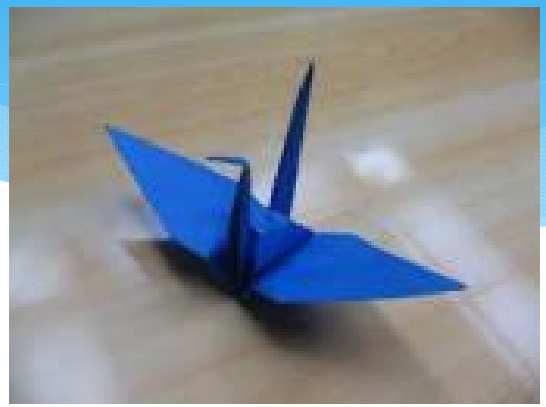
SEEC 2014

Let's Make It Fly!


GIFU
Harbin
China
Changchun
Mudanjiang
Jilin
Soviet Union
Vladivostok
Nakhodka
Shenyang
Anshan
Ch'ŏngjin
North Korea
Sinŭiju
Hamhŭng
Wŏnsan
P'YŎNGYANG
Demarcation Line
SEOUL
Inch'ŏn
South Korea
Taejŏn
Taegu
Pusan
Kwangju
Mokp'o
Yellow Sea
Tsushima Strait
Cheju-do
Korea Strait
Fukuoka
Sasebo
Nagasaki
Fukue-shima
Kitakyūshū
Kumamoto
Kyushu
Kagoshima
East China Sea
ŌSUMI-SHOTŌ
TOKARA-RETTŌ
Philippine Sea
AMAMI-SHOTŌ
OKINAWA-SHOTŌ
Naha
SENKAKU-SHOTŌ
SAKISHIMA-SHOTŌ
RYUKYU ISLANDS
Daitō-jima
Okino-daitō-jima
Boundary representation is not necessarily authoritative.
Sea of Japan
Ullŭng-do
Liancourt Rocks
OKI-GUNTŌ
Tottori
Okayama
Hiroshima
Kōbe
Kyōto
Ōsaka
Takamatsu
Tokushima
Matsuyama
Shikoku
Uwajima
Ōita
Sado
Kanazawa
Nagano
Honshu
Gifu
TOKYO
Yokohama
Shizuoka
Hamamatsu
Niigata
Sendai
Iwaki
Utsunomiya
Akita
Morioka
Aomori
Tsugaru-kaikyō
Hakodate
Sapporo
Asahikawa
Hokkaido
Kushiro
Wakkanai
La Perouse Strait
Sakhalin
Soviet Union
Ostrov Iturup
Ostrov Kunashir
Shikotan-tō
Habomai Islands
North Pacific Ocean
NANPŌ SHOTŌ
Sumisu-jima
Tori-shima
BONIN ISLANDS (OGASAWARA-SHOTŌ)
VOLCANO ISLANDS (KAZAN-RETTŌ)
Iwo Jima
Japan
Railroad
Road
0 100 200 Miles
0 100 200 Kilometers



