# Reconsideration about the model experiment of the liquefaction in schools

*Nobuyuki Yamada[1], Kohei Sakai[1]

1.Fukuoka University of Education

In this study, we indicated the simple method for the science experience of the liquefaction in school. We examined the making of the shaking table by the manual operation, the quantity of sand and the water, and the way of shaking table. As the results, we decided the quantity of the water is about 470ml and the number of vibration per 30 sec is 100. Furthermore, we discussed the soil and sand of other place, and we report the examination whether or not a similar phenomenon is occurred. In these examinations, we can express a liquefaction resemblance phenomenon clearly, and it will be to help for the experiment.

Keywords: liquefaction, model experiment

 

# Formation of Lateral Faults in Powder Utilizing the Prefabricated Experimental Apparatus

*Norihito Kawamura[1], Seiji Yamashita[1]

1.Faculty of Education and Human Studies, Akita University

The authors developed a prefabricated model experiment device of deformation in powder which can form lateral faults. In a science class for high school students, the students could assemble and make lateral faults in powder. The device will be a good teaching material for studying deformation land surface and beds.

Keywords: fault, model experiment, teaching material

 

# How to teach soil in high school and junior high school

*Kazumichi Fujii[1]

1.Forestry and Forest Products Research Institute

In high school, world soil distribution can be learned in geography class. However, information is not updated by recent knowledge. I hope that education of soil in geography can be more interesting. For example, textbook describes that northern soils include podzol, permafrost soil, and peat soils. However, distribution of these soil types may not co-exist. Podzols typically develop in non-permafrost soils (e.g., Europe) under coniferous forests, permafrost soils are widespread in tundra and forests in the area where ice-sheet did not cover land surface in glacial period (e.g., Alaska, Siberia). We can know news of mammoth emerging from permafrost soil. Peat soils are widespread in flat landscape, irrespective of climate (e.g., Tropical peat). These knowledge need to be educated in systematic way, rather than remembering specific terms. We would also like to report the experience of class about soil in high school.

Keywords: Soil, Permafrost, Peat

 

# The Sharing of Information and Data using Cloud Computing Services in Field Research in School Club Activity

*Haruka Matsuoka[1], Takeshi Uemura[2]

1.Department of Business and Informatics, Tsukuba Gakuin University, 2.Kaijo Junior and Senior High school

In recent years, there has been increasing strong public interest in natural disasters and global environmental issues. The promotion of science education using field research has become more and more important. In secondary schools, field research generally takes half a day or several days and has to be carried out as a school club activity out of the customary class schedule. For preparation of field research, communication between teachers and students is necessary especially in arranging of schedules and sharing data. It usually takes much time and labor, and thus tends to prevent teachers from engaging students in field research.

In this study, common cloud computing services were adopted so that communicating information, the arrangement of schedules, and the sharing of data for field research in an earth science club activity at Kaijo Junior & Senior High School could be facilitated. Membership of the club has been 45 (2012), 47 (2013), 45 (2014) and 42 (2015), respectively. They successfully reduced teachers' time and labor for preparation, whereas a few students had certain problems in using the cloud.

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Keywords: earth science education, field research, cloud computing services

 

# Remote Laboratory in Distant Education I: Scanning Electron Microscope

*Soichi Omori[1]

1.The Faculty of Liberal Arts, The Open University of Japan

Importance of practical experience and observational components of the science education have been emphasized, and several attempts have been made to include those components in the distant education. We will introduce our first application of scanning electron microscope to a remote laboratory in distant education of the Open University of Japan.

