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RESEARCH ARTICLE

The Effects of Teachers' Situational Interest Promotion Strategies on Student Engagement and Achievement in Elementary Classrooms

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ABSTRACT

As elementary education increasingly emphasizes student-centered and motivationally rich learning environments, the role of situational interest has gained attention as a key factor in enhancing both engagement and achievement. Despite its theoretical relevance, empirical research on how different types of interest-promoting strategies influence learning outcomes remains limited in classroom contexts. This study aims to address this gap by examining the effects of teachers' situational interest promotion activities on elementary school students' classroom engagement and academic achievement. Utilizing a quasi-experimental design, the study involved three sixth-grade classes in South Korea, each assigned to a different instructional strategy: Triggered Situational Interest (TSI), Maintained Situational Interest (MSI), and a combined TSI→MSI approach. Over four lessons on the topic of World Energy and Trade, differentiated instructional methods were applied. Data from engagement scales and academic achievement tests revealed that all groups improved significantly. However, the integrated TSI→MSI strategy yielded the greatest gains in both classroom engagement and achievement. These findings underscore the importance of combining initial attention-capturing methods with sustained motivational supports to optimize learning outcomes.

Keywords: Situational Interest, triggered interest, maintained interest, student engagement, academic achievement, elementary education

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Introduction

Learner-centered education has become a significant axis of the educational paradigm, emphasizing students' autonomy and active participation. This educational philosophy recognizes students' interest as a crucial driving force in the learning process, evolving towards respecting and accommodating their interests. However, students' interest is not merely a matter of personal inclination but rather a dynamic concept that can be manifested and transformed in various ways depending on the learning environment and teaching strategies (Hidi & Renninger, 2006). Therefore, educators need to move beyond simply accommodating students' interests and instead understand the diverse dimensions of interest and actively guide and develop it within the learning process.

Research in educational psychology has discussed interest by distinguishing between situational interest (SI), which is a momentary attention and positive emotional response, and individual interest, which is an individual's lasting preference (Hidi et al., 2004). In particular, situational interest, triggered by specific learning environment or task characteristics, acts as an important motivational factor that promotes learning engagement (Rotgans & Schmidt, 2011). Hidi and Renninger (2006) further categorized situational interest into triggered situational interest (TSI), the initial phase, and maintained situational interest (MSI), the deepened phase. They posited that while TSI induces initial attention towards learning activities, MSI leads to in-depth learning through sustained engagement and value recognition of the learning content (Krapp, 1999). Furthermore, the potential for the initial TSI to develop into MSI through appropriate teaching strategies and learning experiences holds significant implications for enhancing learning motivation and participation (Linnenbrink-Garcia et al., 2010).

Therefore, this study aims to apply various teaching strategies in an elementary school classroom setting to activate triggered situational interest (TSI) and facilitate its development into maintained situational interest (MSI). Specifically, strategies such as novelty, hands-on activities, multimedia utilization, emotional appeal, curiosity-driven questions, and collaborative learning will be employed to trigger TSI. Subsequently, clear goal setting, feedback provision, challenge and skill balance, social interaction, curiosity reinforcement, and continuous teacher support will be designed to facilitate the transition from TSI to MSI. The primary purpose of this study is to analyze the changes in elementary school students' class participation and academic achievement resulting from the application of these teaching strategies. The findings of this research are expected to maximize the effectiveness of learner-centered education and provide practical educational implications for enhancing students' active learning participation and academic achievement.

Theoretical Background

The concept of Situational Interest (SI), a temporary state of focused attention and positive affect triggered by specific learning environment or task characteristics, plays a crucial role in learning contexts as an external motivational factor (Hidi & Renninger, 2006). Unlike individual interest, situational interest is externally induced. Key researchers in educational psychology, such as Hidi, Renninger, and Krapp, have significantly contributed to the theoretical understanding of SI (Hidi et al., 2004).

