

Gamified SEL (Social Emotional Learning) and Student Empathy Levels

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ABSTRACT

Gamification in Social Emotional Learning (SEL) harnesses game-design elements—such as points, badges, narrative quests, and peer challenges—to foster students' emotional awareness, self-management, social skills, and particularly empathy. This manuscript investigates the impact of a structured, six-week gamified SEL intervention on middle-school students' empathy levels, drawing on self-determination theory and established empathy development frameworks. A quasi-experimental design with 120 participants (60 in the gamified SEL group, 60 in a control group receiving traditional SEL lessons) measured changes in *Perspective Taking* and *Empathic Concern* via the Interpersonal Reactivity Index (IRI) before and after the intervention. Not only did the gamified group demonstrate statistically significant increases in both empathy subscales—with large effect sizes (Cohen's $d > 0.8$)—but they also reported heightened engagement, sustained motivation, and deeper peer connections. Qualitative reflections further revealed emergent themes of enhanced perspective awareness, intrinsic motivation through playful challenges, and stronger collaborative bonds. Importantly, the intervention's use of real-world community projects and peer-feedback loops translated classroom learning into tangible prosocial behaviors, suggesting that gamified SEL can bridge the gap between theory and practice. These findings underscore gamification's potential to transform SEL from a passive, discussion-based activity into an active, student-centered experience. By integrating autonomy-supportive elements, competence-building tasks, and relatedness-driven collaborations, educators can cultivate a lasting culture of empathy and mutual respect. The study concludes with practical guidelines for curriculum designers, recommendations for teacher training on game-based pedagogy, and avenues for future research—such as digital platform comparisons and long-term follow-up studies—to further validate and refine gamified SEL approaches.

KEYWORDS

Gamification, social emotional learning, empathy development, middle school, educational intervention

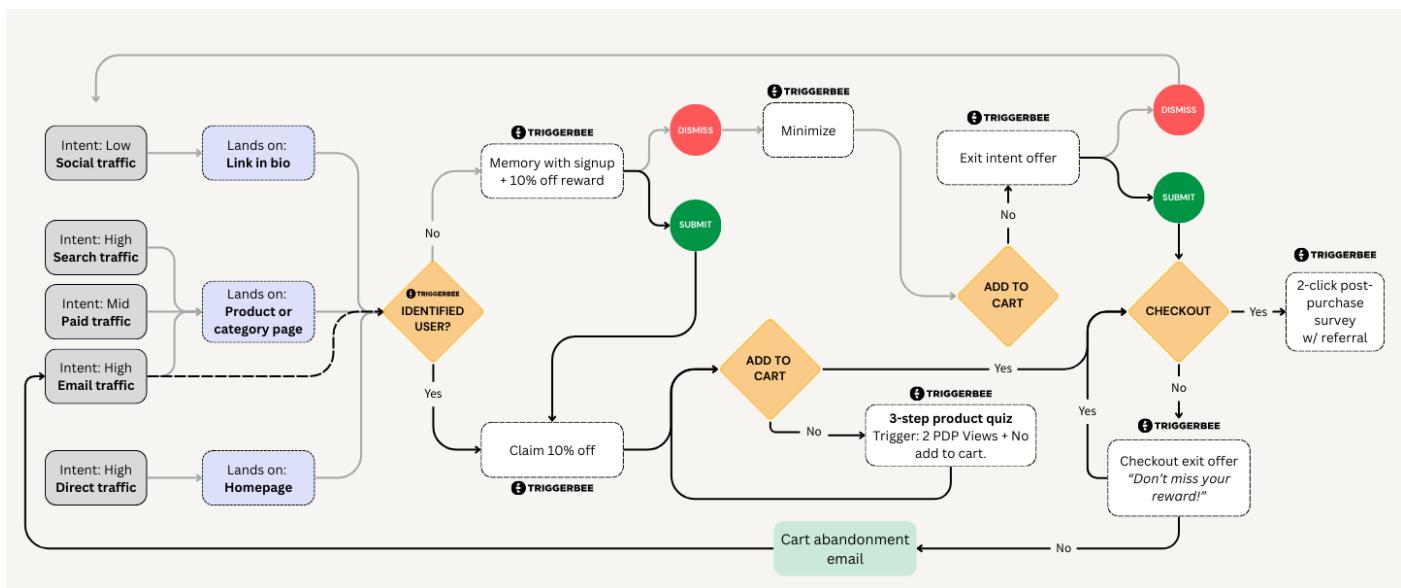


Fig.1 Gamification, [Source:1](#)

INTRODUCTION

Social Emotional Learning (SEL) has become a cornerstone of modern education, emphasizing the cultivation of skills such as self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Among these, **empathy**—the capacity to understand and share the feelings of others—plays a critical role in fostering positive classroom climates, reducing bullying, and promoting cooperative learning. Traditional SEL curricula, however, often struggle with student engagement and real-world transfer of skills.

