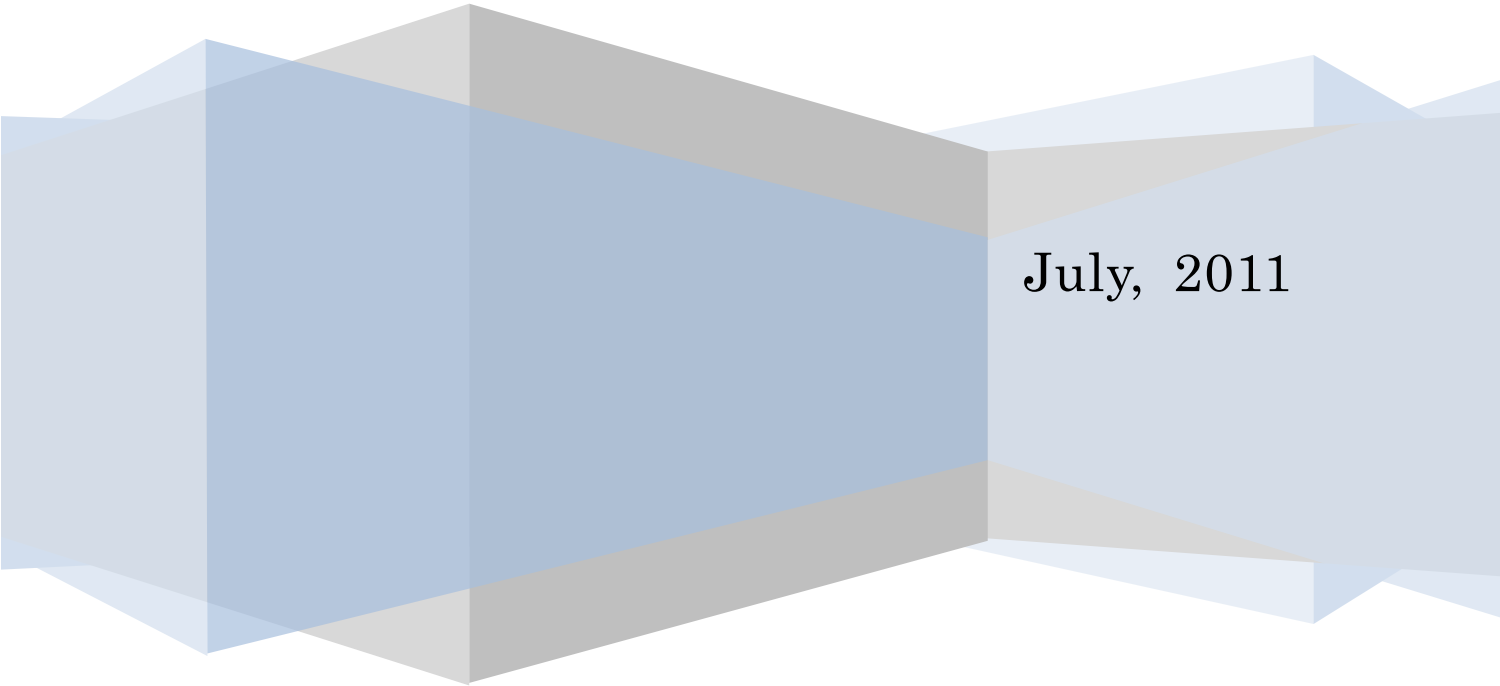


Discussing the Nuclear Accident

原発事故のはなし

Lesson Plans for Elementary, Middle
and High School Levels

The Japanese Society for Environmental Education
“Discussing the Nuclear Accident”
Lesson Plan Development Working Group



July, 2011

Introduction

To the teachers and children/students who use these lesson plans in class:

“There was a strange stillness. The birds, for example – Where had they gone? Many people spoke of them, puzzled and disturbed.” (Rachel Carson, *Silent Spring*)

In 1962, a scientist named Rachel Carson published “*Silent Spring*.” The world her book portrayed, warning of the environmental damage caused by agrochemicals and pesticides, is now becoming a reality in our local communities. On May 7th, 2011, during a visit to Iitate Village, Fukushima Prefecture, I witnessed the beauty of the natural, satoyama-countryside: the gentle colors of the flora and trees, the insects, birds, and glimpses of various other wildlife. But “spring was silent,” in that there were no signs of people, people who should have been there.

I received an email from an acquaintance living in Iitate Village saying that children who had been evacuated from Fukushima were being bullied at their new schools based on radiation pollution fears. There was an urgent need for education to spread correct information on radiation exposure. Already, one-third of Iitate Village’s children, 195 elementary and middle school students, have been evacuated to other schools throughout Japan.

The president of the Japanese Society of Environmental Education released an emergency statement on May 20th, 2011, entitled “To the Schools and Communities that have Accepted Evacuee Children from the Fukushima Daiichi Nuclear Accident.” In order to prevent any further cases of bullying towards children who had evacuated from the nuclear accident area, the Society immediately established a working group to create these lesson plans.

If there are children at your school who have evacuated from Fukushima Prefecture or the Tohoku disaster area, please try to imagine the pain and suffering they have gone through. They have been ripped from their natural surroundings and the lives they knew in their beautiful hometowns. They have been separated from family and friends. They are now living in areas unknown to them and do not know if or when they will be able to return home.

These lesson plans have been designed for elementary school level “Ethics”, middle school level “Ethics” and high school level “LHR” classes, for one-hour intervals. We hope that these lessons will also serve as a starting point for children around the world, starting with those who have experienced so much sorrow due to the Tohoku disaster, to “share in understanding” others’ grief.

Asaoka Yukihiro “Discussing the Nuclear Accident” Lesson
Plan Development Working Group Head, Japanese Society of
Environmental Education, July 17, 2011

Contents

Introduction	1
Guidance Plan for Elementary Schools (Upper-grades)	3
Guidance Plan for Middle School “Ethics” Class	6
Guidance Plan for High School Students (LHR, etc.)	11
Materials 1: Related News Articles	21
• Mainichi Shimbun (April 13 th , 2011)	
• Keizai News, (April 14 th , 2011)	
• Asahi.com News (April 15 th , 2011)	
Materials 2: The Japanese Society of Environmental Education	
President’ s Emergency Statement	23
Working Group Members	

Guidance Plan for Elementary Schools (Upper-grades)

1 . **Subject/Theme: Fairness, Equality** 4-(2)

2 . **Handout: "Taro's Problem"**

3 . **Reason for the Subject/Theme:**

The spread of and exposure to radiation from the Fukushima Daiichi Nuclear Power Plant has caused serious damage throughout the Tohoku region. Especially in the Fukushima Prefecture disaster area, families dealing with distress caused by resettlement, worries about radiation exposure's effect on health, soil pollution problems, etc., are, even now, being forced to evacuate to neighboring communities and capital cities. These circumstances require a strong showing of support for the children of these families. However, a serious problem has arisen: In communities that have accepted evacuees, some local children have shown prejudice and made discriminatory remarks against the children refugees.