These scholars distinguish between two primary forms of SI: Triggered Situational Interest (TSI) and Maintained Situational Interest (MSI). TSI is characterized as an immediate attentional and affective response to particular situational features, including novelty, surprise, or emotionally appealing content. It is typically short-lived and contingent on the continued presence of these stimulating elements. In contrast, MSI involves a more sustained engagement with the learning material, marked by positive feelings and a sense of value associated with the content itself (Hidi et al., 2004). While TSI can draw students into a learning activity, MSI is considered essential for fostering deeper cognitive processing, sustained effort, and the potential development of individual interest over time (Krapp, 1999). Mitchell (1993) pioneered the conceptualization of situational interest as a multifaceted construct, identifying specific classroom factors that contribute to both the triggering and maintaining of interest in secondary mathematics classrooms. His research distinguished between "catch" factors that initially stimulate interest (such as group work, puzzles, and computers) and "hold" factors that sustain interest over time (such as meaningfulness and involvement), establishing a foundational framework for understanding how situational interest functions in educational settings.

The principles underlying the cultivation of situational interest resonate with the educational philosophy of John Dewey, particularly his emphasis on inquiry-based and experiential learning. Dewey (1938) posited that education should commence with the learner's curiosity and actively involve them in the learning process through hands-on experiences and real-world connections. This aligns with the notion that actively engaging students and connecting learning to their experiences can foster both initial and sustained interest (Ainley et al., 2005). Inquiry-based learning, where students are encouraged to ask questions and investigate solutions, mirrors the curiosity-driven questions and direct activities often employed to trigger situational interest (Engel, 2011). Similarly, strategies aimed at cultivating maintained situational interest, such as providing clear goals, feedback, and opportunities for collaboration, parallel Dewey's emphasis on clear objectives, reflection, and social interaction within the learning environment (Dewey, 1916).

In the context of the experimental study, several specific factors were applied to influence TSI:

Novelty and Surprise: Presenting unexpected or unique information can effectively capture students' attention, creating an immediate sense of interest (Silvia, 2008).

Hands-On Activities: Engaging learners in authentic, interactive tasks allows for direct experience with the material, stimulating immediate involvement and curiosity (Dewey, 1938).

Multimedia and Technology: Utilizing dynamic tools such as videos, animations, or virtual reality can draw students' attention by offering visually and audibly stimulating content (Moreno, 2007).

Emotional Appeal: Introducing emotionally engaging content, such as stories, humor, or relatable human experiences, can create an immediate connection and spark interest (Plass & Kaplan, 2016).

Curiosity-Driven Questions: Designing tasks or questioning techniques that provoke curiosity or present intellectual challenges can stimulate an immediate desire to know more (Loewenstein, 1994).

Collaborative or Social Learning: Providing opportunities for students to discuss, work in groups, and share ideas can stimulate immediate interest through peer interaction and engagement (Vygotsky, 1978).

The methods applied to foster MSI in the study included:

Clear Goals and Structure: Clear, achievable objectives help learners stay focused and motivated by providing a roadmap for their learning (Locke & Latham, 2002).

Feedback and Support: Continuous, constructive feedback keeps learners engaged by showing progress and guiding their learning (Hattie & Timperley, 2007).

Challenge and Skill Alignment (Flow Theory): Providing tasks that are neither too easy (to avoid boredom) nor overwhelmingly hard (to avoid frustration) creates an optimal state for sustained engagement (Csikszentmihalyi, 1990).

Social Interaction and Collaboration: Opportunities for peer learning and collaboration foster a sense of shared purpose and keep learners engaged over time (Johnson & Johnson, 2009).

Reinforcement of Curiosity: Maintaining curiosity by gradually revealing answers or layering information in interesting ways can sustain engagement over extended periods (Berlyne, 1960).

Longitudinal Support from Instructors: Active encouragement and enthusiasm from educators can sustain learners' engagement by fostering a positive and supportive learning environment (Wentzel, 1997).

