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Reflective Learning Technologies in The Development of Social Activity Competence

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Abstract: This study examines the theoretical foundations and empirical effectiveness of reflective teaching technologies (RTT) in developing social activity competence (SAC) among university students. An intervention study based on a mixed-methods approach was conducted over one academic year with two groups, involving a total of 60 participants. The results demonstrated statistically significant improvements in the experimental group in terms of social initiative, empathy, collaborative decision-making, civic orientation, and self-regulation.

Keywords: reflective teaching technologies, social activity competence, higher education pedagogy, sociocultural theory, experiential learning, civic engagement, self-regulation.

1. Introduction

The 21st century requires university graduates to possess not only academic knowledge but also strong social and civic competencies. These include collaboration, empathy, initiative in uncertain situations, and sustained participation in community life. Such qualities are described as social activity competence (SAC), which integrates cognitive, emotional, and behavioral dimensions of effective social engagement.

However, higher education programs continue to prioritize knowledge transmission and exam-oriented learning, leaving limited space for systematic development of social competencies. Although competency-based education has gained attention, practical mechanisms for integrating social development into everyday teaching remain insufficient[1].

Reflective learning technologies (RLT) offer a promising approach to addressing this gap. Based on the idea that learning requires structured reflection on experience, RLT includes methods such as reflective writing, group dialogue, case analysis, peer feedback, and self-assessment. These tools encourage students to critically analyze their experiences and reconstruct their understanding[2].

The effectiveness of RLT is supported by major educational theories, which emphasize learning through social interaction, experience, and critical reflection as key drivers of personal and social development. Together, these perspectives suggest that reflective practices can foster deeper transformation of students' attitudes and behaviors.

Despite strong theoretical support, there is still limited empirical evidence on how systematically applied reflective technologies influence social competence, especially in contexts where traditional, teacher-centered approaches dominate. This study addresses this gap through a quasi-experimental intervention at a regional university, examining changes in key dimensions of SAC[3].

The paper is organized as follows: literature review, methodology, results and discussion, and conclusion with implications for educational practice and policy.

Literature Review

The literature on reflective learning technologies (RLT) and social activity competence (SAC) draws on interdisciplinary research in pedagogy, psychology, sociology of education, and civic studies, forming a strong theoretical foundation for this study.

Social activity competence is conceptualized as an integrated personal quality that includes readiness for social engagement, cooperative behavior, and internalized civic values. According to A. Brockbank and I. McGill, SAC is widely recognized as a dynamic and value-based construct shaped through interaction, reflection, and experience rather than a fixed set of skills. This view is supported by Jacques Delors, who emphasizes learning as a holistic process of “learning to know, to do, to live together, and to be,” highlighting its social and civic dimensions. Scholars also stress that competence frameworks in higher education must avoid reducing SAC to technical abilities, instead emphasizing its relational and contextual nature, as originally argued by John Dewey[4].

Reflective learning theory provides the main pedagogical basis for developing SAC. Foundational works by David A. Kolb argue that meaningful learning emerges through structured reflection on experience, particularly through experiential learning cycles that transform experience into knowledge. Similarly, Fred Korthagen emphasizes the integration of practice and theory through reflection in teacher education. Transformative learning theory developed by Jack Mezirow further explains how critical reflection leads to deep changes in worldview and identity, which are essential for social and civic development. In addition, the concept of reflection-in-action proposed by Donald Schön highlights the importance of real-time adaptive thinking in professional and social contexts[5].

Empirical research supports the effectiveness of reflective pedagogies in improving interpersonal and professional competencies. Studies in teacher and higher education demonstrate that structured reflective cycles significantly enhance communication, collaboration, and self-regulation skills, a perspective strongly grounded in the sociocultural theory of Lev Vygotsky, who emphasized learning through social interaction and mediation within the zone of proximal development. Furthermore, reflective learning is most effective when it is socially mediated through dialogue and peer interaction, reinforcing the importance of collaborative learning environments. Competence-based approaches in higher education, as discussed by Peter Zgaga, further support the idea that competencies develop through socially embedded educational processes[6].

Overall, the literature confirms that reflective learning technologies are theoretically and empirically grounded approaches capable of enhancing social activity competence. This study builds on this foundation by examining their effectiveness in a longitudinal, quasi-experimental design within an underexplored educational context.

2. Materials and Methods

This study used a quasi-experimental pre-test/post-test design with experimental and control groups to examine the impact of reflective learning technologies on students' social activity competence in a real university setting over one academic year.

The sample included 60 third-year undergraduate students from social science and humanities programs, divided into two comparable groups: an experimental group (n=30) receiving an RLT-based curriculum and a control group (n=30) following a traditional curriculum. Participants were similar in age, academic background, and demographic characteristics, and all provided informed consent under institutional ethical approval[7].

