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Nearpod-based physical education learning and its implications for students' self-confidence: A systematic literature review

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Abstract

This systematic literature review examines the potential of Nearpod to support students' self-efficacy in Physical Education (PE). Guided by Bandura's self-efficacy theory, the review explores how Nearpod's interactive features may contribute to students' confidence in performing physical activities through four sources of self-efficacy: mastery experiences, vicarious experiences, social persuasion, and physiological and emotional states. The article selection process followed the PRISMA 2020 guidelines. A total of 247 articles were identified from Google Scholar, Scopus, ERIC, ScienceDirect, and Sinta. After screening, eligibility assessment, and the application of inclusion criteria, 40 articles were included in the review, with 10 highly relevant studies selected for in-depth discussion. The findings suggest that Nearpod may support self-efficacy by increasing student engagement, providing immediate feedback, facilitating learning through demonstrations, encouraging peer interaction, and creating a more engaging learning environment. Its features, including interactive videos, quizzes, polls, Collaboration Boards, and educational games, may help teachers deliver formative assessment and monitor students' learning progress. However, direct empirical evidence of Nearpod's effectiveness in improving self-efficacy in PE remains limited. Therefore, experimental studies using control groups and validated measures of the four sources of self-efficacy are needed. This review highlights Nearpod's potential as a technology-supported learning tool while emphasizing the need for further research in authentic PE settings.

Keywords: Nearpod; self-efficacy; physical education; educational technology; systematic literature review.

INTRODUCTION

Rapid advances in digital technology have shifted learning from teacher-centered instruction toward more interactive and student-centered approaches. In Physical Education (PE), learning objectives extend beyond motor skills to include affective outcomes such as self-confidence, learning motivation, and active participation (Banjarnahor & Tarigan, 2023). Therefore, interactive learning media are needed to create engaging experiences and encourage student involvement. Nearpod is an interactive digital learning platform that integrates quizzes, videos, simulations, educational games, collaboration boards, and real-time feedback. These

features support two-way communication between teachers and students and may increase engagement, participation, and learning outcomes compared with conventional instruction.

Self-efficacy is closely related to students' confidence and participation. Zhu et al. (2024) define self-efficacy as an individual's belief in their ability to complete tasks and achieve goals. Students with high self-efficacy are generally more willing to express ideas, try new activities, and participate actively, whereas those with low self-confidence may hesitate, fear making mistakes, and become passive learners. Interactive digital learning environments may strengthen self-efficacy through increased engagement and meaningful learning experiences. Ren et al. (2025) found that digital skills and perceived interactivity are associated with stronger self-efficacy, while Yuerong et al. (2024) highlighted the positive roles of social presence, peer interaction, and instructor involvement in students' perceived competence and learning quality. These findings suggest that interactive platforms such as Nearpod may help develop students' confidence.

In PE, self-confidence influences students' willingness to participate in physical activities and acquire sport-specific skills. Confident students are more likely to try new movements and engage in group activities, whereas low confidence can limit participation. Xu et al. (2025) found that learning-environment support and self-efficacy are associated with student engagement in physical education. Similarly, Yang et al. (2021) demonstrated the importance of learning models that promote motivation and participation in effective physical education instruction.

Nearpod may support these outcomes by combining theoretical content, movement-demonstration videos, interactive assessments, and collaborative activities. These features can facilitate successful learning experiences, immediate feedback, and peer interaction. In Bandura's theoretical framework, such experiences relate to the sources of self-efficacy that shape students' beliefs in their abilities. Digital interaction may also reduce the pressure associated with answering questions or expressing opinions publicly. Supporting evidence comes from Huang (2021), who found that digital technology-based projects can improve students' learning enthusiasm and confidence in demonstrating their abilities. Prates et al. (2025) likewise reported that digital technology can contribute to students' engagement, social competence, and self-confidence.

Despite these promising findings, the relationship between Nearpod, self-efficacy, and self-confidence in physical education remains insufficiently examined. Existing studies generally focus on cognitive outcomes, motivation, or general learning engagement, while systematic reviews specifically addressing Nearpod's contribution to students' self-efficacy and self-confidence in physical education are limited. This gap justifies a systematic literature review examining how Nearpod may support students' self-confidence in PE learning.

Compared with previous systematic reviews, this article offers three contributions. First, while reviews of digital technology and self-efficacy generally cover multiple platforms and subject areas (Prates et al., 2025; Chi et al., 2025), this review focuses specifically on Nearpod, self-efficacy, and physical education. Second, it distinguishes studies directly examining Nearpod from those investigating digital learning media more broadly, allowing the strength of the evidence to be assessed more transparently. Third, it uses Bandura's (1997) four sources of self-efficacy—mastery experience, vicarious experience, social persuasion, and physiological states—as a conceptual framework for mapping Nearpod features, including

quizzes, interactive videos, collaboration boards, and virtual reality simulations, to potential psychological mechanisms. This mapping represents a conceptual synthesis by the authors rather than a generalization from direct empirical findings. A comparison with previous systematic reviews is presented in Table 1.