The transition from TSI to MSI involves nurturing the initial spark of interest and developing it into a more sustained engagement. This process often requires building relevance by connecting the learning activities to students' personal experiences and interests (Deci & Ryan, 2000). Providing opportunities for choice allows students to take ownership of their learning, which can foster a sense of intrinsic motivation (Patall, 2013). Furthermore, offering opportunities for mastery experiences helps students develop a sense of competence and accomplishment, which are crucial for sustaining interest over time (Bandura, 1997). The theoretical understanding suggests that moving from externally triggered attention to internally sustained motivation is key to achieving deeper learning and academic success (Krapp, 1999).

Situational interest significantly influences students' classroom participation. According to Rotgans and Schmidt (2011), situational interest promotes students' cognitive and behavioral engagement, increasing their activeness and persistence in the learning process. Their research revealed that in problem-based learning environments, situational interest encourages students' self-directed learning and active participation. Wang and Eccles (2013) explained that situational interest contributes to students' emotional engagement, fostering positive attitudes and a sense of belonging toward classroom activities. This emotional engagement becomes a driving force for students to immerse themselves in class, enjoy the learning process, and make continuous efforts. Knogler et al. (2015) studied how patterns of change and persistence in situational interest affect classroom participation. They found that triggered situational interest captures students' initial attention, while maintained situational interest promotes sustained engagement and deeper cognitive processing throughout the learning process. This suggests that educators need both initial interest-triggering strategies and educational approaches that can maintain this interest when designing their courses.

Situational interest also positively correlates with academic achievement. Linnenbrink-Garcia et al. (2010) demonstrated that both triggered and maintained situational interest in mathematics classes showed significant correlations with students' academic achievement. In particular, maintained situational interest was more closely related to long-term learning outcomes. Rotgans and Schmidt (2017) provided empirical evidence that situational interest directly impacts knowledge acquisition during the learning process. According to their research, situational interest facilitates the learner's information processing, deepens conceptual understanding, and enhances knowledge transfer and application. Freeman et al.'s (2014) meta-analysis showed that increased situational interest in active learning environments is closely related to improved academic achievement among STEM students. This suggests that situational interest plays a crucial role in promoting understanding and achievement in abstract and complex academic domains such as science, technology, engineering, and mathematics. Ayikoru and Veen (2020) investigated the impact of applying situational teaching methods in elementary school mathematics classes on students' interest and achievement. The results showed that teaching methods utilizing situational contexts were more effective in triggering and maintaining students' interest than traditional teaching methods, ultimately leading to higher academic achievement. In particular, contextual problem-solving activities connected to real life contributed to enhancing students' participation and understanding. Patall (2013) examined how providing students with choices affects situational interest and classroom participation. The research revealed that offering appropriate choices triggers students' situational interest and enhances their autonomy and competence, ultimately contributing to improved classroom participation and academic achievement.

In summary, situational interest positively influences students' classroom participation and academic achievement through the two phases of triggering and maintenance. Educators can increase students' participation and improve academic achievement by applying strategies that trigger and maintain situational interest in their course design. This can be realized through various pedagogical approaches such as creating contextual learning environments, connecting activities to real life, providing appropriate challenging tasks, and supporting student autonomy.

Method

Participants and Design

The participants of the study included three 6th-grade classes (Class A: 24 students, Class B: 25 students, Class C: 23 students) from a public elementary school in Sejong City, Korea. The students, aged 11 to 12 years, were assigned to one of three instructional conditions based on their existing classroom groups: Triggered Situational Interest (TSI), Maintained Situational Interest (MSI), and a Transition condition where Triggered Situational Interest was followed by Maintained Situational Interest (TSI→MSI). The study utilized a quasi-experimental design to evaluate the effects of these instructional conditions on students' classroom engagement and academic achievement in the subject "World Energy Production and Trade Exchange."