Paper airplane

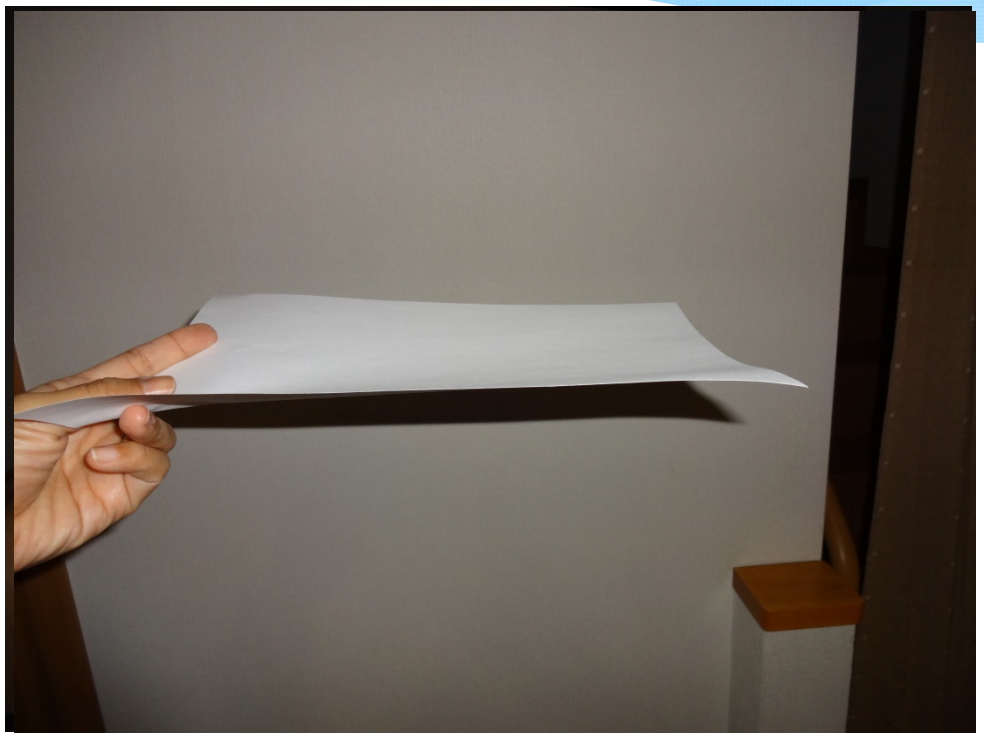
I want to fly in the air!

Let’s make it fly!

Aerodynamic lift

Paper airplane

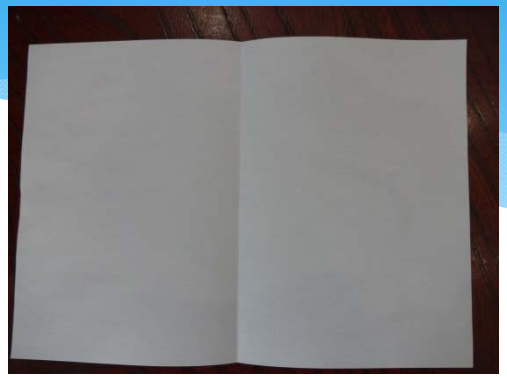
From one sheet of paper



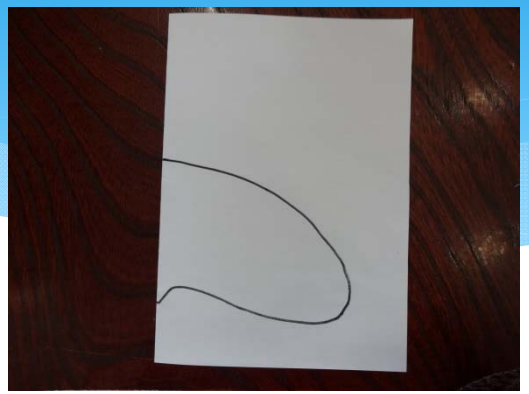
Alsomitra

Insert an Alsomitra movie

Let's make a seed glider!



(1) Fold a paper into half.



(2) Draw symmetrical wings on the left and right.

(3) Cut it out.

(4) Stick a sticker in place of the seed. First fix a cellophane tape at the location where the sticker is to be stuck

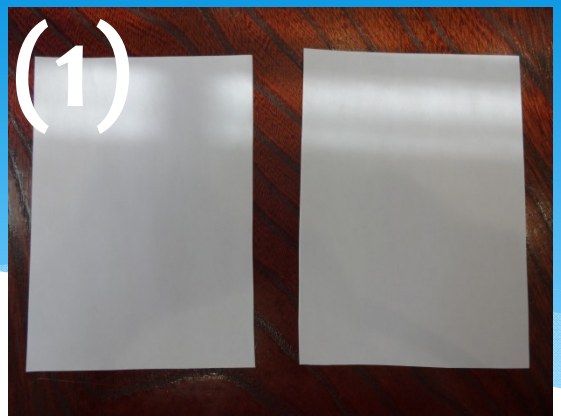
(5) Make a mountain fold at the blue portion and a valley fold at the orange portion.

