

BEING A SCIENCE COMMUNICATOR IN THE SCIENCE KOREA PROGRAM

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Abstract

My Personal Experience will be introduced as a science communicator after retrained through WISE Science Mom Academy, which is similar to the team teaching program Madam Curie once employed for her children. I further participated in the science communicator-training program run by NISWIST(National Institute Supporting Women in Science and Technology).

I received Ph. D. degree in food and nutrition and worked as a lecturer once. Through this retraining program my career path changed to science communicator. Now I develop science contents and conduct lab work for K1-K6 students in Science Korea Project.

My experience as a lab instructor and the effect of Science Korea Program will be discussed.

Keywords: science communicator, wise center, regional science class

1. Introduction

Conversation is speaking and understanding what others say.

It is difficult to continue the conversation when you use difficult words or talk with a person at a different level than you which is like conversation between a child and an adult or an expert and a non-expert. Some doctors explain things in a way that you could understand easily. However, other doctors use technical terms that you don't understand, so you can't ask questions. You can see cases like this very often around us.

Even people like teachers, reporters, and lecturers need to get training on communication skills. The discussions here will focus on science. Due to its technical terminology and difficult concepts, it is very hard to explain science to children. However, some lectures like "Christmas in August" are very easy to understand. Why is that? Maybe it is because the lectures use the words in a way that the audience easily understands.

Teachers, reporters, and experts should therefore talk in a way that their audience understands. As a science teacher, I'd like to introduce how I teach them "regional science class."

2. Main Subject

I teach "regional science class " called Wise Science Class which means I am a science communicator. The objectives of the regional science class are to expand the population that are interested in science and to make science their everyday lives.

Most students think science is a difficult subject because they mostly study science theories in school. The class I teach meets at a village office not in a school and we have about 30 students. Table 1 is a brief introduction of the class. The class lasts for about 1 hour and the first 15 minutes are spent exchanging thoughts and asking questions on the day's experiment. I explain the theory behind the experiment and then the students start the experiment.

Table 1. Class Introduction

Location	Conference room of village office
Duration	1 hour
Number of Students	Less than 30 students
Target	Elementary school students (4th graders and the younger)
Subject	Science 80%, Mathematics 20%

What's special about Wise regional Science Class is this:

When doing experiments, the students carry out experiments from scratch rather than use ready-made experiment kits. The finished product could be rough and crude, however I believe making experiments from scratch helps students learn more from the experiments. They get to think about the structure of the finished product and learn from trial and error which they cannot experience from using ready-made kits.

Once the experiment is over, we talk about how everyone made the experiment, summarize it and write a report on it. When the reports are done, the students submit them to me and this is when I get to talk with the students one-by-one. I praise and encourage them and briefly go over with them what they did that day. A student who is quick of understanding wants more detailed explanations from the teacher and expect him to notice he knows more than other students.

When talking with the students one-by-one, I praise that kind of students and ask them more detailed questions which lead them to explore the topic more and think deeper. After the class, I write a report on the class on how many students were present, what was done in class, and so on and submit it to the official in charge which takes me about one and a half hours including the class itself.

The teachers of Wise regional Science Class teach one-hour classes three to five times a week. At the end of each month, the teachers put the work diary (table 2) and class records on the Wise regional Science Class web site. You can see the sample work diary and class record in table 3 and 4.

The teachers of Wise center get together twice a month to carry out preliminary experiments, talk about class records and exchange information on experiments. We also plan what kind of experiments we will make and each teacher takes one experiment and do a preliminary experiment. The teachers decide which experiment they will do in consultation with other teachers, estimate the amount of materials needed, and report it to the center. The center identifies how many students will join each class and prepare the materials accordingly.

In the week before the last week of each quarter, the teachers receive the materials from the center in an amount they need for the next quarter and send them to village office.

The first quarter of Wise regional Science Class is from January to February, the second from March to June, the third from July to August, and the fourth from September to December. These quarters are divided according to the vacation schedule of the students. During the four quarters, there are three special programs for students and two workshops for teachers. The special programs for students usually include field trips to a museum, a science museum, science fair, or public lecture on science.

Table 2. The teaching record for a month

Worker information	name	won jong sook	Tel No	019-***-****
	personal No	6*****_2*****		
	bank account	kukmin bank 0*0-**-***** (name : Won Jongsook)		
	address	Kyunggi-do, Goyang-si Ilsan-gu, Madu-dong, Sam-whan Apt		
work place	Daeshin dong / honggeun 1 dong			
The teaching record for a month				
Date	Time	Contents	place	
1/3 Tue.	PM 3-4	Dancing bubble snake/ potato catalyts	Daeshin dong	
1/3 Tue.	PM 4-5	Dancing bubble snake/ potato catalyts	Daeshin dong	
1/5 Thu.	PM 3-4	Dancing bubble snake/ potato catalyts	honggeun 1 dong	
1/10 Tue.	PM 3-4	Measurement of buoyant force	Daeshin dong	
1/10 Tue.	PM 4-5	Measurement of buoyant force	Daeshin dong	
1/12 Thu.	PM 3-4	Measurement of buoyant force	honggeun 1 dong	
1/17 Tue.	PM 3-4	What? What?	Daeshin dong	
1/17 Tue.	PM 4-5	What? What?	Daeshin dong	
1/19 Thu.	PM 3-4	What? What?	honggeun 1 dong	
1/24 Tue.	PM 3-4	Swimming iron powder	Daeshin dong	
1/24 Tue.	PM 4-5	Swimming iron powder	Daeshin dong	
1/26 Thu.	PM 3-4	Swimming iron powder	honggeun 1 dong	
1/31 Tue.	PM 3-4	Magic card	Daeshin dong	
1/31 Tue.	PM 4-5	Magic card	Daeshin dong	