The intervention integrated four main reflective practices into regular teaching: weekly reflective journaling, structured Socratic seminars, peer debriefing after simulations and role-plays, and semester-based portfolio self-assessment. Instructors were trained in reflective facilitation, and ongoing coordination meetings were held to ensure consistent implementation.

Social activity competence was measured using a validated instrument with five dimensions: social initiative, empathy, collaborative decision-making, civic engagement

orientation, and self-regulation. Data were collected before and after the intervention, and the instrument showed good reliability across all scales[8].

Data analysis included descriptive statistics, ANCOVA to compare post-test results while controlling for baseline differences, and effect size calculations. Qualitative reflections from journals and portfolios were analyzed thematically to complement quantitative findings and provide deeper insight into students' learning experiences.

3. Results and Discussion

Table 1 presents pre- and post-test mean scores for all five SAC subscales and the composite score across both groups. Asterisks (*) denote statistically significant differences ($p < .001$) between experimental post-test scores and control post-test scores at ANCOVA after controlling for pre-test[9].

Table 1.
Pre- and Post-Test SAC Subscale and Composite Scores by Group:

Indicator / Group	Control Pre	Control Post	Experimental Pre	Experimental Post
Social Initiative Scale	48.3	51.2	47.9	68.4 (+20.5) *
Empathy & Perspective-Taking	52.1	53.8	51.6	71.3 (+19.7) *
Collaborative Decision-Making	44.7	46.1	44.2	65.9 (+21.7) *
Civic Engagement Orientation	39.5	41.0	38.8	59.7 (+20.9) *
Self-Regulatory Behavior	55.6	56.4	54.9	73.8 (+18.9) *
COMPOSITE SCORE	48.0	49.7	47.5	67.8 (+20.3) *

Note: All scores on 12–84 scale. * $p < .001$ (ANCOVA controlling for pre-test score). Changes shown for experimental post-test relative to experimental pre-test.

As Table 1 reveals, the experimental and control groups were closely comparable at pre-test across all subscales (composite scores: 47.5 vs. 48.0, respectively), confirming group equivalence prior to the intervention. Following one year of RLT-enriched instruction, the experimental group demonstrated substantial gains on all five subscales, with composite score increasing by 20.3 points (from 47.5 to 67.8), representing a gain of approximately 43% relative to pre-test. In contrast, the control group showed negligible change across the year (composite: 48.0 to 49.7, a gain of just 1.7 points). ANCOVA confirmed that these between-group differences at post-test were statistically significant across all subscales and the composite (all $p < .001$), with Cohen's d values ranging from 1.42 to 1.79, indicating very large effect sizes[10-11].

The largest absolute gains in the experimental group were observed on the Collaborative Decision-Making Assessment (pre: 44.2, post: 65.9; gain: 21.7 points) and the Civic Engagement Orientation Scale (pre: 38.8, post: 59.7; gain: 20.9 points). These findings are theoretically coherent: collaborative decision-making and civic orientation are the dimensions most directly dependent on dialogical, social-situational learning of the kind facilitated by Socratic seminar and role-play debriefing. The Self-Regulatory Behavior Inventory, while showing the smallest absolute gain (18.9 points), began from the highest pre-test baseline (54.9) and still reached 73.8 at post-test, suggesting that reflective journaling - the modality most directly linked to self-regulation - contributed meaningfully to metacognitive development[12].

Figure 1 below provides a bar chart visualization comparing pre- and post-test composite SAC scores across experimental and control groups, illustrating the magnitude and asymmetry of intervention effects.

