

# The Study of Class Assessment and Reflection on the Fieldwork Activities in Seikatsu-ka with Analysing Students' Performances

Shoko SAKATA<sup>1</sup>, Mayumi TAKAGAKI<sup>2</sup>, Makoto SHIMIZU<sup>3</sup>

## Abstract

In Seikatsu-ka learned by 1<sup>st</sup> and 2<sup>nd</sup> elementary students, it is often aimed for having experiences of the intellectual realizations. This study put attention to students' performances especially verbal communication and actions in the fieldwork class. It also tried to interpret that students experienced the intellectual realization as the fundamental concepts learning of Science and Rika (school science). Besides, it tried to reflect the class to get outcomes that teacher aimed through the fieldwork activities. After analyzing results of this investigation, it was able to infer that students had experiences some of intellectual realization, such as realizing with feeling and finding out, realizing with comparing by relative position, length, value, and circumstances, and expansion of realization through a lot of verbal communication concerned in characteristics of things. Moreover, it proved that outcomes of the fieldwork class became to be what teachers aimed for by using considered worksheet and librarian's help.

**Key Words** : Seikatsu-ka, fieldwork, intellectual realization, process skills

## I PREVIOUS RESEARCH AND ISSUES

In Seikatsu-ka, intellectual realization is regarded as students' verbal expressions come from their own theories and ideas with intuitional characterizing, comparing, and relating phenomena. They are also considered as the bases of scientific thinking, understandings, rational discussion, and a criterion for authentic and ethical judgment. (1999 Course of Study Commentary; Seikatsu-ka)

Ikeda and Tokita (2004) sampled several intellectual realizations from learning situation with students' verbal communication through activities in Seikatsu-ka class. They classified what students said into five categories, such as "the basic words of science", "the temporary expressions",

---

<sup>1</sup> Faculty of Education, Tokoha-Gakuen University

<sup>2</sup> Faculty of Child Studies, Kamakura Women's University

<sup>3</sup> Faculty of Education, Saitama University

“the sympathetic words”, and “the words of dependent upon teachers”. Especially, the basic words of science are regarded as intellectual realization concerning with natural phenomenon in recognition and emotion.

Therefore, in Seikatsu-ka learned by 1<sup>st</sup> and 2<sup>nd</sup> grade students, it is expected that students have many experiences of realizations for scientific foundation will be learned in the future as well as the variety of realizations. In this study, students’ words and actions were taken notice with the view points of science process skills in the fieldwork programs, because students are involved in natural phenomena deeply and tend to perform actively. All of the students’ words and actions were categorized by basic science process skills (R.J.Rezba, et.al.2003, Sakata & Takagaki 2005) and analyzed for getting the perspective on their performance, and each situation of notable expressions were more examined. Furthermore, it was inferred from these perspective and tendencies what kind of intellectual realization did students experience. It was also given careful consideration that fieldwork class got some outcomes teachers’ intention, and discussed about the method for practicing better class.

## II METHOD

**Unit;** Our hometown Kawane, autumn activities (6 hours)

**Activity;** “Let’s go to the Totoro’s forest” Activity in the copse, park, and open grassy space next to shrine woods.

**Goals;** Feel and enjoy autumn atmosphere with sensory observations. Expansion of realizing through the view points of observing showed by teachers.

**Subject;** Forty-seven 2<sup>nd</sup> grade students in Kawane elementary school (Kawane-cho, Shizuoka prefecture)

**Produce;** Completing together two hours of Seikatsu-ka class fieldwork activities. Three of video recording equipments were used and much visual and audio data was gathered. In addition, written data about what occurred was recorded by four observers. All of the students’ words and actions were noted from the recorded data. Then, all data were categorized and analyzed on discussion of observers and teachers. Two homeroom teachers facilitated students working on this activity and librarian supported.

## III RESULTS AND CONSIDERATIONS

The fieldwork activity class concerned aimed at feeling autumn with sensory observations and enjoying the autumn atmosphere, with playing the game named “Autumn Bingo” and “Seeking for the evidence of autumn”. After the analyzing with basic science process skills, it was found following for results. (Table 1)

- 1 The students performed variously fallen into many kinds of science process skills categories in the fieldwork class concerned. These include;
  - observing (seeing, hearing, feeling, smelling)

