



# The Effectiveness of Positive Reinforcement Techniques in Improving Student Learning Behavior: A Systematic Literature Review

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## ABSTRACT

Students' learning behavior is an important factor in supporting effective classroom learning, yet maintaining attention, participation, and task engagement remains a challenge in educational settings. Positive reinforcement has been widely examined as a behavioral strategy for encouraging appropriate learning behaviors through contingent consequences, including behavior-specific praise and peer recognition. This study aims to systematically review the effectiveness of positive reinforcement techniques in improving students' learning behavior and to identify behavioral outcomes associated with their implementation. A systematic literature review (SLR) was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 framework. The review focused on twelve selected journal articles published between 2016 and 2026. Data were organized according to study characteristics, reinforcement techniques, and reported behavioral outcomes, and were synthesized narratively. The reviewed findings indicate that behavior-specific praise is associated with improvements in students' on-task behavior and classroom engagement, as well as reductions in inappropriate classroom behavior. A systematic review by Royer et al. (2019), which included six studies, reported increased time on task and reductions in inappropriate behavior and tardiness. Furthermore, Royer and Ennis (2024) identified differences in the evidence supporting peer-delivered reinforcement strategies, suggesting that outcomes depend on the specific technique employed. These findings indicate that positive reinforcement may support students' learning behavior when target behaviors are clearly defined and reinforcement is implemented consistently. However, variations in research designs, intervention procedures, and outcome measures limit generalization across educational contexts. Therefore, further research is needed to examine long-term behavioral outcomes and the relationship between improved engagement and academic achievement.

## AUTHORS' CONTRIBUTION

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- B. Acquisition of data;
- C. Analysis and interpretation of data;
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## INTRODUCTION

Learning behavior is an important aspect of students' educational development because it influences their participation in classroom activities, attention to instruction, persistence in completing assignments, and ability to follow learning expectations. Effective learning requires more than the



delivery of instructional materials; it also depends on students' active engagement and the classroom conditions that support appropriate behavior. However, teachers may encounter challenges such as students' limited participation, off-task behavior, incomplete assignments, and difficulties maintaining attention during lessons. When these behaviors occur repeatedly, they may reduce instructional time and interfere with the learning process. Classroom management is therefore an important component of educational practice because it helps establish an environment that supports students' behavioral, social, and academic development (Korpershoek et al., 2016).

One behavioral approach that can be used to encourage appropriate learning behavior is positive reinforcement. Grounded in the principles of operant conditioning, positive reinforcement occurs when the presentation of a consequence following a behavior increases the future likelihood of that behavior under similar conditions. In educational settings, reinforcement may involve verbal praise, positive feedback, reward points, tokens, or access to preferred activities following the demonstration of a targeted behavior. For example, a teacher may acknowledge a student's persistence in completing an assignment or provide specific praise when a student participates appropriately in a classroom discussion. These practices are intended to strengthen desirable behavior by establishing a meaningful relationship between students' actions and their consequences. Nevertheless, reinforcement should be distinguished from simply providing rewards, because a consequence is considered reinforcing when it demonstrably increases the likelihood of the behavior it follows (Cooper et al., 2020).

Positive reinforcement is particularly relevant to classroom learning because it can direct students' attention toward observable behaviors that support instructional goals. Rather than focusing exclusively on correcting inappropriate behavior, teachers can acknowledge students' efforts, participation, task completion, and compliance with classroom expectations. Behavior-specific praise, for example, identifies the particular action that meets an expectation, allowing students to understand which behavior is being encouraged. This approach differs from general praise because it explicitly connects feedback with the behavior being reinforced. Research on teacher-delivered behavior-specific praise has reported improvements in outcomes such as students' time on task and reductions in inappropriate classroom behavior, although the strength of the evidence depends on study quality and the outcomes assessed (Royer et al., 2019). Accordingly, examining positive reinforcement is important for understanding how classroom practices may support the development and maintenance of constructive learning behavior.

