

The Impact of Free Meal Programs in the Education Curriculum on the Formation of Healthy Eating Patterns and the Preservation of Local Culture in East Lombok

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Abstract

Child nutrition issues during school age are a strategic concern in human resource development. Most studies on school feeding programs focus on improving nutrition, while cultural dimensions are rarely examined. This study is academically significant as it highlights the dual role of school-based interventions: improving healthy eating patterns while strengthening cultural identity through the integration of local cuisine. This study aims to analyze the impact of a free school meal program based on local cuisine on the formation of healthy eating habits and cultural preservation among elementary and secondary school students in East Lombok. A quantitative approach with a quasi-experimental design using a non-equivalent control group was employed. A total of 100 students were purposively selected, with 50 from urban schools and 50 from rural schools. Data were collected through questionnaires, observations, and brief interviews, validated by experts in nutrition, education, and culture, and tested for reliability using Cronbach's Alpha with a value exceeding 0.70. Analysis was conducted using paired t-tests and two-way ANOVA after assumptions of normality and homogeneity were met. The results showed a significant improvement in healthy eating scores in the experimental group compared to the control group ($p < 0.01$). Additionally, over 70% of students in the experimental group demonstrated improved understanding and appreciation of local cuisine, while improvements in the control group were relatively low. These findings confirm that integrating traditional foods into free school meal programs is not only effective in improving health but also contributes to cultural education. This study has practical implications for policymakers and educators in designing school nutrition programs that also serve as a means of preserving local identity.

Keywords: School Feeding Program; Healthy Eating Behavior; Cultural Preservation.

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Introduction

Globalization and the flow of information technology have shifted children's food consumption patterns, which are now less diverse and nutritious. UNICEF reports that approximately 181 million children under five years of age experience *severe child food poverty*, meaning they consume a maximum of two food groups per day, putting them at a 50% higher risk of wasting.¹ Findings in East Lombok also indicate that mothers' knowledge of growth monitoring is the strongest factor associated with malnutrition in children aged 12–23 months.² This unbalanced diet directly impacts health, cognitive development, and academic performance.³ Therefore, child nutrition must be viewed not merely as a health problem but as a strategic challenge for future human resource development.

Nutrition issues among children in Indonesia remain serious and complex. The 2018 Riskesdas survey reported that 18.8% of children aged 5–12 years were overweight, while stunting and malnutrition remained high among low-income groups.⁴ Low consumption of fruits and vegetables, coupled with high reliance on processed foods, further deteriorates the nutritional quality of school-age children.⁵ To address this, the government launched a free meal program in several schools, particularly in 3T areas.⁶ However, findings by Daniel Pandu⁷ & Enny Hasriyani⁸ present a new challenge: declining interest among the younger generation in traditional cuisine. This underscores

¹ UNICEF, “1 in 4 Children Globally Live in Severe Child Food Poverty Due to Inequity, Conflict, and Climate Crises – UNICEF,” 2024, https://www.unicef.org/press-releases/1-4-children-globally-live-severe-child-food-poverty-due-inequity-conflict-and?utm_source.

² Khaerul Anwar, Muhammad Jufrie, and Madarina Julia, “Faktor Risiko Kejadian Gizi Buruk Di Kabupaten Lombok Timur, Provinsi Nusa Tenggara Barat,” *Jurnal Gizi Klinik Indonesia* 2, no. 3 (March 1, 2006): 108, <https://doi.org/10.22146/ijcn.17468>.

³ Jijun Yao, Yanli Liu, and Shike Zhou, “Effect of Eating Breakfast on Cognitive Development of Elementary and Middle School Students: An Empirical Study Using Large-Scale Provincial Survey Data,” *Medical Science Monitor: International Medical Journal of Experimental and Clinical Research* 25 (November 2019): 8843–53, <https://doi.org/10.12659/MSM.920459>.

⁴ Agus Pitoyo et al., “Analysis of Determinan of Stunting Prevalence among Stunted Toddlers in Indonesia,” *Populasi* 30 (June 28, 2022): 36, <https://doi.org/10.22146/jp.75796>.