METHODS

This study used a Systematic Literature Review (SLR) based on PRISMA 2020 guidelines to identify, select, and analyze previous empirical studies on Nearpod and its potential effects on students' self-efficacy in Physical Education (PE) (Creswell & Creswell, 2022; Moleong, 2021; Page et al., 2021).

Literature Search Strategy

The literature search was conducted systematically through five scientific databases, namely Google Scholar, ERIC, Scopus, ScienceDirect, and Sinta (Science and Technology Index). The search strategy used a combination of structured keywords with Boolean operators as follows: ("Nearpod" AND "self-efficacy") OR ("Nearpod" AND "physical education") OR ("Nearpod" AND "student confidence") OR ("interactive learning media" AND "self-efficacy" AND "physical education") OR ("digital learning" AND "student engagement" AND "PJOK"). The search was conducted from January through March 2026, with the last search date on March 15, 2026, and yielded a total of 247 articles from all searched databases.

Search Strings by Database

To ensure reproducibility, the search strings were adapted to each database's search syntax. Google Scholar used combinations of Nearpod, self-efficacy, physical education, and student confidence, with the publication-year filter set to 2019–2026, yielding 98 articles. Scopus used title, abstract, and keyword searches covering Nearpod, self-efficacy, physical education, student confidence, and interactive learning media, limited to research articles published between 2019 and 2026, yielding 47 articles. ERIC searched for Nearpod in combination with self-efficacy, student confidence, or physical education, applying peer-reviewed and 2019–2026 publication filters, yielding 42 articles. ScienceDirect searched titles, abstracts, and keywords related to Nearpod, self-efficacy, student engagement, and digital learning, limited to research articles published between 2019 and 2026, yielding 35 articles. Sinta searched titles and abstracts using Nearpod, interactive learning media, self-efficacy, self-confidence, and physical education, limited to Sinta 1–4 journals published between 2019 and 2026, yielding 25 articles. The total of 247 articles corresponds to the Identification stage of the PRISMA 2020 flowchart (Figure 1).

Inclusion and Exclusion Criteria

Articles were selected using predefined inclusion and exclusion criteria. Inclusion criteria were: (1) published between 2019 and 2026; (2) written in Indonesian or English; (3) empirical studies, review articles, or systematic literature reviews published in scientific journals; (4) discussing Nearpod or interactive digital learning media in education; (5) addressing self-efficacy, self-confidence, learning motivation, or student engagement; (6) available in full text online; and (7) published in journals indexed by at least Sinta 3, DOAJ, Scopus, or Web of Science (Q1–Q4). Articles were excluded if they: (1) were not available in full text; (2) were conference proceedings, theses, dissertations, or non-peer-reviewed institutional reports; (3)

were not sufficiently relevant to Nearpod, self-efficacy, or Physical Education (PE); or (4) were duplicates across databases.

Article Selection Procedure

The article selection process followed four stages based on PRISMA 2020 guidelines. In the Identification stage, 247 articles were retrieved from five databases: Google Scholar (98), Scopus (47), ERIC (42), ScienceDirect (35), and Sinta (25). After removing duplicates, 189 articles remained. During Screening, titles and abstracts were reviewed, and 67 relevant articles were retained, while 122 were excluded due to irrelevant titles (n = 64), mismatched abstracts (n = 39), or unsuitable publication types (n = 19). In the Eligibility stage, full-text assessments resulted in the exclusion of 27 articles because they did not explicitly discuss self-efficacy (n = 12), had unavailable full texts (n = 8), or fell outside the publication year range (n = 7). Finally, 40 articles met the inclusion criteria and were included in the analysis. Of these, 10 highly relevant articles addressing Nearpod, self-efficacy, and physical education were selected for in-depth discussion.