This lesson aims to provide support and guidance for children in these communities, encouraging them to base their judgments of radiation pollution on reason and an attitude of fairness and equality towards refugee children. This is line with the aims of the government curriculum guideline's "Item Entry Guideline Points" 4 (2): "Endeavor to implement justice through fair and equal treatment of all, without discrimination or prejudice towards anyone." In thinking about the issues that concern those children affected by the Tohoku disaster, this lesson also makes students aware of the basic values of a democratic society.

The creation of "Taro", a character representing a typical child from the disaster area, is an important part of this lesson. He has lost a parent to the earthquake and tsunami, faced the hardships of life due to emergency evacuation, and is discriminated against based on his dialect and fears of radiation exposure. In addressing Taro's problems, students can amply understand and imagine how one would feel under the circumstances. The lesson also emphasizes the need for making judgments based on scientific knowledge in order to prevent discriminatory speech and conduct. It teaches that radiation exposure under a certain standard level is minimal and cannot be transmitted to others, as well as the fact that radiation levels in the areas and surrounding schools that have accepted evacuees have tested for the same amount of radiation as in Fukushima Prefecture. Here, though the teacher should base what they say on reliable data, even if that data is unavailable, it is crucial that these facts are transmitted firmly to students during the lesson.

We cannot expect this lesson alone to immediately resolve the problem of discrimination. In order to effectively build upon the lesson, there needs to be other related life/learning guidance. The lesson can be opened up progressively to the local community and parents. It can also be tied into other human rights education issues (AIDS, disability persons, foreigners living in Japan, etc.).

In this way, by intentionally incorporating the curriculum into the school as a whole, we would like to see schoolchildren raised to have a fair and equal attitude regarding other matters as well.

4 . Study Guidance for the Lesson Period

(1) Lesson Period Aim

- To nurture an attitude of fairness and equality towards evacuee transfer students.

Guidance Plan for Elementary Schools (Upper-grades)

Lesson Plan Development

Stage	Study Activities & Main Questioning	Anticipated Student Response	Instruction Points to Remember
Intro	○ Recall a relationship with a friend close to you.	<ul style="list-style-type: none"> • Getting along well together • Sometimes fighting 	<ul style="list-style-type: none"> • Develop interest in the case of Taro
Development	<p>○ "How do you think Taro felt?"</p> <p>○ Predict the reason for Taro not attending school:</p> <ul style="list-style-type: none"> • "Taro stopped attending school because of something he was told by a friend. What do you think he was told?" <p>○ Understand the problem of words like "Radiation Boy/Girl"</p> <ul style="list-style-type: none"> • "Why did he stop going to school after being called this?" <p>○ Understand that there are many children in the same circumstances as Taro.</p> <p>○ Understand correct information</p>	<ul style="list-style-type: none"> • Really sad. • Why am I being bullied? • I want to go home to Fukushima. • You're gross! • You're creepy! • Drop dead! • Because he felt he was being labeled. • Because he thought he would be treated kindly, but instead was told something awful. • Because he felt that the radiation exposure was not his fault. • I didn't know there were so many children like Taro. • The other children were mistaken about Taro. 	<ul style="list-style-type: none"> • Speak in simple terms while posting flashcards on the blackboard (reference written plan on board) • Emphasize that Taro doesn't know why he is being discriminated against. • Add a simple explanation of the Fukushima nuclear problem. • The word provided is only an example. Be sure to instruct that it not be used on its own outside of class. • It would be good to have an article introducing a case of discrimination against children exposed to radiation.

	<p>regarding radiation.</p> <ul style="list-style-type: none"> • What do you think about the child who said the mean things? What do you think about Taro?” <p>○ Understand that Taro’s predicament is also connected to oneself.</p>	<ul style="list-style-type: none"> • It’s terrible that they were saying mean things based on gossip. • This should be told squarely to Taro as well. • There’s also the possibility that I have been exposed to a small amount of radiation. • If I had switched schools and was told the same thing, I would be depressed. • Everyone is making an effort to solve the problem. 	<ul style="list-style-type: none"> • Teach that radiation exposure below a certain standard level is relatively safe and not infectious. • Introduce the fact that radiation measurements are being taken around the school, and that many people are making efforts to keep the children safe.
Conclusion	<p>○ Fill-in the worksheet</p> <p>○ Present what you wrote.</p> <p>○ Listen to what the teacher has to say.</p>	<ul style="list-style-type: none"> • I thought a lot about the evacuated children’s situation and want to meet them. • I think we have to treat not just Taro, but other people fairly, as well. 	<ul style="list-style-type: none"> • Have students write a letter encouraging Taro to come back to school. • Discuss ways of being kind to your close friends and people who are socially discriminated against.

5. Outline for “Taro’s Problem” Handout

Taro has transferred to Capital City’s A-Elementary School from Fukushima Prefecture. He and his mother are living together. His father passed away recently.

Taro has a bright personality and loves soccer, and soon makes friends. But, one day, a friend starts imitating his dialect. Then another student avoids walking past him so they won’t come into contact in the hallway. On top of this, he is mocked for “always wearing the same clothes.” Taro is becoming gloomier by the day.

Finally, one day, Taro stops wanting to go to school. The reason for this is because his classmates have started calling him “Radiation Boy.” This name makes him understand all the reasons he is disliked.

Every day, Taro becomes more and more deeply distressed. What should he do?