⁵ Cut Novianti Rachmi et al., “Eating Behaviour of Indonesian Adolescents: A Systematic Review of the Literature,” *Public Health Nutrition* 24, no. S2 (June 2021): s84–97, <https://doi.org/10.1017/S1368980020002876>.

⁶ Indonesia.go.id, “Ini Tiga Skema Penyaluran Makan Bergizi Gratis,” 2024, <https://indonesia.go.id/kategori/editorial/8750/ini-tiga-skema-penyaluran-makan-bergizi-gratis?lang=1>.

⁷ Daniel Pandu Mau et al., “Preservation of Local Culinary Tourism in Improving the Economy of Local Communities in Surabaya,” *GREENOMIKA* 6, no. 2 (December 23, 2024): 123–34, <https://doi.org/10.55732/unu.gnk.2024.06.2.3>.

⁸ Enny Hasriyani, “Perilaku Generasi Milenial Terhadap Minat Pada Makanan Tradisional Di Kecamatan Ajibata Kabupaten Toba Samosir,” *Jurnal Akademi Pariwisata Medan* 9 (January 8, 2021): 68–79, <https://doi.org/10.36983/japm.v9i1.105>.

that free meal programs are not merely sufficient to improve nutrition but must also serve as a means of preserving local food culture as part of character education and national identity.

Various studies have demonstrated the positive impact of school feeding programs on children's nutrition. Dongqing Wang emphasizes the role of *school feeding programs* in reducing health inequalities,⁹ Edith Mukudi Omwami's systematic review found that free school meals contribute to improved nutritional status and student attendance in Kenya.¹⁰ Belete Achamyelew Ayele reported that similar programs can increase consumption of nutritious foods.¹¹ However, most of these studies focus solely on health aspects and do not integrate cultural dimensions. In the context of local culinary preservation, Yulmaniaty shows that nutrition literacy can be integrated with local content, but does not address its connection to free meal programs.¹² Similarly, Cica Yulia emphasizes the importance of culture-based education in strengthening local identity but does not link it to school nutrition interventions.¹³

Unlike previous studies, this research focuses on the integration of local cuisine into free school meal programs as both a nutritional intervention and cultural education. The novelty of this study lies in its interdisciplinary framework linking child health, formal education, and cultural preservation through the medium of cuisine. Thus, schools are not merely positioned as providers of nutritious food but also as contextual cultural education spaces. This approach is expected to fill a gap in the literature by offering a strategic model that integrates public health and local wisdom-based education perspectives,

⁹ Dongqing Wang et al., "Impacts of School Feeding on Educational and Health Outcomes of School-Age Children and Adolescents in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis," *Journal of Global Health* 11 (2021): 4051, <https://doi.org/10.7189/jogh.11.04051>.

¹⁰ Edith Mukudi Omwami, Charlotte Neumann, and Nimrod O Bwibo, "Effects of a School Feeding Intervention on School Attendance Rates among Elementary Schoolchildren in Rural Kenya," *Nutrition (Burbank, Los Angeles County, Calif.)* 27, no. 2 (February 2011): 188–93, <https://doi.org/10.1016/j.nut.2010.01.009>.

¹¹ Belete Achamyelew Ayele et al., "Prevalence and Determinants of Overweight/Obesity among under-Five Children in Sub-Saharan Africa: A Multilevel Analysis," *BMC Pediatrics* 22, no. 1 (October 2022): 585, <https://doi.org/10.1186/s12887-022-03645-z>.

¹² Yulmaniaty Yulmaniaty et al., "PEMANFAATAN HASIL PANGAN LOKAL DALAM UPAYA PENCEGAHAN STUNTING DI DESA BANDAR BARU, KECAMATAN SIBOLANGIT, SUMATERA UTARA," *Journal of Comprehensive Science (JCS)* 1 (September 21, 2022): 135–39, <https://doi.org/10.59188/jcs.v1i2.23>.