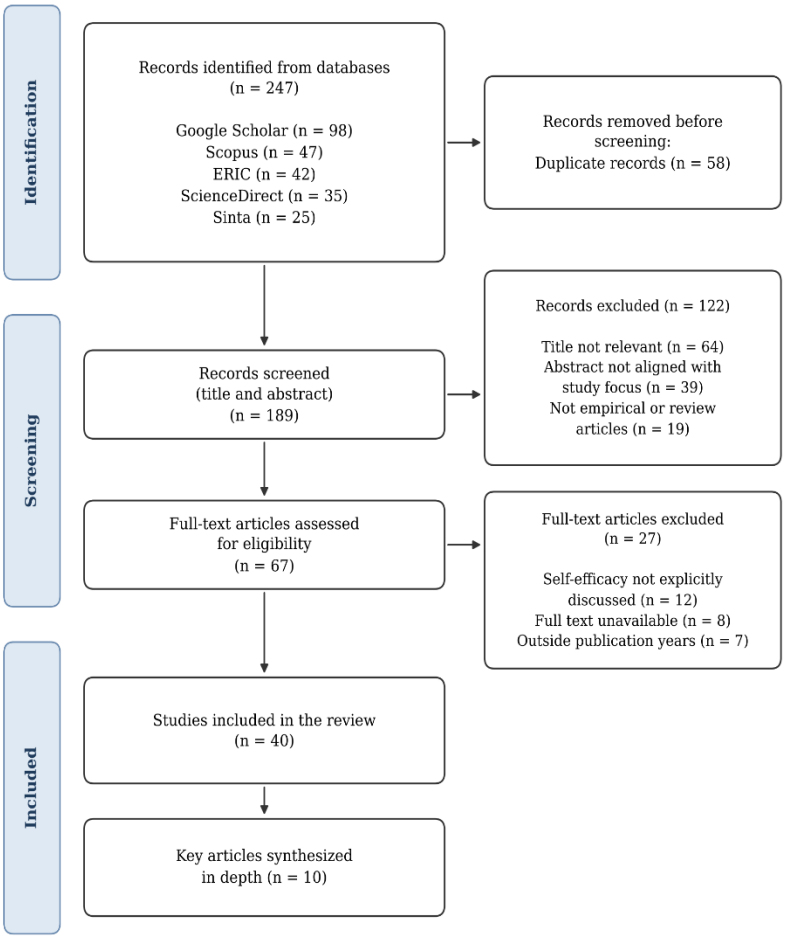


Figure 1. PRISMA 2020 flow diagram

Article Quality Assessment

Article quality assessment was conducted on the 40 articles that passed the eligibility stage using the Mixed Methods Appraisal Tool (MMAT). Each article was assessed based on five criteria: (1) clarity of the research objectives; (2) alignment of the research design with the objectives; (3) validity and reliability of the data collection instruments; (4) adequacy of data analysis; and (5) relevance of the findings to the study topic. The maximum score was 5 points per article. Articles with a score of ≥ 3 were retained for analysis, while those with a score of <

3 were excluded. Of the 40 articles evaluated, all met the minimum quality threshold, so all 40 were analyzed. Table 2 presents a summary of the data extraction for the 10 key articles that were the focus of the in-depth review, while Table 3 presents a comparative synthesis of these studies.

Data Extraction and Analysis

The data extraction process was conducted independently by two researchers using a standardized data extraction form. Data extracted from each article included: author names and year of publication, title and journal name, study design, participants/sample, variables studied, measurement instruments, main findings, and relevant conclusions. The extraction results were organized into a data extraction table (see Table 2: Summary of Supporting Literature). Data analysis was conducted using a thematic approach by identifying recurring themes emerging from the various studies, which were then synthesized to answer the research question regarding Nearpod's contribution to students' self-efficacy and self-confidence in Physical Education (PE) learning.

Position of This Article Relative to Previous Systematic Reviews

To more clearly highlight the novelty of this study, Table 1 compares this article with previous systematic reviews on related topics, namely a review on digital technology and self-efficacy in general (Prates et al., 2025), a review on digital storytelling and affective factors in language learning (Chi et al., 2025), and an article on interactive media in Physical Education (PE) learning that is not a systematic review but is relevant as a thematic comparison (Ridwan, 2026). This comparison confirms that the differences between this article and the prior literature lie not only in superficial topics but also in the scope of platforms, the targeted psychological constructs, the domains of learning, and the nature of the theoretical frameworks used.

Table 1. Comparison of This Article with Previous Systematic Reviews

Comparison Aspects	This Article	Prates et al. (2025)	Chi et al. (2025)	Ridwan (2026)
Type of study	Systematic literature review (PRISMA 2020)	Systematic review	Systematic review	Single-author research article (not a review)
Platform/Technology Focus	Specific to a single platform (Nearpod)	General: Digital technology in pre-service teacher education, without a single platform	General: digital storytelling, without a single platform	Interactive media in general, without a focus on Nearpod
Key psychological constructs	Self-efficacy (Bandura's four sources)	Engagement, social competence, and self-confidence (discussed together, not separately by construct)	General affective factors (motivation, anxiety), without Bandura's self-efficacy framework	General student motivation, without Bandura's self-efficacy framework
Learning domains	Physical Education (PE)	Pre-service teacher education (cross-subject)	Foreign Language Learning (EFL/ESL)	Physical Education (PE), but not a