6 Blackboard Plan


<p>● Taro's problem</p> <ul style="list-style-type: none"> Transfer student from Fukushima • Father has passed away • Loves soccer • Imitating dialect/accnt • Being avoided • “wears the same clothes every day ! ” <p>◎ Why did Taro stop going to school?</p> <ul style="list-style-type: none"> • He was being labeled. • He thought they would treat him more kindly. • It's not his fault he was exposed to radiation. 	<div data-bbox="1007 488 1326 741" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Copy of a Newspaper article</p> </div> <p>★ What about radiation ?</p> <ul style="list-style-type: none"> → Safe under a certain standard level → Not contagious! → Efforts to remove it
--	--

7. Worksheet

Ethics: “Taro’s problem”

Name ()

◎ Write a letter encouraging Taro to come back to school as quickly as possible.



Guidance Plan for Middle School “Ethics” Class

1 . **Subject:** Compassion

2 . Handout: “Radiation is scary”: Discrimination against schoolchildren refugees from Fukushima (Mainichi Shimbun, April, 13th, 2011)

3 . **Reason for addressing this theme:**

The following guidance plan was designed for middle schools that, though not necessarily directly affected by the Great East Japan Earthquake Disaster, may be hosting transfer/admitted students from the disaster area. Because it incorporates a real newspaper article as a handout, special care should be taken if there are transfer/admitted students in the class.

Though some months have passed since the Great East Japan Earthquake Disaster, the Fukushima Daiichi Nuclear Power Plant is still emitting radioactive material, and the issue of evacuation remains for many schoolchildren. But for those communities that have not been directly affected by the disaster, the initial urgency of the event has faded, and there is less of a sense of personal involvement in the issue.

Perhaps due to differences in understanding in these communities, transfer/admitted students from the disaster area have also had to deal with the additional psychological pressures of careless words and actions. Faced with this reality, we thought that schoolchildren should be raised with a sense of empathy for those who have experienced such sorrow, and so developed this Ethics lesson plan in line with the Contents of Ethics Education: “2, Concerned mainly with how we are connected to other people”, “(2) to develop a kind-hearted mind towards humanity and a sense of compassion towards others.”

The sentiments described in the article “Thoughtless Speech and Conduct Towards Evacuated Schoolchildren” are based not only on fears of the earthquake disaster and radiation leaking from the nuclear power plant, but are also largely influenced by a lack of compassion and a certain narrow-mindedness. We may say this is due to a weakening of human relationships, whereby students separate new members from the group as “special” and do not allow them to join a circle of friends. However, because students have a low awareness of this fact, we hope that the article “Discrimination Toward Evacuated Children” will make them more aware of what it means to alienate others.

Also, because people have been unable to refute the kinds of words and actions described in the articles due to ignorance about radiation and nuclear power, we hope to make clear that radiation is different from a contagious disease and to dispel the air of rumors and misleading information surrounding this issue.

As a guide:

Though “nuclear power” and “radiation” are currently hot topics, we would like students to think carefully about how careless words and actions directed towards children refugees are indicative of a deep-seated narrow-mindedness and a lack of compassion present prior in ourselves. In order to do this, rather than rushing to conclusions and further action, we would like students to envision “another self” who has been the target of similar words and actions. Especially for middle school students who have difficulty expressing their feelings, we would like to stress the importance of the “Dialogue with Oneself” worksheet as a means of composing their thoughts. The teacher should look over what students are writing at their desks, offer appropriate guidance and act as a comprehensive facilitator during the class.

Topic 2” in the worksheet is unspecified so that students are vigilant and think seriously about new topics that come up in class. It is provided so that the topic can change with the development of the lesson and to address the needs of the students. Though this lesson does not touch much upon radiation information beyond confirming that it is not contagious, needless to say, it is important that students think more about radioactivity by obtaining correct knowledge in other areas, such as Science.

4. Lesson Period Guidance

(1) Lesson Period Aim

- To make students aware of the existence of discrimination towards middle school students who have been forced to transfer schools after the Tohoku disaster, and to have students consider what it means to alienate someone as “less of a person.”
- To develop students’ minds so that they are more kind-hearted toward other human beings and to develop a sense of compassion for others.

(Contents of Ethics Education: 2. “Concerned mainly with our how we are connected to other people” (2))

(2) Development of the Lesson Period

Stage	Study Activity & Main Questioning	Anticipated Student Response	Instruction Points to Remember
Intro 5 minutes	○ Envision the current situation of the Tohoku disaster area: “Do you know what the situation is like, now, after the earthquake?”	<ul style="list-style-type: none"> • Water drainage at the nuclear plant is still inadequate. • There is still the threat of radiation fallout. • There are still people living in evacuation centers. 	<ul style="list-style-type: none"> • Make an environment where students can express their opinions freely.

<p>Development 35 minutes</p>	<p>○ Make students aware that evacuated children are being bullied and face discrimination.</p> <p>“Did you know that in the midst of all this, these type of incidents are happening now around us?”</p> <p><Teacher reads aloud></p> <p>○ Understanding today’s topic:</p> <p>“Today, I want us to think about the possibility of discrimination towards evacuees happening around us.”</p> <p>Understanding the theme of the lesson period:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Why do you think there was discrimination against the evacuees?</p> </div> <p>“Let’s try writing on our worksheets.”</p> <p>Categorize student opinions</p> <p>“The class seems divided between those who think it’s related to radiation and those who think it’s something else.”</p> <p>○ Clear up any misunderstandings about radiation: “Do you think that radiation can be transmitted from person to person?”</p> <p>○ Confirm that radiation is not contagious: “First, I’d like to make clear that because radiation is not an infectious disease, it is not contagious. Those with internal radiation exposure</p>	<p>>Worksheet description></p> <ul style="list-style-type: none"> • It’s only some light teasing. • I don’t think that person is such a big problem... • So what if they poked fun at their dialects? • Its just happens when you feel annoyed. • It’s just a way of satisfying curiosity about someone you don’t know. • I’m scared of radiation and radioactivity, and they make me anxious. • I just thought of the word “radiation” off the top of my head. 	<ul style="list-style-type: none"> • Pass out copies of the article and have students read it in a relaxed atmosphere. • Communicate clearly to students that radiation is not contagious. • Because this is “Ethics” class, make it clear
-----------------------------------	--	--	---