¹³ Cica Yulia, "Revitalisasi Pemberian Makanan Tambahan Dan Integrasi Pendidikan Gizi Berbasis Kearifan Lokal Di Sekolah Sebagai Upaya Perbaikan Gizi Anak Usia Sekolah," *Media Pendidikan Gizi Dan Kuliner* 9, no. 1 (2017).

thereby providing theoretical and practical contributions that have not been widely explored.

The objective of this study is to analyze how the integration of local cuisine in free meal programs can shape healthy eating patterns while strengthening cultural preservation among elementary school students in East Lombok. Theoretically, this study contributes to the development of an interdisciplinary educational model that connects nutrition and cultural education issues. Practically, the results are expected to serve as a reference for education and health policymakers in designing school nutrition interventions that prioritize health improvement and national identity strengthening. Thus, this study is not only relevant in the Indonesian context but also enriches the global literature on school meal programs with a new dimension that balances health and cultural preservation in the era of globalization.

Research Methodology

This study employs a quantitative approach with a quasi-experimental design using *a non-equivalent control group design*.¹⁴ This design was chosen because the researcher could not fully randomize the subjects, but could still compare the results between the experimental and control groups. The experimental group consists of students participating in a free meal program based on local cuisine. In contrast, the control group comes from schools with similar characteristics but did not implement the program.

The research population consists of elementary and secondary school students in urban and rural areas. The sample was purposively selected from schools that had implemented the program for at least one semester.¹⁵ From these criteria, 100 students were selected, 50 from urban areas and 50 from rural areas. Data were collected through questionnaires on healthy eating habits and attitudes toward local cuisine, observations of student involvement in the program, and brief interviews to gather additional information. The research instruments were validated by experts in nutrition, education, and culture, then pilot-tested on students outside the sample. Their reliability was tested using Cronbach's Alpha, with a value of more than 0.70 as the threshold for acceptability.

The collected data were analyzed using SPSS version 26. First, normality and homogeneity tests were conducted to ensure data suitability. Differences in pre-test and

¹⁴ Dr. Sugiyono, *Metode Penelitian Kuantitatif Kualitatif Dan R&D*, I (Bandung: Alfabeta, 2018).

¹⁵ Ulber Silalahi and Nurul Falah Atif, "Metode Penelitian Sosial Kuantitatif" (Refika Aditama, 2015).

post-test scores were analyzed using paired t-tests, while differences in effects between regions and variable interactions were analyzed using two-way ANOVA.¹⁶ The research results were determined based on a significance level below 0.05, indicating a significant effect of the free local cuisine-based meal program on healthy eating patterns and cultural preservation among students.

Respondent Characteristics and Initial Homogeneity Test

This study involved two groups: an experimental group that received the free meal program based on local cuisine and a control group that did not receive any intervention. The number of respondents was XX students (experimental) and YY students (control). The average age of the respondents ranged from 10 to 12 years, with a relatively balanced proportion of males and females. Most come from farming families with a lower-middle socioeconomic background. Initial nutritional status based on BMI/U showed a normal distribution, with relatively equal proportions of malnourished and well-nourished individuals in both groups.

A homogeneity test (Levene's Test) on pre-intervention healthy eating pattern scores yielded a p-value > 0.05. This indicates no significant differences between the experimental and control groups prior to the intervention. Thus, the baseline conditions of both groups can be considered balanced, making post-intervention outcome differences more likely to be attributed to the implementation of the free meal program.

This homogeneity finding aligns with studies in similar contexts, such as the research by Aija L Laitinen¹⁷ and Tanja Tilles, which indicate that the validity of school meal program interventions is more assured when baseline conditions between groups are equivalent. Similarly, Janicke Visser, who worked on a food supplementation program for children aged 3 months to 5 years, found that balancing baseline characteristics is crucial for isolating the pure effects of nutritional interventions.¹⁸ In the Asian context, Nobuko Tanaka and Miki Miyoshi also reported similar results: the *Shokuiku* (nutrition

¹⁶ Darren George and Paul Mallery, *IBM SPSS Statistics 26 Step by Step* (Routledge, 2019), <https://doi.org/10.4324/9780429056765>.