Table 1 Categories of science process skills in fieldwork activity

Process skills	Lower category	Frequency	Words and actions
Observing	Seeing	43	Oh, this one looks so small by magnifying glass. Head is bottom, and tail is up. Strange mushroom, a yellow one, I found. This mushroom grew on the tree which in near the shrine. There were a lot of big mushrooms there. I've caught something have many feet, it is on the leaf. Look! ( <i>with pointing</i> ) The insect is climbing the tree, not flying. Look at this, and it's quite little. This cricket has some prickles on its bottom. A curious insect is streaming. This has green projection like an antenna. <i>sitting and picking some nuts and acorns. looking by magnifying glasses. gazing a spider by magnifying glasses. picking the flower up. chasing the insect on the ground. digging a hole to seek something. Trying to catch a worm with hand covered by plastic bag.</i> etc.
	Hearing	13	I listened, and I could hear the sound that wind shook the leaves. The cricket songs reach my ears. I heard the wind sound by the shrine. Something has just clipped around here, can you hear? etc.
	Feeling	10	Outside of this fruit is very smooth, but there are some sticky grains in it. I've found something sticky. <i>having and touching acorns in the hands. touching something prickly called Otabi.</i> etc.
	Tasting	0	
	Smelling	21	It smells sweet. This is fragrant flower. This nut smells like lemon. They smell bad. It is stinking. I've found some leaf smells. <i>smell the flowers.</i> etc.
Communicating	Silent	11	<i>trying to talk to teacher. handing nuts to teacher. turning around and show the flowers to teacher. sticking Otabi on another student's cloth.</i> etc.
	Oral	63	I don't know, I'll look it up. I saw this mushroom, too. Let's find it later. Then, we finish looking for Oyako, and shall we find another one. How many acorns do you get? I'll go with you, please wait for me. Do you know this one? What do you think of it? I can't see it. etc.
	Written	1	There are two. It describes two in this book. <i>filling in the worksheet.</i> etc.
	Pictorial	8	Do you tape anything to this item box? <i>looking at the picture book, and discuss.</i> etc.
Classifying	Comparing	76	Maybe this nut beard by Arakashi, a kind of oak, because it is similar in this picture. This insect is different from this picture, so I guess it is the same of that one. River water in summer is colder than in autumn. This one belongs to item of "sticky things". etc.
	Relating	9	I've found the family of grasshopper, I guess that the big grasshopper is a male and small one is a female. etc.
Measuring	Length	0	
	Value	0	
	Weight	0	
	Number	2	I've caught six crickets. These are six.
	Temperature.	0	
Inferring		10	This mantis born from this egg. These are thorny, and their stick in my cloth. This is the same plant which we found in Tennouyama Park. This mushroom has any poison, because they are yellow and red, so we mustn't eat it. Isn't this insect born of something small? etc.
Predicting		4	They are the same, so they should have some seeds in it. Probably we can see something little like leaves in it, if it is opened. etc.
Total		271	*Description in <i>italic characters</i> show actions

- communicating (silent, oral, written, pictorial)
  - classifying (comparing, relating)
- The students put various performances into natural phenomena and especially many species of living things such as insects, worms, plants, trees, leaves, and fruits. (e.g. I listened, and I could hear the sound that wind shook the leaves. Outside of this fruit is very smooth, but there are some sticky grains in it. The cricket was on the place where a lizard had been. I've found the family of grasshopper, I guess that the big grasshopper is a male and small one is a female)
  - The students' actions and words were often grouped into categories of comparing, and communicating among students. There are many conversations produced with using some kinds of the illustrated books and materials. (e.g. This mantis born from this egg. These are thorny, and their stick in my cloth. This is the same plant, which we found in Tennouyama Park. Maybe this nut beard by Arakashi, a kind of oak, because it is similar in this picture.)
  - There are few performances fell into the categories of tasting, and measuring.

Four observers and two teachers discussed what kind of intellectual realizations did students experience with a full understandings of the investigation. It was also clear that some evidences of this fieldwork class were effective for students to have experiences of intellectual realizations, based on perspectives and tendency of students' performances.

• Students' sensory observations belonging to seeing, hearing, feeling, and smelling categories were promoted. Because, the fieldwork site was chosen the copes next to the shrine woods called Totoro's Forest by students, and the worksheet that was bingo game style was took advantage of the fieldwork. These measures also encouraged oral communication among students very frequently.

• The items of bingo game style worksheet were established such as "thorny things", "sticky things", and "rounded things", so that there were many realizations with comparing by students' findings and their feelings. (Fig.1)

• The item of "Oyako" that was a point of view concerned with relation established the worksheet, in addition, students showed a tendency to think connecting things, place, relative position, situation, and size. These performances were regard as the primary scientific thinking and viewing.