Recent research has investigated positive reinforcement within broader classroom management and behavioral intervention frameworks. Korpershoek et al. (2016), in a meta-analysis of classroom management interventions in primary education, found that intervention effects varied across student outcomes, indicating that classroom management approaches should be evaluated according to the specific outcomes they are intended to improve. Caldarella et al. (2018) examined the effects of the Class-Wide Function-Related Intervention Teams program on teachers' ratings of elementary school students at risk for emotional and behavioral disorders. This study illustrates how reinforcement can be incorporated into structured classroom practices to encourage appropriate behavior. However, findings from multicomponent interventions must be interpreted carefully because improvements may reflect the combined effects of reinforcement, explicit expectations, monitoring, and other intervention elements rather than the independent contribution of positive reinforcement alone.

Evidence concerning teacher praise provides a more specific perspective on reinforcement. Moore et al. (2019) systematically reviewed research on teacher praise in kindergarten through Grade 12 classrooms. Their review evaluated the methodological quality of 30 studies and found that only 11 met the criteria for methodologically sound evidence. The authors concluded that the available evidence was insufficient to classify teacher praise as an established evidence-based practice for the population examined. This finding is important because it demonstrates that the theoretical plausibility of positive reinforcement does not eliminate the need for rigorous empirical evaluation. In contrast, Royer et al. (2019), in a systematic review of teacher-delivered behavior-specific praise, reported positive findings for outcomes including time on task, inappropriate behavior, and tardiness across the six studies included in their review. Differences in the number of included studies, eligibility criteria, and evidence-assessment procedures indicate that conclusions about praise should be interpreted in relation to the scope and quality of the evidence examined.

Subsequent research has continued to examine the implementation and measurement of teacher praise. Drake et al. (2021) reviewed observational studies of teacher-delivered praise and found considerable variation in the frequency and measurement of general and behavior-specific praise across classrooms. Their findings suggest that the presence of praise in classroom practice does not necessarily indicate consistent or systematic implementation. Research has also identified a need to examine praise across different educational levels. Floress et al. (2024), in a systematic review of 32 empirical studies involving middle and high school students, found that most studies investigated the effects of teacher praise on student behavior or the effects of teacher training on teachers' use of praise. The review also identified limited research on students' preferences regarding praise at the secondary level. These findings highlight the importance of considering educational stage, implementation procedures, and students' responses when evaluating reinforcement practices.

The scope of reinforcement research has also expanded beyond teacher-delivered praise. Royer and Ennis (2024) conducted a systematic literature review and meta-analysis of student-delivered behavior-specific praise, examining interventions such as positive peer reporting and tootling, in which students report peers' appropriate or prosocial behaviors. Their review included 36 articles and found differences in the evidence supporting particular peer-praise approaches. The authors classified tootling as an evidence-based practice under the criteria they applied, whereas positive peer reporting had mixed evidence. This finding indicates that reinforcement-related practices may operate through different social and behavioral mechanisms, and that evidence supporting one technique should not automatically be generalized to another. More recent work on group engagement interventions has likewise examined combinations of behavioral strategies, including points, tangible rewards, and teacher praise, illustrating the diversity of reinforcement procedures used in educational environments (LeJeune et al., 2026).

Despite these developments, several issues remain unresolved in the literature. First, positive reinforcement is implemented through different techniques, including verbal praise, behavior-specific feedback, token systems, and group-based rewards. These techniques differ in their delivery, timing, social context, and relationship to the target behavior. Second, previous studies have measured a range of outcomes, including engagement, time on task, disruptive behavior, assignment completion, academic performance, and motivation. Although these outcomes are related, they represent different dimensions of student functioning and should not be treated as interchangeable indicators of learning behavior. Third, studies vary in methodological quality, participant characteristics, educational levels, intervention duration, and outcome-measurement procedures. These differences complicate comparisons and make it difficult to determine whether reported improvements can be attributed specifically to positive reinforcement.

Furthermore, previous reviews have focused on particular aspects of reinforcement, such as teacher-delivered praise, praise among peers, or broader classroom management interventions (Moore et al., 2019; Royer et al., 2019; Royer & Ennis, 2024). Although these reviews contribute important evidence, their different scopes leave room for a more integrated examination of positive reinforcement techniques in relation to students' observable learning behavior. In particular, a synthesis that distinguishes the type of reinforcement, the targeted behavior, the educational context, and the methodological characteristics of each study may help clarify the consistency and applicability of the available findings. Such a synthesis should also distinguish the direct effects of reinforcement from outcomes associated with broader intervention packages. The central research gap, therefore, concerns the need to integrate recent empirical evidence to establish what positive reinforcement techniques have been investigated, which learning behaviors they target, and under what conditions improvements have been reported.

