Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

CONTEXTUAL-BASED LEARNING MODEL WITH PEER TUTORING IN STRENGTHENING JUNIOR HIGH SCHOOL STUDENTS' NUTRITION LITERACY

Ahmad Imam Khairi[1a*], A. Fatikhul Amin Abdullah[2b], Agung Dwi Bahtiar El Rizaq[3c], Febrihada Gahas Chandramukti[4d], Dwi Yanuar Prasetyo[5e]

[12345]Prodi Tadris IPS, Fakultas Tarbiyah dan Ilmu Keguruan, Universitas Islam Negeri Madura, Pamekasan, Indonesia

[a]*E-mail:* ahmadimamkhairi@uinmadura.ac.id ,
[b]*E-mail:* fatikhul@iainmadura.ac.id
[c]*E-mail:* elrizaq@iainmadura.ac.id ,
[d]*E-mail:* febrihada@iainmadura.ac.id
[e]*E-mail:* 23381081011@student.iainmadura.ac.id

(*) Corresponding Author
ahmadimamkhairi@uinmadura.ac.id

ARTICLE HISTORY
Received : 19-05-2026
Revised : 21-07-2026
Accepted : 08-09-2026

KEYWORDS
Contextual-Based Learning; Nutrition Education; Nutrition Literacy; Peer Tutoring; Stunting

ABSTRACT
Nutritional challenges among Indonesian adolescents remain a strategic concern in national health development, particularly amid the persistence of the double burden of malnutrition. While efforts to reduce stunting continue, increasing obesity rates linked to high consumption of sugar, salt, and fat highlight the need for contextualized nutrition education. This study aimed to examine changes in students' nutrition literacy following the implementation of a Contextual-Based Learning (CBL) model integrated with peer tutoring at SMPN 1 Pamekasan. A pre-experimental one-group pretest–posttest design was employed involving 200 students in grades VII and VIII. Data were collected through nutrition literacy tests, attitude questionnaires, classroom observations, and interviews, and analyzed using paired sample t-tests and qualitative analysis. The results showed a statistically significant improvement in students' nutrition literacy scores and attitudes ($p < 0.05$). Students demonstrated better abilities in interpreting nutrition labels, selecting healthier foods, and applying the "Isi Piringku" guideline in daily practices. Qualitative findings indicated that contextual and collaborative learning enhanced student engagement and awareness of healthy behaviors. Overall, the implementation of the CBL model with peer tutoring was associated with improvements in nutrition literacy and shows potential as a school-based nutrition education strategy in high-risk regions.

This is an open access article under the CC–BY-SA license.

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

INTRODUCTION

Adolescent nutrition remains a strategic concern in Indonesia's human resource development agenda. While national initiatives continue to focus on reducing stunting prevalence, a parallel challenge has emerged in the form of rising obesity rates among school-aged children. This situation reflects the double burden of malnutrition, characterized by the coexistence of undernutrition and overnutrition within the same population. According to the Global Nutrition Report (WHO, 2022), the double burden of malnutrition constitutes a major challenge for developing countries due to its long-term implications, including reduced productivity, heightened risk of non-communicable diseases, and the deterioration of overall quality of life among younger generations. In Indonesia, the Indonesian Health Survey (Kementerian Kesehatan Republik Indonesia (Kemenkes RI), 2023) reports that stunting prevalence remains at 21.5%, while adolescent obesity has increased markedly from 9.2% in 2018 to 13.8% in 2023. These trends underscore the urgent need for nutrition education interventions that extend beyond knowledge acquisition and promote sustained behavioral change toward healthier dietary practices.

Schools occupy a strategic position in supporting these efforts, as they function not only as institutions for knowledge transmission but also as environments that shape character and cultivate healthy lifestyle habits (Nizar et al., 2025). Adolescence particularly at the junior secondary level represents a critical stage in physical, psychological, and social development that significantly influences health outcomes in adulthood (Prabowo, 2016; Savitri & Listiyandini, 2017). Nevertheless, numerous studies indicate that the implementation of nutrition education in schools continues to face substantial challenges. Many programs remain predominantly didactic and fail to meaningfully connect instructional content with students' real-life contexts (Kristanti & Sebtalesy, 2021). In fact, nutrition literacy extends beyond cognitive understanding; it encompasses the capacity to critically evaluate information, make informed decisions, and translate knowledge into everyday dietary practices (Nutbeam, 2008; Velardo, 2015). Empirical evidence from Koca and Arkan (Koca & Arkan, 2020) as well as Topan et al. (Topan et al., 2023) confirms that low levels of adolescent nutrition literacy are associated with frequent consumption of foods high in sugar, salt, and fat, along with limited awareness of reading nutrition labels prior to purchase.

