Validity of progress chart for middle range homework : A study about mathematics homework in senior high school

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Abstract: In Japanese junior and senior high schools, it is common for students to have middle range homework which they must finish workbook by the deadline. However, some students do not work on problems properly or cannot finish their homework because it is too late to start. In this study, as a teaching aid to encourage effective learning of students, we propose a progress chart that can visually grasp students challenge achievements. We expect that learning motivation and self-management skills for the homework will be improved by using this chart. We conduct interviews with responsible teachers and questionnaires to the students about mathematics homework of senior high school.

Key words: Task Analysis Diagrams, Self management, Learning motivation

Introduction: In Japanese junior and senior high schools, it is common for students to have middle range homework which they must finish workbook by the deadline. However, some students do not work on problems properly or cannot finish their homework because it is too late to start. In addition, many students are not good at continuously working on it. Those problems may be caused by students' low self management skills and learning motivation. With keeping this in mind, we developed a Progress-Chart as a teaching aid that can visually grasp students challenge achievements. We expect that the Progress-Chart can heighten their self management skills and learning motivation. The purpose of this study is to propose of this Progress-Chart to educational sites.

Outline of the Progress-Chart: Figure 1 is an example of the progress chart : p.p. 1-8 are whole homework and the student is already done with p.p. 1-3. In P2, the student got all the answers right. In this way, this chart can visually grasp the total amount of homework. In additional, it can visually grasp the learning achievement of each page by dividing the paint color according to the number of correct answers. The rule of dividing the paint color is: ①Pages that a student works all problems are yellow. ②Pages that a student gets all the answers right are black.
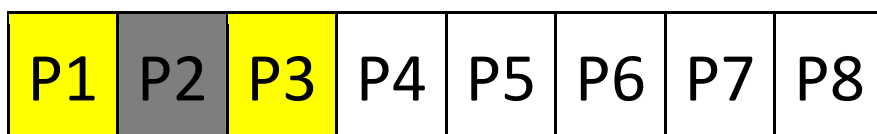

Figure 1 the example of the progress chart

Practice content: We carry out a case study in the Mathematics classes of Amagasaki Sousei high school of Amagasaki City. We are going to conduct before and after the summer vacation. The teacher distributes the progress chart when presenting the homework and explain how to use. Students put the chart on the first page of notes to be submitted and submit the chart along with the note.

Evaluation method: we conduct pre and post questionnaire to students before and after practice. In the pre-questionnaire, we ask questions about efforts to homework students have ever worked on. In post-questionnaire, we ask questions about efforts to homework this time. Evaluation points of the questionnaire are shown in Table 1. We also conduct an interview for the teacher of the class before and after the practice. Question in the interview are shown in Table 2.

Expected results: In the questionnaire, we hope that the number of 1,2,3 is increased than before. In the interview, we want to clarify students' attitudes toward homework are improved than before. In addition, we expect that a lot of students and teachers answer "Yes" to the question "Do you want to use the progress chart the next time?".　When we get the expected results, we want to perform spread activity to school.

Items that we hear in five steps
1.   Pace to advance the homework
2.   Presence or absence of scheduling
3.   Approach to each problem
4.   Whether you feel the significance to homework
5.   Do you want to also use the next? (only post questionnaire)
Items that can hear a free description
Other thoughts and opinions

Table 1 Evaluation Points of the questionnaire

Items that we hear
1.   Submission rate of homework
2.   Approach to each problem
3.   Willingness of students
4.   Do you want to also use the next?(only post questionnaire)
5.   Other thoughts and opinions

Table 2 Questions in the interview

Reference: Takahashi, Akiko, Hisashi Ichikawa, Akihiro Abe and katsuaki Suzuki(2007) "Development of a Self-directed e-Learning System Based on Task Analysis Diagrams" in Japan Society for Educational

Technology (eds.), Japan journal of educational technology , Tokyo: Japan Society for Educational Technology, pp. 25-28.