	<p>can only affect other people at extremely high doses. Because radioactive material from Fukushima was dispersed in the air, there is no chance of being affected by indirect radiation from those who were exposed. Though this topic should be widely discussed by now, why do you think these kind of incidents still happen?</p> <p>○ Have students realize what constitutes careless speech and conduct: “Why do you think they teased someone they didn’t know?”</p> <p>○ Stand in the shoes of the person who was told the remarks: “It seems like they didn’t think much about what they were saying, but how do you think the child who evacuated from Fukushima felt?”</p> <p>○ Realize the importance of thinking from the other person’s point of view. (Describe) [Topic 2] Try putting yourself in the other person’s shoes. How do you feel?</p>	<ul style="list-style-type: none"> • It’s not that they were looking to tease them. They just didn’t think that much about them. • It’s shocking. • It’s kind of funny. • After escaping from the disaster, it must feel like a double shock for them. • They must be at a loss of where to go. • It must have brought back even more heart-wrenching feelings on top of the earthquake, tsunami and radiation damage they had experienced. • They must hate Chiba Prefecture. <p>>Worksheet description></p> <ul style="list-style-type: none"> • I’ve teased people lightly, but without 	<p>topic is “Careless actions and words,” touching less upon radiation itself than the need for more opportunities to study about radiation.</p> <ul style="list-style-type: none"> • If there are no opinions from students, you may describe Topic 2 as “How they felt when they went back.” • Students should think carefully about how careless practices can leave big scars on others. • Give students ample time to look carefully inwards at themselves.
--	---	--	---

	<div style="border: 1px dashed black; height: 40px; width: 100%;"></div>	<p>thinking about how the other person felt.</p> <ul style="list-style-type: none"> • I think it was a bad thing to do. • I feel like this hits me right in the heart. • I was just thinking about myself. • This isn't just about radiation, but also about how we say things lightly without thinking about the feelings of the other person. 	
<p>Conclusion 10 minutes</p>	<p>○ Listen to the teacher's lecture, and think back again on today's theme: "Sometimes the things we say without thinking can really hurt others. Today's case dealt with the violent effect that careless words did to evacuees from Fukushima, but I have a feeling that similar things are happening in other areas, too. I've often heard that transfer students worry too much about what others think about them, and it ends up stifling their own personalities. I think if we open up our hearts and put ourselves in other people's shoes, then we can widen our relationships with one another. What do you think? Please write freely your final impression of the class." < Worksheet description ></p>	<p>Free students from the perspective of "discrimination towards children refugees," and expand the topic to make it more personal. Have them write their own thoughts freely.</p>	

5. Worksheet (example)

“Radiation is scary”: Discrimination against schoolchildren refugees from Fukushima (Mainichi Shimbun, April 13th, 2011)

Year Class Number Name

1. Why do you think there was discrimination against the refugees?

2. Topic:

Your thoughts:

3. Conclusion (impressions, your own thoughts, etc.):

Guidance Plan for High School Students (LHR, etc.)

“Let’s start discussing our energy policy! Before that, remember those in Fukushima.”

1. Background for designing these teaching materials:

Due to the nuclear power plant accident, Fukushima high school students have been forced to evacuate their homelands, and unable to return home for an extended period, pass the days anxiously waiting. On top of this, they have to face discrimination and misconceptions regarding radiation.

However, students outside of Fukushima are more concerned about the topic of “energy-saving” cutbacks than “nuclear power plant accident”, “disaster victims” and “reconstruction aid” issues. There is now less interest in those who were forced to evacuate due to the nuclear power plant accident.

As such, there are worries that if the media does not provide periodic news on those in Fukushima within the nuclear and alternative energy policy debate, their pain and suffering will be forgotten. As such, concern may disappear for those in Fukushima.

2. Goals of these teaching materials:

- To have students re-live what it must like for Fukushima high school students who were forced to evacuate, so that they can come to understand how Fukushima students feel and keep this etched in their memories.
- To raise students who are able to make concerned judgments, while keeping in mind the people and local communities that exist in the background of the nuclear/alternative energy debate.
- To nurture students who can make scientifically based judgments, taking into account that one of the reasons for discrimination and misconceptions regarding radiation is a lack of knowledge.

3. As a guide:

In order to have students re-live what Fukushima high school students experienced, while at the same time having them remember what school life was like from before the accident until now, we designed a worksheet that expresses the typical pattern of an evacuee’s experience in blog form.

However, many students may not write anything on this worksheet.

As it may be hard for students to make choices that are difficult for high school students in Fukushima, rather than making them put the various problems of the situation into words, the teacher should persist in making a class environment conducive for students to experience things that are difficult to imagine.

Also, though it is difficult to have students comprehend everything about radiation, the readings should help lower the hurdle of mass media regarding radiation

information. It should be firmly communicated that radiation-related discrimination and prejudice against those in Fukushima is scientifically irrational.

There will probably also be students who are glad this hasn't happened to them. If the school is within TEPCO's jurisdiction, students should be made aware of their own involvement through a concrete, local example, such as the local use of energy that is produced and sent from Fukushima. Students should be made aware of their own roles in society, involved in making the pressing decisions regarding energy policy that the near future requires.

As irrational bullying of Fukushima transfer students at the high school level is unlikely, we designed this lesson plan to be thrown into one period of extended homeroom or science/geography & history/civics. Though this was our intention, the resulting contents are, admittedly, somewhat excessive. However, we would like to communicate the message that we are aiming for a certain mark here: i.e., to raise students who can imagine future energy policies, not based solely on surface information (such as electricity price or environmental impact), but on their effect on various people, communities, society and culture.

4 Lesson Period Guidance

(1) Lesson Period Goals

- To share in common the feelings of insecurity that Fukushima high school students have in order to keep them in students' memories.
- To have students acquire the minimum amount of knowledge on radiation/radioactivity through organization of keywords.
- To make students aware of their own personal involvement in addressing energy policy, and to enable them to imagine those people and regional communities affected by policy.

(2) Development

Stage	Study Matter & Main Questioning	Anticipated Student Response	Instruction Points to Remember
Intro 5 minutes	“What was the impact of the nuclear power plant accident?”	-Worries about radiation -Awareness of energy-saving measures -Inconvenience of scheduled blackouts -Appreciation of electricity	It's possible that that no one mentions the evacuees from Fukushima. After students have expressed their own opinions, guide the discussion toward the topic of people in Fukushima.

