

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」

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|------------------------------------|-----------|
| 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.4-5, p.33, pp.35-36) 参照

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 suppose that many of you have seen gorillas in the zoo or on TV before. 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, p.19) As you can see, there are 3 main areas where gorillas live in Africa. They are Nigeria, the Western part of Congo, and the Eastern part of Congo near Lake Edward. Gorillas cannot eat bananas in these countries. Lesson 4 is about the 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 of the interviewer. Where does Professor Yamagiwa work for?

S: He is a professor at Kyoto University.

T: That's right. He is a professor in the Graduate School of Science at 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 the groups of gorillas. While living with them, he learned how to greet gorillas, a gorilla language and the rules in the society of gorillas. He lived with gorillas and learned how gorillas live. *[showing his books to the students]*

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【ゴリラと人間との類似性】

T: Then, let's study further about the interesting things about gorilla that Prof. Yamagiwa introduced to us. Look at the pictures and Gorilla Facts. ②Do they look similar to us? Did you find something similar to 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. Then, ③how are gorillas similar to humans? What do they do just as we do? (What about their actions? Do they make body contact?)

S: They make eye contact with each other.

T: Yes, they act like us. ④Why do they do so? What is the purpose of eye contact?

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

T: Correct. Again, ④why do they do so? 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: OK. You are right. Then, 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 the forest where gorillas are living. Can you watch gorillas greeting each other by making eye contact?

S: Yes, we can watch them greeting each other.

T: How about inviting others to play?

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

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

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

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

S: No, I don't think so.

T: OK. Let me make the point clear. As for observing greeting each other, or inviting others to play with our own eyes, are these facts or opinions?

S: They are facts.

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

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S: It is his opinion.

T: That's right. So I would like you to understand the meaning of "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. Then according to Professor Yamagiwa, what style of communication is an important base in human conversation?

S: Face-to-face communication is.

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

T: However, monkeys such as ニホンザル don't make eye contact: They look away. Gorillas and humans are different from monkeys in the communication pattern. 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 the same animal group and monkeys don't. You can see that the same animal group members, gorillas and humans have similar 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. Think about our communication patterns which 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?

S: Yes, I think so.

T: Eye contact is not language, you know. A way of communicating in which we don't use a 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. Then, let's think about how human languages developed. As we learned,

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gorillas are similar to humans in making eye contact with each other. As for making eye contact, is there any difference between 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 a little bit away from each other?

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

T: Good point. Then, why are gorillas closer to each other compared with humans? What is it that humans have and gorillas don't have?

S: I think it is a 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 47. 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 have to notice is that gorillas do not beat their chests not with their fists but with their open hands, 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.

T: I can imagine that. Then, what was the first impression of the interviewer about chest beating by gorillas?

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

T: Yes, that's right. The interviewer also said that she got scared when they beat their chests. What do 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 they are aggressive when they first see their big bodies and their chest

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beating.

T: Good point. In fact, when the people coming from Europe and America saw the chest beating by gorillas for the first time, they thought that gorillas were aggressive animals. Have you heard of the movie titled “King Kong”? It was 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 monsters. In the movie, King Kong climbed up the building in New York, and did chest beating like a gorilla.

T: Thanks to this movie, the image that gorillas are aggressive and violent has been fixed. This movie also gave us the wrong information that Gorilla beat their chests with fists, not with open hands. I guess most of you misunderstand that gorillas beat their chests with fists.

【ドラミングが伝えるもの】

T: Then, 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? In this 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 the language and speak out to communicate. So, as we use languages as a communication tool, gorillas use chest beating instead. Chest beating is like a conversation between gorillas.

T: Then, according to Professor Yamagiwa, ②What does the chest beating mean? Does it mean they 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. Then ③why 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, and to give warnings. It seems that gorillas beat their chests in different circumstances. It must be an important communication tool.

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

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

T: ④Why do you think they do so? What do they want to do by beating their chest?

S: They want to invite other gorillas to play.

T: Correct. By beating their chests, young gorillas invite other gorillas to play, telling that they are very excited and encourage others to play more.

T: What about human children? What do they do when they play?

S: They shout at each other.

