

Evaluation of the Group Study using Peer Review in the Lesson of Programming.

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Abstract— The lessons of programming are made into the special foundation subjects at the curriculum of the faculty of information system. However, it is difficult for the current students to attain study targets in a standard classroom lecture. Then, we would propose adopting the group study method in a part of simultaneous lesson. One group is composed of several students. And each student in a group teaches each other. Especially students evaluate flow charts mutually, which is called peer review. As a result of carrying out factor analysis of students' questionnaire after group study, the following three factors were extracted. The 1st factor is the effect of group study. The 2nd factor is the benefits of reviewers. The 3rd factor is the effect of a review. Furthermore, students were divided into the high-achieving group and the poor-achieving group, and t-test of average of factor scores of both groups was performed. The average of each factor score of the 1st factor and the 3rd factor was intentionally high the poor-achieving group. The group study accompanied by a peer review is useful in order to make the study target of a simultaneous lesson attain. Students wish to carry out the group study once for every five simultaneous lessons. This frequency of group study also fits a curriculum.

Index Terms— simultaneous lesson, programming, group study, peer review, flow chart

I. MORE DETAILED THAN ABSTRACT

The simultaneous lesson is performed at many universities in Japan. A simultaneous lesson transmits knowledge and theory to the students of a fixed level, and aims at making it master efficiently. The lesson of programming is also performed in the form of a simultaneous lesson. As for the simultaneous lesson of programming, a teacher explains along with a textbook. Each student understands description and practices execution of programs, change of programs, etc. which were indicated by the textbook. Although students have gathered, in fact, they have closed almost all their study activities to each student. In recent years admission requirement has become lower than ever, there are many students out of the range of the fixed level of basic academic ability or study volition. Therefore, it is difficult for students to

attain a study target in a traditional simultaneous lesson.

However, actually, there are restrictions of the organization of curriculum or teachers, equipment of classrooms, etc., and form of a lesson cannot be changed greatly. Then, we proposed using together the group study accompanied by peer review to a simultaneous lesson for study target achievement of a simultaneous lesson. Group study constructs a group by several students. It is that students acquire target knowledge, teaching mutually about the portion which he or she does not understand completely.

The following points became clear from the student questionnaire after group study.

(1) Three factors have been extracted through factor analysis.

(a) The 1st factor is "an understanding of programming and flow chart improved sharply by teaching each other" (effect of group study).

(b) The 2nd factor is "Reviewers were able to see examples of good programming by evaluating" (benefits of reviewers).

(c) The 3rd factor is "the designer has discovered the error of a flow chart by reviewing" (effect of a review).

(2) Furthermore, students were divided into the high-achieving group and the poor-achieving group, the average of each factor score of the 1st factor and the 3rd factor was high the poor-achieving group.

(3) The students of poor achieving group answered that "group study is helpful for by the reason for understanding well by a question and a consultation to each other" in free description column of a questionnaire. The most typical opinion of this group is that "Since there are four students, other someone teach the portion which I do not understand. This was useful in order to understand programming well."

(4) The high-achieving group has described more good points of group study than the poor-achieving group to free description column of a questionnaire. We will introduce two opinions of this group. "By showing against and explaining a flow chart, it was able to learn more deeply." "I think that it is helpful to explain a flow chart to reviewer when I explain something to people in the future."

(5) Students are requesting that group study is carried out once for every 4.74 simultaneous lessons. This number of times fits curriculum advance.

As mentioned above, it turns out that group study was useful.