A growing body of research has introduced innovative approaches to nutrition education. Putri et al. (Putri et al., 2024) demonstrated that the implementation of Contextual-Based Learning (CBL) in science instruction enhanced students' analytical abilities in evaluating the nutritional content of foods. Similarly, Lee et al. (Lee et al., 2022) reported that culturally contextualized nutrition education effectively improved healthy dietary behaviors among adolescents in South Korea. In parallel, Topping (Topping, 2015) and Tanan et al. (Tanan et al., 2024) found that peer tutoring strategies significantly increased student participation, motivation, and knowledge retention in health education settings. Despite these promising findings, most studies have examined CBL and peer tutoring as separate pedagogical approaches. Limited research has explored their integration as a comprehensive and synergistic educational intervention within school-based nutrition education, particularly in the Indonesian context.

A growing body of research has introduced innovative approaches to nutrition education. Studies have shown that Contextual-Based Learning (CBL) enhances students' ability to connect academic concepts with real-life situations, thereby improving analytical and applied competencies in nutrition (Lee et al., 2022; Putri et al., 2024). In parallel, peer tutoring has been found to strengthen student engagement, motivation, and knowledge retention through collaborative interaction (Tanan et al., 2024; Topping, 2015).

However, existing studies have largely examined these approaches in isolation, focusing either on contextual learning or peer-assisted strategies without systematically integrating both within a unified instructional framework. This separation overlooks the potential pedagogical synergy between contextualization and social interaction, as suggested by social constructivist theory, which emphasizes that meaningful learning occurs through the interaction between experience and collaboration. Consequently, limited empirical evidence is available regarding how the integration of CBL and peer tutoring may jointly facilitate not only cognitive gains but also the development of attitudes and real-life dietary practices.
Furthermore, prior research has paid insufficient attention to the role of local socio-cultural contexts in shaping nutrition literacy, despite evidence that dietary behavior is strongly influenced by social environment and cultural practices (Ayanti et al., 2025; Setianingsih et al., 2023). This gap indicates the need for a more integrative and context-sensitive instructional model that combines experiential learning with peer-mediated interaction.

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

Accordingly, this study proposes the integration of Contextual-Based Learning and peer tutoring as a pedagogical model that combines experiential learning with collaborative interaction to strengthen nutrition literacy among adolescents. This integrative approach is expected to address limitations in previous studies by simultaneously targeting cognitive understanding, affective engagement, and behavioral application within a socio-cultural learning context.
Based on this rationale, the study aims to examine changes in students' nutrition literacy, attitudes, and dietary practices following the implementation of a Contextual-Based Learning model integrated with peer tutoring.

METHOD

This study employed a quantitative approach using a pre-experimental one-group pretest–posttest design (Stratton, 2019). This design was selected because it allows for the observation of changes in students' learning outcomes before and after the implementation of the intervention, albeit in the absence of a control group. The approach was considered appropriate given the study's objective of evaluating the effectiveness of a Contextual-Based Learning (CBL) model integrated with peer tutoring in enhancing students' nutrition literacy. The model was implemented as an instructional intervention, and its impact was assessed by comparing pretest and posttest scores to determine improvements in students' knowledge, attitudes, and dietary practices.

The study was conducted at SMP Negeri 1 Pamekasan, Pamekasan Regency, East Java Province, during the first semester of the 2025/2026 academic year. The school was purposively selected due to its characteristics aligned with the focus of the research, including active participation in school-based nutrition programs, the implementation of the government-supported Free Nutritious Meal (MBG) initiative, and a strong institutional commitment to innovation in health education. Furthermore, Pamekasan Regency reports a relatively high stunting prevalence of 25.1% [2], rendering it a representative setting for examining efforts to strengthen nutrition literacy through a contextualized educational approach.

From the total sample, 15 students were appointed as peer tutors through a structured selection process. Initially, supervising teachers nominated potential candidates based on academic performance records and classroom participation. Subsequently, shortlisted students underwent further screening based on three operational criteria: (1) demonstrated academic achievement (top 20% of class ranking), (2) communication skills assessed through classroom interaction and teacher evaluation, and (3) willingness to participate as indicated through informed consent. Final selection was confirmed through a brief orientation session to assess students' readiness to facilitate peer learning activities.

The research was conducted over a three-month period, encompassing preparation, implementation, and evaluation phases. The preparatory phase involved the development of research instruments, validity and reliability testing, and training sessions for peer tutors and supervising teachers.

During the implementation phase, activities commenced with the administration of a pretest to assess students' baseline nutrition literacy and attitudes. This was followed by the application of the peer-assisted Contextual-Based Learning model across six instructional sessions. Each session lasted two class periods (2 × 40 minutes) and addressed distinct topics, including balanced nutrition concepts, the importance of breakfast, healthy snack selection, nutrition label interpretation, application of the "Isi Piringku" (My Plate) principle, and practical evaluation of the Free Nutritious Meal (MBG) menu provided at school.