Let's make a seed glider that flies till far!

* Q1. What should be the position of the sticker (seed)?
* Q2. How many stickers should be used?

Seeds that fly while rotating

(1)



(2)

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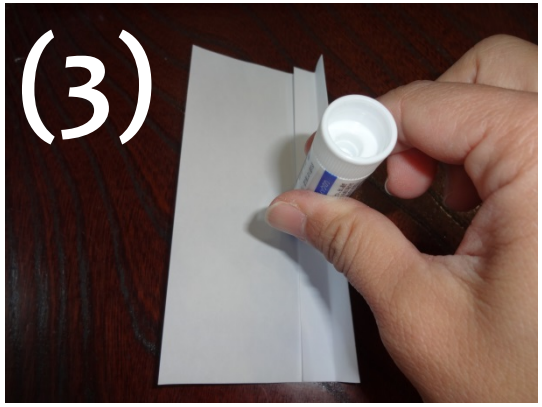

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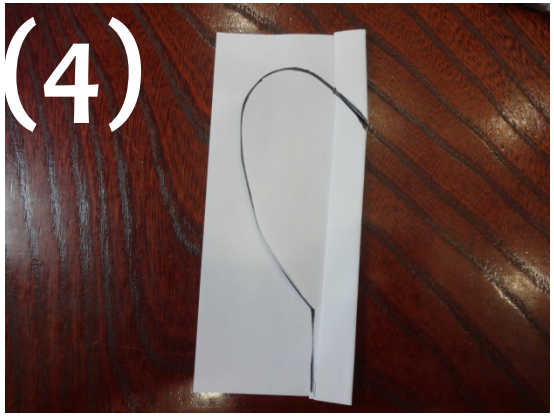

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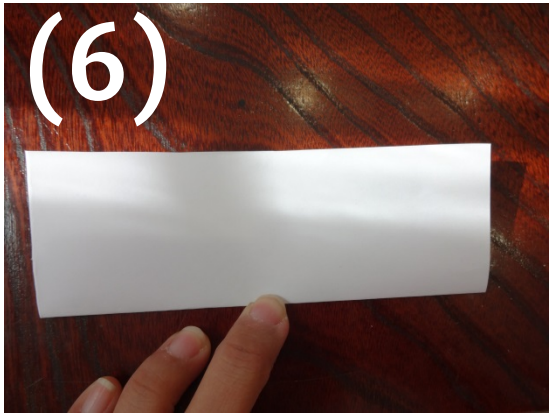

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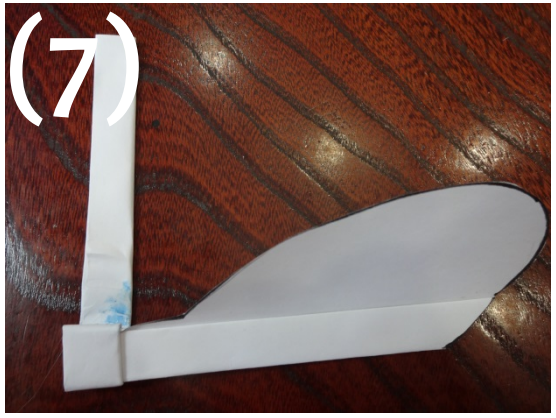

