

Mathematization and Mathematics Activity: An appearance of ICMI and world mathematics reform movements in Japan before and after WWII

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Under the established Japanese mathematics tradition and community beyond the influence of Chinese mathematics until 16<sup>th</sup> century, Japanese introduced European mathematics evolutionally in the middle of 19<sup>th</sup> century. Mathematicians and matheducators studied mathematics in Germany at the end of 19<sup>th</sup> century and the beginning of 20<sup>th</sup> century. They had engaged in developing integrated curriculum under the movement of Kline. Beyond the earthquake which fired the capital Tokyo, the integration of mathematics curriculum from the elementary level to the secondary level was completed during WWII. The final stage of integration was completed 1943 under the key word 'Mathematization'. In the textbook until calculus for year 11 to 16 at 1943 included a lot of mechanical tools as for the subject matter for mathematization. After WWII, the idea of Mathematization continuously enhanced in relation to mathematical activity. From 1957 curriculum reform, mathematical thinking has been enhanced and in 1968 reform, Japanese modernization has completed under the enhancement of mathematical thinking. At high school level, there were collaborations between mathematicians such as Akizuki who is a member of ICMI and matheducator such as Shimada who is currently known as a developer of Open-ended Approach which was originated from mathematization during WWII. The lecture by Shibata about the theory for curriculum development in relation to Mathematization at ICME 2 was a result of collaboration. Until modernization, mechanical tools kept the position in textbooks through curriculum reforms in relation to mathematization. Electronic circuit mechanism, as a basic theory of computer, was a last mechanical tool which was newly discussed to be put into curriculum as a teaching content or not. After the Japanese modernization, there was the regression of teaching time and then, geometry was retreated and algebraic approach was relatively focused on. Under the ICT revolution after modernization, many teachers are losing the mechanical tools for mathematics classroom even if they have tools in their staffrooms. Here, we focused on mechanical tools on WWII and some related issues after modernization.