• It was thought that not many students' performances fallen into "tasting" and "measuring" categories were showed because of no item concerning these categories in the worksheet. As many students' performances were conscious of worksheet items, choice of items was very important

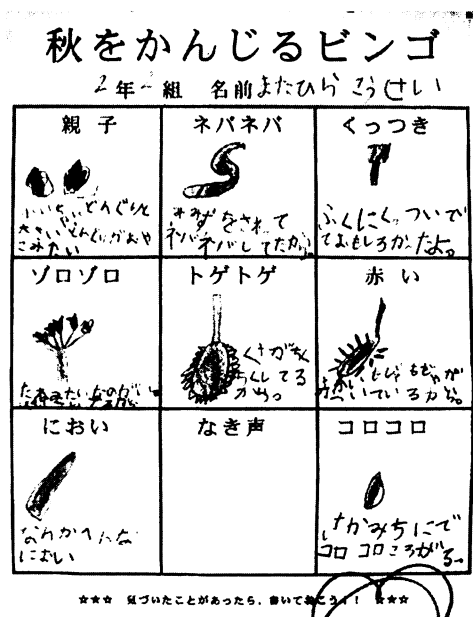


Fig. 1 Bingo game style worksheet

and influential elements of facilitating the fieldworks.

・Because of bringing some kinds of the picture books to fieldwork site and getting activity support of librarian, students compared the genuine objects with the photos in the picture books. (Fig.2) Besides, the words noticed the characteristics of things were promoted in the communication among students. It was inferred that students' intellectual realizations were expanded by these factors.



Fig. 2 Picture books to fieldwork site

#### IV CONCLUSION

After analyzing the result of this investigation, it was found that students experienced some intellectual realizations through fieldwork activity in a natural environment in autumn. The found intellectual realizations were realizing with comparing by students' findings and feelings, and realizing with connecting things with place, situation, and size. Moreover, above realizations were noted to expand by promotion of communication concerned with the characteristics of the things. From the results, it was influenced the fundamental intellectual realizations for learning science and school science (Rika) in the future. What is more, considered practice with preparing several kinds of picture books, getting librarian supports, and using the worksheets work out brought outcomes what teachers aimed for. According to this study, it was suggested that considered planning of activities and careful selection of the worksheet's items had the effect of heightening the class successful result in the nature.

Lastly, this study was practiced on trial. To practice of the similar class assessment after this, it will be expected to show more results and suggestions of the study. As one approach for analyzing was used in this study, it is necessary to try another way of analyzing the fieldwork outcomes to increase effectiveness of the fieldwork class assessment and reflection.

#### REFERENCES

- 池田仁人, 戸北凱惟: 生活科に見られる科学的萌芽の形成に関する研究-学びの場に表れる「知的な気づき」の分析を通して-. 理科教育学研究, 45 (1), 1-10, 2004.
- 稲垣成哲, 竹村重和 他訳: 理科のプロセススキル「理科学習の心理学-子どもの見方と考え方をどう変容させるか-」, 第3部 理科学習のための方法とメディア. 東洋館出版, Shawn M. GLYNN, Bruce K. BRITTON & Russell H. YEAEY原著, 1993.
- Midori SUZUKI, Yoshisuke KUMANO, & Robert E. YEAGER: Assessing Science Literacy of Students; Modeling Upon "Six Domains of Science", Journal of science education in Japan, 24 (3), 139-150, 2000.
- Richard J. REZBA, Constance SPRAGUE & Ronald L. FIEL: Learning and Assessing SCIENCE PROCESS SKILLS 4<sup>th</sup> ed., KENDALL/HUNT PUBLISHING COMPANY, 2003.

坂田尚子・高垣マユミ：フィールド学習における科学的思考のプロセススキルに関する研究。日本科学教育学会第29回年会論文集，473-474、2005。

Sandra K. ENGER, Robert E. YAGER：Assessing Student Understanding in science; A Standards-based k-12 Handbook, CROWN PRESS, INC, 2002.

Shoko SAKATA, Mayumi TAKAGAI, & Yoshisuke KUMANO：INQUIRY INTO THE SCIENTIFIC THINKING PROCESSES THROUGH FIELDWORK ACTIVITIES IN BIOLOGY。静岡大学研究教育学研究報告（教科教育学編），38、51-60、2007。

文部省：小学校学習指導要領解説生活編。63、1999。

(Received September 20, 2007)

(Accepted October 19, 2007)