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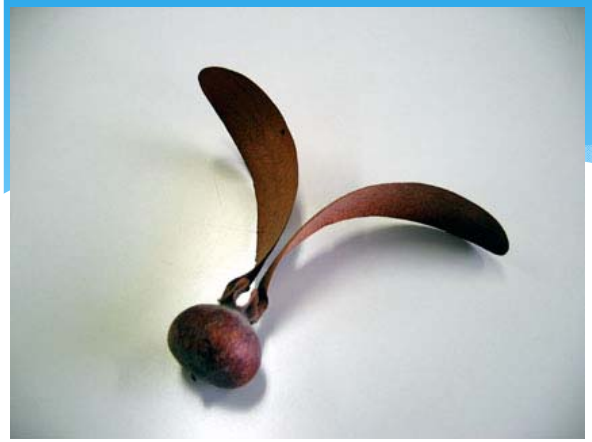
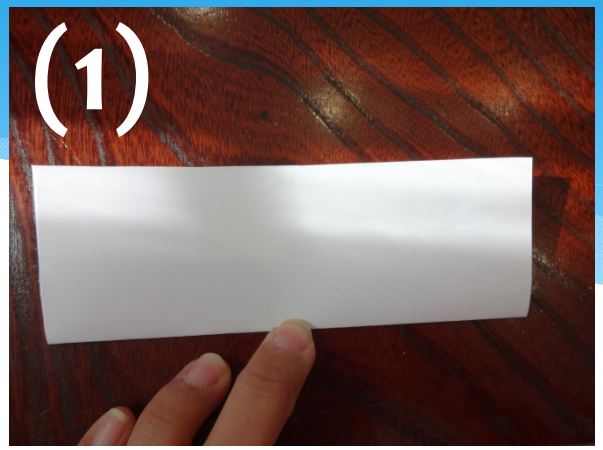
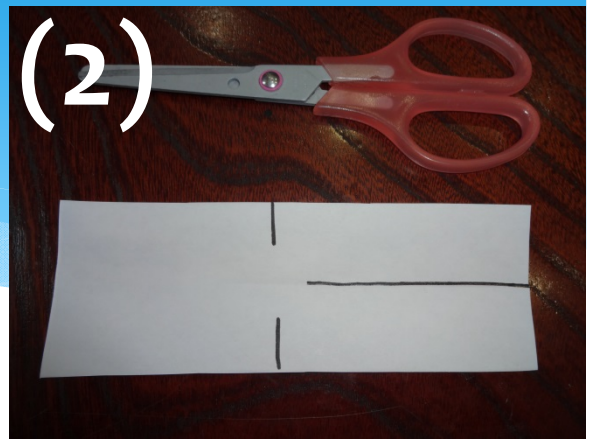



(1)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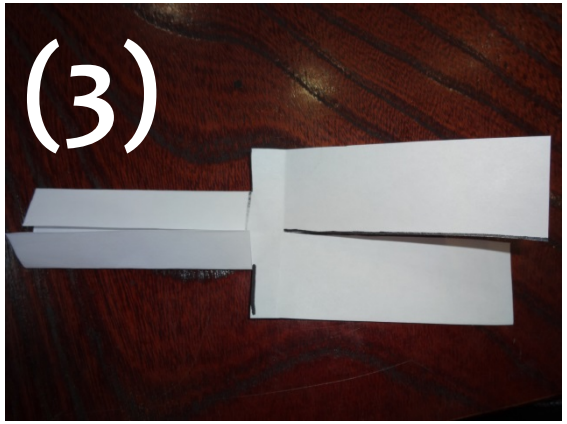
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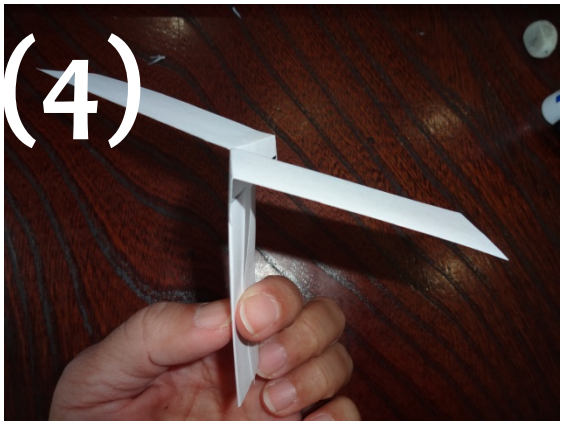

(4)


(5)

Let’s make seed-copters having various rotations!

