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Improving Basketball Chest Pass Learning Outcomes through the STAD Cooperative Learning Model: A Classroom Action Research in Senior High School

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ABSTRACT

This study aimed to improve students' basketball chest pass learning outcomes through the implementation of the Student Teams Achievement Divisions (STAD) cooperative learning model among tenth-grade students at SMA Negeri 5 Denpasar. This Classroom Action Research (CAR) was conducted in two cycles consisting of planning, action, observation, and reflection. The participants were 36 students (16 males and 20 females). Data were collected through observation and basketball chest pass performance assessments and analyzed using descriptive quantitative analysis based on classical learning mastery. The results showed that the implementation of the STAD cooperative learning model improved students' basketball chest pass learning outcomes. Initial learning mastery was 41.6% (15 students). During Cycle I, classical mastery was 27.8% (10 students) because students were still adapting to the STAD learning procedures and the refined assessment criteria applied during the intervention. Following reflection and improvements in the instructional process, classical mastery increased substantially to 94.5% (34 students) in Cycle II, exceeding the predetermined mastery criterion of 80%. It can be concluded that the Student Teams Achievement Divisions (STAD) cooperative learning model effectively improves students' basketball chest pass learning outcomes by promoting active participation, peer tutoring, and collaborative learning.

KEY WORDS

STAD model, Learning outcomes, Chest pass, Basketball, Physical Education.

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A. Introduction

Physical Education, Sports, and Health (PJOK) plays an important role in developing students' cognitive, affective, and psychomotor competencies. Through physical education, students are expected to acquire movement skills, healthy lifestyles, teamwork abilities, and positive character values that support lifelong learning. Among various sports taught in schools, basketball is one of the most popular team sports because it promotes physical fitness, cooperation, communication, and decision-making skills.

One of the fundamental techniques that must be mastered in basketball is the chest pass. The chest pass is frequently used during game situations because it enables players to deliver the ball quickly and accurately to teammates. However, empirical evidence indicates that many students still experience difficulties in performing the chest pass correctly. Preliminary observations conducted in Class X-2 of SMA Negeri 5 Denpasar during the 2025/2026 academic year revealed that only 46% of students achieved the Minimum Learning Achievement Criteria (KKTP), while 54% failed to meet the expected standard. Most students demonstrated weaknesses in body positioning, arm coordination, passing accuracy, and follow-through movements. These findings indicate that students' learning outcomes in basketball chest pass skills remain relatively low and require instructional improvement.

One factor contributing to the low learning outcomes is the continued implementation of teacher-centered instructional approaches. In conventional learning situations, students tend to become passive recipients of information and have limited opportunities to practice collaboratively with peers. Consequently, learning activities become less engaging and fail to accommodate individual differences in learning abilities. Therefore, innovative and student-centered instructional models are needed to improve students' participation and learning achievement.

Cooperative learning has been widely recognized as an effective instructional approach for improving academic achievement and social interaction among students. According to Slavin, cooperative learning encourages students to work together in small heterogeneous groups to achieve shared learning goals. One of the most widely implemented cooperative learning models is Student Teams Achievement Divisions (STAD). In the STAD model, students learn collaboratively, assist one another in understanding instructional materials, and receive group recognition based on collective achievement. This learning model promotes active participation, peer tutoring, responsibility, and teamwork.

Several recent studies have reported the effectiveness of cooperative learning and STAD in improving learning outcomes. Wulandari (2022) found that STAD significantly enhanced student engagement and academic achievement in elementary education. Sari and Nugroho (2021) reported that cooperative learning improved students' motor skill performance and classroom participation in physical education settings. Pratama et al. (2023) demonstrated that STAD positively influenced students' motivation and teamwork during sports learning activities. Internationally, research by Chen et al. (2022), Lee and Kim (2021), García et al. (2023), and Hassan et al. (2024) showed that cooperative learning strategies improved physical education learning outcomes, motor skill acquisition, and collaborative competencies among secondary school students. Furthermore, basketball learning studies conducted by Rahman et al. (2022) and Putra et al. (2024) revealed that cooperative instructional approaches contributed significantly to the development of students' basketball skills and learning motivation.

