

A Comparative Analysis of Mathematics Textbooks between the 2022 South Korean Curriculum and the Australian Curriculum v9.0: Focusing on the Introduction to Functions in Secondary

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Introductory sections of textbooks play a significant role in learning mathematics. How mathematical concepts are introduced initially usually determines the direction of the whole picture. The Australian and Korean mathematics curriculums have common things, but they have their own purpose for education. This study aims to compare the introduction of functions to Year 7 students in both countries. Especially, this study focuses on analysing how the introductory section affects students building the concepts of functions with the aspect of inductive modelling and deductive reasoning. This study will conduct three types of comparison. First, the change of textbooks for Australian curriculum from v8.4 to v9.0. Second, the change of textbooks for Korean curriculum from 2015 to 2022. And finally, a comparison between the Australian and Korean mathematics curriculum.

According to the revised Australian Curriculum version 9.0 (ACARA, 2022), secondary students are required to describe the relationship between variables from authentic data. Version 8.4 also includes the contents about analysing graphs from authentic data. But we can find it gets more intentional in content descriptors as part of textbooks for v 9.0, where the textbooks emphasise the process of modelling real-world phenomena rather than the ability to transform a pattern to an equation. The textbooks don't refer to the word, function, but the relationship is related to function. Also, using digital tools has been combined more strongly with the content descriptors. Content descriptions describe what students should understand in the whole context of the concept and the way they would go.

The concept of Digital Literacy is one of the important factors in the South Korean 2022 revised Mathematics Curriculum. (Ministry of Education [MOE], 2022). Digital literacy means the ability to use digital tools to find information needed. In 2015 Curriculum, digital tools were tools reflecting data. In the 2022 Curriculum, it is a main field for mathematical thought by itself. The use of digital tools is a new capability for students to develop, which has been added in the revised 2022 curriculum that did not exist in the 2015 curriculum. 'Ability to Connect' stems from connecting mathematical concepts, principles, and rules, applying them to real-life problems and other subjects and recognising the usefulness of mathematics. The findings may support educators to be better able to design the next version of the curriculum that is more suitable for their students.

References

- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2022). *Australian Curriculum:Mathematics (v9.0)*.
Ministry of Education. (2022). Mathematics curriculum (Proclamation Nop. 2022-33, Separate Volume 8).