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T: Correct. While 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 similar are they? 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 both 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 similarities between young gorillas and young children? I will show you an example. Young children, especially babies, try to catch others' attention. What do they do? Please show 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. 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 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. Then, ④can you find another example of chest beating?

S: I think that the adult male gorillas of the group beat their chest when they 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.

T: Correct. Does the trouble always happen? Trouble “can” happen doesn't have the same meaning as trouble happens. Any volunteer?

S: I think trouble doesn't always happen.

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

T: Why do you think trouble might happen when the two different groups are approaching? OK. Look at Gorilla Facts on page 47. It says that they live in groups of around 10 gorillas. If they get too close to each other, it means that they intrude on the territory of the other group. Do the gorillas beat their chests to express that they want to fight with other gorillas?

S: No.

T: Right. Class, I would like you to remember how gorillas beat their chests. Gorillas don't use their

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fists; they use their open hands. If gorillas beat with their fists, it will mean that they are ready to fight. Chest beating with open hands shows that gorillas must have different purposes. ④ What do the gorillas beat their chests for?

S: To give a warning to each other about coming 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 described that gorillas beat their chests in order to suggest that each of the gorillas is as strong as the other, and they should leave 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 gorillas want to do. More importantly, they beat their chests to give warnings so that trouble may not happen. Have you changed your image of gorillas?

S: Yes.

T: What kind of image do you have?

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 Part 1 and 2, we have found 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.

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 do so 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 chest beating?

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S: Each group warns the other about coming closer.

T: What will 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 want trouble to happen.

T: That's right. They give warnings by chest beating and avoid fighting by chest beating. Gorillas use chest beating as a means of communication, as they use eye contact. Before you learned about gorillas 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 opinion?

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

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

S: After I learned about gorillas, my impression changed. Now I think that gorillas are peaceful animals.

S: I also have changed my idea. Now I know gorillas have good communication tools such as eye contact and chest beating. I thought chest beating was an aggressive action, but I learned chest beating has 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 is her idea?

S: In her idea, 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 47. What does it say?

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 keep in harmony with the other group members without fighting, avoiding physical contact. However, are they always peace-loving animals? ② Don't they fight each other?

S: They sometimes fight for food in their group.

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

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

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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 food?

S: No, they don't.

T: O.K. ③Do these fighting gorillas stop fighting naturally, or do other gorillas act as peace-makers, or make peace between these gorillas, and stop the fight?

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 ways humans usually try to stop the fight, isn't it? Female gorillas or younger gorillas usually stop the fight between the angry gorillas, whose bodies are larger.

T: ④Then, how do the smaller gorillas stop the fight?

S: Through 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 volunteer?

S: I think the smaller gorillas make eye contact and try to say, "Fighting is not good. Be friends again" and the angry gorillas understand it.

T: Good try. Then, what do the angry gorillas do after they understand the smaller gorillas?

S: They will not be angry anymore.

T: Good answer. They will calm down. The angry gorillas can understand that the smaller gorillas try to persuade them to stop the fight.

【力による解決の弊害】

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

S: If other large gorillas use force to stop a fight, frustration remains and another fight may happen.

T: Then, 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 can stop the fight willingly thanks to the peacemaking action by the smaller gorillas. The larger gorillas, who are more

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powerful than females or younger gorillas, accept the less powerful gorillas and can calm down their excitement and control their own actions. Since the larger angry gorillas stop the fight through their own choice, no frustration remains.

【ニホンザルについて】

T: For further knowledge, do you remember what I told you about ニホンザル? For Nihonzaru, staring at each other is a kind of threatening. Only stronger monkeys can stare at the other. The weaker monkey has to look away. If the weaker monkey looks back at the stronger one, they will be attacked by the stronger ones. You can see the difference in the use of eye contact between these two animals, apes and monkeys

T: Now, class, in Part 3, so far we have learned another good way for gorillas to use eye contact. The smaller gorillas, who are usually less powerful, make eye contact to stop the fight between the larger gorillas. So they keep further trouble from happening within their group. In other word, they can solve the 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 fighting?

S: We use force.

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

S: I think the countries start war.