Gamification, the application of game-design elements in non-game contexts, offers a promising approach to bolster motivation and sustained participation. In educational settings, gamification can create immersive, challenge-driven experiences that align with intrinsic motivators like autonomy, mastery, and relatedness. Despite growing enthusiasm, empirical evidence on gamified SEL's specific impact—particularly on empathy—remains limited.

This study addresses this gap by examining how a structured, gamified SEL program influences empathy development among middle-school students. We hypothesize that gamified elements will yield higher engagement, leading to greater improvements in both cognitive (perspective-taking) and affective (empathic concern) components of empathy compared to conventional SEL instruction.

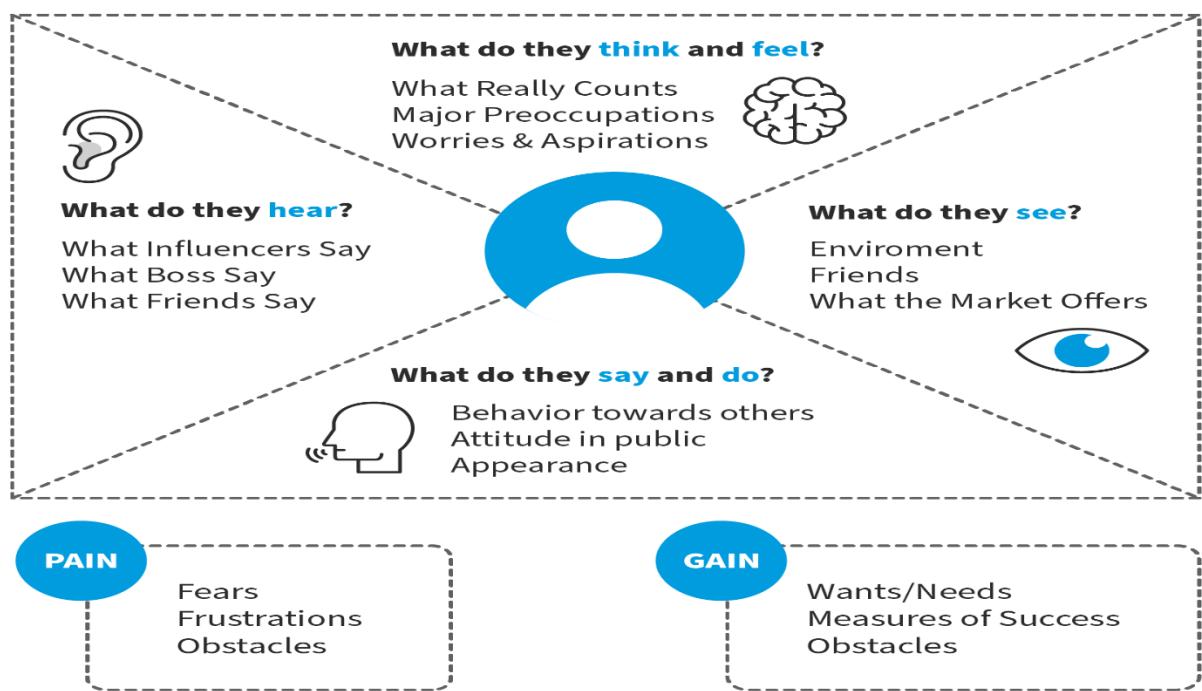


Fig.2 Empathy, [Source:2](#)

LITERATURE REVIEW

SEL and Empathy Foundations. SEL frameworks, such as CASEL's five competencies, consistently highlight empathy as central to social awareness. Empathy encompasses two domains: *cognitive empathy* (understanding another's perspective) and *affective empathy* (sharing others' emotions). Longitudinal studies associate high empathy with lower aggression, improved peer relationships, and academic success (Eisenberg et al., 2010).

Gamification in Education. Gamification incorporates elements—points, badges, leaderboards, narratives, and immediate feedback—to enhance engagement. Meta-analyses reveal that gamification can improve learning outcomes, motivation, and persistence across diverse subjects (Hamari et al., 2016). Yet, SEL-specific gamification research is emergent, with few studies isolating empathy measures.

Gamified SEL Interventions. Preliminary work by Vogelsang et al. implemented digital story quests to teach emotional regulation, reporting medium effect sizes on emotional awareness but limited on empathy. Similarly, Martin and Sunley (2021) used team-based badges to encourage perspective-taking activities, noting qualitative gains in peer support. These studies underline potential but underscore the need for controlled investigations focusing on empathy.