Comparison Aspects	This Article	Prates et al. (2025)	Chi et al. (2025)	Ridwan (2026)
				systematic review
Theoretical Framework	Explicit mapping of Nearpod features to Bandura's (1997) four sources of self-efficacy	Technological Pedagogical Content Knowledge (TPACK), without a self-efficacy framework	Does not explicitly use Bandura's self-efficacy framework	Does not explicitly use Bandura's self-efficacy framework
The nature of novelty	First cross-section: Nearpod × self-efficacy × Physical Education; transparency regarding the nature of indirect inferences	The innovation lies in the contextual scope (teacher education), not in the platform or specific constructs	Innovations in digital storytelling elements for EFL/ESL, not in the platform or the construct of self-efficacy	Field data within a single Physical Education context; not a synthesis across studies

As shown in Table 1, the novelty of this article does not lie in the use of the SLR method itself since Prates et al. (2025) and Chi et al. (2025) are also systematic reviews— but rather in the specificity of the intersection of three variables (the Nearpod platform, Bandura's self-efficacy construct, and the PE domain), which have never been synthesized together in any previous review. This comparison also highlights the inherent limitations of this position: since no previous systematic review has directly examined the intersection of these three variables, this article essentially constructs a new synthesis from previously separate bodies of literature; thus, its claimed contribution is conceptual and integrative in nature and is not yet supported by an accumulation of direct empirical evidence, as explained in Table 3.

RESULTS

Table 2. Summary of Supporting Literature

Author & Year	Research Focus / Key Findings	Relevance to the Use of Nearpod & Confidence in Physical Education
Sucipto et al. (2025).	The implementation of the ARCS Flipped Classroom strategy using Nearpod significantly increased students' motivation to learn and their self-efficacy.	Provides empirical evidence that Nearpod is effective in boosting students' confidence in completing learning tasks.
Ridwan (2026)	Learning support and increased self-efficacy have a significant relationship with student engagement in physical education.	This demonstrates that, in the context of Physical Education, self-efficacy is key to students' active engagement.
Adebayo et al. (2024)	Interactive digital learning environments enhance motivation, engagement, and self-efficacy through collaborative activities.	Explaining that digital interactions reduce anxiety and make students feel more comfortable participating without feeling embarrassed,

Author & Year	Research Focus / Key Findings	Relevance to the Use of Nearpod & Confidence in Physical Education
Ren et al. (2025)	Digital competencies and perceptions of interactivity in technology-based learning contribute to increased self-efficacy.	Supports the argument that Nearpod's interactive features are a key driver of self-confidence.
Chi et al. (2025)	A systematic review shows that digital learning materials contribute to increased motivation, engagement, and self-confidence.	It provides a strong theoretical foundation for the idea that digital technology generally has a positive impact on students' affective aspects.
Yang et al. (2021)	Instructional models (such as cooperative learning) that increase participation and motivation have a positive impact on the effectiveness of physical education.	This is relevant because Nearpod facilitates collaborative learning that supports the mastery of motor skills.
Azahari (2025)	Educational technology has a positive relationship with self-efficacy and student engagement in online learning.	Strengthening the link between active engagement on digital platforms and increased student self-confidence.
Huang (2021)	Technology-based learning projects increase students' engagement in learning and their confidence in demonstrating their abilities.	Supports the idea that successful experiences through digital media build students' confidence.
Bintoro et al. (2024)	Nearpod influences elementary school students' motivation and academic achievement through its interactive features.	Demonstrating Nearpod's flexibility across various levels of education to foster engagement.

Table 3. Comparative Synthesis: Convergences, Contradictions, and Gaps in the Literature

Theme/Dimension	Common Ground Across Studies (Convergence)	Differences, Contradictions, or Gaps	Implications for the Synthesis
The Effect of Nearpod on Self-Efficacy	Sucipto et al. (2025), Ren et al. (2025), and Huang (2021) agree that engagement with interactive digital media is associated with increased self-efficacy.	Most of these studies (Ren et al., 2025; Huang, 2021) did not examine Nearpod directly but rather digital technology in general. Only Sucipto et al. (2025) specifically used Nearpod, and their design was a small-scale (one-class) classroom action research study, not a controlled experiment.	The claim that "Nearpod increases self-efficacy" remains an indirect inference (derived from the literature on similar digital media), rather than direct evidence accumulated from numerous studies on Nearpod itself.
Engagement and Learning Motivation	Adebayo et al. (2024), and Bintoro et al. (2024), consistently report a positive relationship between interactive media and student engagement/motivation.	The contexts are diverse and not comparable: Bintoro et al. (2024) studied elementary school students in general online learning, whereas this article focuses on Physical Education (PE) at levels that are not always the same. This cross-level generalization has not yet been empirically tested in a single research design.	The convergence of findings reflects general patterns in interactive learning technologies rather than the specific effects of Nearpod on Physical Education; cross-grade-level comparisons should be interpreted with caution.