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

S: I think it is economic power.

T: Exactly. True, some countries send military force (troops) to other countries at war to stop fighting. For example, some countries sent military troops to Afghanistan to stop the war there. Also, the United Nations uses the economic force called 'economic sanction's on countries such as Iraq which are thought to threaten the international community to force them to change their policy. By using the economic sanction, some countries or groups such as the United States try to damage the economy in the countries at war and make people living there worse and encourage them to stop the war. When do you think people feel their lives are getting worse?

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

T: Good point. Then how do they use their economic power to harm the people's lives? Any volunteer?

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

T: That's right. Some countries stop exporting goods that people use for their daily lives. Sometimes they stop importing goods such as oil from the countries at war. People there may lose the ways to

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get profit. That makes the lives of people there 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: Yes. Take the countries in the Middle East for example. Wars break out one after another. Why can't we stop the wars? Think about gorillas. Why can gorillas stop the fight?

S: Because they don't use force.

T: Exactly. That's what I want you all to think about. Any opinion?

S: I think if we continue to use force, we cannot stop wars.

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, in the world, some countries have used military or economic power to stop wars. However, there still remain wars in the world. Or other countries start to hate each other and the new wars break out. A peaceful world has not yet been realized. In contrast to the human world, gorillas can avoid fights without using force, right?

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

S: Smaller gorillas use eye contact for stopping a fight among larger gorillas. They don't use 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 about some interesting and surprising facts about gorillas. They are similar to us humans in the way they communicate with each other. We mostly use our languages as a means of communication. In contrast, gorillas have their own communication styles by using their bodies, such as eye contact and chest beating. I have to remind you that such communication styles gorillas use are the importance basis for human conversation. Our language developed from this style of communication. We also learned that gorillas are not aggressive animals; they are peaceful animals. Through eye contact communication and chest beating, they can prevent fighting without using force.

【ゴリラの生息地の確認】

T: In Part 4, let's learn something very serious which is happening in the regions where gorillas are living. Before beginning to study Part 4, I have to make sure in which countries of Africa most of the gorillas live. Look at the map on the worksheet again. (Look at the map on p.44 of the

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textbook.) As you can see, there are 3 main areas for gorillas to live in. They are Nigeria, the Western part of Congo, and the Eastern part of Congo near Lake Edward.

【ゴリラの現在の状況】

T: Now, let's learn what is happening in where gorillas live in Africa. ②What is the present situation of gorillas? What is happening to them? Are they increasing in their numbers? (Or are they under the threat of extinction?)

S: Their numbers have been decreasing and they are becoming extinct.

T: Right. Actually gorillas are in a very dangerous situation. They are threatened with dying out. How many gorillas used to live in Africa ten years ago?

S: About 120,000 gorillas lived there.

T: Then how many are living now?

S: Only 30,000 to 50,000 of them are living now.

T: That's right. In other words, the number has become less than half of that of ten years ago. It is said if we do not change this situation right now, they may be extinct in 10 to 30 years.

【絶滅危惧種補足】

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

S: I think gorillas are decreasing in number.

S: Gorillas will disappear from the earth.

T: Good guess. Gorillas will die out. An endangered species is an animal which is dying out from the earth. In other words, they are becoming extinct.

T: As you can see in the handout, a 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.

【ゴリラ絶滅の危機の原因】

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

S: People have been destroying the living areas of gorillas in the forest.

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

S: To collect rare metals produced in Africa.

T: Yes, Africa is an important area for producing rare metals. Then, ④what else is happening in the living areas of gorillas?

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 for

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their food.

T: Exactly. You are right. While working in the habitat of gorillas, they hunt gorillas for their food. People eat gorillas. It is called “bush meat”. (Not only that, they also eat elephants and rhinos.) Mining rare metals has caused destroying the living area for gorillas and hunting 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.22) Can you see which part of Africa produces rare metals?

S: Congo.

T: Correct. Congo is one of the countries where gorillas live. Congo is an important habitat for gorillas. At the same time, Congo produces rare metals. In the Republic of Congo, they are digging, or mining rare metals.

T: Look at 補充資料 again. Can you understand what kind of rare metals Congo produces?