<p>Development 20 minutes</p>	<ul style="list-style-type: none"> • “How do the Fukushima high school student evacuees feel, and what kind of lives are they leading now?” ”Look back and think about how the evacuees have been feeling from the accident until today.” • Pass out Worksheet 1 • “Right now, many high school students from Fukushima are living as evacuees (for example, there are 175 transfer students in 80 high schools in Saitama Prefecture (including those evacuated due to the earthquake).” “What do you think is the most difficult thing for them to deal with?” • If you were in the same situation, what do you think would happen to your club activities, your student life, your friends, your job/career plans, your plans for higher education, your future life, your neighborhood connections, etc.? 	<p><</p> <ul style="list-style-type: none"> • Some students start writing without thinking very deeply. • Other students don’t write anything.> •Not having any possessions, not being able to go home, not being able to meet friends, no private space, worries about the future... 	<ul style="list-style-type: none"> • Distinguish between the impact of the tsunami and the nuclear accident on evacuations. • Lay out the different kind of evacuation levels based on urgency (such as immediate evacuations after the explosion and extended evacuations until the end of May), followed by taking out some time for students’ thoughts. •Devise a way for students to feel the reality of the situation by providing concrete examples from real communities. <p>After providing specific examples, have students think concretely about what would happen to each of them.</p>
-----------------------------------	---	--	---

<p>Development 15 minutes</p>	<p>“Why did the hotel take that stance?”</p> <p>”Let’s read the provided handout.” Pass out Handout 1</p> <p>“The need for judgment based on scientific knowledge”</p>	<ul style="list-style-type: none"> • I think it was a cruel way to treat them. But was based on: • Worries about those who are different. • Worries about radiation. • Doing it for the benefit of other customers. 	<ul style="list-style-type: none"> • Communicate the existence of discrimination and misunderstandings regarding radiation • Communicate that the amount of radiation exposure for people in Fukushima is not enough to cause immediate health damage, and firmly stress that damage from radiation is not contagious.
<p>Conclusion 10 minutes</p>	<ul style="list-style-type: none"> • Pass out Worksheet 2 <p>Lecture from the teacher</p>	<ul style="list-style-type: none"> • About the costs and safety of alternatives to nuclear power • Interest in the future of energy policy, but with a sense of powerlessness/apathy 	<ul style="list-style-type: none"> • Touch on issues besides cost and safety, including residents living in the area, local society and culture. • Make students aware of their own role as involved parties in the future of energy policy.

5 . Worksheet 1

This is a blog (fictional) written by high school student living near the nuclear people power. If it were you, how would you continue writing the following sentences?

3/11 Today, there was a surprisingly huge earthquake. Club activities were canceled, and I rushed home from school.
Everything was out of sorts at home, but at least my family and friends were safe. Thank goodness. But I wonder what will happen next...

3/12 Today, school is canceled due to yesterday’s earthquake. I spent the day cleaning up knocked-over bookshelves and drawers. While eating lunch, I happened to turn on the TV and saw footage of an explosion at the nuclear power plant next to our house. I opened the window, looked outside, and there was smoke coming out! What’s going to happen to me?

I was totally confused and not sure what to do, when my parents came home quickly from work and said, “We’re getting out of here, now.”
In the meantime, I grabbed my wallet, cell phone and a few changes of clothes. We rushed into the car, determined to get out of Fukushima as quickly as possible, and decided to evacuate to a relative’s home.

Along the way it started to get dark, so we decided to stay at a hotel. But at the front desk, we were told, "You've come from Fukushima? I'm sorry, but you'll have to find another hotel to stay in."
We explained the circumstances, but in the end, the hotel wouldn't let us stay there. So that night, we had to stay in the car, parked in a service area. I can't hear my dad's (usually noisy) snoring.
He probably can't fall asleep.

When I think about

.....
.....
.....

I can't fall asleep either.

3/13 We arrived at our relative’s house and, for the time being, were able to relax. There are futons for us to sleep on.
But it’s impossible for two families to live in this house. There’s not enough space, and we don’t want to be an imposition on our relatives. I wonder what will happen to us.

3/25 We heard that a large hall has been turned into an evacuation facility, and

many people from Fukushima are moving there. We can't just stay at our relative's house forever, so we decided as a family to move there, too. It seems like we won't be able to go back to Fukushima for quite awhile. High school and the resumption of classes are nowhere in sight. I wonder how everyone from my class and club activities are doing. Is everyone alright?

April Because it looks like we won't be able to go back to Fukushima anytime soon, we rented an apartment in Saitama Prefecture to live in for awhile. My dad is looking for a job, and I've transferred to a high school in Saitama. It seems that I'm the only evacuee from Fukushima one who has entered this school.

.....
.....
.....

May Somehow, I've managed to get used to the school and make some friends in class. But today, in a casual conversation, a friend said to me, while laughing, "Radiation is contagious" and "You're going to die early, right?"

.....
.....
.....

June We're able to return home temporarily for two hours. But we have to wear those white radiation-proof suits in the muggy heat, and it's only for two hours. It looks like we won't be able to live in that Fukushima house any more...

But because it's been while since I've been home,

I'll.....
.....
And then, I want to bring back.....
.....

※1 Why did the hotel refuse to let them stay?

.....
.....
.....

6 . Handout 1

[Radioactivity and radiation]

Mr. Study I' ve heard a lot about radioactive rays and radiation on TV and in the news, and I pretended to understand, but, actually, I don' t really get it.

Expert Yes, it' s true, there aren' t many opportunities for middle school and high school students to learn about it in class. OK, well, besides radioactive rays, what other "rays" can you think of?

Mr. Study "Ultraviolet rays", "infrared rays", "light rays" ... I guess that' s about it.

Expert Light rays are light. More accurately, we call them "visible light rays." Think of radioactive rays as part of the same group as ultraviolet, infrared and visible light rays.

Mr. Study You can' t see radioactive rays, right? But you can see light?

Expert Yes, that' s right. Because they are "visible light rays," they are "rays" that we can see. But we can' t see ultraviolet or infrared rays. For example, you know the tiny lens on the end of a TV remote control? Infrared light comes out of it and operates the TV, but you can' t see that infrared light, right?

Mr. Learner You mean, infrared light is like the electric waves that come out of cell phones, radios and TVs?

Expert You can also think of the waves (electromagnetic) of a cell phone as the same kind as infrared, ultraviolet and visible light.

In other words, radioactive rays are similar to light and electromagnetic waves in that they are "rays" that you cannot see.

Because we can' t see radioactive rays, all we can do is measure them with specialized equipment. Maybe you' ve seen these on TV?

