Problem-Solving Learning of Physics through the Creation of Quiz

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From this year 2013, the active-learning method has been applied to some subjects such as “Nature’s Structure” in the general education of Ehime University in Japan. The creation of a homemade quiz on natural science has been utilized for one of the subjects, in order to make the students have an interest in the physical phenomenon and learn the problem-solving method. This lecture title is “The Wonderful Discovery in the Living”, and the method of this subject is as follows [1, 2].

A student shows a question to the natural phenomenon that he/she does not know the method to solve. (For example, why is it colder in the higher mountain?) From these questions gathered from all the members in a class, a student selects one question that can be solved by his/her ability, and investigates the mechanism of the phenomenon with various literatures in order to get a right answer of a quiz. Also, he/she requests the others to solve the question according to their intuitions. These solutions are utilized to make the choices of a wrong answer of the quiz, so the quiz may mislead a person to the wrong choices by the misunderstanding and the misconception obtained through one’s life. In the presentation of the subject, the student explains his/her investigation, and the quiz is completed through the discussion with all the members.

This subject was done from 2001 with usually 10 ~ 21 students in a class. The most questions shown by the students were about physical phenomena. Through the creation of quiz, the students learned various natural phenomena aggressively and enjoyed the learning of natural science. The method of the subject excites the curiosity of student, and encourages him/her in learning of physics.

By the purpose of making the wrong-answer choices of quiz, the students can talk easily and consider carefully about their misunderstood things. Then, the teacher may play an audience in the class, so the creation of quiz is easy and important.