The instructional activities were designed in accordance with the principles of Contextual-Based Learning by explicitly linking academic content to students' everyday experiences. For instance, during the session on nutrition label interpretation, students were asked to bring packaged food products from home and directly analyze the nutritional information displayed. Peer tutors facilitated small-group discussions, assisted their classmates in understanding key nutritional terminology, and illustrated concepts through relevant personal experiences. Meanwhile, supervising teachers functioned as facilitators, ensuring the smooth implementation of activities, providing constructive feedback, and assessing students' participation and motivation throughout the learning process.

The evaluation phase was conducted through the administration of a posttest to measure changes in learning outcomes following the intervention. In addition, direct classroom observations, completion of nutrition attitude questionnaires, and semi-structured interviews with students and supervising teachers were undertaken to obtain complementary qualitative data. Accordingly, the study findings encompass three interrelated dimensions: the cognitive

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

domain (nutrition knowledge), the affective domain (attitudes toward healthy eating), and the psychomotor domain (healthy dietary practices).

The research instruments comprised three primary components: a nutrition literacy test, a nutrition attitude questionnaire, and a classroom observation sheet. The nutrition literacy test consisted of 25 items (20 multiple-choice questions and 5 short-response items) developed based on balanced nutrition competency indicators. The instrument underwent validity and reliability testing through a pilot study involving 30 students outside the research sample, yielding a Cronbach's Alpha coefficient of 0.87, indicating high internal consistency. The nutrition attitude questionnaire employed a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), encompassing dimensions of awareness, behavioral intention, and social norms. This instrument demonstrated a reliability coefficient of 0.89. The observation sheet was used to assess students' engagement, motivation, collaboration, and conceptual understanding during the learning process, as well as to document the interaction dynamics between peer tutors and group members.

In addition to reliability testing, content validity of the instruments was established through expert judgment. The nutrition literacy test and attitude questionnaire were reviewed by three experts in nutrition education and educational measurement to ensure the alignment of items with the intended constructs and learning objectives. Revisions were made based on their feedback to improve clarity, relevance, and representativeness of the items.

To complement and enrich the quantitative findings, the study incorporated in-depth interviews with six students, three peer tutors, and two supervising teachers. These interviews were conducted to explore participants' perceptions of the effectiveness of the CBL model and their lived learning experiences throughout the intervention. Data triangulation was employed to enhance the validity and credibility of the findings by integrating multiple sources and methods of data collection.

Quantitative data were analyzed using paired sample t-tests with the assistance of the Statistical Package for the Social Sciences (SPSS) version 26 to determine significant differences between pretest and posttest scores (Marsden & Torgerson, 2012). This analysis was intended to measure the mean improvement in students' nutrition literacy and attitudes following the intervention. Qualitative data were examined using the interactive model proposed by Miles and Huberman (Miles, M.B., Huberman, A.M. and Saldana, 2014), which comprises three principal stages: data reduction, data display, and conclusion drawing. The integration of these analytical approaches was designed to provide a comprehensive understanding of the effectiveness of the contextual, peer-assisted learning model in strengthening nutrition literacy among junior secondary school students.

The integration of quantitative and qualitative data was conducted using a convergent triangulation approach. Quantitative findings from the pretest–posttest analysis was used to identify patterns of change in students' nutrition literacy and attitudes, while qualitative data from interviews and observations were employed to explain and contextualize these changes. Specifically, qualitative insights were used to interpret how and why improvements occurred, thereby enriching the statistical results with participants' lived experiences. This integrative approach enhances the overall validity of the findings by linking numerical trends with contextual explanations.

RESULT AND DISCUSSION

Result

Overview of Students' Nutrition Literacy and Attitudes

The findings indicate that prior to the implementation of the peer-assisted Contextual-Based Learning (CBL) model, the nutrition literacy level of students at SMPN 1 Pamekasan was moderate. Based on the pretest results administered to 200 students, the mean nutrition literacy score was 65.3 on a 100-point scale. Most students demonstrated a basic understanding of fundamental concepts, such as the functions of carbohydrates and proteins, yet were unable to effectively relate this knowledge to their daily dietary practices. Moreover, only 28% of students reported consistently reading nutrition labels before purchasing packaged foods, suggesting limited application of nutritional knowledge in real-life consumption decisions.

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

In the attitudinal dimension, questionnaire results revealed that the majority of students held positive views regarding the importance of nutritious foods; however, these attitudes were not consistently reflected in their daily eating behaviors. Approximately 41% of students reported frequently purchasing fast-food snacks from the school canteen without considering their nutritional content. These findings suggest that although theoretical awareness of nutrition is present, meaningful behavioral change toward healthier consumption patterns requires a more practical and contextually grounded instructional approach.