Mr. Study OK, but what' s the difference between radioactive rays and radiation?

Expert The correct definition of radiation is "the capability to release radioactive rays," but the media, etc. often use it to mean "matter that is capable of releasing radioactive rays." That' s why it' s ok to think radiation=radioactive substances, "matter that has the property of emitting radioactive rays."

Mr. Study What matter releases radioactive rays?

Expert The example: "Radioactive matter is to a light bulb what radioactive rays are to light" is often used to describe the relationship between radioactive rays and matter. A light bulb is the matter (radioactive substance) that has the property of emitting light (radioactive rays). If we look at the TV remote control example, the remote is the radioactive material and the infrared is the radioactive rays. As such, you should have an image of radioactive matter (radiation) as a thing with form, and radioactive rays as something like light or electromagnetic waves.

【Radiation kinds and permeability】

Mr. Study If that's so, which causes "hibaku" ("radiation exposure")?

Expert To be exact, "hibaku" means to be exposed to radioactive rays. But if radioactive matter (the light bulb) sticks to your body, then, in the end, you will also be exposed to radioactive rays (light). That's why the media doesn't differentiate much between radiation exposure from radioactive materials (radiation) sticking to the body and exposure from radioactive rays.

Mr. Study But the white, radiation-proof suits I've seen on TV protect from both forms of exposure, right?

Expert Because radioactive matter has form (to be more precise, form at the atomic level), if you were to wear that suit, it wouldn't be able to touch or attach to the body directly (or at least, most of it wouldn't, though matter could enter through gaps in the clothing or attach when taking off clothes.). However, many radioactive rays can pass through protective wear, so even if you were to wear the suit, you may be exposed to radioactive rays. That's why, in areas emitting very high radioactive ray levels, even if you wear a protective suit, you can only work for a short period.

Mr. Study What! So radioactive rays can actually go through protective clothing? Those protective suits don't stop them?

Expert There are a number of different kinds of radioactive rays, such as alpha rays, beta rays, neutron rays, gamma rays and X-rays.

Mr. Study X-rays...you mean the same as in

an X-ray machine?

Expert That's right. It's easy to imagine how radioactive rays go through protective clothing if you think of an X-ray machine. Gamma rays are also used in nondestructive inspections of trains and airplanes to check for cracks without taking them apart. They have very high permeability and can go through protective clothing, exposing the body to radioactive rays.

Mr. Study So that's what you were saying before about radioactive rays being like electromagnetic waves. The fact that I can use my cell phone in my house means that the waves are going through the walls of the building. So does that mean that there's no reason for them to wear protective clothing?

Expert It's true that you can't protect against most radioactive rays, but the clothing does stop "substantive radioactive material" from coming into direct contact with the body. If you take off this protective clothing, you can clean off the "substantive radioactive material" so that it doesn't cling to the body. What happens if this radioactive material stays directly attached to the body? The body will be exposed to continuous exposure to radioactive rays. Of course, however, you can wash these off in the shower.

Mr. Study ...

Expert A bit difficult to understand? In other words, if you leave the light bulb (radioactive material) attached to your body, you will be continuously exposed to the light (radioactive rays). So, you wear clothes to keep the light bulb

(radioactive rays) from touching your body. Then, if it touches your body, you take a shower to wash off the light bulb (radioactive materials).

Mr. Study Oh, so that's why the news showed them washing cars and things with huge blasts of water after working at the nuclear plant site.

Expert Because radioactive materials are matter (though also present at the atomic level), we can block most of them with protective clothing and wash them off thoroughly in the shower.

That's why those who think that people who are working now at the nuclear plant site or who have evacuated from Fukushima can emit direct radioactive rays are, quite simply, mistaken. There are no such worries.

Mr. Study I see. So the reason that people are told to stay evacuated indoors and not go outside as much as possible is to avoid radioactive materials from getting on their bodies and to keep it from getting in the room.

【The effect of radioactive rays on the body and SV (Sieverts)】

Mr. Study Before, you said that X-rays are also radioactive rays. I recently had a chest X-ray taken for a heart exam, but does this mean I was exposed to radioactive rays?

Expert That's right. You were exposed to radiation. A chest X-ray image taken during the group heart exam in high school exposes you to about .05mSV of radioactive rays.

Mr. Study Is that ok? Does it have any effect on the human body?

Expert If you were exposed to a large amount of radioactive rays, of course, it would have an effect in the body, but 0.05mSV is not a problem. For example, when you stay out in the sun for a long time and are exposed to a lot of ultraviolet rays, you get a sunburn. But a little bit of sun is no problem, right? In the same way, if you are exposed to a large amount of radioactive rays, you will get something like a sunburn and your white blood cells will decrease, but a small amount is no problem. **Since the amount of radioactive material leaked during the accident exposed Fukushima residents to a large amount of radioactive rays for a short period of time, and it wasn't enough to cause any immediate effects to the human body, there's nothing to worry about.**

Mr. Study But everyone is still worried about something.

Expert Yes. It's true that radioactive rays cause damage to the DNA within cells. Of course human beings have the ability to repair damaged DNA, but if there is a lot of damage, the body cannot fix it in time. It is said that if the DNA cannot be fixed in time, there is a heightened probability of some effects on the human body, such as cancer and leukemia. I said before that exposure to a small amount of radiation rays is not a problem, but even a small amount can collect and become a large amount of exposure over a long time period. If that happens, it might have an effect on the human body.

Mr. Study So, for those who were forced to

evacuate from Fukushima, the large amount of radioactive rays they were exposed to in the short term will not have much effect on them, but if they were to live there long-term, it would result in more exposure and might have an effect on the human body. And that's why they evacuated.

Expert **Therefore, though some people seem to think that those exposed to radioactive rays have a contagious disease, this is a misunderstanding. Since the damage occurs at the DNA level, it is different from transmittable, disease-causing bacteria or viruses and is not contagious to others.**

Mr. Study But people are worried because it's unclear how many mSv of exposure is safe.

Expert Yes, opinions are divided on this, even among the experts. But high school students should understand the basic way of thinking about Sv.

