

A Study of The STEAM Toy Pedagogy Plan Evaluation for Elementary School

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Abstract : Purpose: Based on the interdisciplinary of lower grade Elementary School with the integration of STEAM concept, related wooden toy and pedagogy plans were developed and evaluated. The research goal was to benefit elementary school education. Design/methodology/approach: The subjects were teachers from two primary school teachers and students from the department of design of universities in Taipei. Amount of 103 participants (Male: 34, Female: 69) were invited to participate in the research. The research tools are "STEAM toy design" and "questionnaire of STEAM toy Pedagogy plan." The STEAM toy pedagogy plans were evaluated after the activity of "The interdisciplinary literacy discipline guiding study program--STEAM wooden workshop," Finding/results: The study results: (1) As factors analyzing of the questionnaire indicated the percentage on the major factors were cognition teaching 68.61%, affection 80.18% and technique 80.14%, with $\alpha = .936$ of validity. The assessment tools were proved to be valid for STEAM pedagogy plan evaluation; (2) The analysis of the questionnaires investigation confirmed that the main effect of the teaching factors was not significant (affection = technique = cognition); however, the interaction between STEAM factors revealed to be significant ($F(8, 1164) = 5.51, p < .01$); (3) The main effect of the six pedagogy plans was significant (climbing toy > bird toy = gondola toy > frog castanets > train toy > balancing toy), and an interactive effect between STEAM factors also reached a significant level, ($F(8, 1164) = 5.51, p < .01$), especially on the artistic (A/ Art) aspect. Originality/value: The main achievement of research: (1) A pedagogy plan evaluation was successfully developed. (2) The interactive effect between the STEAM and the teaching factors reached a significant level. (3) An interactive effect between the STEAM factors and the pedagogy plans reached a significant level too.

Keywords : STEAM, toy design, pedagogy plans, evaluation

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