The research design consisted of three phases. First, a pre-test was administered to all three classes to assess their baseline classroom engagement and academic achievement. The results of a one-way ANOVA performed on the pre-test scores revealed no statistically significant differences among the groups, confirming their initial homogeneity and minimizing the influence of pre-existing differences on final outcomes. Second, the intervention phase was implemented, where each of the three classes underwent their respective instructional strategy integrated into the regular Extracurricular Activities curriculum over four weeks. Finally, after the intervention, a post-test was conducted to measure changes in classroom engagement and academic achievement

Interventions

The researcher conducted four lessons during Extracurricular Activities time from October to December 2024. The unit 'World Energy Production and Trade Exchange' was purposefully developed without connection to the existing curriculum or prior learning experiences, enabling the researcher to examine the isolated effects of the instructional methods, unconfounded by students' previous knowledge.

Three instructional approaches (TSI, MSI, and TSI→MSI) were implemented across all four sessions of the "World Energy Production and Trade Exchange" unit. The fundamental principles of instruction for each class were as follows.

Table 1. Instructional design plan by teaching methods

Session	Class A (TSI)	Class B (MSI)	Class C (TSI→MSI)
Session 1: World Energy Resources	Teaching Strategy: ■ Sudden power outage simulation ■ Multimedia "Energy History in 10 Minutes" ■ Surprising fact cards game ■ Energy bingo game Key Activities: ■ "What if energy disappeared?" scenario ■ Cooperative investigation of country resources ■ Interactive games with unexpected elements	Teaching Strategy: ■ Clear learning goals and evaluation criteria ■ Progressive knowledge building ■ Continuous teacher feedback ■ Self-assessment tools Key Activities: ■ "Energy Expert Badge" system ■ Cooperative expert groups studying specific resources ■ Structured resource classification and mapping	Teaching Strategy: Beginning (TSI): ■ Shocking facts presentation (oil formation time) ■ Mystery box with energy resource samples Middle-End (MSI): ■ Structured inquiry questions ■ Systematic mapping activities Key Activities: ■ Visual displays of resource inequality ■ Gradual transition to cooperative mapping ■ Self-assessment checklist
Session 2: International Energy Trade	Teaching Strategy: ■ "Oil Crisis" breaking news simulation ■ Role-play and board games ■ Unpredictable price fluctuation scenarios Key Activities: ■ Energy trade board game ■ "Energy Resource Negotiation Table" role-play ■ "Today's Amazing Discovery" reflection	Teaching Strategy: ■ Connection to previous learning ■ Incremental challenge tasks ■ Structured economic models ■ Formative assessment Key Activities: ■ Energy trade simulation with increasing difficulty ■ Country case studies analysis ■ Trade concept application to real-world contexts	Teaching Strategy: Beginning (TSI): ■ Dramatic "Energy War" scenario ■ Emotional engagement with crisis scenarios Middle-End (MSI): ■ Structured debate on trade importance ■ Rules-based simulation Key Activities: ■ Interactive trade route exploration ■ Progressive difficulty trade simulation ■ Concept mapping of trade principles
Session 3: Renewable Energy	Teaching Strategy: ■ "Letter from the Future" role-play ■ Hands-on renewable energy experiments ■ VR/AR future city exploration Key Activities: ■ Mini solar panel and wind generator experiments ■ "Energy City 2100" poster creation ■ Energy quiz show with funny penalties	Teaching Strategy: ■ Learning roadmap presentation ■ Differentiated tasks based on ability ■ Problem-based learning approach ■ Peer assessment Key Activities: ■ Structured comparative analysis of renewable energy types ■ "Energy Mix 2050" project ■ Self and peer evaluation of key concepts	Teaching Strategy: Beginning (TSI): ■ Shocking future newspaper headline ■ Demonstration of renewable energy inventions Middle-End (MSI): ■ Evidence-based analysis ■ Comparative evaluation Key Activities: ■ Virtual future city energy exploration ■ Structured comparison tables of energy sources ■ Timeline creation with scientific rationales
Session 4: Energy, Environment and Sustainability	Teaching Strategy: ■ "Missing Polar Bear" story with letter ■ Mystery-solving detective game ■ Emotional documentary Key Activities: ■ "Energy Detective Squad" environmental investigation ■ "If I were Energy Minister" workshop ■ Time capsule with sustainability promises	Teaching Strategy: ■ Comprehensive learning journey review ■ Integration of concepts ■ Data-based environmental analysis ■ Reflection journal Key Activities: ■ Energy-en vironment-economy relationship concept map ■ International energy cooperation treaty draft ■ "Three most important things I learned" reflection	Teaching Strategy: Beginning (TSI): ■ Sensory experience of raised classroom temperature ■ Emotional storytelling about disappearing islands Middle-End (MSI): ■ Problem-solving approach ■ Data-driven analysis Key Activities: ■ Climate change impact emotional stories ■ "Sustainable Energy Future Roadmap" project ■ Multi-level action plans (personal to international)

