Critique of *Active Learning Improves Academic Achievement and Learning Retention in K-12 Settings: A Meta-Analysis*

Introduction

The article *Active Learning Improves Academic Achievement and Learning Retention in K-12 Settings: A Meta-Analysis* was written by Özgür Tutal and Taha Yazar and published in *i-manager's Journal on School Educational Technology* in 2023. The aim of the study is to evaluate the effect of active learning strategies on academic achievement and knowledge retention among K-12 students. Tutal and Yazar approach the subject by conducting a large-scale meta-analysis, drawing on hundreds of individual studies to generate more reliable conclusions than single studies alone. Their work is timely given the ongoing emphasis on student-centered learning approaches in schools.

Summary of the Article

The study synthesizes nearly 400 research articles focusing on academic achievement and close to 90 articles addressing learning retention. By applying a random-effects model, the authors report a strong effect size of 0.96 for achievement and 1.22 for retention. These results indicate that active learning strategies consistently yield positive effects on both performance and long-term knowledge retention in K-12 contexts.

The article also includes moderator analyses that examine how variables such as grade level, subject area, group size, and geographic region shape the outcomes. According to the results,

active learning demonstrates effectiveness across all contexts considered. The authors argue that this consistency strengthens the case for adopting active learning methods broadly in schools.

Evaluation of Methods

The meta-analytic approach used by Tutal and Yazar is appropriate for the research question, as it allows the combination of findings from many individual studies into a single, more comprehensive analysis. The use of a random-effects model further acknowledges the diversity of the included studies. These methodological choices represent a strength of the article.

However, the criteria for selecting and screening the included studies are not fully detailed. Without transparent inclusion standards, it is difficult to judge the reliability of the evidence base. The issue of publication bias is acknowledged briefly, but the article does not present clear statistical tests for bias such as funnel plots or fail-safe N analysis. This omission limits confidence in the stability of the reported effect sizes.

Evaluation of Findings

The reported effect sizes are large, and the presentation of findings is clear, but the discussion is relatively brief. The article highlights averages but does not provide enough detail on the range of outcomes across studies. Greater emphasis on variability would strengthen the analysis, as it would allow readers to see in which contexts active learning performs especially well or less effectively.

The moderator analyses add depth but are only lightly discussed. For example, while the authors report that active learning is effective across subject areas, they do not explain why some

subjects might benefit more strongly than others. More interpretation would improve the practical relevance of the findings for teachers and policymakers seeking specific strategies suited to their contexts.

Strengths and Weaknesses

The major strength of the article is the scope of the dataset. Combining hundreds of studies gives weight to the overall claim that active learning benefits student achievement and retention. The clear presentation of results and the use of a robust statistical model further support its reliability.

Weaknesses include insufficient detail on study selection, limited discussion of heterogeneity in the dataset, and minimal treatment of potential publication bias. These limitations reduce the usefulness of the findings for practical application. Teachers and administrators would benefit from clearer guidance on when and how active learning has the greatest impact.

Conclusion

Tutal and Yazar's meta-analysis provides important confirmation that active learning improves academic outcomes in K-12 education. Its strongest contribution lies in demonstrating the consistent, positive influence of active learning across a very large body of research. Nevertheless, the article leaves important questions unanswered about variability and methodological rigor. Future studies should address these gaps by investigating differences among contexts, clarifying inclusion criteria, and examining publication bias in greater detail. Overall, the article remains a significant contribution to educational research, reinforcing the case for active learning as a valuable instructional strategy in schools.