Despite the growing body of literature on cooperative learning and the Student Teams Achievement Divisions (STAD) model, several important limitations remain. Previous studies have generally reported positive effects of STAD on students' academic achievement, motivation, and participation in Physical Education. However, most of these studies evaluated general learning outcomes without specifically examining the improvement of basketball chest pass skills as a psychomotor competency. In addition, many previous investigations employed experimental or quasi-experimental designs that primarily measured learning outcomes at a single point in time, providing limited evidence regarding how students' performance develops through continuous instructional improvement. Consequently, the instructional process, teacher reflection, and cyclical refinement of learning strategies have received relatively little attention. These

limitations indicate the need for Classroom Action Research that not only measures learning outcomes but also documents the process of improving basketball chest pass skills through iterative implementation of the STAD cooperative learning model.

The novelty of this study lies in integrating the STAD cooperative learning model with a Classroom Action Research approach to improve basketball chest pass learning outcomes among senior high school students. Unlike previous studies that mainly focused on general Physical Education outcomes or employed experimental designs, this study emphasizes the cyclical process of planning, action, observation, and reflection to optimize students' psychomotor performance through continuous instructional improvement. Therefore, this study contributes not only empirical evidence regarding the effectiveness of STAD but also practical guidance for implementing reflective teaching practices in basketball instruction.

Based on the identified problems and research gaps, this study aims to improve the learning outcomes of basketball chest pass techniques among Class X-2 students at SMA Negeri 5 Denpasar through the implementation of the Student Teams Achievement Divisions (STAD) cooperative learning model.

B. Theoretical framework and Literature review

2.1 Basketball Chest Pass Theory

Basketball is a team sport that requires players to master fundamental technical skills, including dribbling, passing, shooting, rebounding, and pivoting. Among these skills, the **chest pass** is one of the most frequently used techniques because it enables players to transfer the ball quickly, accurately, and efficiently to teammates during offensive and defensive situations. Effective execution of the chest pass contributes not only to maintaining ball possession but also to creating scoring opportunities and improving overall team performance. Therefore, mastering the chest pass is considered an essential learning objective in Physical Education, particularly at the secondary school level.

The chest pass is performed by holding the ball at chest level, positioning the feet shoulder-width apart, and extending both arms forward while transferring body weight from the back foot to the front foot. The movement concludes with a proper follow-through, in which the wrists rotate outward and the arms remain fully extended toward the target. Correct execution requires coordination among body posture, arm movement, balance, and visual focus to ensure that the pass is delivered accurately and efficiently. These movement components form the basis for assessing students' psychomotor performance in basketball instruction.

Successful chest pass performance is influenced by several factors, including arm strength, hand-eye coordination, body balance, movement accuracy, concentration, learning motivation, and the frequency of practice. Because these factors are developed primarily through repeated practice and active engagement, instructional approaches that encourage collaboration and continuous feedback are expected to facilitate students' mastery of chest pass skills. Consequently, cooperative learning strategies, particularly the Student Teams Achievement Divisions (STAD) model, are considered appropriate for improving students' basketball chest pass learning outcomes.

2.2 Learning Outcomes Theory

Learning outcomes refer to the knowledge, attitudes, and skills acquired by students after participating in instructional activities. Based on Bloom's revised taxonomy, learning outcomes encompass three interrelated domains: cognitive, affective, and psychomotor. The cognitive domain reflects students' understanding of concepts and procedures, the affective domain relates to attitudes, responsibility, cooperation, and sportsmanship, while the psychomotor domain emphasizes the development of physical skills and movement performance. In Physical Education, these three domains complement one another; however, psychomotor achievement is generally regarded as the primary indicator of successful skill acquisition because it demonstrates students' ability to perform movement tasks accurately and effectively.

In the context of basketball instruction, learning outcomes are primarily reflected in students' ability to perform the chest pass correctly through proper body positioning, coordinated movement execution, passing accuracy, and effective follow-through. The achievement of these psychomotor competencies is influenced not only by students' individual abilities but also by instructional strategies that provide opportunities for repeated practice, peer interaction, and constructive feedback. Therefore, the improvement of basketball chest pass learning outcomes is theoretically associated with cooperative learning, particularly the Student Teams Achievement Divisions (STAD) model, which promotes active participation, collaborative practice, and continuous skill development throughout the learning process. This theoretical relationship forms the basis for examining the effectiveness of STAD in enhancing students' basketball chest pass learning outcomes.