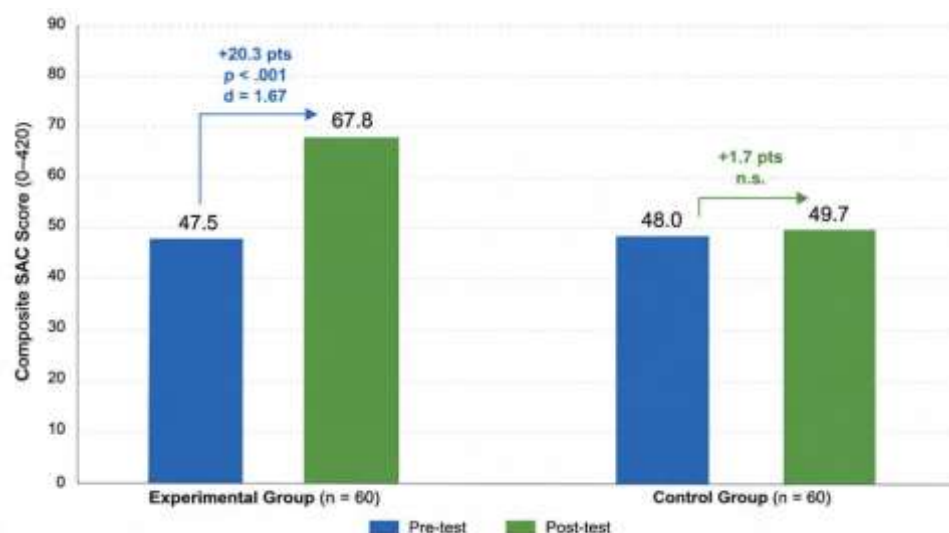


Figure 1. Bar Chart — Pre/Post Composite SAC Scores by Group:
 Note: Experimental Pre: 47.5 | Experimental Post: 67.8 (+20.3 pts, $p < .001$, $d = 1.67$)
 Control Pre: 48.0 | Control Post: 49.7 (+1.7 pts, n.s.)

Thematic analysis of student reflective journals and portfolio narratives in the experimental condition identified three overarching themes:

- deepening awareness of self-in-relation - students described an expanding capacity to situate their own behaviors and attitudes within broader social contexts, recognizing the reciprocal influence between self and community;

- reframing social complexity - participants reported movement from binary or simplistic framings of social situations toward appreciation of ambiguity, competing perspectives, and systemic influences;

- agency and accountability - many students articulated a strengthened sense of personal agency in social settings coupled with heightened ethical accountability for the effects of their actions on others[13].

These qualitative themes are consistent with the quantitative findings and align closely with Mezirow's transformative learning theory, Schon's reflective practitioner framework, and Vygotsky's accounts of how social mediation becomes internalized as individual psychological structure. They also resonate with Ivanov's (2016) formulation of SAC as encompassing not merely behavioral skill but motivational and value-based transformation.

The findings of this study provide strong support for the hypothesis that systematically implemented RLT produces meaningful and statistically robust gains in social activity competence among university students. The very large effect sizes observed are notable and suggest that the intervention operated at a level of intensity and coherence sufficient to produce genuinely transformative outcomes rather than superficial behavioral changes.

Several features of the intervention design are likely to have contributed to its effectiveness. First, the longitudinal duration of one academic year is considerably longer than many published RLT studies, allowing for the cumulative deepening of reflective habits rather than episodic engagement. Second, the deliberate combination of multiple reflective modalities - journaling, Socratic dialogue, peer debriefing, and portfolio assessment - created a mutually reinforcing ecology of reflection in which insights generated through one modality could be processed and consolidated through others. Third, instructor training and ongoing team consultation ensured pedagogical fidelity and allowed for adaptive refinement of facilitation practice[14].

Comparison with the extant literature supports and contextualizes these findings. Korthagen's ALACT-based studies in teacher education reported comparable effect magnitudes over similar time periods. Brockbank and McGill highlighted the centrality of quality dialogic environments to reflective learning effectiveness, a condition actively

cultivated in the present intervention through Socratic seminar practice. The negligible gains in the control group confirm that these social competence dimensions do not develop spontaneously through conventional academic exposure alone and require intentional pedagogical cultivation.

From the perspective of sociocultural theory, the gains observed can be understood as the progressive internalization of social-reflective capabilities initially enacted within the ZPD through structured dialogue with instructors and peers. The portfolio self-assessment component, requiring students to articulate a personal theory of social change, may have been particularly powerful in consolidating this internalization by requiring meta-level reflection on the reflective process itself - a form of what Korthagen calls "core reflection"[15].

4. Conclusion

This study demonstrates that reflective learning technologies (RLT), when consistently integrated into higher education, significantly enhance students' social activity competence. Over the course of one academic year, students exposed to the RLT-based curriculum showed substantial improvements across all key dimensions - social initiative, empathy, collaborative decision-making, civic engagement, and self-regulation - while the control group showed minimal change.

The findings highlight important implications for higher education practice. Effective implementation of RLT requires curriculum redesign that embeds reflective activities into regular coursework, rather than treating them as supplementary practices. Instructor preparation is also crucial, as facilitation skills in dialogue, reflection, and peer interaction strongly influence outcomes. At the institutional level, sustained reflective learning demands structural support, including appropriate scheduling, assessment systems, and learning environments.

The study also acknowledges several limitations, including the quasi-experimental design, limited generalizability due to a single institutional context, and the use of non-randomized groups. Future research should apply randomized or multi-site designs, explore long-term effects, and identify the most effective components of reflective learning interventions across different cultural and educational contexts.

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