Accordingly, this systematic literature review aims to examine the effectiveness of positive reinforcement techniques in improving students' learning behavior by synthesizing relevant empirical studies published within the previous ten years. Specifically, the review seeks to identify the types of positive reinforcement used in educational settings, examine their reported effects on students' observable learning behavior, compare findings across educational levels and intervention contexts, and identify methodological factors that may explain variations in outcomes. The novelty of this study lies in

its focused synthesis of positive reinforcement techniques and their relationship with specific learning behaviors, rather than treating motivation, academic achievement, and behavioral engagement as equivalent outcomes. By organizing the evidence according to intervention characteristics, target behaviors, educational settings, and research designs, this review is expected to provide a clearer account of the current empirical evidence and its limitations. Overall, the study seeks to contribute to educational psychology by informing the evidence-based selection of reinforcement practices while emphasizing the importance of appropriate implementation, context-sensitive application, and rigorous evaluation of student behavioral outcomes.

## METHODS

This study employed a Systematic Literature Review (SLR) to examine the effectiveness of positive reinforcement techniques in improving students' learning behavior. This approach was selected to systematically identify, evaluate, and synthesize empirical evidence from previous research. The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines to promote transparency and methodological consistency in the identification, screening, eligibility assessment, and inclusion of studies (Page et al., 2021).

The literature search focused on peer-reviewed journal articles published between 2016 and 2026. Relevant studies were sought through academic databases and scholarly platforms, including Scopus, ERIC, Web of Science, and Google Scholar, subject to database accessibility. Search terms included "positive reinforcement," "behavior-specific praise," "teacher praise," "student learning behavior," "classroom engagement," "on-task behavior," and "academic behavior." Boolean operators, including AND and OR, were applied to combine keywords and identify studies relevant to the research objectives. The search strategy considered previous reviews of classroom management, teacher-delivered praise, and reinforcement-based interventions, which have examined outcomes such as classroom engagement, task completion, and disruptive behavior (Korpershoek et al., 2016; Caldarella et al., 2018; Royer et al., 2019).

The inclusion criteria comprised studies that (1) were published in peer-reviewed journals between 2016 and 2026; (2) were written in English; (3) examined positive reinforcement in educational settings; (4) involved school-aged students; and (5) reported outcomes related to learning behavior, including attention, participation, task engagement, assignment completion, or on-task behavior. Studies were excluded if they were duplicates, theoretical papers without empirical findings, conference abstracts, dissertations, or investigations that did not directly address positive reinforcement and student learning behavior. These criteria were established to ensure that the selected literature was relevant to the review objectives.

The selection process followed the PRISMA 2020 stages of identification, screening, eligibility assessment, and inclusion. First, records identified through database searches were compiled, and duplicate records were removed. Second, titles and abstracts were screened to assess their relevance. Third, the full texts of potentially eligible studies were evaluated against the inclusion and exclusion criteria. Finally, twelve articles were selected for the systematic review. The number of records identified, duplicates removed, studies screened, full texts assessed, and articles excluded should be reported in the PRISMA flow diagram according to the actual screening results. This reporting approach is consistent with systematic reviews examining teacher praise and positive behavioral interventions (Moore et al., 2019; Drake et al., 2021; Floress et al., 2024).

Data extraction was conducted using a structured framework that recorded each article's authors, publication year, research location, design, participants, reinforcement technique, implementation procedures, measured outcomes, and principal findings. The extracted data were organized into a comparative matrix to facilitate cross-study analysis. Particular attention was given to differences in reinforcement delivery, including verbal praise, behavior-specific praise, and other reinforcement procedures.

A narrative synthesis was used to integrate the conceptual and empirical findings of the twelve selected studies. The analysis identified recurring patterns, variations in reported effectiveness, and contextual factors associated with changes in students' learning behavior. Findings from research on teacher-

delivered praise and student-delivered reinforcement were considered alongside differences in study design and outcome measures (Royer & Ennis, 2024). Because the included studies could differ in intervention procedures and methodological characteristics, the findings were synthesized narratively rather than statistically pooled. This approach provided a structured basis for evaluating the reported effectiveness of positive reinforcement while acknowledging limitations in the available evidence.

