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Analysis on the Converged Method of Korean Scientific and Mathematical Fields and Liberal Arts Programme: Focusing on the Intervention Patterns in Liberal Arts

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Abstract : The purpose of this study is to analyze how the scientific and mathematical fields (STEM) and liberal arts (A) work together in the STEAM program. In the future STEAM programs that have been designed and developed, the humanities will act not just as a 'tool' for science technology and mathematics, but as a 'core' content to have an equivalent status. STEAM was first introduced to the Republic of Korea in 2011 when the Ministry of Education emphasized fostering creative convergence talent. Many programs have since been developed under the name STEAM, but with the majority of programs focusing on technology education, arts and humanities are considered secondary. As a result, arts is most likely to be accepted as an option that can be excluded from the teachers who run the STEAM program. If what we ultimately pursue through STEAM education is in fostering STEAM literacy, we should no longer turn arts into a tooling area for STEM. Based on this consciousness, this study analyzed over 160 STEAM programs in middle and high schools, which were produced and distributed by the Ministry of Education and the Korea Science and Technology Foundation from 2012 to 2017. The framework of analyses referenced two criteria presented in the related prior studies: normative convergence and technological convergence. In addition, we divide Arts into fine arts and liberal arts and focused on Korean Language Course which is in liberal arts and analyzed what kind of curriculum standards were selected, and what kind of process the Korean language department participated in teaching and learning. In this study, to ensure the reliability of the analysis results, we have chosen to cross-check the individual analysis results of the two researchers and only if they are consistent. We also conducted a reliability check on the analysis results of three middle and high school teachers involved in the STEAM education program. Analyzing 10 programs selected randomly from the analyzed programs, Cronbach's α .853 showed a reliable level. The results of this study are summarized as follows. First, the convergence ratio of the liberal arts was lowest in the department of moral at 14.58%. Second, the normative convergence is 28.19%, which is lower than that of the technological convergence. Third, the language and achievement criteria selected for the program were limited to functional areas such as listening, talking, reading and writing. This means that the convergence of Korean language departments is made only by the necessary tools to communicate opinions or promote scientific products. In this study, we intend to compare these results with the STEAM programs in the United States and abroad to explore what elements or key concepts are required for the achievement criteria for Korean language and curriculum. This is meaningful in that the humanities field (A), including Korean, provides basic data that can be fused into 'equivalent qualifications' with science (S), technical engineering (TE) and mathematics (M).

Keywords : Korean STEAM Programme, liberal arts, STEAM curriculum, STEAM Literacy, STEM
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