to protect the gorillas. After her death, the Dian Fossey Gorilla Foundation was established. In fact, you can find the website of the Dian Fossey Gorilla Foundation. You can donate money to this foundation. The foundation

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cooperates with the governments of Uganda, Rwanda and the Republic of the Congo to preserve the living areas of gorillas and protect them.

【ゴリラを絶滅から救うためにできること：地元民への環境教育・NGO活動】

T: Are there any other opinions you'd like to share?

S: I think that people should learn more about gorillas and what is happening to them.

T: Good point. What kind of people should learn about gorillas? I mean, the local people or people who live outside of the countries where gorillas live?

S: I think both.

T: OK, so why do you think people living in areas near the gorillas should know about them?

S: Because they hunt gorillas, eat bush meat, and destroy the forests where the gorillas live.

T: Exactly. Let me tell you about one program that educates people on protecting gorillas and the areas in which they live. It is called 'POPOF' (The Pole Pole Foundation) and is an NGO founded in the Congo. Prof. Yamagiwa also got involved in the foundation of POPOF. It aims to preserve gorilla populations and promote education to help preserve the natural environment.

【ゴリラを絶滅から救うためにできること：エコツーリズム】

T: Let me tell you about another program. This one is called 'Gorilla Tourism.' People combine protecting gorillas with economic activities. They protect national parks where gorillas live and invite tourists from all over the world to watch gorillas.

T: On a Gorilla Tour, only one tourist group of 6-7 people can visit the forest where gorillas live. They have to stay 7m away from the gorillas and watch how groups of gorillas live in the wild. This is a very valuable tour. Thanks to this project, the number of hunters has decreased and the number of gorillas has begun to recover again.

【レッスン全体まとめ】

T: In this lesson, you have learned a lot about gorillas. Human beings and gorillas are very similar: Both humans and gorillas communicate, though gorillas have different communication tools from ours. It is we humans who created the aggressive image of gorillas because of their appearance and our misunderstanding of their behaviors. Gorillas are in danger of extinction. As you can see, we humans are responsible for making the gorilla an endangered species. We pursue a modern and comfortable life using electronic devices such as computers and smartphones. We cannot live without these devices.

T: But remember, class, it is totally up to us humans to preserve where gorillas live. Gorillas and humans are both apes: we belong to the same animal category, or group. We have to coexist, live together in harmony. If gorillas die out, it means their living areas will have been totally destroyed. It also means that global environmental destruction will have become more serious, or worsened.

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T: It seems to me that gorillas are very close to us humans. If gorillas should die out, we will be losing our 'relative'. And then what kind of animals will die out after gorillas become extinct? I would like you to think about that.

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