Table 3. Class Record - Science

Title	Dancing bubble snake / potato catalyst		Number of time	1st
Date	January 5, 2006		Location	Multipurpose room of Hong-eun-1-dong office
Teachers	main	Won jong sook	sub	
Helpers	mother of Jang Won Joon and 2 others			
Attendance	28 students			
Materials	transparent glasses, 3% and 30% oxygenated water, ionized potassium, dish cleaner, incense, potatoes, watercolors			
Methods	<ol style="list-style-type: none"> 1. talked about where we could see oxygenated water in everyday life. 2. had the students who had wounds get to the front of the class and applied 3% oxygenated water on the wounds. Found that the bubbles rise and talked about why that happened. 3. talked about catalysts and what could be a catalyst around us. 4. explained the ingredients of digestives and how enzymes play a role as a catalyst. 5. poured 30% oxygenated water in a glass, put an incense with fire in the glass, and saw what happened 6. did the same experiment as number 5 with ionized potassium 7. talked about the differences between 5 and 6 8. explained the characteristics of oxygen 9. the teacher showed how to make a bubble snake, put cut potatoes in 3% oxygenated water, saw what happened, and explained the experiment 10. wrote a report on the experiment 			
Lessons learned	<ol style="list-style-type: none"> 1. The students who had wounds and was called to the front of the class enjoyed the opportunity. It might be a good idea to get volunteers and have them do part of the experiments next time. 2. The students enjoyed the experiment even though they had a hard time to clean it up. 			
Suggestions	Dish cleaner was better for the experiment than soap power.			

Table 4. Class Record - Mathematics

Title	Magic Card		Number of time	5th
Date	February 2, 2006		Location	Multipurpose room of Hong-eun-1-dong office
Teachers	main	Won jong sook	sub	
Helpers	mother of Jang Won Joon and 2 others			
Attendance	28 students			
Preparation	binary number conversion table, cards, stickers, felt-tipped pens			
Methods	<ol style="list-style-type: none"> 1. had some students think of a number between 1 and 31 and guessed what the number was by using the magic cards 2. asked the student a questions, what kind of numbers people used thousand years ago and shared thoughts 3. talked about the kinds of numbers before the Arabian numbers were made 4. talked about bundles; a dozen of pencils, a Jeop of garlic, a Chook of squid 5. explained notation <ul style="list-style-type: none"> - explained the decimal, duodecimal, sexagesimal, and binary system using subtraction - showed how units change as a subtraction is made - explained that the sexagesimal system was used in counting time, the duodecimal system was used in counting the unit of pencils, and the binary number system was used in computers. 6. converted decimal numbers from 1 to 31 into binary numbers 7. wrote the decimal numbers corresponding to the converted binary numbers, $2^0(1)$, $2^1(2)$, $2^2(4)$, $2^3(8)$, $2^4(16)$ on the cards 8. had some students think of a number again and guessed what the number was by using the magic cards 9. explained how to guess numbers and switched the roles. 10. paired the students up and had them use the magic cards in guessing numbers 11. wrote a report on the experiment. 			
Lessons learned	The students liked the magic cards, but it was hard to make them understand the theory. Binary scale seems to be a difficult subject for the students to understand. I had only the students who			

	seemed to understand write a report and the first graders and the younger use the card prepared in advance.
Suggestions	

When going on a field trip, the parents always go with the students for their safety. Field trips can be an incitement for the students and a good opportunity for the students to get out-of-class experience. Many students enjoy the company with their parents and the parents also enjoy the trips and appreciate the program.

At the end of each quarter, teachers put together class reports from students and give them back to them with some comments and stamps on. The students who were present for the whole quarter receive rewards for perfect attendance and the ones who wrote good reports or improved a lot during the quarter receive books on science as a reward.

The students and parents think of Wise regional Science Class as follows:

The best thing about the class is that they don't need to bear high expenses to take the class. The students don't need to compete with each other and just enjoy the class. The contents of the class are also very diverse and introduce information on a lot of different fields which makes the students interested in new things and stimulated.

On the other side, they think there are too many students in one class and the class is too short. However, the center thinks that one-hour class is more than enough for elementary students.

3. Conclusion

Classes have to be interesting. When they are interesting, they can attract interests of students and make them understand the contents. Teachers therefore need to think that they give the service to students. Students are their customers. Teachers need to identify what students like and enjoy to attract their attention and lead more efficient classes. When explaining experiments, if the teacher uses examples, the students could understand more easily and focus more on the class. Teachers have to keep trying for more efficient and inclusive classes.

I have realized a lot of things while teaching the kids in Wise Science Class. First, I have noticed a lot of cases that can be called the pygmalion effect. Second, there are reasons why children talk or behave in a way they do. Sometimes what they say and how they behave are connected to their imagination and creativity which are very hard for me to understand. There are some students who disturb the flow of the class by talking or behaving in a peculiar way. Some would say these students are trouble makers, but I think they can change if the teacher pays constant attention to them and wait with patience. Students can feel that they are getting attention and care.

I think a good teacher for Wise Science Class is the one who is concerned about students and has a sense of duty. Knowledge and interest in science is a basic requirements.