First, you understand that Sv (Sievert) is used as an indicator of the effects of radiation ray exposure on the human body, right? Also, the greater the Sievert level, the greater impact there is on the human body. But in reality, the Sievert is too large a unit of measurement and, instead, mSv (millisieverts) and μ Sv (microsieverts) are used. 1/1000 of a gram is a "mg", right? In the same way, 1000mSv = 1Sv. And 1/1000 of that is a " μ " (micro), so that 1000 μ Sv = 1mSv, 1000mSv = 1Sv, 1000000 μ Sv = 1000mSv = 1Sv.

Mr. Study My head hurts.

Expert These "m" (milli) and " μ " (micro) measurements are difficult, I know.

One more troublesome thing is "mSv/hr (millisieverts per hour)".

For example, if you work for five hours at an hourly wage of 800 yen, you make 4000 yen, right? This 800 yen is the amount for one hour, and 4000 yen is the sum total. When mSv are written "mSv/hr", it means the amount of radioactive ray exposure for one hour, but when it is written as "mSv", it means the sum total.

For example, the radioactive ray amount now for Saitama City is written in the newspaper as 0.055 μ Sv/hr. This means 0.055 μ Sv of radiation ray exposure per hour. If we were to consider the radiation exposure amount of living here for one year:

Mr. Study 1 day is 24 hours, 1 year is 365 days,
 $0.055 \mu \text{Sv/hr} \times 24 \text{ hours} \times 365$
 $\text{days} = 481.8 \mu \text{Sv} = 0.4818 \text{mSv}$

So this value of 0.4818mSv is the total sum of radioactive ray exposure for one year.

Expert If you don't recognize whether it is per hour, per year or per lifetime when they talk about Sv in the newspaper or on TV, you'll make a mistake.

Mr. Study It's like the difference between an hourly and a yearly wage.

[Use of radioactive rays]

Expert The yearly value of 0.48mSv that you calculated is about the same as Japan's average radioactive ray amount before the nuclear power plant accident.

Mr. Study What! There were radioactive rays before the nuclear power plant accident? Why were there radioactive materials leaking? Where from?

Expert Oh yes, I forgot to explain. I told you that radioactive materials are matter. At middle school, you learned that all matter is made up of small particles called atoms, right?

Mr. Study Yes, I did. I remember being surprised to hear that all the matter in the world is made up of about 100 different types of atoms. And because those atoms do not break down, they make up the law of conservation of mass.

Expert That's right. For basic science and chemistry class, that's fine, but actually, even now, unstable atoms exist that may break apart. These unstable atoms actually do break apart, and when they do, a portion of the particles that make them up fly out and emit something like light. This portion of expelled particles and light-like emissions are radioactive rays. Because these unstable atoms on the verge of breaking are present all over the world, radioactive rays are emitted from the earth, and the plants and food that have absorbed that dirt also emit a small amount of radioactive rays. Also, since there are radioactive rays that rain down on Earth from space, no matter where we go, we have always been exposed to a certain amount of radioactive rays. It's said that the average global yearly amount is 2.4mSV.

Mr. Study So there have always been

radioactive rays.

Expert And these radioactive rays are being used in various areas, such as nondestructive inspections, sterilization of medical instruments, selective breeding techniques and cancer treatment. We human beings have scientifically unraveled the workings of nature and utilized those techniques.

For example, from the electricity that once only existed in static electricity and clouds, human beings freely created electric power, became able to store it in batteries, and now utilize various electric appliances.

In the same way, human beings were able to collect large amounts of radioactive rays as energy from the small amounts emanating from unstable atoms present in nature, and they created nuclear bombs and nuclear power. This is the "fruit" and the "cost" of humanity's scientific achievements.

From now, there will likely be a debate about how our future energy policy should progress. This may be one of those large, historical turning points that you learn about in history class. And, Mr. Study, you will get to witness it.

7 . Worksheet 2

◆1 What do you think about the hotel’s stance of refusing to let them stay the night?

.....

.....

.....

.....

.....

◆ 2 From now, debate will move forward regarding nuclear power as right or wrong and the promotion of alternative energies (wind/solar power). When you decide which is better, what kind of information do you want regarding their merits and demerits?

.....

.....

.....

.....

.....

◆3 How do you think decisions should be made regarding the future of energy policy, and who should make them?

.....

.....

.....

.....

.....

◆4 What can you do until this decision is made? What will you do?

.....

.....

.....

.....

.....

Great East Japan Earthquake: “Radiation is scary” : Discrimination against schoolchildren refugees from Fukushima

It was recently found that the Board of Education of Funabashi City, Chiba Prefecture, provided guidance instruction to both elementary and middle school principals in order that more care be given to Fukushima children evacuees, as there have been several cases where children faced discrimination from other children who said they were “scared of radiation.” Two elementary school-age brothers who had evacuated to Funabashi City from Minamisoma City, Fukushima Prefecture, faced such discrimination at a park where they were playing. The local children blatantly avoided them. The brothers were deeply hurt, so the family decided to take refuge in a different area. Already, a month has passed since the earthquake, but the grave situation at Fukushima Daiichi Nuclear Power Plant does not seem to be contained. Experts are concerned about discrimination and biases due to a lack of knowledge. (Yuki Misawa)

The case of the elementary school brothers was reported to the Board of Education of Funabashi City by one of the city council members who has been very active in receiving evacuees. According to the council member, the brothers are in the 1st and 5th grades at elementary school and had evacuated right after the earthquake to take refuge at their relative’s house in Funabashi, together with their parents and grandparents. They were supposed to move into one of the schools in the city from April.

The brothers were playing at a park in March when they experienced the discrimination. Some local children who were playing in the same park noticed the difference in the brothers’ dialect and asked where they were from. When the brothers answered “Fukushima”, the local children started to scream “Oh no, they brought radiation disease!” and ran away from them. The brothers went home crying, and after the parents discussed the situation, they decided to move to Fukushima city, stating: “We cannot make our children put up with this situation they face in Chiba.”

A taxi driver who knows the family well and also evacuated to another prefecture from Fukushima said: “I heard that there were several adults who were rejected from entering hospitals and taxis. Even adults have shown discrimination, so we can’t just blame the local children who are reacting like this. However, it must be really hard for those who were discriminated against.”

After receiving the report from the council members, the Board of Education of Funabashi City sent guidance instructions to elementary and junior high school principals on March 28th to “receive children evacuees warmly” and to “be careful about word usage when

considering how anxious the evacuees feel”, stating: “There are worries that the anxiety adults feel about radiation may affect children and cause them to be unprepared.”