Measures

To measure elementary school students' classroom engagement, we used the "Learning Engagement vs. Learning Dissatisfaction" scale developed by Skinner et al. (2009). This measurement tool evaluates students' behavioral and emotional engagement, as well as their behavioral and emotional disaffection, across four sub-dimensions. It consists of 20 items. The scale's reliability and validity have been verified across various studies, with Cronbach's alpha coefficients ranging from 0.70 to 0.85 for all sub-dimensions, thereby demonstrating high internal consistency. For this study, the total score was used to assess the level of classroom engagement for each student.

To ensure homogeneity between groups prior to conducting the intervention, a pre-test was administered to three groups: Class A (n = 24), Class B (n = 25), and Class C (n = 23), with a total of 72 participants. ANOVA was performed to examine whether there were any statistically significant differences in classroom engagement scores across the groups at baseline. The means and standard deviations for each group were as follows: Class A (M = 3.45, SD = 0.28), Class B (M = 3.49, SD = 0.30), and Class C (M = 3.47, SD = 0.29). The ANOVA results showed no statistically significant differences among the three groups ($F(2, 69) = 0.256$, $p = 0.775$). Additionally, the effect size, calculated using eta squared (η^2), was 0.007, indicating a negligible effect size according to Cohen's guidelines (Cohen, 1988).

To assess the academic achievement of the "World Energy Production and Trade Exchange" class, researchers collaborated with elementary school teachers to develop assessment items. Specific care was taken to ensure that the content of the evaluations was not directly tied to the existing curriculum and that it would not be influenced by students' prior learning experiences. A set of ten multiple-choice items was developed—five for the pre-test and five for the post-test. The pre-test items aimed to measure students' baseline knowledge and general understanding related to global energy types, major production regions, and basic concepts of supply and demand. These questions were designed to capture students' prior knowledge before the intervention. In contrast, the post-test items were constructed to directly align with the specific content and learning objectives addressed during the instructional sessions. These included understanding the characteristics of renewable and non-renewable energy, identifying major energy trade routes, and analyzing the impact of energy consumption on international trade dynamics. To ensure content clarity and appropriateness for the target grade level, all items were reviewed and refined through feedback from peer elementary school teachers with subject matter familiarity. The use of a multiple-choice format enhanced scoring consistency and reduced potential evaluator bias.

As part of the pre-test analysis, ANOVA was performed to compare the students' prior knowledge of "Energy Production and Trade" across three classes: Class A (n = 24), Class B (n = 25), and Class C (n = 23). The descriptive statistics for each class were as follows: Class A (M = 3.25, SD = 0.86), Class B (M = 3.12, SD = 0.92), and Class C (M = 3.18, SD = 0.89). The results of the ANOVA revealed no statistically significant differences among the three groups, $F(2, 69) = 0.89$, $p = .415$, $\eta^2 = .025$, indicating that all classes were homogeneous in terms of their prior knowledge of the subject.

