A Study on Information Sharing Support in Manufacture Club Activities

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This report proposes an internet-based information sharing environment on manufacturing club activities in technical colleges based on the results of the field questionnaires in order for actual technical college students to investigate how to share technical information in daily activities.

In recent decades, there is a real need for encouraging students' independence in higher education of Japan. They say that classical classroom lectures are not enough for them to develop such aspect or skill in their school life. So, "active learning" is beginning to catch the attention of places of diverse levels of education such as collaborative learning, problem-based learning, and club activity. In my research, I focus on active learning in technical college.

Technical college is one of the institutions of higher education in Japan. Junior high school graduates can enter the technical colleges upon passing entrance examinations. And they learn technical and engineering knowledge for five years. According to the report, they are expected to have a technical knowledge and a sense of responsibility from companies. It is notable that the technical colleges actively address a variety of active learning activities, especially manufacturing club activities which are ones that can learn creativity and substance technology and knowledge from science and

industrial points of views in cooperation with colleagues. A robot contest for technical college students (Robo-con) is held every year, and is even aired on TV. Technical college students make a robot and demonstrate its technology and ideas since its themes and rules are set every year. The contest begins with regional contests. And then twenty five winners of the regional contests come in a nationwide contest. They operate robot so that it can carry some objects to compete distance, time and score. The contest would give them creativity and a sense of responsibility. On the other hand, it may give them a little presentation skill and public spirit. Therefore, I carried out some questionnaires for actual technical college students to investigate how to share information and to make presentation in their daily manufacture club activities.

After the results of three times questionnaires, I compiled the features and the issues about robot idea review methods, presentations and information sharing in Robo-con activities. Many technical colleges adopt a robot idea review flow that decides mechanisms after game plans. Robot idea presentations are held as a screening meeting at a stage prior to robot manufacturing. There are multiple storing locations for the activities data because shared computers and personal ones are used in combination. Some web contents are blocked at some technical colleges. On the other hand, the activities data may be collected by web access limitations. Technical college students recognize that information sharing is important not only technologies but also members and schedules. Powerful teams can accumulate technical information than weak ones. Powerful teams also think that they can share information about member's skills. Many teams share schedule information with members. But schedule sharing has a problem about its adjustment.

In order to illustrate such features and issues, I make a technical college Robo-con activity model. It has five processes; "rule announcement", "robot idea review", "presentation and documentation", "robot manufacturing" and "contest". Each of these processes has detail sub processes. Many data are generated and should be shared by member's activities. In "robot idea review" process, themes of Robo-con are different in every year. But, the rules are sometimes similar to the past one. Then if the members are able to share the information as background knowledge, they can discuss it in depth. In

“presentation and documentation” process, presentations used in screening meeting are desired to be used effectively as application materials. “Robot manufacturing” process is the longest process in technical college Robo-con activity. This process should follow a PDCA cycle by repetition of trial and error. Generated information varies from each sub process. Such variety make it difficult to store and share useful information over the school year.

In order to solve these issues comprehensively, I proposed how to use three information sharing environments; SNS, Google service and NAS. The first one is Facebook. Facebook information sharing environment especially can share information about members. They can create group pages to communicate particular members for project management, browse other member’s postings in chronological order, and comment to other’s postings. The postings that have many responses are recognized as important and stay at the top of the page for long time, then they can reference easily. The second approach is Google service. Google service environment especially can share information about schedules. It is composed with Google Calendar and Google Drive. This calendar can share schedules not only but also files. The uploaded files can display a shared calendar as with schedule. Thus, they can look back on information when the file was used. The third approach is NAS. Two approaches described above, the information are stored in cloud computing systems, thus it is hard to pick up the information when the administrator left. As a substantive storage media, it avoids information reference difficulty by administrator graduation. These methods are expected effective references and reuse with adding metadata in each processes information.