Q1. A seed-copter that descends slowly

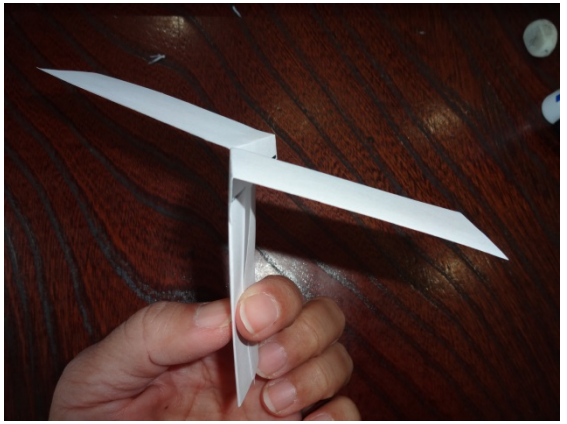
Q2. A seed-copter that descends while rotating fast

Let's try!

A: Seed glider

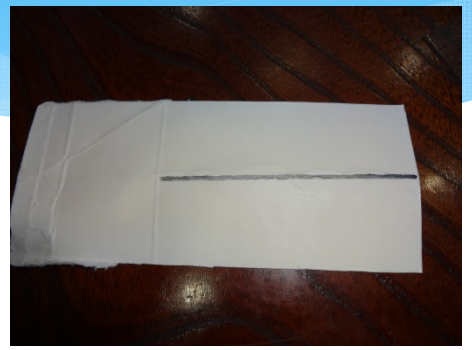
B: Single wing

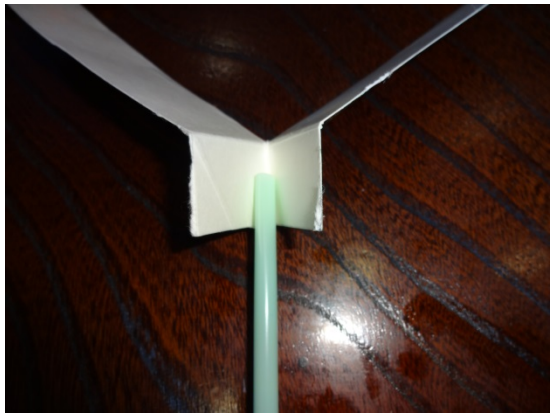
C: Double wings



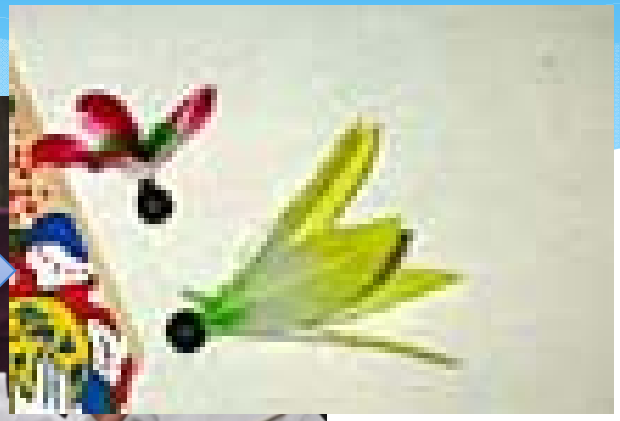

チビのすけ

Let’s make a paper dragonfly!





Hanetsuki (Japanese badminton)



SEEC2014 “Let’s Make It Fly!” Fujibayashi Script November 30, 2013		
Slide	Details of Presentation	Activities and Reactions
1	Good morning everyone! I am Junko Fujibayashi, an elementary school teacher in Japan.	
2	I live in the Gifu prefecture, which is located exactly at the center of Japan. The Gifu prefecture is surrounded by mountains, has beautiful rivers flowing through it, and is also rich in nature!	
3	This is Koto elementary school where I teach. (Click) When it is recess time, children can be seen running around and playing in the playground filled with energy. (Click) There is a biotope beside the school playground where children can be seen enjoying the nature while gathering acorns, catching insects, and making up new games. (Click) When it is raining, they pass long enjoyable hours indoors as they read books, draw pictures, and enjoy origami. This is an origami object made by the children. (Click)	・An actual origami object made by the children is brought in.
4	Children enjoy making various shapes with paper. Boys love making throwing-knives and paper airplanes with origami.	
5	These are paper airplanes. Children make planes of different shapes with the hopes of flying it further and play by competing with one another.	
6	Human beings cannot fly freely in the sky like birds. Therefore, all through the ages, the yearning to fly freely in the sky has been very strong. You can understand this very well even from the fairy tales across the world. People like “Aladdin,” “Ikaros,” and the character from “Kiki’s Delivery Service,” who could fly freely in the sky, are thought to be incredible, and the infatuation has continued over the years.	
7	This is Doraemon, the favorite anime of Japanese children. Doraemon is a robot from the 21st century. It uses a 21st century “Take-copter (bamboo-copter)” to fly freely in the sky. (Demonstration of the toy) Have you ever seen this? In Japan, we call it a “taketombo” which means a bamboo dragonfly? (This object) The take-copter has been derived from the concept of the taketombo, a typical toy seen in Japan. (Demonstration of the bamboo dragonfly)	・Demonstration of the Doraemon toy and a taketombo “It flies as it is a hand generator”