Theme/Dimension	Common Ground Across Studies (Convergence)	Differences, Contradictions, or Gaps	Implications for the Synthesis
Relevance to Physical Education Specifically,	Ridwan (2026) and Yang et al. (2021) demonstrate that self-efficacy and active participation play a crucial role in Physical Education learning.	Neither of these studies tested Nearpod at all; Ridwan (2026) discussed interactive media in general within Physical Education, while Yang et al. (2021) examined cooperative learning without the involvement of digital technology. None of the 10 key articles directly combined all three elements (Nearpod + self-efficacy + Physical Education).	This is the core gap acknowledged by this article itself in the Introduction: The Nearpod × self-efficacy × PE synthesis is constructed from the integration of three separate bodies of literature, rather than from a study that tests all three simultaneously.
Mechanisms via Bandura's self-efficacy theory	Ren et al. (2025) support the idea that digital interactivity can facilitate the sources of self-efficacy formation.	The linking of Bandura's four sources (mastery experience, vicarious experience, social persuasion, physiological states) to Nearpod's features in this article represents the author's conceptual argument, not findings directly reported by the cited studies. None of the studies in the table measured these four sources separately among Nearpod users.	Bandura's framework serves as a reasonable interpretive lens, but it must be explicitly stated as the author's conceptual mapping, not as verified empirical results.

Table 2 above summarizes the findings of each article separately. To fulfil the review's objective as a synthesis, Table 3 above compares these findings across studies, highlighting both commonalities and differences, and identifies the extent to which the existing literature truly addresses specific questions regarding Nearpod, self-efficacy, and physical education simultaneously.

A comparison across the literature reveals a consistent yet not entirely homogeneous pattern. Studies that directly used or tested Nearpod (Sucipto et al., 2025; Banjarnahor & Tarigan, 2023; Bintoro et al., 2024) tended to report positive results regarding motivation, engagement, and learning outcomes. However, many studies cited to link Nearpod with self-efficacy (Ren et al., 2025; Huang, 2021; Yuerong et al., 2024) examined digital learning media or environments in general, rather than Nearpod specifically. In other words, the synthesis in this article relies on combining two bodies of literature with different research focuses, so the strength of its inference is indirect and must be explicitly stated as a limitation of the study.

A more fundamental contradiction arises at the intersection of the three main variables: Nearpod, self-efficacy, and Physical Education (PE). None of the ten main articles examined all three simultaneously within a single research design. Articles discussing Nearpod (Sucipto

et al., 2025; Banjarnahor & Tarigan, 2023) were generally conducted in subjects other than Physical Education, while articles discussing self-efficacy in the context of Physical Education (Ridwan, 2026; Xu et al., 2025; Yang et al., 2021) did not include Nearpod as a variable or intervention. This gap is the primary reason why this systematic review is necessary; however, it also constitutes a significant limitation that restricts the conclusions: the relationship between Nearpod and increased self-efficacy among Physical Education students in this review is a theoretical hypothesis constructed through literature triangulation, not a generalization from direct empirical findings.

From a methodological perspective, the variation in research designs across the reviewed literature also limits the strength of the synthesis. Some studies were small-scale classroom action research involving a single group (Sucipto et al., 2025), others were cross-sectional correlational surveys (Ren et al., 2025; Xu et al., 2025), and still others were systematic reviews without new primary data (Prates et al., 2025). This diversity in study designs makes direct comparisons between studies methodologically unequal; therefore, the synthesis in the Results and Discussion section of this article is best understood as a thematic narrative synthesis rather than an accumulation of generalizable quantitative evidence.

Based on a review of various literature meeting the inclusion criteria, several findings were identified that illustrate the potential of the Nearpod learning platform to enhance students' self-confidence in Physical Education (PE) learning. These findings are grouped into the following four main themes.

Characteristics and Interactive Features of Nearpod

The results of the literature review indicate that Nearpod is a digital learning platform that excels at creating two-way interaction between teachers and students. Various available features, such as interactive quizzes, polls, virtual reality (VR) field trips, interactive videos, collaboration boards, and educational games, have been shown to encourage active student engagement during the learning process (Bintoro et al., 2024; Banjarnahor & Tarigan, 2023). These features allow each student to participate individually or in groups without feeling pressured by peer assessment.

Another advantage of Nearpod lies in its ability to provide real-time feedback to students. This feedback helps students instantly gauge their level of understanding, thereby fostering curiosity and motivation to continue learning. The availability of a self-paced learning mode also allows students to learn at their own pace and in their preferred learning style, which has a positive impact on reducing anxiety and boosting self-confidence (Sucipto et al., 2025).

The Impact of Nearpod on Self-Efficacy and Self-Confidence

Findings from various studies consistently show that the use of Nearpod contributes to an increase in students' self-efficacy. Sucipto et al. (2025) found that the implementation of Nearpod, combined with the ARCS Flipped Classroom strategy, significantly increased students' learning motivation and self-efficacy. This increase in self-efficacy is reflected in students' growing confidence in their ability to complete learning tasks.