2.3 Cooperative Learning Theory

Cooperative learning is a student-centered instructional approach in which students work collaboratively in small heterogeneous groups to achieve shared learning goals. Unlike conventional teacher-centered instruction, cooperative learning emphasizes active participation, positive interdependence, individual accountability, face-to-face interaction, interpersonal skills, and group reflection. According to Johnson and Johnson, these principles enable students to develop not only academic competence but also communication skills, teamwork, responsibility, and mutual respect through meaningful social interaction. Consequently, cooperative learning provides a learning environment that encourages students to become actively involved in constructing knowledge rather than passively receiving information.

In Physical Education, cooperative learning is particularly relevant because most sports activities require students to communicate, collaborate, and solve movement-related problems together. Through collaborative practice and peer interaction, students are able to observe movement demonstrations, exchange feedback, and repeatedly practice motor skills in authentic learning situations. These learning experiences support the development of psychomotor competence while simultaneously fostering positive social behaviors. Therefore, cooperative learning serves as the theoretical foundation for implementing the Student Teams Achievement Divisions (STAD) model, which operationalizes these collaborative principles to improve basketball chest pass learning outcomes.

2.4 Student Teams Achievement Divisions (STAD) Theory

Student Teams Achievement Divisions (STAD) is one of the most widely implemented cooperative learning models developed by Slavin. The model organizes students into heterogeneous groups with different academic abilities, genders, and learning characteristics to encourage cooperation and mutual support during learning activities. STAD consists of five integrated components: class presentation, team discussion, individual quizzes, individual improvement scores, and team recognition. Through these stages, students are encouraged to learn collaboratively, assist one another in understanding the learning material, and take individual responsibility while contributing to the achievement of their groups.

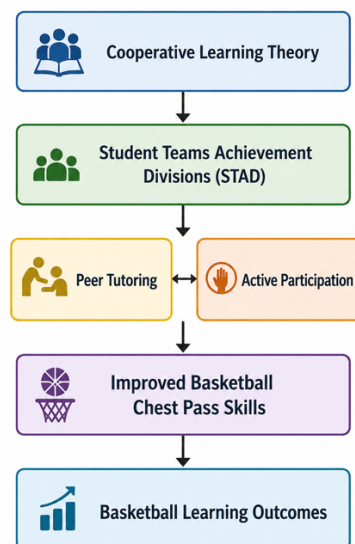
Within the context of Physical Education, the STAD model provides meaningful opportunities for students to practice movement skills collaboratively through peer tutoring, discussion, and repeated performance. These learning experiences enable students to receive immediate feedback, improve movement accuracy, and develop greater confidence in performing basketball skills. Consequently, STAD operationalizes the principles of cooperative learning by promoting active participation, positive interdependence, and individual accountability, all of which contribute to improving psychomotor learning outcomes. Previous studies have also demonstrated that the STAD model enhances student participation, motivation, teamwork, and academic achievement across various educational settings. Therefore, this study proposes that the implementation of STAD can effectively improve basketball chest pass learning outcomes among tenth-grade students through collaborative and student-centered learning experiences.

2.5 Conceptual Framework

This study is grounded in the integration of Learning Outcomes Theory, Cooperative Learning Theory, and the Student Teams Achievement Divisions (STAD) model. Learning outcomes in Physical Education are primarily reflected in students' psychomotor performance, particularly their ability to execute basketball chest pass techniques accurately and effectively. Cooperative Learning Theory explains that students learn more effectively through collaboration, peer interaction, and shared responsibility, while the STAD model provides a structured instructional strategy that facilitates these collaborative learning processes.

The implementation of STAD encourages students to participate actively in heterogeneous learning groups where peer tutoring, collaborative practice, and continuous feedback become integral components of the instructional process. These learning experiences enhance students' motivation, movement accuracy, confidence, and active participation, ultimately leading to improved basketball chest pass learning outcomes. Based on this theoretical relationship, the present study proposes that implementing the STAD cooperative learning model can effectively improve basketball chest pass learning outcomes among tenth-grade students at SMA Negeri 5 Denpasar.

