


The Effectiveness of Systems Thinking Training and Creative Problem-Solving on Social-Emotional Skills in University Students

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E d i t o r

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R e v i e w e r s

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1. Round 1

1.1. Reviewer 1

Reviewer:

In the paragraph beginning with “Recent educational research has demonstrated that students with higher levels of social-emotional competence exhibit stronger academic motivation,” the authors summarize positive outcomes associated with social-emotional competencies but do not critically discuss contradictory findings or contextual moderators. For example, the role of cultural norms, socioeconomic conditions, and disciplinary differences in shaping social-emotional functioning among university students remains unaddressed. Including a critical synthesis rather than exclusively supportive literature would improve the scholarly rigor of the literature review.

The conceptualization of systems thinking in the Introduction requires greater operational specificity. The sentence “systems thinking refers to a holistic cognitive approach that emphasizes understanding relationships, patterns, interconnected structures, and dynamic interactions within complex systems” remains descriptive and broad. The manuscript should identify which specific dimensions of systems thinking were targeted in the intervention (e.g., causal loop reasoning, feedback analysis, dynamic complexity recognition, mental model restructuring) and how these dimensions were expected to influence social-

emotional competencies. Without this clarification, the theoretical pathway between intervention and outcome remains partially underdeveloped.

Table 1 presents descriptive statistics across pretest and posttest stages; however, the manuscript does not report whether baseline equivalence between groups was formally tested statistically. The statement that “the groups were relatively homogeneous before the intervention” should be supported by independent-samples t-tests or multivariate baseline comparisons. Without formal baseline testing, it is difficult to evaluate whether posttest differences are fully attributable to the intervention.

The effect sizes reported in Table 2 are notably large, particularly the multivariate partial η^2 value of 0.786. While such findings may indicate a highly effective intervention, the manuscript does not critically discuss the plausibility of these magnitudes in relation to comparable educational interventions reported in prior literature. The authors should provide a more nuanced interpretation of effect sizes and consider whether contextual or methodological factors may have contributed to unusually strong intervention effects.

The Findings section would benefit from the inclusion of confidence intervals alongside mean differences and effect sizes. Reporting only p-values and partial eta squared values limits the interpretability of the statistical results. Confidence intervals would provide additional information regarding the precision and stability of the estimated intervention effects.

Authors uploaded the revised manuscript.

1.2. Reviewer 2

Reviewer:

The rationale for integrating systems thinking and creative problem-solving into a single intervention needs stronger justification. In the paragraph stating that “theoretical perspectives suggest that systems thinking and creative problem-solving may complement each other,” the manuscript does not sufficiently explain whether the relationship between these constructs is additive, synergistic, or hierarchical. The authors should elaborate on the conceptual interaction between analytical systemic reasoning and divergent creative cognition and clarify whether prior empirical studies have combined these approaches in educational interventions.

The Methods section states that “students who expressed willingness to participate in the study were screened according to the inclusion criteria,” yet no information is provided regarding exclusion criteria beyond “absence of severe psychological disorders based on self-report.” The authors should clarify how psychological disorders were assessed, whether any structured screening tools were used, and whether participants receiving psychological counseling or psychiatric medication were excluded. The lack of methodological precision may affect the internal validity of the findings.

The sampling strategy raises concerns regarding potential selection bias. Although the study reports the use of purposive sampling followed by random assignment, it remains unclear whether participants self-selected into the study based on pre-existing motivation for personal development or emotional learning. Such self-selection could inflate intervention responsiveness. The manuscript would benefit from a discussion regarding the implications of volunteer bias for the interpretation of intervention effectiveness.

The description of the intervention lacks sufficient procedural detail for replication. The paragraph beginning with “The intervention protocol consisted of twelve 90-minute training sessions” outlines broad themes but does not provide session-by-session content, instructional sequencing, facilitator qualifications, or examples of training activities. Including a detailed intervention protocol table or appendix would substantially improve methodological transparency and reproducibility.

The manuscript reports that the control group “did not receive any intervention during the study period,” but no explanation is provided regarding whether this constituted a passive waitlist control or whether participants received routine university activities. The absence of an active comparison condition introduces the possibility that observed effects were influenced by nonspecific factors such as group interaction, facilitator attention, or expectancy effects rather than the intervention content itself. This issue should be acknowledged explicitly in the limitations section.

The psychometric discussion of the Social Emotional Competence Questionnaire (SECQ) is insufficiently contextualized for the present sample. Although the manuscript notes that previous studies demonstrated acceptable reliability and validity, the authors do not report Cronbach's alpha coefficients, confirmatory factor analysis indices, or reliability estimates calculated specifically for the current dataset. Reporting sample-specific psychometric properties is essential for evaluating measurement reliability within the present cultural and educational context.

The Data Analysis section indicates that assumptions of normality and homogeneity were examined, yet the manuscript does not report the actual statistical values for the Shapiro–Wilk test, Levene's test, or Box's M test. Reporting only that assumptions were "satisfied" is insufficient for methodological transparency. Including exact test statistics, degrees of freedom, and p-values would improve the rigor and replicability of the statistical reporting.

Authors uploaded the revised manuscript.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.