The study results also show that interactive digital learning environments, such as those facilitated by Nearpod, can reduce students' anxiety about expressing their opinions and answering questions. This contrasts with conventional learning, where students often feel shy or afraid of making mistakes in front of their peers. Through Nearpod, interactions take place

digitally, allowing students to feel safer and more comfortable participating (Adebayo et al., 2024).

Student Engagement and Learning Motivation in Physical Education

A review of the literature reveals that the use of interactive digital learning media consistently increases student engagement and learning motivation. In the context of Physical Education (PE), Xu et al. (2025) demonstrated that learning support and increased self-efficacy are significantly associated with student engagement in physical education. Students with high self-efficacy exhibit more active engagement, greater courage to try new skills, and better performance in physical activities.

The findings of Yang et al. (2021) reinforce this by showing that cooperative learning models in physical education can simultaneously improve students' mastery of motor skills and their motivation to learn. When this cooperative model is facilitated by interactive media such as Nearpod, the potential for increasing students' self-confidence in physical education becomes even greater.

The Relevance of Nearpod to Self-Efficacy Theory

From the perspective of Bandura's theory of self-efficacy, there are four primary sources of self-confidence formation: mastery experience (experiences of success), vicarious experience (observation of others), social persuasion, and physiological states. A review of the literature indicates that Nearpod has the potential to facilitate all four of these sources. The interactive quiz and assessment features provide immediate experiences of success; demonstration videos allow students to observe good examples; teacher feedback via the platform provides social persuasion; and a fun learning environment reduces students' physiological anxiety (Ren et al., 2025).

DISCUSSION

Nearpod, Self-Efficacy, and Student Confidence

Nearpod supports interactive learning through quizzes, polls, educational games, videos, and collaboration boards. These features encourage active participation. Sucipto et al. (2025) found that combining Nearpod with the ARCS Flipped Classroom strategy improved students' learning motivation and self-efficacy. Bintoro et al. (2024) also reported increased engagement and participation through Nearpod's interactive features. Similarly, a systematic review by Prates et al. (2025) found that digital learning technologies can support students' self-efficacy, engagement, and social competence. Together, these findings suggest that interactive technology may strengthen students' confidence in their academic abilities.

Ren et al. (2025) found that digital competence and perceived interactivity in technology-based learning are associated with higher self-efficacy. Adebayo et al. (2024) likewise explained that collaborative, student-centered digital environments can improve motivation, engagement, and self-efficacy. In physical education, self-efficacy is related to students' willingness to try new skills, participate in physical activities, and improve their performance. Learning media that support self-efficacy may therefore help students become more confident in PE lessons. Sucipto et al. (2025) reported that Nearpod significantly increased students' self-efficacy. Students with stronger self-efficacy are more likely to believe they can complete learning tasks and achieve goals. In physical education, this may be reflected

in greater willingness to practise new movements, join group activities, and participate without excessive fear of failure.

Nearpod may also create a more comfortable learning environment. Using digital devices to answer questions or share opinions can reduce embarrassment when students make mistakes. This may be particularly helpful in PE classes for students who are passive or lack confidence when performing in front of classmates. Learning motivation is another factor related to students' self-confidence. When students are interested and motivated, they are more likely to try the activities assigned by teachers. Nearpod's interactive tools may support motivation and engagement; repeated participation and positive learning experiences may, in turn, strengthen students' confidence in PE.

Why Nearpod May Support Self-Confidence

Nearpod may support self-confidence through three key mechanisms. First, responding on personal devices can provide a degree of privacy and reduce fear of public embarrassment. Second, immediate feedback confirms successful responses and can strengthen students' belief in their abilities. These repeated successes reflect "mastery experiences," the strongest source of self-efficacy in Bandura's theory (Ren et al., 2025; Sucipto et al., 2025). Third, gamification features such as "Time to Climb" make assessment more enjoyable and may reduce pressure associated with tests. These features may be especially useful in PE, where motor skills are often performed and assessed in front of peers.

Conceptual Model: Bandura's Four Sources of Self-Efficacy

This article proposes a conceptual model based on Bandura's (1997) four sources of self-efficacy to explain how Nearpod may support students' self-confidence in Physical Education (PE). The model is a theoretical synthesis, not a direct empirical finding. It connects research on Nearpod, interactive digital learning, and self-efficacy by mapping mastery experience, vicarious experience, social persuasion, and physiological states to Nearpod features and the needs of physical education.