Figure 1. Conceptual Framework of the Study



Source: Developed by the authors based on Johnson & Johnson's Cooperative Learning Theory and Slavin's Student Teams Achievement Divisions (STAD) model.

C. Methods

This study employed a Classroom Action Research (CAR) design aimed at improving students' learning outcomes in basketball chest pass skills through the implementation of the Student Teams Achievement Divisions (STAD) cooperative learning model. The research followed the model proposed by Arikunto, consisting of four stages in each cycle: planning, action, observation, and reflection. The study was conducted in two cycles, with each cycle consisting of two learning meetings.

The participants of this study were 36 tenth-grade students of Class X-2 at SMA Negeri 5 Denpasar during the 2025/2026 academic year. The class consisted of 16 male students and 20 female students aged between 15 and 16 years.

The students had previously received basic basketball instruction; however, many still experienced difficulties in performing the chest pass technique correctly. Preliminary observations revealed that only

46% of students achieved the Learning Objective Mastery Criteria (KKTP), indicating the need for instructional improvement.

The participants were selected using a purposive sampling technique because the class demonstrated relatively low learning outcomes in basketball chest pass skills and was directly taught by the researcher during the instructional process.

Research Procedure

The study was conducted through two cycles.

Cycle I

The activities in Cycle I included:

1. Planning the lesson using the STAD cooperative learning model.
2. Preparing instructional materials and assessment instruments.
3. Implementing the learning activities.
4. Observing students' participation and performance.
5. Conducting reflection to identify weaknesses and improvements for the next cycle.

Cycle II

Cycle II was conducted based on the reflection results from Cycle I. Improvements were made to instructional strategies, group interactions, and learning activities to maximize students' participation and skill development.

Research Instruments

The primary instrument used in this study was a basketball chest pass performance assessment rubric developed based on physical education competency standards.

Tabel 1. The assessment consisted of three indicators

No	Assessment Aspect	Score Range
1	Preparatory Position	1–4
2	Execution Movement	1–4
3	Follow-Through Movement	1–4

The total score ranged from 3 to 12 points.

Tabel 2. The performance categories

Score	Category
10–12	Excellent
7–9	Good
4–6	Fair
1–3	Poor

Students' basketball chest pass performance was assessed individually by two trained Physical Education teachers acting as independent observers. Each assessment consisted of three performance aspects: preparatory position, execution movement, and follow-through movement. Each aspect was scored on a four-point scale ranging from 1 (poor) to 4 (excellent), resulting in a total score ranging from 3 to 12. The final score for each student was obtained by averaging the scores assigned by the two observers to minimize subjective judgment and improve scoring consistency.

In addition to the performance rubric, observation sheets were used to assess students' participation, cooperation, and engagement during the learning process.

Content validity of the assessment rubric was established through expert judgment involving two experienced Physical Education teachers and one university lecturer specializing in sports education. The experts evaluated the relevance, clarity, and appropriateness of each assessment indicator with respect to the learning objectives of basketball chest pass instruction. Revisions to the assessment rubric were made based on the experts' recommendations before its implementation in the classroom.

Instrument reliability was examined using inter-rater reliability because students' performance was evaluated by two independent observers. After each observation session, the scores assigned by both observers were compared to determine the level of scoring consistency. High agreement between observers indicated that the assessment rubric produced consistent and reliable measurements of students' basketball chest pass performance throughout the research process.

Data Collection Techniques

Data were collected using:

1. Observation of learning activities.
2. Performance assessment of basketball chest pass skills.
3. Field notes and reflection records during each research cycle.

The collected data included students' psychomotor performance, learning participation, and mastery achievement.

Data Analysis

The collected data were analyzed using descriptive quantitative analysis to determine individual and classical learning mastery.

Individual Learning Mastery

Individual mastery was calculated using the following formula:

$$\text{Individual Mastery} = \frac{\text{Student Score}}{\text{Maximum Score}} \times 100\%$$

Students were considered to achieve mastery if their score met or exceeded the Minimum Learning Achievement Criteria (KKTP) established by the school.

Classical Learning Mastery

Classical mastery was calculated using the following formula:

$$\text{Classical Mastery} = \frac{\text{Number of Students Achieving Mastery}}{\text{Total Number of Students}} \times 100\%$$

The action was considered successful if at least 80% of students achieved mastery learning. The results from each cycle were compared to identify improvements in students' basketball chest pass learning outcomes following the implementation of the STAD cooperative learning model.