Results

The study evaluated the effects of three instructional strategies (Class A: TSI, Class B: MSI, and Class C: TSI→MSI) on classroom engagement and academic achievement. Prior to conducting further analyses, the assumptions of normality and homogeneity of variance were tested. Shapiro-Wilk tests for normality revealed that all pre-test and post-test scores had p values greater than .05, indicating that the normality assumptions were satisfied. Similarly, Levene's test confirmed homogeneity of variance, as all p values were greater than .05. With these assumptions satisfied, parametric analyses were carried out to assess the effectiveness of the instructional strategies. The descriptive statistics for pre-test and post-test scores indicated a general improvement across all groups.

Table 2. Descriptive statistics and normality tests by group

Variable	Group	Shapiro-Wilk Test (p)	Levene's Test (p)	Pre-test (M ± SD)	Post-test (M ± SD)	Change (Post−Pre)
Classroom Engagement	Class A (TSI)	Pre: 0.682, Post: 0.712	Pre: 0.619, Post: 0.558	3.45 ± 0.28	3.85 ± 0.35	+0.40
	Class B (MSI)	Pre: 0.798, Post: 0.770	Pre: 0.639, Post: 0.553	3.49 ± 0.30	3.95 ± 0.40	+0.46
	Class C (TSI →MSI)	Pre: 0.812, Post: 0.865	Pre: 0.631, Post: 0.528	3.47 ± 0.29	4.20 ± 0.32	+0.73
Academic Achievement	Class A (TSI)	Pre: 0.730, Post: 0.689	Pre: 0.472, Post: 0.445	3.25 ± 0.86	4.10 ± 0.78	+0.85
	Class B (MSI)	Pre: 0.754, Post: 0.805	Pre: 0.482, Post: 0.446	3.12 ± 0.92	4.40 ± 0.80	+1.28
	Class C (TSI →MSI)	Pre: 0.843, Post: 0.872	Pre: 0.481, Post: 0.436	3.18 ± 0.89	4.50 ± 0.72	+1.32

Paired t-tests were conducted to examine within-group changes between pre-test and post-test scores. All groups demonstrated statistically significant improvements ($p < .001$) in both classroom engagement and academic achievement. For classroom engagement, Class A (TSI) showed a significant increase ($t(23) = 7.89$, $p < .001$; Cohen's $d = 1.61$), as did Class B (MSI) ($t(24) = 8.21$, $p < .001$; Cohen's $d = 1.64$). Class C (TSI→MSI) demonstrated the largest improvement ($t(22) = 11.63$, $p < .001$; Cohen's $d = 2.43$). For academic achievement, Class A (TSI) again showed a significant increase ($t(23) = 8.75$, $p < .001$; Cohen's $d = 1.79$), and Class B (MSI) also showed a statistically significant improvement ($t(24) = 10.48$, $p < .001$; Cohen's $d = 2.10$). Class C (TSI→MSI) showed the largest effect ($t(22) = 13.62$, $p < .001$; Cohen's $d = 2.86$), indicating that combining TSI and MSI enhances outcomes more effectively than using these strategies separately.

Table 3. Within-group analysis results

Variable	Group	t-value	p-value	Effect Size (Cohen's d)
Classroom Engagement	Class A (TSI)	t(23) = 7.89	p = 5 .43e-08	1.61
	Class B (MSI)	t(24) = 8.21	p = 1 .99e-08	1.64
	Class C (TSI→MSI)	t(22) = 11.63	p = 1 .00e-10	2.43
Academic Achievement	Class A (TSI)	t(23) = 8.75	p = 8 .90e-09	1.79
	Class B (MSI)	t(24) = 10.48	p = 2 .00e-10	2.10
	Class C (TSI→MSI)	t(22) = 13.62	p = 1 .00e-12	2.86

Note: Cohen's d effect criteria: small effect = 0.2, medium = 0.5, large = 0.8, very large ≥ 2.0

A one-way ANOVA was conducted to compare post-test scores between the three instructional groups (Class A: TSI, Class B: MSI, Class C: TSI→MSI). Significant differences were found for both classroom engagement and academic achievement.

