

Effects of Technology Education Classes: Meta-analysis on Research Findings in the Republic of Korea

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Background

Technology education in the Republic of Korea has been conducted using various teaching and learning methods. This study has been conducted on how technology education has affected students, but there is there is a lack of integration in the studies conducted.

Objectives

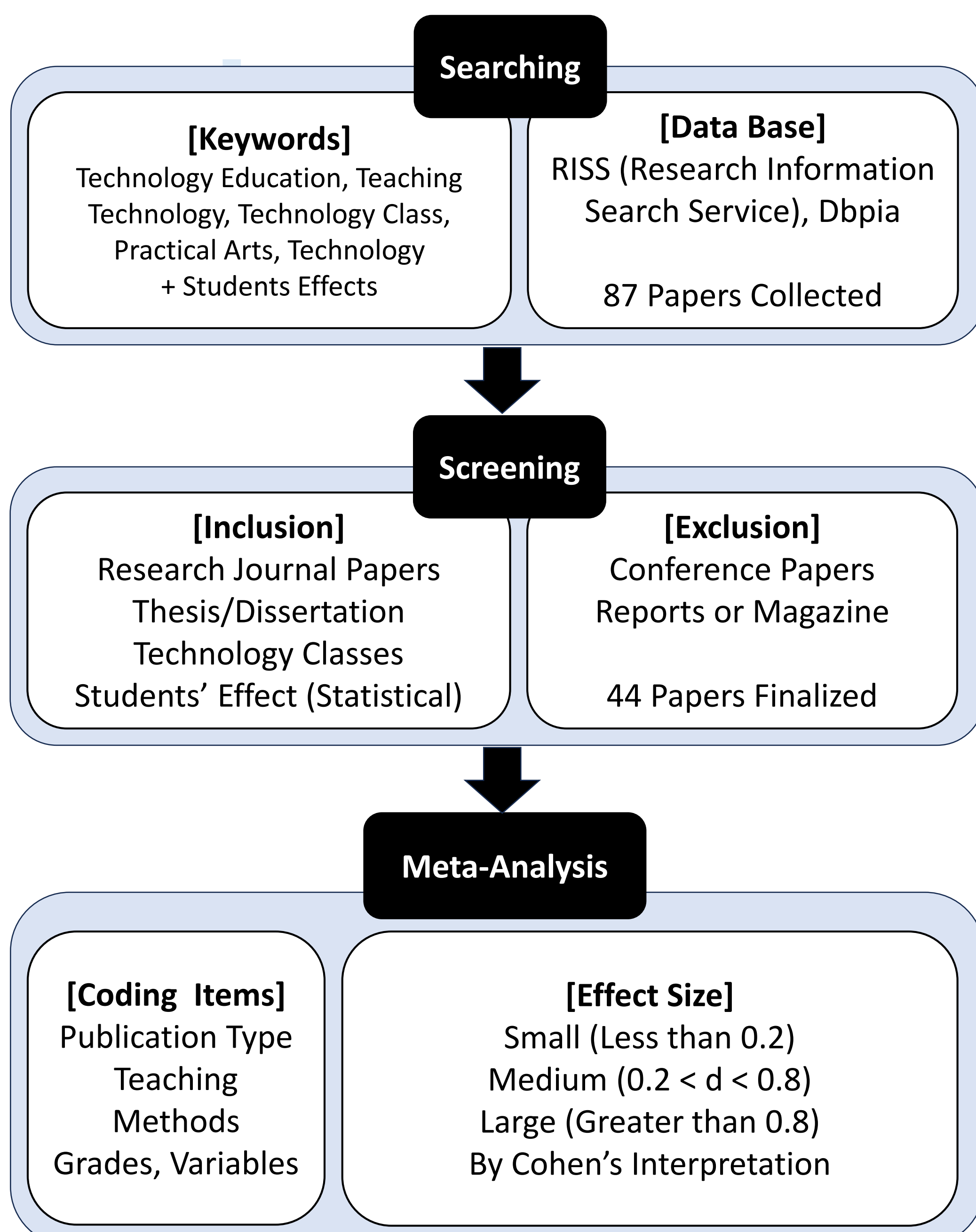
The purpose of this study is to identify current research trends on the effectiveness of technology education and synthesize the results. The specific goals of the study are as follows :

- 1) Analyzing the impact of technology education on students
- 2) Analyzing the effect of technology education teaching method on dependent variables.

This study presents the trends of previous studies related to technology education and provides recommendations for both research and practice of technology education.

Methods

This study conducted the meta-analysis. From 2000 to 2021, 44 studies were analyzed by selecting papers related to the subject.



Results

In technology education, convergence education has a positive effect on enhancing technological attitudes, creativity, self-efficacy, and problem-solving skills. Furthermore, a meta-analysis of teaching methods in in the technology classes revealed a medium effect size.

[Number
of Studies]
44

[Effect
Size(g)]
0.633

[Statistical Value]
95% Interval 0.511-0.754
p value 0.000

The effect sizes were analyzed by categorizing them into subcategories based on publishing type, teaching method type, school level, and dependent variables. As a result, the publication type showed academic journals, and the thesis showed the size of the intermediate effect size.

The school level showed a high effect size in elementary school, followed by middle school and high school. The experimental types showed intermediate effect sizes in the order of a single group and experimental control. The dependent variables showed intermediate effect sizes in the order of affective, psychological, and cognitive.

Conclusions

Technology education has a positive effect on enhancing technology attitudes, creative tendencies, self-efficacy and interest, and problem-solving skills. In technology education, cooperative learning has a positive effect on academic achievement, social interaction, and affective areas.

Problem-based and problem-solving learning in technology education has a positive effect on improving academic achievement, affective areas, and problem-solving skills.

Student-centered teaching methods in technology classes can be interpreted as having a medium effect size of 0.633 based on Cohen(1988). Within the teaching method category, STEAM demonstrated a large effect size. Additionally, the effect sizes for dependent variables followed the order of affective, psychomotor, and cognitive areas, each exhibiting an intermediate effect.

References

Cohen, J. (1988). Statistical power analysis for behavioral sciences (2nded). And 56 other references