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An Exploration of Science, Technology, Engineering, Arts, and Mathematics Competition from the Perspective of Arts

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Abstract : There is a growing number of studies concerning STEM (Science, Technology, Engineering, and Mathematics) and STEAM (Science, Technology, Engineering, Arts, and Mathematics). However, the research is little on STEAM competitions from Arts' perspective. This study takes the annual PowerTech STEAM competition in Taiwan as an example. In this activity, students are asked to make wooden bionic mechanical beasts on the spot and participate in a model and speed competition. This study aims to explore how Arts influences STEM after it involves in the making of mechanical beasts. A case study method is adopted. Through expert sampling, five prize winners in the PowerTech Youth Science and Technology Creation Competition and their supervisors are taken as the research subjects. Relevant data which are collected, sorted out, analyzed and interpreted afterwards, derive from observations, interview and document analyses, etc. The results of the study show that in the PowerTech Youth Science and Technology Creation Competition, when Arts involves in STEM, (1) it has an impact on the athletic performance, balance, stability and symmetry of mechanical beasts; (2) students become more interested and more creative in making STEAM mechanical beasts, which can promote students' learning of STEM; (3) students encounter more difficulties and problems when making STEAM mechanical beasts, and need to have more systematic thinking and design thinking to solve problems.

Keywords : PowerTech, STEAM contest, mechanical beast, arts' role
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