8	Now, let's all think together about the concept of "flying" based on the model of seeds. Today, we will make a glider just like a paper airplane, and a propeller toy like a take-copter (bamboo-copter).	
9	So, how can a glider and a helicopter fly in the air? The secret lies in the wings! The wings of an airplane have a curved shape on the upper side. When an airplane moves forward, the wind is separated to the upper side and the lower side by its wings. Thus, upon separation, the air on top flows very fast. The force that is generated	
1 0	is called "aerodynamic lift." When the air is separated into the upper and lower sides, the flow on the upper side becomes faster than the flow on the lower side. As a result, the pressure on the upper side becomes lower than the pressure on the lower side, and the airplane is lifted up. (Click) Objects that are not curved, like a paper airplane, also fly with the help of "aerodynamic lift." In a paper airplane too, aerodynamic lift is generated due to a difference in the pressure in the upper side and the lower side.	
1 1	This is a single sheet of paper. Today, from this "single sheet of paper" we will make a seed glider and a seed-copter that everyone can enjoy making any time and at any place to easily experience "flying"!	
1 2	This is an Alsomitra seed. "Movie" Alsomitra is a plant that grows in Indonesia. The seeds descend from a height of almost 10 meters. This seed is also said to be able to fly up to several kilometers.	
1 3	Let's try making a glider from this sheet of paper based on this seed! The first thing to be considered is the shape. The one thing that's common among objects flying in the sky is bilateral symmetry. Birds, airplanes, and even this seed have bilateral symmetry. (1) Let's fold the paper in half. (2) Draw symmetrical wings on the left and right. This shape makes flying easy. Draw the wings with reference to the example. You can also try out different shapes to see which one flies the best! (3) Now, let's cut out the shape.	・A print-out of the procedure for making the glider is kept on the table.

	(4) Stick a sticker in place of the seed. You can stick the sticker either in front or on the back. If you place cellophane tape around the position where the sticker is to be placed, the sticker can be peeled off and stuck back many times. (5) Finally, fold the paper. Make a mountain fold at the blue portion and a valley fold at the orange portion.	
1 4	Let's make a glider by trying out different positions and number of stickers! Q1. What would be the appropriate position of sticking the sticker? At the front, right at the center, or at the back? Q2. How many stickers would enable proper flying? Try increasing and reducing the number of seals! This time we used paper, but you can even try out changing the type of paper to make a glider that can fly well!	"Let's keep trying!" "You can paste it wherever you like!" "From my experience, with this kind of shape, a glider on with seven sstickers at the backside of the front part will fly the best." "This is called an air foam sheet that is used in packaging. It is light and flies well." "This is a clear file. While it is a little heavy, its shape is stable, and it is suitable for performing experiments several times."
1 5	These are seeds that descend while rotating. These include the single-winged maple seeds, double-winged lauan, and the Buckleya lanceolata seeds having four wings. The seeds function as dead weights to descend while rotating, or fly with the wind. As explained earlier, this propeller too flies because of the generation of "aerodynamic lift" in the wings. [Movie or demonstration]	・Maple seeds are collected on site and a demonstration is given.
1 6	First of all, let's try making a propeller with a single wing. (1) Take two sheets. (2) Fold the first sheet in half, and then fold it slightly and fix it with glue. (3) Draw a wing and cut it out. (4) Make the seed with the other sheet. Fold it in an elongated manner and fix it with glue. (5) Fix it below the wing with glue. Adjust the weight. How the object rotates varies depending on the size of the wing	・A print-out of the procedure is prepared and kept on the table.