To evaluate learning improvement across research cycles, descriptive statistics were used to calculate individual scores, classical learning mastery, and the percentage of students achieving the Minimum Learning Achievement Criteria (KKTP). Comparisons between the initial observation, Cycle I, and Cycle II were conducted descriptively to identify changes in students' basketball chest pass learning outcomes following the implementation of the STAD cooperative learning model.

Research Ethics

Permission to conduct the study was obtained from the school administration, and all participants voluntarily participated in the research activities. The researcher ensured that students' personal information remained confidential and that all collected data were used solely for academic and research purposes. Participation in the study did not expose students to any physical or psychological risks beyond those normally encountered during regular Physical Education activities.

D. Result and Discussion

This study was conducted to improve students' basketball chest pass learning outcomes through the implementation of the Student Teams Achievement Divisions (STAD) cooperative learning model among Class X-2 students at SMA Negeri 5 Denpasar. The preliminary observation was conducted before the implementation of the STAD cooperative learning model. The assessment focused on students' ability to perform the basketball chest pass technique, including the preparatory position, execution phase, and follow-through movement. The results showed that only 15 out of 36 students achieved the Minimum Learning Achievement Criteria (KKTP), resulting in a classical mastery percentage of 41.6%. These findings indicate that students' basketball chest pass learning outcomes were still relatively low and required instructional improvement.

Cycle I was implemented using the STAD cooperative learning model. Students were organized into heterogeneous groups and participated in collaborative learning activities designed to improve their understanding and execution of the basketball chest pass technique.

The evaluation results showed that 10 students (27.8%) achieved mastery learning during Cycle I. Although this percentage was lower than the initial observation (41.6%), the decrease did not indicate a decline in students' actual learning performance. Instead, it reflected students' early adaptation to the STAD cooperative learning model, which introduced new collaborative learning procedures, peer tutoring activities, and more structured performance assessments. During the first cycle, many students were still adjusting to working in heterogeneous groups, actively participating in discussions, and providing peer feedback while simultaneously developing their basketball chest pass skills. Consequently, the learning process during Cycle I focused primarily on familiarizing students with the cooperative learning environment rather than achieving optimal learning mastery.

Based on the reflection results from Cycle I, several improvements were implemented during Cycle II. Additional guidance was provided, group interactions were strengthened, and students received more opportunities to practice and receive feedback from peers and the teacher. The results of Cycle II demonstrated a substantial improvement in learning outcomes. A total of 34 students achieved mastery learning, while only 2 students did not meet the mastery criteria. Consequently, the classical mastery percentage increased to 94.5%, exceeding the predetermined success criterion of 80%.

Table 3. Students' Basketball Chest Pass Learning Mastery Across Research Cycles

Phase	Students Mastered	Percentage
Initial Observation	15	41.6%
Cycle I	10	27.8%
Cycle II	34	94.5%

Table 3 illustrates the progression of students' basketball chest pass learning mastery across the research cycles. Although the mastery percentage decreased from 41.6% during the initial observation to 27.8% in Cycle I, this reduction should be interpreted within the context of the instructional intervention. During the first implementation of STAD, students were required to adapt to collaborative learning procedures, including peer tutoring, team discussions, and individual accountability, all of which represented new learning

experiences for most participants. Following reflection on Cycle I, improvements were made to group organization, teacher guidance, and learning activities, enabling students to participate more confidently and effectively. As a result, classical learning mastery increased substantially to 94.5% in Cycle II, exceeding the predetermined success criterion.

Figure 2. Percentage of Learning Mastery Across Research Cycles

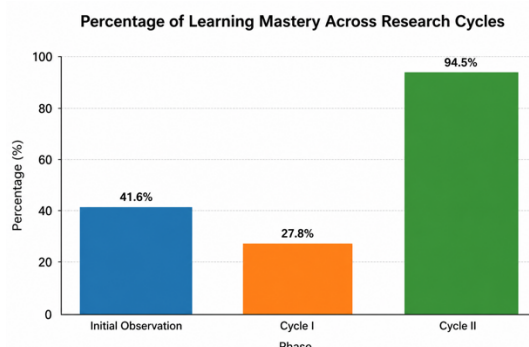


Figure 2 illustrates the fluctuation in students' basketball chest pass learning outcomes throughout the research cycles. Although mastery levels decreased during Cycle I, a substantial improvement was observed in Cycle II following the refinement of learning strategies and increased student adaptation to the STAD cooperative learning model.