According to the Board, there are 43 children evacuees from the area who will be attending schools in the city from this month. 38 of them are from Fukushima prefecture.

Shunichi Nakamura, the principal of Gyoda Nishi municipal elementary school emphasized that “receiving children evacuees warmly is a matter of course”. He also said, “I have been telling teachers repeatedly to pay more attention to children so that none of them suffer discrimination due to their dialects or radiation. I spoke to the children at both the entrance ceremony and the opening ceremony about making friends with the evacuee children who had joined the school so that they remember Funabashi as a good choice when they go back to their hometowns someday in the future.

The council member who reported to the city board said “I felt very sad to hear about what had happened to the brothers. I always talk to the children in Funabashi City about being compassionate.”



The National Institute of Radiological Sciences (NIRS) opened a consultation phone line on March 14th right after the accident at the Fukushima Daiichi Nuclear Power Plant. Researchers as well as retirees from the institution are answering questions regarding radiation and exposure from morning to midnight. The questions are mainly coming from the Tokyo central area, and the number of calls has already reached more than 6,000.

At the beginning, there were many questions such as “Will my children be affected if I accept a relative who lives close to the power plants into our home?” As the number of evacuees increased, there were more calls such as: “I was refused a room in an apartment” and “I was asked at the hospital and welfare facilities to submit a certificate of a screening check for radiation levels.”

Taking into account the incidents at Funabashi, Dr. Shizuko Kakinuma at NIRS pointed out, “We need to educate adults first. There is nothing that the receiving side should worry about. Worrying too much is not good for the body.” She also says “It is important to be ‘properly anxious’ according to the proper knowledge. People need to study more, and we feel a responsibility in making efforts to provide more understanding.” NIRS will continue the consultation phone line for the immediate future(phone: 043 290 4003).

Bullying against children evacuees from Fukushima, guidance from the Funabashi City Board of Education

It was found during an interview on the 14th that there was an anonymous phone call in March to the city's Board of Education saying that children from Fukushima Prefecture who had taken refuge in Funabashi city, Chiba prefecture, were being bullied by other children, saying "Your radiation is contagious."

The Board of Education of the city sent guidance to a total of 83 elementary and middle schools in the city to give proper instruction to students when considering the evacuees. According to the Board, the anonymous phone call was about brothers who had experienced bullying in March when they were playing at a park. The brothers had evacuated to Funabashi city from Fukushima prefecture after the Fukushima Daiichi Nuclear Power Plant accident.

The guidance instructions from the city board demanded schools give more care to those who had evacuated, saying "Receive children evacuees with compassion and warmth" and "Be careful about word usage when considering the children's feelings." It also pointed out the need to work with parents, saying: "Adult anxiety (regarding radiation) may affect children, causing them to be unready for the situation."

Bullying "Radiation contagion" -against elementary school students from Fukushima--Chiba Prefecture

It was found on the 15th that there was a case of bullying against brothers who had taken refuge in Funabashi city, Chiba prefecture from Fukushima prefecture due to the Fukushima Daiichi Nuclear Power Plant accident. The brothers were told "Your radiation is contagious." The Board of Education at Funabashi City sent guidance to elementary and junior high schools demanding they give proper instruction to students to be careful about word usage in considering how anxious evacuees feel and to deal with evacuated school children with compassion.

According to the Board, the brothers from Minamisoma City, Fukushima Prefecture, were asked where they were from by local children at a park in March. When the brothers answered "Fukushima," the local children ran away from them saying "Your radiation is contagious." The parents of the brothers decided not to have them enter an elementary school in the city, and the family moved to Fukushima City to take refuge there.

[Jiji Press]

To schools and communities hosting refugee children from the Fukushima Daiichi nuclear accident:

- A request from the Japan Society of Environmental Education -
- (President's Emergency Statement) –

President Abe Osamu
Japan Society of Environmental Education
May 20th, 2011

We currently face a very difficult trial. On March 11th, the Great East Japan Earthquake and massive tsunami that followed took the lives of tens of thousands, destroying countless towns and villages. Combined with the Fukushima Daiichi nuclear accident, this incident has led to over a hundred thousand people being forced to evacuate their homes. Restoration efforts have already begun, but it is believed that those affected will be living as evacuees for an extended period of time.

Your schools and communities have taken in these evacuees. I deeply respect your attentive and warm efforts in welcoming them.

However, I have heard of some extremely regrettable developments taking place in a portion of the schools and communities. Based on fears of radioactive contamination, there have been a number of cases of bullying and discrimination against Fukushima residents and children evacuees.

Our organization, the Japan Society for Environmental Education, is involved in both the research and practical application of environmental education in schools and communities. It is clear that there is no threat of Fukushima resident and children evacuees spreading radioactive contamination. These people have been driven from their homes, separated from family, neighbors and friends, and are now living as refugees. I ask that you please try to share in understanding the grief they must feel. I implore you: Do not hurt these evacuated children and residents any more with unscientific, irrational discrimination and generalizations, based only on your fears of the nuclear accident and radioactive contamination.

We, as an academic society, are planning to make teaching materials and study provisions for people to learn more in their schools and communities about the nuclear accident. We would like to do our utmost, together with all of you, to help the evacuated residents and children of this accident return home as quickly as possible.

「Discussing the Nuclear Accident」 Lesson Plan Development Working Group

Asaoka Yukihiro (Tokyo University of Agriculture and Technology, Institute of Agriculture) *Working Group Representative

Hiroko Iishima (Otsuma Tama Junior High School)

Takashi Uchida (Shiki High School) *Leader: Guidance Plan for High School Students (LHR, etc.)

Toshiya Kodama (Fujisawa Minami Elementary School) *Leader: Guidance Plan for Elementary Schools (Upper-grades)

Tetsu Sekigami (Fujimigaoka Educational Institution)

Eiko Takashiro (Kogane Junior High School) *Leader: Guidance Plan for Middle School「Ethics」Class

Go Hagiwara (Kagoshima University)

Koichi Mori (Rikyo University) *Editing/Production Leader

Ri Gyo Yo (Tokyo University of Agriculture and Technology) *Office Leader

Publication / The Japanese Society of Environmental Education “Discussing the Nuclear Accident” Lesson Plan Development Working Group” 17th July 2011

発行／日本環境教育学会「原発事故のはなし」授業案作成ワーキンググループ 2011年7月