Following the implementation of the peer-assisted Contextual-Based Learning model across six instructional sessions, a significant improvement was observed in both students' nutritional knowledge and attitudes. The mean posttest score increased to 83.7, reflecting a statistically significant gain as confirmed by the paired sample t-test ($t = 9.32$; $p < 0.05$). The most substantial improvements were identified in students' ability to interpret nutrition labels, distinguish between healthy and unhealthy foods, and determine balanced portion sizes in accordance with the "Isi Piringku" (My Plate) guideline. In addition, the average nutrition attitude score increased by 15.4 points compared with the pretest results, indicating a positive shift in students' awareness and behavioral intentions toward healthier dietary practices.

To ensure clarity in data interpretation, this study employed multiple measurement indicators across different scales. Nutrition literacy and attitude scores were measured on a 0–100 scale to capture overall cognitive and affective changes, while classroom observation data were assessed using a 4-point Likert scale to evaluate behavioral engagement and participation. In addition, percentage-based indicators were used to reflect specific behavioral practices, such as reading nutrition labels and food selection habits. These complementary measures were not intended to be directly compared numerically but rather to provide a multidimensional assessment of changes in students' nutrition literacy across cognitive, affective, and behavioral domains.

Table 1. Comparison of Pretest and Posttest Results of Students' Nutrition Literacy at SMPN 1 Pamekasan

Measured Aspect	Indicator	Pretest (n = 200)	Posttest (n = 200)	Δ (Increase)	t-value	Sig. (p)	Interpretation
Nutrition Knowledge	Mean nutrition literacy score (0–100 scale)	65.3	83.7	+18.4	9.32	< 0.05	Statistically significant improvement
Reading nutrition labels before purchasing food (%)	28%	61%	+33%	–	–	Significant increase	–
Distinguishing between healthy and unhealthy foods (%)	52%	85%	+33%	–	–	Significant increase	–
Determining balanced portions ("Isi Piringku") (%)	46%	81%	+35%	–	–	Significant increase	–
Nutrition Attitudes	Mean attitude score (0–100 scale)	68.6	84.0	+15.4	8.75	< 0.05	Statistically significant improvement
Willingness to bring healthy lunchboxes (%)	37%	72%	+35%	–	–	Significant increase	–

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

Measured Aspect	Indicator	Pretest (n = 200)	Posttest (n = 200)	Δ (Increase)	t-value	Sig. (p)	Interpretation
Habit of purchasing fast food (%)	41%	22%	−19%	–	–	Positive decrease	–
Overall Conclusion	Average overall improvement	–	–	+22.4%	–	–	Model effectively enhances nutrition literacy and attitudes

Source: Processed primary data (2025)

The results consistently show an increase across all measured indicators following the implementation of the peer-assisted Contextual-Based Learning model. Improvements were observed in mean nutrition literacy scores, attitude scores, and behavioral indicators, including reading nutrition labels and selecting healthier foods. Observation data further demonstrate increased student engagement, participation, and contextual understanding during the learning process.

Implementation of the Peer-Assisted Contextual-Based Learning Model

The implementation of the peer-assisted Contextual-Based Learning (CBL) model followed six structured instructional stages: relating, experiencing, applying, cooperating, transferring, and reflecting (Johnson, 2002). Each stage was systematically integrated with activities that connected nutritional content to students' authentic experiences. During the *relating* phase, students engaged in discussions about their daily eating habits and identified local foods from Pamekasan that possess high nutritional value. The *experiencing* phase involved direct observation of the Free Nutritious Meal (MBG) menu provided by the school, during which students evaluated the nutritional balance and hygiene standards of the meals served. Within the instructional process, peer tutors assumed a central role as facilitators. They led group discussions, assisted classmates in comprehending the "Isi Piringku" (My Plate) concept, and encouraged critical reflection on students' dietary choices. Meanwhile, supervising teachers functioned as mentors and coordinators, ensuring that the learning activities were implemented as planned and maintaining an interactive classroom climate. The collaboration between teachers and peer tutors effectively fostered a participatory, inclusive, and cooperative learning environment.

Table 2. Observation Results of Student Activity and Participation During the Implementation of the Peer-Assisted Contextual-Based Learning Model

No.	Observed Aspect	Observation Indicator	Mean Score Before Implementation (Pre)	Mean Score After Implementation (Post)	Δ (Increase)	Interpretation
1	Student Engagement	Participation in group discussions	2.8	3.7	+0.9	Very strong improvement
2	Learning Motivation	Enthusiasm and involvement in learning activities	3.0	3.8	+0.8	Significant improvement
3	Communication Skills	Ability to explain nutrition concepts	2.9	3.6	+0.7	Consistent improvement