S: Yes, it is coltan.

T: That's correct. Coltan is also called tantalite. Congo is a main producing area of tantalite.

T: People are mining rare metals. They have been destroying the living areas of gorillas in the forest.

【レアメタル使用の目的】

T: OK. Then, ④what do you use rare metals for? Why do we need them?

S: To use them in cellphones.

T: That's right. Look at the picture on the top of p.51. You can see how many rare metals are used in cellphones. And I would like you to pay attention to タンタル. That is tantalite, or coltan, which is produced in Congo.

T: Tantalite is very important for downsizing cellphones, that is, making cellphones become smaller, or improving their performance and making cellphones better. We especially, need tantalite to make condensers for cellphones.

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

S: Personal computers and game machines.

T: That's correct. Don't you think cellphones, personal computers and game machines are necessary for our daily life?

S: Yes, I think so.

T: Can we live without these devices?

S: No.

T: Why not?

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S: Because we use my cellphones 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 smart phones, I cannot use LINE and cannot talk with my friends over the phone.

S: Computers are related to human lives. We cannot spend a single day without using computers.

S: Computers make our daily lives comfortable and convenient.

T: All right. We can see rare metals play an important role when we enjoy convenient lives.

【レアメタル採掘・盗掘がもたらす影響】

T: As you can see, we cannot live our modern life without rare metals.

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

S: Yes, I think so.

T: Good point. The governments in Africa, such as Congo, continue to dig up rare metals even though they have been cutting down the trees and destroying the environment.

T: Not only governments but also their citizens are trying to look for metals to make money. Then, how do they find rare metals? Do the governments allow all people to mine rare metals?

S: No, I don't think so.

【アフリカ諸国の内戦事情】

T: Then, what do they do?

S: They dig rare metals secretly without permission.

S: They dig rare metals against laws.

T: Good try. Good answer. They mine rare metals illegally. These metals are often illegally exported to the countries where rare metals are really needed.

T: Now, class. I want to ask you a further question: Can the government ask people to stop digging metals secretly? The answer is that it is difficult for the government to do so. I will tell you why. In some African countries, such as Congo, or Rwanda, there have been wars between the groups of people who live in the same country. This is called "civil war", 内戦. Wars between the government and the groups of people who are against 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 illegally exported to the countries where rare metals are really needed. What is more, in Congo, Rwanda, and Uganda, the military groups which are against their governments mine rare metals illegally to make money. They buy weapons with the money. In these countries, there were civil wars, wars between the people of the same country. These wars did serious damage to the living areas of gorillas.

T: Remember. These rare metals are produced in the living areas of gorillas. Gorillas are becoming extinct because their living areas have been destroyed by humans. I would like you to understand

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that although we are living far away from Africa where gorillas live, our modern convenient life is connected with 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: So, there must be something we can do to save their lives. What can we do for gorillas? What should each of us do?

S: I think that we should recycle mobile phones.

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

T: Good idea. When we talk 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 the gorillas and how difficult it is for gorillas to live on in their habitats. This is Dian Fossey. *[showing her photo]*

T: You must remember that she wrote her book "Gorillas in the Mist", and the book was made into a movie. This is the DVD whose 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 is still famous for her effort to protect the gorillas. After her death, the Dian Fossey Gorilla Foundation was established. In fact, you can find the HP of the Dian Fossey Gorilla Foundation. You can donate money to this foundation. This foundation cooperates with the governments of Uganda, Rwanda and 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: Any other opinion?

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 local people or people living outside of the countries where gorillas live?

S: I think both.

T: Then, why do you think the people in the living areas have to know about gorillas?

S: Because they have a tradition to eat bush meat, and destroy the forest where gorillas live or hunt

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gorillas.

T: Exactly. Let me tell you one activity for educating people about protecting gorillas and their living areas. It is called 'Popof', an NGO founded in Congo. Prof. Yamagiwa got involved in the foundation of Popof. It aims at preserving gorillas and promoting the education to 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 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 appearances 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 mobile phones. 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 from the earth, it means their living areas will have been totally destroyed. It also means that global environmental destruction will have become more serious, worsened.

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

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