For classroom engagement, the ANOVA results ($F(2, 69) = 15.74$, $p < .001$, $\eta^2 = 0.31$) indicated a statistically significant main effect of instructional group. To identify specific group differences, Tukey's HSD post-hoc test was conducted. The results revealed that Class C (TSI→MSI) scored significantly higher than Class A (TSI) ($p = .004$), indicating the advantage of combining TSI and MSI strategies. However, no significant difference was found between Class B (MSI) and Class C (TSI→MSI) (p = .107), nor between Class A (TSI) and Class B (MSI) (p = .092).

For academic achievement, ANOVA also revealed significant group differences (F(2, 69) = 14.92, p < .001, η^2 = 0.30). Post-hoc comparisons using Tukey's HSD showed that both Class B (MSI) (p = .023) and Class C (TSI→MSI) (p = .007) scored significantly higher than Class A (TSI). However, there was no statistically significant difference between Class B and Class C (p = .118), suggesting that MSI alone may be similarly effective as the combined strategy in terms of achievement outcomes.

These results support the conclusion that while all instructional strategies improved student outcomes, the integration of TSI and MSI (Class C) produced the most substantial gains, particularly in terms of classroom engagement. The effect sizes (η^2 > .30) further indicate practically meaningful differences between instructional methods.

Table 4. Between-group analysis results

Variable	F-value	p-value	η^2	Post-hoc Comparison
Classroom Engagement	F(2, 69)= 15.74	p = 2.3364e-06	0.31	Class C >Class A (p< .05); n.s. Class C and Class B (p >.05)
Academic Achievement	F(2, 69)= 14.92	p = 4.1221e-06	0.30	Class C >Class A (p < .05); Class B >Class A (p < .05); n.s. Class C and Class B (p >.05)

Note: η^2 effect size interpretation criteria: small effect = 0.01, medium effect = 0.06, large effect = 0.14

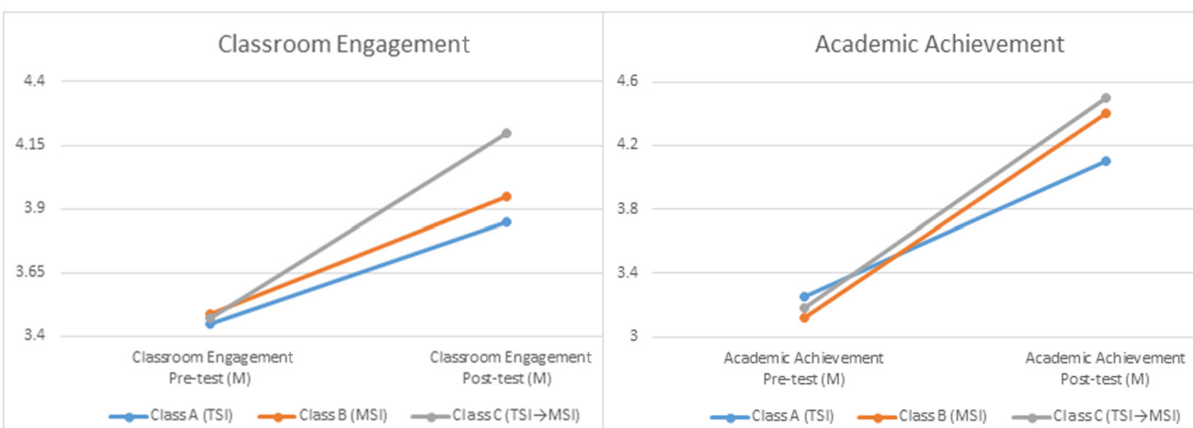

Fig. 1. Changes before and after instruction across three teaching strategies

Discussion

This study compared the effects of three instructional strategies—Triggered Situational Interest (TSI), Maintained Situational Interest (MSI), and an integrated approach facilitating the transition from TSI to MSI—on elementary school students' classroom engagement and academic achievement. The results indicated that all three strategies led to statistically significant improvements in both classroom engagement and academic achievement. Notably, the class that received the integrated TSI→MSI strategy (Class C) demonstrated the largest effect sizes and significantly higher improvements in both measures compared to the class focused solely on TSI (Class A).

