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Research and Development of Education Support System Activating Interactions Between a Teacher and Students

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Traditional lectures so far have been based on face-to-face (or direct) communications between a teacher and students and have tended to become one-sided from a teacher and low mutual communications. It is specifically true in Japan where there has been little custom of a debate. This situation is not so much improved at moment and the fundamental form of lectures are still not changed although lots of IT apparatus have already been introduced to the classroom.

In this report, we propose a new education support system and show results of its evaluation. We introduce new communication channels such as a cellular phone and VOD system to the classroom and implement several functions to activate interactions between a teacher and students; i.e. monitoring of student's situation, student's understanding improvement, opinion exchange activation and so on. Through the practical use in lectures it is confirmed that the system works effectively.

First, we investigated issues in the classroom through the survey of existing researches and free discussions; the results are summarized as follows:

1. It is difficult for a teacher to grasp whether the students understand the lecture or not since student's reactions in the lecture are often very few.
2. When a teacher continues to lecture without grasping the degree of student's understanding, the students often can not follow the lecture and then lose the interest.

3. However, a student feels difficult us for telling an opinion to a teacher due to various reasons.

We developed an education support system called " On-Air" to cope with these issues introduction new channels (such as cellular phone, VOD etc.) for communications between a teacher and students. This system has the following functions:

1. Function for instant questionnaire: This function can make a questionnaire to the students instantly and anonymously any time in the classroom. For example a teacher can monitor student's situation (e.g. well understand, partly understand, or not understand). This function considerably activates mutual communications and understanding.

2. Function for marking student's state through a lecture: This function can record student's situation by marking tags on server. A teacher can know afterwards in which part students in his/her classroom could understand or not his/her lecture.

3. Function for VOD and marking tags on server: We can replay videos selecting any part of the lecture later.

The evaluation experiment was conducted combining these functions in three actual lectures. Through the experiment the usefulness was confirmed for the first and last functions, but was not confirmed for the second function. Therefore we improved this function as follows. Some one in a classroom inputs a table of contents of a lecture to the system linking to video record. Every student can use this table as indices for pointing replay places of video and marking parts of a lecture difficult to understand. The teacher can use this table with marks to know which part is difficult for students afterwards. The usefulness of this improved function was confirmed through a questionnaire.

From these considerations, the system was estimated that it was useful. Therefore we conclude that this study can suggest successfully how to realize a prototype of an education support system.