Overall, the findings indicate that the implementation of the STAD cooperative learning model effectively improved students' basketball chest pass learning outcomes. The classical mastery percentage increased significantly from 27.8% in Cycle I to 94.5% in Cycle II, representing an improvement of 66.7 percentage points.

Discussion

The findings of this study demonstrate that the implementation of the Student Teams Achievement Divisions (STAD) cooperative learning model effectively improved students' basketball chest pass learning outcomes. Although classical learning mastery temporarily decreased during Cycle I, a substantial improvement was observed in Cycle II after instructional refinements were implemented. As previously discussed, the temporary decline in Cycle I reflected students' adaptation to a new collaborative learning environment rather than a reduction in their actual learning ability. Following reflection and improvements in teaching strategies, students became more actively engaged in learning activities, resulting in significantly better psychomotor performance.

The improvement in basketball chest pass learning outcomes can be explained by the instructional characteristics of the STAD cooperative learning model. Unlike conventional teacher-centered instruction, STAD organizes students into heterogeneous learning teams in which they actively exchange ideas, observe one another's movements, provide corrective feedback, and practice technical skills collaboratively. These learning experiences create repeated opportunities for students to refine body positioning, arm coordination, passing accuracy, and follow-through movements through continuous practice and peer interaction. Consequently, students not only receive guidance from the teacher but also benefit from immediate assistance and reinforcement from their teammates, accelerating the development of psychomotor skills.

Another important mechanism contributing to the effectiveness of STAD is peer tutoring. Students with higher levels of skill assist their teammates by demonstrating correct movement techniques, identifying performance errors, and providing constructive feedback during practice sessions. This collaborative process enables lower-performing students to learn through observation, imitation, and repeated correction, which are fundamental principles of motor skill acquisition. Simultaneously, students acting as peer tutors reinforce their own understanding by explaining and demonstrating the correct techniques, creating reciprocal learning benefits for all group members. These collaborative interactions increase students' confidence, motivation, and willingness to participate actively throughout the learning process.

The findings are consistent with Social Constructivism Theory, which argues that knowledge and skills develop through meaningful social interaction. Within the STAD learning environment, students construct movement knowledge collaboratively by discussing techniques, observing peers, and practicing skills together. The results also support Cooperative Learning Theory, which emphasizes that positive interdependence, individual accountability, and face-to-face interaction enhance both academic achievement and psychomotor performance. Furthermore, the findings are aligned with Slavin's STAD Theory, which proposes that collaborative learning, peer support, and team recognition encourage students to participate more actively and achieve higher levels of learning performance.

The present findings are also consistent with previous studies reporting the positive effects of STAD and cooperative learning on students' participation, motivation, and learning achievement. However, unlike previous research that primarily demonstrated the effectiveness of STAD in improving general Physical Education outcomes, this study provides a more specific explanation of how STAD enhances basketball chest pass performance. The findings suggest that the improvement occurs because collaborative practice, peer tutoring, immediate feedback, and repeated movement correction create an effective learning environment for developing psychomotor competence. Therefore, this study extends previous research by explaining not only that STAD is effective but also why it effectively improves basketball chest pass learning outcomes among senior high school students.

D. Conclusion

This study concludes that the implementation of the Student Teams Achievement Divisions (STAD) cooperative learning model effectively improved basketball chest pass learning outcomes among tenth-grade students at SMA Negeri 5 Denpasar. The implementation of STAD increased classical learning mastery from the initial observation to 94.5% in Cycle II, indicating that the instructional intervention successfully enhanced students' psychomotor performance in basketball chest pass skills. These findings demonstrate that the STAD cooperative learning model is an effective instructional approach for improving basketball learning outcomes in Physical Education.

Future studies are recommended to examine the effectiveness of the STAD model with larger samples, different educational levels, and comparative instructional models to strengthen the generalizability of the findings.

E. Conflict of Interest

No Conflict of Interest

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