Mastery Experience

Bandura (1997) identifies mastery experience—success achieved through one's own effort—as the strongest source of self-efficacy. Success can strengthen belief in one's ability, whereas repeated failure without support may weaken confidence. Nearpod quizzes and open-ended questions allow students to respond individually and receive immediate feedback. Confirmation of correct answers may reinforce their belief that they can complete learning tasks. Sucipto et al. (2025) found that students' self-efficacy scores increased from before the intervention through the end of the Nearpod-based learning cycle. Gamification, including "Time to Climb" and educational games, can also make assessment feel more like achievement than a threat. In PE, success in answering questions about movement techniques may help students feel prepared to practise those skills physically (Ren et al., 2025; Xu et al., 2025).

Vicarious Experience

Vicarious experience develops when people observe others with whom they identify successfully completing a task. Bandura (1997) describes this as social modeling: seeing a similar person succeed may lead learners to believe that they can succeed too. This is relevant to PE students who have limited sporting experience and may hesitate to try unfamiliar movements. Nearpod's interactive videos and VR Field Trip simulations can include demonstrations by teachers, athletes, or peers. These examples may help students form a mental

model of the movement and believe they can learn it. Yuerong et al. (2024) found that social presence and engagement in digital learning communities positively contribute to perceived competence, which is conceptually consistent with vicarious experience. Teachers can use Nearpod to show demonstrations of skills such as the long jump, volleyball spike, or swimming strokes before practical sessions (Adebayo et al., 2024; Xu et al., 2025).

Social Persuasion

Social persuasion involves encouragement from significant people, including teachers, peers, and parents. Bandura (1997) notes that although it is less powerful than mastery experience, sincere and consistent encouragement can improve a person's belief in their ability. Nearpod's Collaboration Board allows teachers and students to share responses, comments, and appreciation in real time. This supportive digital space may reduce barriers to participation. Teacher feedback, scores, and positive reactions can also provide students with timely affirmation. Ren et al. (2025) found that perceived interactivity, including feedback and responsiveness, contributes to self-efficacy. Azahari (2025) likewise reported a positive relationship between active engagement on digital platforms and self-efficacy. In PJOK, digital encouragement may be particularly useful for students who feel anxious about being evaluated, helping them gain confidence before practising skills in the field (Adebayo et al., 2024; Bintoro et al., 2024).

Physiological States

Physiological states concern how people interpret physical and emotional responses as signs of their ability. Bandura (1997) explains that anxiety, muscle tension, a rapid heartbeat, and cold sweats may be interpreted as signs of incompetence and reduce self-efficacy. This is important in PE, where students may feel anxious when demonstrating motor skills in front of classmates and teachers. Nearpod may help by moving some assessment and response activities to personal devices, reducing the pressure of public mistakes. Its gamification features, including "Time to Climb" and point-based games, may also make assessment more enjoyable and less threatening. Suriani (2025) reported in a systematic review that digital learning media can improve affective outcomes, including anxiety and psychological well-being. Adebayo et al. (2024) also found that interactive, learner-centered digital environments can reduce anxiety about expressing opinions and participating. For students who fear negative judgment during physical activities, a supportive Nearpod-based classroom experience may help build the confidence to try (Xu et al., 2025; Yang et al., 2021).

Integrating the Four Sources

Nearpod may support self-efficacy through all four sources at once. Quizzes and feedback provide mastery experiences; videos and movement demonstrations support vicarious experience; collaboration and encouragement enable social persuasion; and enjoyable, low-pressure activities may support more positive physiological states. These processes can reinforce one another: a safer digital environment supports observation, repeated success, and positive feedback, which may gradually strengthen confidence in PE. The value of Nearpod therefore lies not only in its range of features but also in its potential to activate the four sources of self-efficacy within one platform (Adebayo et al., 2024; Bandura, 1997; Ren et al., 2025; Sucipto et al., 2025).

Nearpod Compared with Other Learning Platforms

Nearpod also differs from learning management systems (LMSs) such as Google Classroom, Moodle, Canvas, and Edmodo. These platforms commonly focus on distributing tasks, managing content, and supporting asynchronous assessment. Nearpod is designed around interactive presentations that combine instruction, participation, and real-time assessment (Bintoro et al., 2024). Its live sessions, immediate feedback, virtual reality simulations, and gamification can support active participation and create conditions that may foster self-confidence (Ren et al., 2025; Sucipto et al., 2025).

Implications for Physical Education

Nearpod may benefit PE in several ways. Demonstration videos can help students visualise movement techniques before practising them (Xu et al., 2025). Individual quizzes and polls offer a lower-pressure way to check understanding of movement concepts. Virtual reality simulations may let students explore movements and sport strategies before attempting them physically. Student-paced activities can also accommodate different ability levels and help students with less-developed motor skills avoid feeling excluded. Thus, Nearpod may support not only cognitive understanding but also the confidence and willingness to participate that contribute to PE learning (Ridwan, 2026; Xu et al., 2025; Yang et al., 2021).

