

HOW TO SUMMARIZE WHAT WE'VE LEARNED:TWO TYPES OF SUMMARY IN MATHEMATICS LEARNING

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Summarizing what students have learned is the crucial part of learning both for students and teacher. Polya(1945) pointed out the importance of “Looking Back” in the process of problem solving. Reflective activity on the process of learning is integral not only for problem solving but also for the learning activity in general. In this presentation, the importance of summarizing learning process is focusing on, and two types of summary in mathematics learning are identified.

Fendel, D. et. al.(1997) identified portfolio activity as a summary of learning unit. In the process of compiling portfolio, students choose important papers through what they have learned, and summarize the unit with these selected papers. “Selection” becomes one of the important activities, because they have learned through various ways of activities, and some of which are not crucial to understand the major idea of whole content in the unit they have learned. Since students pick up the highlights of what they have learned, this kind of summary can be explained as compiling the “Digest” of their learning, and it is defined as “Digest Type of Summary”.

On the other hand, most of Japanese students rarely compile digest of their learning. This is due to the contents of what they learn. In general, Japanese mathematics curricula are well designed and students can follow “the ideal path of mathematical thinking”. It is really good because they can learn well-structured mathematics contents and they can acquire the main points so efficiently. In this case, students cannot select the papers, because every paper is crucial and they cannot exclude any of them. So, their summary must be different from Digest Type. What they might do is summarizing every paper into brief description and making the list of small notes, just like an index. It is defined as “Index Type of Summary”.

Either of these two types of summaries is good for the students’ mathematics learning because summarizing itself is very important. Differences of the types are due to the differences of learning; the former is rather open and let students do by their own, in contrast, the latter is well organized and students tend to follow the same instruction. We need to appreciate both ways of summarization, and try to let students do in appropriate ways.

References

- Fendel,D. et. al.(1997), *Patterns, Teacher’s Guide*, Interactive Mathematics Program Year 1, Key Curriculum Press
- Polya,G.(1945) *How to Solve It: A new Aspect of Mathematical Method*, Princeton University Press