The Triggered Situational Interest (TSI) strategy, implemented in Class A through elements like novelty, hands-on activities, and multimedia, effectively captured students' initial attention and facilitated their initial participation. This suggests that TSI strategies can play a positive role in sparking students' short-term interest and initiating engagement in learning (Silvia, 2008). However, the ANOVA results revealed that the TSI strategy class showed lower levels of final classroom engagement and academic achievement compared to the MSI and TSI→MSI integrated strategy classes. This implies that relying solely on short-term interest arousal may have limitations in fostering sustained engagement and deep learning outcomes.

The Maintained Situational Interest (MSI) strategy, applied in Class B through clear goal setting, feedback provision, and appropriately challenging tasks, also resulted in significant improvements in students' classroom engagement and academic achievement. These strategies likely encouraged students to recognize the value of the learning content and exert sustained effort (Locke & Latham, 2002; Hattie & Timperley, 2007). The ANOVA results indicated that the MSI strategy class achieved significantly higher academic achievement than the TSI strategy class but did not show a statistically significant difference in classroom engagement. This suggests that while MSI strategies can positively impact the quality of learning, additional efforts might be needed to promote active student interaction and participation.

The most compelling findings emerged from the class that received the integrated TSI→MSI strategy (Class C). This approach combined various strategies to trigger initial interest with strategies designed to sustain that interest and promote deeper learning. For instance, lessons might have started with curiosity-provoking questions followed by hands-on exploratory activities (TSI), which then transitioned into clearly defined learning objectives with individual feedback (MSI), and incorporated collaborative learning to foster social interaction (MSI). This integrated approach proved most effective in maintaining students' initial immersion, strengthening intrinsic motivation towards the learning content, and ultimately enhancing both classroom engagement and academic achievement (Deci & Ryan, 2000; Patall, 2013). The ANOVA results further supported this, showing that the integrated strategy class scored significantly higher than the TSI strategy class in both classroom engagement and academic achievement, and showed comparable academic achievement with the MSI strategy class while exhibiting a trend towards higher classroom engagement.

Conclusions and Implications

This study empirically demonstrates that effectively leveraging students' interest as a driving force in learning requires the integration of both short-term interest-triggering strategies (TSI) and sustained engagement strategies (MSI). Specifically, the research confirms that teachers' situational-interest strategies significantly impact student engagement and learning outcomes.

The findings reveal that while triggering initial interest through novelty and surprise alone improved student participation and academic achievement, the implementation of interest maintenance strategies - including clear goal setting, appropriate support, and balance between challenge and skill - yielded even more positive results. Most notably, an integrated approach that first captures attention and then maintains it led to the greatest improvements in both engagement and achievement. These results support both Renninger and Hidi's (2011) interest-development framework and Mitchell's (1993) concept of "catch" versus "hold" factors.

The implications for elementary education are clear and compelling: teacher training and lesson design must incorporate structured situational-interest activities. By mastering techniques to both trigger and maintain student curiosity, teachers can foster deeper engagement that translates into academic success. The findings of this research provide valuable insights for developing and implementing specific teaching strategies aimed at effectively utilizing students' interest in learner-centered educational environments.

Future research should explore the long-term effects of such pedagogies, examine the integration of TSI and MSI across various subject content and learning environments, conduct in-depth qualitative studies on students' interest development processes, and investigate how these approaches can be scaled across different subjects and age groups. This study ultimately underscores the importance of a comprehensive approach to interest-based learning, combining both initial engagement strategies and sustained interest maintenance techniques to optimize educational outcomes.

Conflicts of Interest

The authors declared no conflicts of interest.

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