Limitations, Contradictory Findings, and Implementation Barriers

Despite these potential benefits, the evidence is not uniformly positive. Ren et al. (2025) reported that high digital stress weakens the indirect relationship between digital interactivity and self-efficacy. Students with limited digital literacy or technology fatigue may experience more anxiety rather than less. Moreover, none of the ten key articles reviewed directly examined the conditions in which Nearpod fails to improve self-efficacy. Its benefits should therefore be understood as a general pattern in the available literature, not a guarantee for every student or classroom.

Digital readiness is another important barrier. Polat (2024) reported variations in digital readiness among vocational students in Nigeria, which may hinder mobile learning. Nearpod requires access to personal devices or computer labs and a stable internet connection. Its benefits may be limited in schools with insufficient devices, unreliable internet access, or limited budgets for premium features, such as virtual reality simulations and *Time to Climb*. When teachers operate Nearpod on a single device connected to a projector, students may have fewer opportunities to respond individually and maintain partial anonymity. These features may help support self-efficacy. Such challenges are particularly relevant in schools with limited internet access and operational funding.

The practical setting of PE creates additional challenges. Lessons often take place on fields, in gymnasiums, or at swimming pools where Wi-Fi may be weak. Using smartphones during physical activity may also create safety risks, damage devices, or distract students from instructions. Consequently, Nearpod may be more practical for theory sessions before or after field activities than during movement practice itself, limiting opportunities for real-time mastery experiences. PE teachers may also have limited preparation time or lack the digital skills needed to use advanced features such as virtual reality and collaboration boards. Effective implementation therefore depends on teacher training and readiness as well as platform features.

These limitations mean that Nearpod's contribution to students' self-confidence in PE should be considered a potential rather than a universal effect. Its impact depends on school

infrastructure, students' and teachers' digital literacy, the practical demands of PE lessons, and students' ability to manage digital learning environments. Implementation should therefore reflect local resources and needs rather than follow a uniform approach.

Study Limitations

This study has several limitations. First, no empirical study has directly examined Nearpod, self-efficacy, and PE learning together in a single research design; the proposed relationship is therefore a theoretical synthesis rather than a result of direct field testing. Second, the reviewed studies vary in design (quantitative, qualitative, and mixed methods), population, educational level, and subject, requiring caution when comparing or generalising findings. Third, much of the evidence is indirect, coming from subjects other than PE or from research on self-efficacy in digital learning more broadly. Fourth, publication bias cannot be ruled out because positive and statistically significant findings may be more likely to be published than neutral or negative results. Finally, the search was limited to Google Scholar, ERIC, Scopus, ScienceDirect, and Sinta, so relevant studies indexed elsewhere may have been missed. These limitations highlight the need for empirical studies that directly investigate Nearpod, self-efficacy, and physical education, as discussed in the Conclusion.

CONCLUSION

This review suggests that Nearpod may support students' self-efficacy in Physical Education (PE) through interactive learning, immediate feedback, and Bandura's four sources of self-efficacy: mastery experiences, vicarious experiences, social persuasion, and positive physiological and emotional states. Features such as quizzes, demonstration videos, virtual reality simulations, and peer interaction may help build students' confidence and create a supportive learning environment.

Teachers can integrate Nearpod according to lesson objectives. Interactive videos and quizzes can support volleyball learning, while demonstration videos and Collaboration Boards can assist track and field instruction. In badminton and table tennis, polls and educational games such as "Time to Climb" can assess students' understanding of techniques, tactics, and rules. Quizzes, polls, and open-ended questions can also support formative assessment. Schools should ensure adequate digital access and consider alternatives, such as teacher-operated devices and projectors, where resources are limited. Self-efficacy should also be considered alongside motor skills and cognitive knowledge when evaluating PE learning.

Further empirical research is needed to test Nearpod's effectiveness in improving self-efficacy in actual PE settings. Experimental studies using pretest–posttest control groups and separate measures of Bandura's four sources of self-efficacy could provide stronger evidence. Studies across different educational levels, cultural contexts, and physical activities are also needed to assess the generalizability of the findings.

ETHICAL STATEMENT

This article is a systematic literature review of previously published studies and did not involve human participants or the collection of primary data; therefore, ethical approval was not required.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in this research.

AUTHOR CONTRIBUTIONS

N. N.: Conceptualization, Methodology, Investigation, Writing – original draft. M. M. F.: Methodology, Formal analysis, Data curation. F. A. N.: Validation, Supervision, Writing – review & editing. M. I.: Investigation, Resources, Data curation. R. K.: Supervision, Project administration, Writing – review & editing. All authors reviewed and approved the final version of the manuscript.

AI DISCLOSURE STATEMENT

The authors used AI-based tools, namely ChatGPT and Grammarly, for language editing, structural improvement, and readability checking. All scientific content, data analysis, interpretation of findings, citations, and conclusions were reviewed and validated by the authors. The authors take full responsibility for the accuracy and integrity of the article content.

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