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

		using real-life examples				
4	Group Collaboration	Mutual support among students and peer tutors	3.1	3.9	+0.8	Significant improvement
5	Contextual Application	Ability to relate content to personal experiences	2.7	3.8	+1.1	Very substantial improvement
Average	–	–	2.9	3.8	+0.9	Overall improvement was very strong

Source: Processed primary data (2025)

Observation data indicate a substantial increase in student participation throughout the implementation of the model. The average score for engagement in group discussions rose from 2.8 to 3.7 (on a 4-point scale), while learning motivation improved from 3.0 to 3.8. This enhancement was likewise reflected in students' ability to articulate nutritional concepts using concrete examples drawn from their own experiences. For instance, several students connected the topic of "balanced dietary patterns" to their breakfast routines at home and the food options available in the school canteen. These findings suggest that context-based instruction encourages learners to construct meaningful connections between theoretical concepts and personal experiences, in alignment with the principles of social constructivism.

Qualitative Analysis: Students' Perceptions and Learning Experiences

In-depth interviews with students, peer tutors, and supervising teachers yielded several salient themes that illuminate the dynamics of implementing the peer-assisted Contextual-Based Learning (CBL) model.

First, the majority of students reported that the learning process became more comprehensible when the material was delivered by peers using language that was simple and closely aligned with their everyday experiences. This finding underscores the effectiveness of horizontal communication within peer tutoring strategies, as emphasized by Topping (Topping, 2015), who argues that egalitarian social relationships reduce psychological pressure during the learning process. Zivana, an eighth-grade student, noted that through this activity she began to appreciate the importance of reading nutrition labels and became more cautious in selecting snacks. This testimony reflects a meaningful transition from cognitive understanding to affective internalization, indicating that nutritional knowledge had begun to shape individual awareness and personal responsibility.

Second, several students highlighted constraints related to time and entrenched habits that were difficult to modify. For example, Meutya acknowledged that although she understood the importance of consuming fruits and vegetables, her preference for spicy and fried foods remained strong. This finding suggests that the development of healthy dietary behaviors requires a sustained process and consistent support from the surrounding social environment, including both family and school contexts. It aligns with Velardo's (Velardo, 2015) assertion that nutrition literacy is shaped not solely by knowledge acquisition but also by broader social, cultural, and environmental influences.

Third, the role of supervising teachers was regarded as crucial in sustaining the continuity of the program. Teachers functioned not merely as activity monitors but as facilitators who assisted students in linking instructional content to everyday practices. They verified the nutritional quality of the MBG menus, provided education on food safety, and fostered empathy through community-oriented initiatives, such as sharing appropriate and nutritious food with local residents. These social

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

engagement activities reinforced the character dimension of nutrition literacy by cultivating social awareness and a sense of collective responsibility for public health.

Table 3. Results of In-Depth Interview Analysis with Students, Peer Tutors, and Supervising Teachers

Main Theme	Description of Findings	Example Interview Excerpt	Interpretation / Implications
Enhanced Comprehension through Peer Tutoring	Most students perceived the learning process as easier to understand when explanations were delivered by peers using simple language closely related to their lived experiences.	"I understand more quickly when a friend explains it, because the language feels like everyday conversation and uses examples I often encounter at school." –Zivana, Grade VIII	Peer tutoring fosters effective horizontal communication, reduces psychological pressure, and enhances both conceptual understanding and emotional engagement in the learning process.
Challenges in Changing Dietary Habits	Some students acknowledged ongoing difficulty in modifying unhealthy eating habits, such as frequent consumption of fried and spicy foods, despite understanding the importance of balanced nutrition.	"I know it's important to eat fruits and vegetables, but I still prefer fried or spicy foods sometimes." –Meutya, Grade VIII	Indicates that behavioral change in dietary practices requires sustained intervention and consistent social support from both family and school environments. Nutrition literacy must be reinforced through habitual practice and the strengthening of healthy social norms.
Role of Supervising Teachers as Facilitators and Reinforcers of Social Values	Teachers actively linked instructional content to practical activities, such as evaluating the Free Nutritious Meal (MBG) menu, teaching food safety principles, and cultivating empathy through community food-sharing initiatives.	"We help students evaluate the MBG menu and teach them about food safety. We also encourage them to share healthy food with local residents." –Supervising Teacher 1	Demonstrates that teachers function not only as supervisors but also as mentors and promoters of character values. Their involvement strengthens nutrition literacy oriented toward social awareness and collective responsibility.

Source: Processed primary data (2025)

Furthermore, the "Menu Feedback Letter" activity through which students articulated critiques and suggestions regarding the MBG meals they received emerged as a notable innovation within this study. This mechanism reflects students' active engagement in decision-making processes concerning the food they consume and serves as a form of reflective practice in nutrition literacy.

Positioning students as co-creators of the learning process distinguishes the peer-assisted CBL model from conventional instructional approaches, reinforcing participatory learning and fostering a deeper sense of ownership over dietary choices.