	and the weight of the seed. Let's make a seed that rotates slowly and a seed that rotates fast!	
17	Next, we will make a propeller with double wings. (i) Take an elongated paper. (ii) With a pair of scissors, cut the portion indicated by lines in the photograph. (iii) Nowfold them as shown in the picture. (iv) Finally, fold the bottom part to make the seed. The mode of rotation can be understood by changing the length and width of the wings. Here too, let's try making a seed that rotates slowly and a seed that rotates fast!	
18	For both single wing and double wings, let's try making a "seed-copter that descends slowly" and a "seed-copter that descends while rotating fast." The main point is the size of the wings and the weight of the seeds.	
19	Select one of these three and then make it. The material and method of creation is provided on each table marked A, B, and C. Find out the seed glider and the seed-copter that will fly the best. In the end, we'll all together fly the seed-glider and the seed-copter! Here, the main point is the shape of the wings, and the weight and position of seeds. [Preparing and performing an experiment] Okay, so those of you who have made a glider will now try to fly it. Let's try your glider first. (Applause) What options have you tried out? Next, we will try fly a seed-copter with one wing! Finally, we will try flying the seed-copter with double wings! Thank you all very much! Please return to your seats.	"You will get ○ minutes." "○ minutes are remaining." "You have the best record." "Please return to your seats." "Please show this to everyone." "It's great!"
20	In this way, by making a toy and trying out different options, you are experiencing and learning what "flying" is! You will also become interested in the way it flies. A game and an art called "Origami" has been prevalent in Japan from the old times. Various ideas crop up from one sheet of paper. The reason it became very popular among children was	

	that the material was familiar and anyone could make anything very easily. You can make things as many times as you want. Today we tried to make a “flying” toy with a single sheet of paper and learned the concept of “flying.” We made some splendid gliders and seed-copters with everybody’s great thinking capabilities and ideas. You must try this out with other children and have a friendly competition with them. Finally, I would like to end by explaining how to make a“taketombo” with a milk carton.	
2 1	[Demonstration] This is a paper dragonfly made from a used milk carton. (1) As shown in the photograph, make a slit in the milk carton. (2) Fold it in half and insert a straw. (3) Secure the straw and the milk carton with a stapler. This is again a toy that flies while rotating. It is interesting to try out different sizes and shapes of the wings. I am very glad to have this chance to meet all of you today! Japan has a vast culture that is peculiar only to Japan. It would be my pleasure to invite you to come to Japan to experience and enjoy these things. Thank you very much!	

20	In this way, by making a toy and trying out different options, you are experiencing and learning what "flying" is! You will also become interested in the way it flies. A game and an art called "Origami" has been prevalent in Japan from the old times. Various ideas crop up from one sheet of paper. The reason it became very popular among children was that the material was familiar and anyone could make anything very easily. You can make things as many times as you want. Today we tried to make a "flying" toy with a single sheet of paper and learned the concept of "flying." We made some splendid gliders and seed-copters with everybody's great thinking capabilities and ideas. You must try this out with other children and have a friendly competition with them .	
	Finally, I would like to introduce a Japanese toy called "Hanetsuki (Japanese badminton."	
21	[Demonstration] In Japan, a game called "Hanetsuki (Japanese badminton)" has been passed on from the olden times for more than 700 years. People wear their kimonos on New Year's day and play Hanetsuki, and upon losing the game, the loser's face is scribbled with charcoal ink! Take a close look at this shuttlecock. It is modeled on the Buckleya lanceolata seeds having four wings, and that's how the wings are created. If no wings are provided, everybody's face would become completely black in an instant. The concept of "flying" has its roots in the 700-year old game and experiences. Teaching children a lot of games, and letting them experience various things is the starting point of Science in my opinion!	