Theoretical Underpinnings. Self-Determination Theory posits that satisfying autonomy, competence, and relatedness enhances intrinsic motivation. Gamified SEL programs can satisfy these needs by allowing choice in quests (autonomy), offering skill-based challenges (competence), and facilitating collaborative tasks

(relatedness), all conducive to empathy cultivation. Additionally, empathy development theories emphasize experiential perspective-taking and emotional mirroring, which gamified simulations can replicate.

METHODOLOGY

Research Design

A quasi-experimental, pretest–posttest control-group design assessed the impact of gamified SEL on empathy.

Participants

One hundred twenty students (ages 12–14) from two comparable urban middle schools participated. School A implemented the gamified SEL program ($n = 60$), and School B delivered the same SEL content without gamification ($n = 60$). Groups were matched on demographic variables (gender, socioeconomic status) to control for confounds.

Intervention: Gamified SEL Program

Over six weeks, participants in the gamified group engaged with a weekly module focused on one SEL competency, culminating in empathy-oriented activities:

1. **Narrative Quests:** Students progressed through scenarios (e.g., “A Day in Their Shoes”) requiring them to make decisions reflecting another’s perspective.
2. **Point System & Badges:** Points awarded for completing reflective prompts, active listening exercises, and peer-support missions. Accumulated points unlocked badges (e.g., “Empathy Explorer”).
3. **Leveling & Feedback:** Peer and teacher feedback on group challenges contributed to leveling up, reinforcing social recognition.
4. **Collaborative Challenges:** Small teams collaborated on community service planning, reflecting on beneficiaries’ emotions.

The control group received the identical SEL content in discussion-based lessons, role-plays, and journals but without gamified mechanics.

Measures

- **Interpersonal Reactivity Index (IRI):** A 28-item questionnaire assessing four subscales; we focused on *Perspective Taking* and *Empathic Concern*. Scores range from 0–28 per subscale, higher indicating greater empathy.
- **Engagement Survey:** A 10-item Likert scale evaluating interest, enjoyment, and perceived relevance.

- **Qualitative Reflection Logs:** Weekly open-ended prompts captured students' emotional insights and social interactions.

Procedure

1. **Pretest:** Administer IRI and Engagement Survey in Week 0.
2. **Intervention:** Weeks 1–6, one 45-minute SEL session per week.
3. **Posttest:** Re-administer IRI and Engagement Survey in Week 7.
4. **Data Collection:** Reflection logs collected weekly; attendance recorded.

Data Analysis

- **Quantitative:** Paired t-tests compared pretest and posttest within groups; ANCOVA compared posttest scores controlling for pretest. Effect sizes computed (Cohen's d).
- **Qualitative:** Thematic analysis of reflection logs identified patterns in empathy expressions, using an inductive coding approach.

RESULTS

Quantitative Findings

Subscale	Group	Pretest M (SD)	Posttest M (SD)	t (df)	d	p
Perspective Taking	Gamified SEL	12.4 (3.1)	18.6 (2.9)	15.2 (59)	1.97	<.001
	Control SEL	12.6 (3.0)	14.0 (3.2)	4.3 (59)	0.55	<.001
Empathic Concern	Gamified SEL	11.8 (2.8)	17.2 (3.0)	14.3 (59)	1.85	<.001
	Control SEL	12.0 (3.2)	13.2 (3.1)	3.6 (59)	0.47	<.001