Program Impact on Behavioral Change and Nutrition Awareness

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

The integration of the Contextual-Based Learning approach with peer tutoring demonstrated a tangible impact on students' dietary behavior. Triangulation of data derived from questionnaires, classroom observations, and interviews revealed measurable improvements across three principal dimensions of nutrition literacy: knowledge, attitudes, and behavioral practices.

In the knowledge dimension, students demonstrated a marked improvement in their understanding of balanced nutrition principles and the nutritional composition of everyday foods. They were able to explain more accurately the functions of carbohydrates, proteins, and fats, as well as articulate the relationship between nutrient intake and academic performance. Within the attitudinal domain, students exhibited a perceptual shift toward healthy foods, increasingly recognizing that nutritious meals need not be expensive or unpalatable. In terms of behavioral outcomes, approximately 61% of students reported routinely reading nutrition labels, while 54% indicated that they had begun bringing healthy lunchboxes from home at least twice per week.

These findings reinforce the argument that context-based instruction can generate more substantive behavioral change than traditional lecture-based approaches. This conclusion is consistent with the study by Manggabarani (Manggabarani et al., 2020), which demonstrated that peer-assisted contextual learning significantly improved healthy eating habits among adolescents. Similarly, research conducted by Angga and Burhanuddin (Angga et al., 2023; Burhanuddin et al., 2024) underscores that school-based nutrition education interventions involving active student participation can simultaneously enhance dietary behaviors and physical fitness outcomes.

The implementation of this model also generated positive social outcomes. Interactions between peer tutors and their classmates fostered a supportive learning climate, enhanced empathy, and strengthened a shared sense of responsibility for collective health. Accordingly, the learning process extended beyond academic achievement to encompass the development of social character and student leadership. This finding aligns with the health-promoting school framework (World Health Organization, 2018), which emphasizes collaborative engagement among all school stakeholders to cultivate an educational environment that supports students' physical and mental well-being.

While these findings demonstrate measurable improvements across multiple domains, further interpretation is required to understand how and why these changes occurred within the instructional context. Therefore, the following section discusses these findings in relation to relevant theoretical frameworks and previous studies.

Discussion

The observed improvements in students' nutrition literacy can be interpreted through the lens of social constructivist theory. The integration of peer tutoring within the Contextual-Based Learning framework appears to facilitate knowledge construction through social interaction, consistent with Vygotsky's concept of the Zone of Proximal Development (ZPD). In this study, peer tutors functioned as more capable peers who supported other students in bridging gaps between prior knowledge and new understanding, particularly in applying nutrition concepts to real-life contexts.

Furthermore, the CBL approach implemented in this study aligns closely with the principles of meaningful learning. According to Johnson (Johnson, 2002), instruction that is explicitly connected to learners' real-life experiences enhances long-term retention and facilitates the transfer of knowledge to novel situations. This alignment was evidenced by students' improved ability to apply nutritional concepts within their daily contexts, such as selecting healthier food options in the school canteen and evaluating the nutritional balance of meals consumed at home.

From a pedagogical perspective, the integration of Contextual-Based Learning and peer tutoring offers an effective instructional model for enhancing nutrition literacy in schools. First, this approach positions students as active agents in the learning process (student-centered learning), thereby fostering a sense of ownership and responsibility toward their educational development. Second, context-based instruction enables teachers to bridge the gap between abstract academic concepts and students' social realities. Third, the involvement of peer tutors cultivates positive social dynamics, enhances self-confidence, and strengthens students' intrinsic motivation to adopt healthier behaviors.

From a practical standpoint, the implementation of this model may serve as a reference framework for other schools seeking to integrate nutrition education into project-based curricula and extracurricular activities. For instance, the "Menu Feedback Letter" activity can function as a routine reflective component within the Free Nutritious Meal (MBG) program, while peer tutor training may be institutionalized as part of a School Nutrition Cadre initiative. Moreover, this approach can

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

be adapted by local education and health authorities to expand the reach of community-based nutrition education within school settings, particularly in regions characterized by high stunting prevalence.

The findings of this study are consistent with those reported by Nuryani and Paramata (Nuryani & Paramata, 2018), who demonstrated that contextual learning enhances students' ability to analyze nutritional content and fosters positive attitudes toward healthy foods at the junior secondary level. However, the distinctive contribution of the present study lies in the integration of peer tutoring as a central instructional component. This approach introduces a collaborative and social dimension that not only deepens conceptual understanding but also cultivates supportive peer networks among students.

Furthermore, the present findings extend those of Ariga (Ariga et al., 2020), who reported that peer-assisted contextual learning significantly improves healthy consumption habits. Within the Indonesian context, this integrated approach also demonstrates potential as an educational intervention grounded in socio-cultural values, such as *gotong royong* (mutual cooperation) and communal solidarity hallmarks of the Madurese community. Accordingly, this study contributes not only to the academic discourse on nutrition education but also to the broader agenda of strengthening character education and health promotion within school environments.