## RESULTS AND DISCUSSION

### Result

The literature reviewed indicates that positive reinforcement has been investigated as a classroom-based strategy for supporting students' academic engagement and appropriate learning behavior. The available evidence includes systematic reviews, meta-analyses, and empirical intervention studies examining teacher-delivered behavior-specific praise and peer-delivered praise. Across these studies, the primary outcomes include on-task behavior, academic engagement, disruptive behavior, and classroom participation. However, the strength of the evidence varies according to intervention type, study design, participant characteristics, and methodological quality.

Royer et al. (2019) reviewed six studies examining teacher-delivered behavior-specific praise in K–12 educational settings. Their findings indicated improvements in students' time on task, reductions in inappropriate behavior, and reductions in tardiness. The authors classified behavior-specific praise as a potentially evidence-based practice under the standards applied in their review. These findings suggest that explicitly acknowledging appropriate academic or classroom behavior may help teachers strengthen the behaviors they intend to maintain.

Evidence from secondary education provides additional context. Floress et al. (2024) screened 523 unique abstracts and included 32 empirical studies in their systematic review of teacher praise in middle and high schools. Most included studies examined the effects of teacher praise on student behavior or interventions designed to increase teachers' use of praise. This finding demonstrates that praise has been investigated across educational levels, although the distribution of research topics and the availability of evidence differ between settings.

Further evidence comes from Royer and Ennis (2024), who reviewed 36 studies on student-delivered behavior-specific praise. Their synthesis distinguished between positive peer reporting and tootling, an intervention in which students report peers' appropriate or prosocial behavior. The authors classified tootling as an evidence-based practice under the criteria they applied, whereas positive peer reporting was classified as having insufficient evidence. Their meta-analysis reported effect-size estimates of 1.0238 for tootling, 0.2254 for positive peer reporting, and 0.7408 across eligible studies. These estimates relate specifically to the reviewed peer-praise interventions and should not be interpreted as universal effect sizes for all positive reinforcement techniques.

**Table 1.** Synthesis of Literature on Emotion Regulation as a Transdiagnostic Factor

| Author and year        | Study type and scope                                                | Intervention or focus                                                    | Main findings                                                                                      | Relevance to learning behavior                                                                                    |
|------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Royer et al. (2019)    | Systematic review; 6 studies involving K–12 students                | Teacher-delivered behavior-specific praise                               | Reported increased time on task, decreased inappropriate behavior, and reduced tardiness.          | Supports the potential role of specific praise in promoting engagement and appropriate classroom behavior.        |
| Floress et al. (2024)  | Systematic review; 32 empirical studies from 523 screened abstracts | Teacher praise in middle and high schools                                | Most studies examined student behavior outcomes or strategies to increase teachers' use of praise. | Demonstrates the relevance of praise in secondary education and identifies areas requiring further investigation. |
| Royer and Ennis (2024) | Systematic review and meta-analysis; 36 studies                     | Student-delivered praise, including tootling and positive peer reporting | Tootling met the review's evidence-based practice criteria, whereas positive peer reporting was    | Suggests that structured peer recognition may support classroom engagement, although                              |

|                     |                                                                                    |                                                                                 | classified as having<br>insufficient evidence.                                                                               | effectiveness differs by<br>intervention type.                                                                                  |
|---------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Royer et al. (2024) | Single-case intervention study involving one teacher and four high school students | Teacher training and behavior-specific praise in career and technical education | The teacher increased behavior-specific praise, and all four students increased on-task behavior during intervention phases. | Provides direct intervention evidence linking teacher-delivered praise with improved on-task behavior in a secondary classroom. |

The findings can be organized into three themes. First, academic engagement and on-task behavior emerged as important outcomes associated with positive reinforcement. Behavior-specific praise identifies the behavior that meets an academic or classroom expectation, potentially helping students understand which actions should be repeated. The results reported by Royer et al. (2019) and the intervention findings of Royer et al. (2024) are consistent with this interpretation.

Second, classroom behavior and the reduction of disruptive conduct represent another recurring theme. Positive reinforcement emphasizes the acknowledgment of appropriate behavior rather than relying exclusively on responses to inappropriate conduct. The reviewed evidence indicates potential benefits for classroom behavior, although the magnitude and consistency of these effects depend on the intervention and the context in which it is implemented.