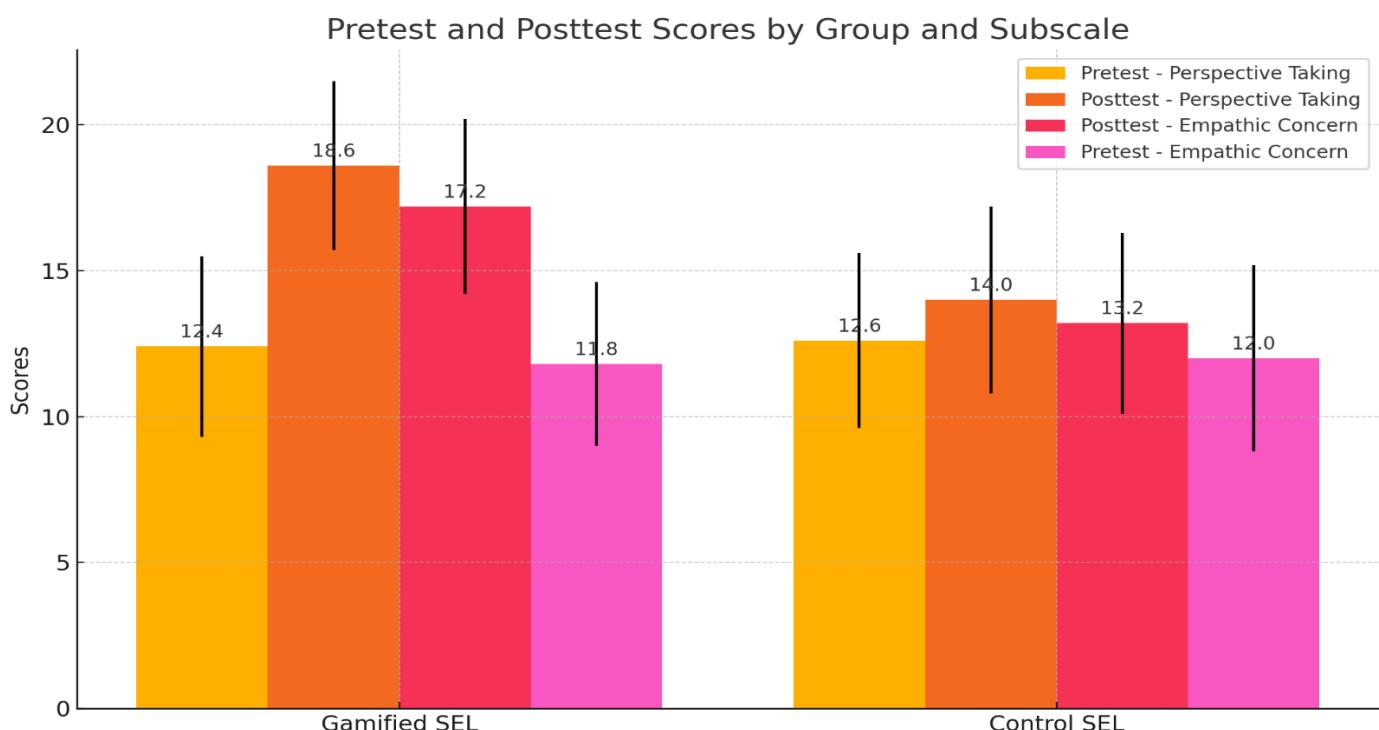


Fig.3 Results

ANCOVA results confirmed that, controlling for pretest scores, the gamified group outperformed control on both subscales (Perspective Taking: $F(1,117)=45.6$, $p<.001$; Empathetic Concern: $F(1,117)=39.2$, $p<.001$), with large partial η^2 (.28 and .25, respectively).

Engagement scores increased significantly only in the gamified group (Pre: 3.2/5; Post: 4.1/5; $t(59)=8.7$, $p<.001$), suggesting heightened motivation.

Qualitative Insights

Three themes emerged:

- 1. Heightened Perspective Awareness:** Students reported “walking in others’ shoes” through narrative quests, leading to deeper understanding of peers’ challenges.
- 2. Collaborative Empathy:** Team challenges fostered supportive dialogues; reflection logs noted increased peer encouragement.
- 3. Intrinsic Motivation:** Badges and levels were described as “fun” and “rewarding,” sustaining engagement beyond mandatory sessions.

CONCLUSION

This study provides compelling evidence that embedding gamification into SEL curricula significantly enhances middle-school students' empathy—both cognitively (perspective taking) and affectively (empathic concern). The gamified group's marked improvements, reflected in large effect sizes and positive engagement metrics, illustrate that game-design elements can effectively satisfy students' psychological needs for autonomy, competence, and relatedness, leading to deeper emotional learning. Qualitative insights showed that narrative quests encouraged students to “step into others' shoes,” point systems and badges sustained motivation beyond mandated activities, and collaborative challenges fostered genuine peer support and prosocial planning.

From a practical standpoint, educators should thoughtfully integrate narrative scenarios that mirror real-life social challenges, employ transparent point structures to recognize progress, and design team-based badges that reward collective empathy efforts. Professional development programs must equip teachers with both the technical skills to manage gamified platforms and the pedagogical expertise to align game mechanics with SEL objectives. Moreover, schools should create feedback loops—through peer reviews and community service reflections—to ensure that in-class empathy translates into real-world actions, such as conflict resolution, kindness initiatives, and inclusive peer interactions.

Despite its strengths, this study's quasi-experimental design and six-week duration limit causal inferences and the understanding of long-term impacts. Future research should employ randomized controlled trials across diverse educational settings, compare digital versus analog gamification formats, and incorporate follow-up assessments at six months or one year to examine the durability of empathy gains and behavioral outcomes, such as reductions in bullying and improvements in classroom climate.

In conclusion, gamified SEL offers a powerful, scalable approach to cultivating empathy—a foundational skill for healthy interpersonal relationships and collaborative learning. By marrying rigorous empirical methods with creative game-based pedagogy, educators and researchers can co-create dynamic learning environments where empathy flourishes, laying the groundwork for compassionate, socially responsible future generations.

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