In conclusion, the implementation of a peer-assisted Contextual-Based Learning model suggests that the model may contribute to improvements in strengthening nutrition literacy among junior secondary school students. The model not only enhanced cognitive understanding but also fostered sustainable attitudes and healthy dietary behaviors. This contextual and collaborative approach is consistent with the paradigm of 21st-century education, which emphasizes meaningful, participatory learning and the development of life competencies that support long-term health and well-being.

However, these findings should be interpreted with caution given the pre-experimental design without a control group. While the results indicate significant improvements, it cannot be conclusively determined that the observed changes were solely attributable to the intervention. External factors, such as students' prior exposure to nutrition information or concurrent school programs, may have also influenced the outcomes.

CONCLUSION

This study indicates that the implementation of a peer-assisted Contextual-Based Learning (CBL) model was associated with improvements in students' nutrition literacy across cognitive, affective, and behavioral domains. The integration of contextual learning and peer interaction appears to support more meaningful and participatory learning experiences, enabling students to better connect nutritional knowledge with everyday practices. These findings highlight the potential of combining experiential and collaborative approaches in strengthening school-based nutrition education. However, given the pre-experimental design without a control group, the results should be interpreted with caution, as causal relationships cannot be conclusively established.

Based on these findings, schools may consider adopting the peer-assisted CBL model as a flexible instructional approach that can be integrated across subjects and school programs to promote nutrition literacy. Teachers are encouraged to facilitate learning that connects academic content with students' real-life contexts, while policymakers may explore its inclusion in broader school health initiatives. Future research is recommended to employ more rigorous designs, such as quasi-experimental or mixed-method approaches, to further examine the effectiveness and sustainability of this model in diverse educational settings.

ACKNOWLEDGMENT

The authors express their sincere gratitude to the Ministry of Religious Affairs of the Republic of Indonesia, through the Directorate of Islamic Higher Education (Ditjen Diktis), and Universitas Islam Negeri Madura for providing financial support under the 2025 Research Grant Program, which made the implementation of this study possible. Appreciation is also extended to the principal, supervising teachers, and all students of SMP Negeri 1 Pamekasan for their active participation and cooperation throughout the research process. The authors further acknowledge their colleagues at Universitas Islam Negeri Madura for their constructive feedback during the research design and data analysis stages.

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

REFERENCES

Angga, P. D., Makki, M., Putra, G. P., & Indraswati, D. (2023). Pregi (Program Edukasi Gizi Dan Aktivitas Fisik): Peningkatan Pemahaman Perilaku Hidup Sehat Melalui Gizi Seimbang Dan Aktivitas Fisik Bagi Anak Sekolah Dasar DI Kota Mataram. *Jurnal Interaktif: Warta Pengabdian Pendidikan*. https://doi.org/10.29303/interaktif.v3i2.103

Ariga, R. A., Astuti, S. B., Ariga, F. A., & Ariga, S. (2020). Improved knowledge and attitude about healthy snack at school through peer education. *International Journal on Advanced Science, Engineering and Information Technology*, *10*(4), 1662–1668. https://doi.org/10.18517/ijaseit.10.4.6373

Ayanti, B. P., Hidayat, R., Saputera, M. M. A., & Muslim, A. A. (2025). Penyuluhan Kesehatan tentang Gizi Seimbang dan Makanan Bergizi dari Tanaman Lokal di SDN Jawa 2 Martapura. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*. https://doi.org/10.33024/jkpm.v8i3.17947

Burhanuddin, S., Juhanis, J., Aziz, M. I. M., Jahrir, A. S., & Awaluddin, A. (2024). Peningkatan Kesadaran Kebugaran Jasmani dan Status Gizi pada Siswa Sekolah Dasar di Kota Makassar. *MALLOMO: Journal of Community Service*, *4*(2), 236–242. https://doi.org/10.55678/mallomo.v4i2.1490

Johnson, E. (2002). *Contextual Teaching and Learning: What It Is and Why It's Here to Stay*.

Kementerian Kesehatan Republik Indonesia (Kemenkes RI). (2023). Stunting di Indonesia dan Determinannya. *Kementerian Kesehatan Republik Indonesia (Kemenkes Ri)*, 1–2.