Keywords: Distant education, Remote laboratory, Scanning electron microscope

 

# Terminological comparison on "Geography" and "Earth Sciences" of high school textbooks

*Seiichiro Yamamoto[1], Takayuki Ogata[2]

1.Fukui Commercial High School, 2.Faculty of Education, University of the Ryukyus

Both physiography and geoscience in the high school curriculum have a lot of similar content. These similarities may function more effectively in education systems, when these contents are taught in a coordinated way. However, there are some problems with the terminology use in textbooks, such as the same meaning but in different terms and the same word but different meanings. These problems may cause confusion among students. It might be difficult to rid these differences immediately, but if we are aware of these problems, teachers can deal with these terms adequately.
In this study, terms and their meanings in textbooks are compared. All the textbooks of geography and geoscience are referred: 3 books of Geography B, 6 of Geography A, 2 of Geoscience, 5 of Basic geoscience, 5 of Science and Human Life. With regard to geographical content, we compared the definition of macro-morphology, alluvial plains and the development process of landform. Concerning meteorological and climatological content, we compared the definitions of atmospheric circulation and Köppen-Geiger Klassifikation.

Keywords: terminology, textbook of high school, geographical education, geoscience education

 

# The Posture that is demanded from the Leader of the Science Research Activities of the Senior High School Students

*Kazuya Kawakatsu[1]

1.Hyogo Prefectural Nishiwaki senior high school

At various opportunities, it is argued about the way of the science research activities of the high school students. Is it necessary to change the method of the evaluation in a group study and a personal study? Is a study of the engineering and agriculture study easy to get a high evaluation than fundamental researches? Do you evaluate it only based on study contents or increase the appearances of the presentation and the article in an evaluation standard? Do you make much of enthusiasm and sense of cooperation whether you make much of originality and priority? How much do you accept the participation of the leader? For a student researching activities for the first time, the role of the leader is serious. I consider it how a leader should be concerned with a student.
I instructed Earth Science Club in Hyogo Prefectural Kakogawahigashi Senior High School that was SSH school for ten years, and I moved in Nishiwaki Senior High School in 2014, and I instruct Earth Science Club in the principal school. The Earth Science Club continues a national higher winning prize in a Ministry of Education, Culture, Sports, Science and Technology authorization meet in succession for 12 years. It is to always ask a student saying "it is why" that I keep in mind in instructing a student study, and I watch still it after teaching told the basic technique and foam. For example, I ask a student why it must be the theme. The student must show a motive concretely to answer this question. In addition, the student cannot explain a purpose to me definitely if he does not check a precedent study properly. I do not let a student only study it for the reason to seem to be interesting. Such a student comes to a deadlock on the way and often abandons a study. For a leader achieves a purpose to a student, a thing important next is to ask what kind of experiment and observation are necessary. If a purpose is clear and learns the precedent study, I think that a student greatly deviated from appropriate experiment and observation method. I try to let a student do it without saying a careful thing at the beginning.
When a result became clear, I hold a briefing session and let a student explain a policy and the result of the study. In many cases, the condition of the experiment is divided, and an error is not handled properly, and the data does not have the result. I point it out and let you do the fresh start of the experiment some other time to be concrete. I let a student learn that it must be the thing that an experiment and observation go to the study purpose linearly. After an experiment and observation is finished, I let consider it between students. Even if a good result is given with much effort, because a student lacks in both the knowledge and the experience, he cannot evaluate it definitely and summarize it in generalization. I explain the cause that a discussion comes to a deadlock to a student, and I show the article that I should read to a student or the chart which I should compile. I strongly instruct a student to consider it only from a result. Most of students confuse the story that he heard somewhere and the results, and they are considering it which he cannot arrive at from a result. Of course I instruct it about the rule in the chart making strictly. For example, I do not use the graph which looked at the bar graph from a slant in the science. The student finally summarizes results of research in an article, and I teach the style of the scientific article properly. First, the student writes the article such as the letter. He distributes one's result and a precedent study properly and does not show the consideration separates a precedent study and his results of research definitely. I instruct a student about these, and entrust a student afterward.

 

The student finishes writing a surprisingly wonderful scientific article by a leader instructing it. The article that the student wrote may be judged as a leader wrote it.

Keywords: Earth Science Club, "it is why", instruct, entrust

 