Third, the delivery and implementation of reinforcement appear important when interpreting differences across studies. Teacher-delivered praise and peer-delivered praise are distinct approaches, and the evidence supporting one form cannot automatically be generalized to another. Royer and Ennis (2024), for example, reported different evidence classifications for tootling and positive peer reporting. This distinction highlights the importance of examining intervention fidelity, the specificity of praise, and the behavioral outcomes measured.

Overall, the reviewed literature suggests that positive reinforcement, particularly behavior-specific praise, has potential to improve selected dimensions of students' learning behavior. Nevertheless, the available evidence does not establish that every reinforcement technique is equally effective across all students and educational settings. The final synthesis of the twelve selected articles should therefore compare their actual methods, participant characteristics, intervention procedures, and reported outcomes before drawing conclusions about the overall effectiveness of positive reinforcement.

## Discussion

The findings of this systematic literature review suggest that positive reinforcement has the potential to improve selected dimensions of students' learning behavior, particularly academic engagement, on-task behavior, and appropriate classroom conduct. The reviewed evidence indicates that behavior-specific praise is a relevant classroom management strategy because it explicitly identifies the behavior that meets learning expectations. Rather than providing general approval, teachers acknowledge observable actions, such as completing assignments, participating in discussions, following instructions, and remaining focused during learning activities. This interpretation is consistent with Royer et al. (2019), whose systematic review of six studies reported improvements in time on task, reductions in inappropriate behavior, and reduced student tardiness. Nevertheless, the findings support the potential effectiveness of particular reinforcement procedures rather than the universal effectiveness of every positive reinforcement technique.

Conceptually, positive reinforcement is grounded in operant conditioning, in which a consequence that follows a behavior and increases the future likelihood of that behavior functions as a reinforcer. In educational settings, reinforcement may include verbal praise, recognition, tokens, points, or access to preferred activities. However, a consequence should not automatically be classified as reinforcement simply because it is intended as a reward; its reinforcing function depends on whether the target behavior subsequently increases. This distinction is important when interpreting classroom intervention findings. Cooper et al. (2020) provide a foundational account of reinforcement principles, while the research synthesis by Pérez et al. (2025) examines training and support procedures intended

to help educators implement behavior-specific praise. Together, these perspectives indicate that reinforcement should be evaluated through observable behavioral outcomes rather than assumptions about students' responses.

One important finding concerns the relationship between behavior-specific praise and academic engagement. Royer et al. (2019) reported favorable outcomes for time on task, suggesting that explicit acknowledgment of appropriate behavior may help students maintain attention to learning activities. Similarly, O'Handley et al. (2020) investigated behavior-specific praise across four secondary classrooms and found a functional relation between praise and improvements in appropriately engaged and disruptive behaviors. The addition of public posting further increased appropriate engagement, although its effects on disruptive behavior were mixed. These results suggest that clearly communicated behavioral expectations and contingent feedback may support students' participation. However, public recognition should be used carefully because students may differ in their preferences for receiving attention in front of classmates.

The effectiveness of positive reinforcement also depends on how consistently it is implemented. Drake et al. (2021) reviewed 14 observational studies and found considerable variation in naturally occurring teacher praise. Reported rates of behavior-specific praise ranged from 5.9 to 23.14 instances per hour, illustrating that students may experience different levels of positive feedback across classrooms. The review also found inconsistencies in the relative frequency of praise and reprimands. These findings identify a practical implementation challenge: teachers may endorse positive reinforcement but use it inconsistently during instruction. Niwayama and Tanaka-Matsumi (2016) examined teachers' self-recording of behavior-specific praise in elementary classrooms, providing a relevant example of monitoring practices designed to support teacher implementation. Consequently, professional development, self-monitoring, and feedback may be useful for improving the consistency of reinforcement practices.

Another important consideration is the developmental and educational context in which reinforcement is applied. Floress et al. (2024) identified 32 empirical studies in their systematic review of teacher praise in middle and high schools. Their findings demonstrate that praise has been investigated in secondary education, although the evidence base and research questions vary across studies. This is significant because reinforcement procedures developed in elementary classrooms should not automatically be assumed to produce identical outcomes among adolescents. Older students may respond differently to public praise, private feedback, peer recognition, or tangible rewards. Therefore, reinforcement should be adapted to students' developmental needs, classroom norms, and preferences while maintaining clear connections between the target behavior and the consequence.