Koca, B., & Arkan, G. (2020). The relationship between adolescents' nutrition literacy and food habits, and affecting factors. *Public Health Nutrition*, *24*, 717–728. https://doi.org/10.1017/S1368980020001494

Kristanti, L. A., & Sebtalesy, C. Y. (2021). *Pendidikan Kesehatan Gizi Usia Sekolah sebagai Upaya Peningkatan Prestasi Belajar SDN Purworejo 03 Geger Madiun*. *2*, 57–65. https://doi.org/10.36596/JPKMI.V2I1.123

Lee, Y., Kim, T., & Jung, H.-J. (2022). The Relationships between Food Literacy, Health Promotion Literacy and Healthy Eating Habits among Young Adults in South Korea. *Foods*, *11*. https://doi.org/10.3390/foods11162467

Manggabarani, S., Said, I., Hadi, A., Saragih, R., Cristandy, M., & Januariana, N. E. (2020). *The Effectivity of Peer Education Module on Knowledge, Attitude, and Fast Food Consumption in Adolescents*. *5*, 35–42. https://doi.org/10.26911/thejhpb.2020.05.01.05

Marsden, E., & Torgerson, C. (2012). Single group, pre- and post-test research designs: Some methodological concerns. *Oxford Review of Education*, *38*, 583–616. https://doi.org/10.1080/03054985.2012.731208

Miles, M.B., Huberman, A.M. and Saldana, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook*. SAGE Publications Ltd.

Nizar, A. R., Putra, A. S. Z., Al-Fawwaz, A. C., Anggriani, F., Damayanti, Z. A., & Asitah, N. (2025). Strategi Pengembangan Karakter Siswa Sekolah Dasar di Luar Jam Sekolah: Peran Guru dan Orang Tua dalam Era Digital. *Nusantara Educational Review*. https://doi.org/10.55732/ner.v3i1.1579

Nuryani, N., & Paramata, Y. (2018). Intervensi Pendidik Sebaya Meningkatkan Pengetahuan, Sikap, dan Perilaku Gizi Seimbang pada Remaja di MTSN Model Limboto. *Indonesian Journal of Human Nutrition*. https://doi.org/10.21776/ub.ijhn.2018.005.02.4

Nutbeam, D. (2008). The Evolving Concept of Health Literacy. *Social Science & Medicine (1982)*, *67*, 2072–2078. https://doi.org/10.1016/j.socscimed.2008.09.050

Prabowo, A. (2016). *Kesejahteraan Psikologis Remaja DI Sekolah*. *4*, 246–260. https://doi.org/10.22219/JIPT.V4I2.3527

Putri, A. N. L., Sutarto, S., & Wahyuni, D. (2024). Meta Analisis Kemampuan Berpikir Kritis Siswa SMP dalam Pembelajaran IPA. *Jurnal Penelitian Pembelajaran Fisika*. https://doi.org/10.26877/jp2f.v15i1.15580

Savitri, W. C., & Listiyandini, R. A. (2017). *Mindfulness dan Kesejahteraan Psikologis pada Remaja*. *2*, 43–59. https://doi.org/10.21580/PJPP.V2I1.1323

Setianingsih, D., Kiranti, D. I., Sulistyorini, S., Wahyudin, D., & Caturiasari, J. (2023). Urgensi Literasi Budaya dan Kewargaan Terhadap Pendidikan Karakter Siswa Sekolah Dasar. *Widyacarya: Jurnal Pendidikan, Agama Dan Budaya*. https://doi.org/10.55115/widyacarya.v7i2.3164

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
ISSN: 2086-6135 E-ISSN: 2541-612x
Volume 15 No. 4 Desember 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

Stratton, S. (2019). Quasi-Experimental Design (Pre-Test and Post-Test Studies) in Prehospital and Disaster Research. *Prehospital and Disaster Medicine*, *34*, 573–574. https://doi.org/10.1017/S1049023X19005053

Tanan, R., Karundeng, J. O., Kafiar, R. E., Mardona, Y., Diliani, D., Firman, A. F., & Onawatme, F. Y. (2024). Pelatihan Peer Education terhadap Peningkatan Pengetahuan Remaja tentang Stunting. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*. https://doi.org/10.33024/jkpm.v7i11.17305

Topan, A., Kürtüncü, M., & Taşdelen, Y. (2023). The relationship between the nutritional literacy level and heart health attitudes of adolescents. *Journal of Pediatric Nursing*. https://doi.org/10.1016/j.pedn.2023.05.004

Topping, K. (2015). Peer tutoring: Old method, new developments / Tutoría entre iguales: Método antiguo, nuevos avances. *Infancia y Aprendizaje*, *38*, 1–29. https://doi.org/10.1080/02103702.2014.996407

Velardo, S. (2015). The Nuances of Health Literacy, Nutrition Literacy, and Food Literacy. *Journal of Nutrition Education and Behavior*, *47*, 385–389. https://doi.org/10.1016/j.jneb.2015.04.328

WHO. (2022). *Global Nutrition Report 2022 Stronger commitments for greater action Executive Summary*. 1–19.

World Health Organization. (2018). Global Standards for Health Promoting Schools. *Who*, 12.