Positive reinforcement can also be delivered through interactions among peers rather than exclusively by teachers. Royer and Ennis (2024) reviewed 36 studies of student-delivered behavior-specific praise. Their synthesis distinguished between tootling and positive peer reporting and classified tootling as an evidence-based practice under the criteria used in their review, whereas positive peer reporting was classified as having insufficient evidence. Their meta-analysis reported effect-size estimates of 1.0238 for tootling, 0.2254 for positive peer reporting, and 0.7408 across eligible studies. These estimates should be interpreted within the specific interventions and studies analyzed rather than generalized to all classroom reinforcement. Nevertheless, the findings suggest that structured peer recognition may offer an additional approach to promoting positive classroom interactions and academic engagement.

The broader evidence on classroom management also supports a contextual interpretation of reinforcement. Korpershoek et al. (2016) synthesized classroom management strategies and programs in primary education, examining academic, behavioral, emotional, and motivational outcomes. Their work provides a broader framework for understanding that classroom behavior is influenced by multiple interacting practices rather than a single technique. Similarly, LeJeune et al. (2026) reviewed and meta-analyzed behavioral interventions designed to increase group engagement in K–12 classrooms. Their review included 50 studies, comprising 10 group-design studies and 40 single-case-design studies. Because group engagement interventions may combine praise with other components, their results should not be interpreted as evidence for the independent effect of positive reinforcement unless the relevant component is isolated.

Despite these encouraging findings, several limitations must be considered. First, studies differ in their designs, participants, settings, intervention duration, and outcome measures, limiting direct comparisons. Second, improvements in on-task behavior or reductions in disruption do not necessarily demonstrate corresponding gains in academic achievement. Third, reinforcement effectiveness may depend on whether the consequence is meaningful to the individual student, whether the target behavior is clearly defined, and whether implementation is sufficiently consistent. Fourth, systematic reviews may include studies with different methodological quality, making it necessary to examine risk of bias and intervention fidelity before drawing strong conclusions. These limitations highlight the importance of distinguishing promising results from conclusive evidence.

Overall, the literature suggests that positive reinforcement, especially behavior-specific praise, can contribute to improvements in selected learning behaviors when it is clearly linked to observable actions and implemented consistently. Its educational value is likely to be greatest when reinforcement is integrated with explicit expectations, appropriate instructional support, and ongoing monitoring. Future research should examine the durability of behavioral changes, the relationship between engagement and academic achievement, differences across age groups, and the effectiveness of reinforcement procedures in Indonesian schools. For the present review, conclusions about overall effectiveness should ultimately be based on the complete analysis of the twelve included articles rather than extrapolated from external studies alone.

## CONCLUSION

This systematic literature review indicates that positive reinforcement is a promising educational strategy for improving students' learning behavior, particularly classroom engagement, on-task behavior, and appropriate classroom conduct. Conceptually, positive reinforcement involves providing a consequence following a desired behavior that increases the likelihood of that behavior occurring again. Empirically, Royer et al. (2019), in a systematic review of six studies, reported improvements in students' time on task, reductions in inappropriate behavior, and reduced tardiness. Similarly, O'Handley et al. (2020) found improvements in appropriate engagement following behavior-specific praise in secondary classrooms, although the effects of additional public posting varied across behavioral outcomes. Furthermore, Royer and Ennis (2024) identified differences in the evidence supporting peer-delivered reinforcement, indicating that effectiveness may depend on the specific technique implemented. These findings suggest that reinforcement is more appropriately evaluated through observable behavioral changes than through the mere provision of rewards or praise. Nevertheless, differences in research designs, participant characteristics, intervention procedures, and outcome measures limit generalization across educational contexts. Improvements in engagement also do not necessarily demonstrate equivalent gains in academic achievement. Overall, positive reinforcement may support students' learning behavior when target behaviors are clearly defined and reinforcement is delivered consistently. Future research should investigate long-term outcomes, academic achievement, and the applicability of reinforcement techniques across educational levels and cultural settings.

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