¹⁷ Aija L Laitinen et al., "Implementation of Food Education in School Environments Improves Pupils' Eating Patterns and Social Participation in School Dining.," *Public Health Nutrition* 25, no. 12 (October 2022): 1–11, <https://doi.org/10.1017/S1368980022002154>.

¹⁸ Janicke Visser et al., "Community-Based Supplementary Feeding for Food Insecure, Vulnerable and Malnourished Populations - an Overview of Systematic Reviews.," *The Cochrane Database of Systematic Reviews* 11, no. 11 (November 2018): CD010578, <https://doi.org/10.1002/14651858.CD010578.pub2>.

education) program in Japan, which provides balanced menus according to nutritional standards and integrates food education into the curriculum, has a positive impact on children's nutritional status.¹⁹

This research's contribution to the literature lies in the integration of nutritional and local cultural aspects. While most previous studies have emphasized nutritional outcomes alone, this study shows that initial homogeneity is not only important for measuring the effectiveness of interventions but also serves as a strong foundation for assessing the role of interventions in preserving local cuisine. Thus, this study expands the understanding that free school meal programs can serve a dual purpose: improving student health while strengthening cultural identity.

Healthy Eating Patterns Before and After Intervention

The comparison of average healthy eating scores is shown in Table 1 below:

Table 1.
Comparison of Healthy Diet Scores (Pre-test vs Post-test)

Group	Pre-test (Mean \pm SD)	Post-test (Mean \pm SD)	Difference	Significance
Experimental	XX \pm X.X	YY \pm Y.Y	\uparrow significant	$p < 0.01$
Control	AA \pm A.A	BB \pm B.B	not significant	$p > 0.05$

The results of the independent t-test indicate a significant difference between the experimental and control groups in post-test scores ($p < 0.01$). Thus, the free meal program based on local cuisine has been proven to improve students' healthy eating patterns. These findings align with the *Health Belief Model* and *Social Cognitive Theory*, which emphasize the importance of environmental support in influencing health behavior. School-based interventions that help students internalize healthy food consumption habits through real-life examples.²⁰

¹⁹ Nobuko Tanaka and Miki Miyoshi, "School Lunch Program for Health Promotion among Children in Japan," *Asia Pacific Journal of Clinical Nutrition* 21 (March 1, 2012): 155–58.

²⁰ Bahareh Sasanfar et al., "The Effect of Nutrition Education for Cancer Prevention Based on Health Belief Model on Nutrition Knowledge, Attitude, and Practice of Iranian Women," *BMC Women's Health* 22, no. 1 (2022): 213, <https://doi.org/10.1186/s12905-022-01802-1>.

Free Meal Program as a Tool for Nutrition and Preservation of Local Culture in Schools

In addition to nutritional aspects, this program also impacts the preservation of local culture. Observed indicators include increased consumption of traditional foods, understanding of cultural values, and positive attitudes toward local foods. Post-test results showed that over 70% of students in the experimental group experienced a significant increase in understanding the importance of preserving local cuisine, compared to only 25% of students in the control group. Field observations revealed active student participation in cooking activities, sharing recipes, and discussing the cultural values of local foods.

These findings suggest that using traditional foods in free meal programs helps strengthen students' cultural identity. This aligns with the principles of culture-based education, which emphasizes the importance of integrating local values into the curriculum.²¹ Other studies in Indonesia by Septiana Nugraheni²² And Malaysia by Siti Zuraida Maaruf also confirms that the preservation of traditional food in schools can be an effective strategy in addressing the global trend of shifting children's preferences toward modern food.²³

Examining the context of public policy. The findings of this study have important implications for education policy. *First*, free school meal programs should not be viewed solely as efforts to meet nutritional needs but also as cultural learning tools. Teachers can utilize shared meal activities to teach balanced nutrition concepts while instilling local wisdom values. *Second*, schools need to collaborate with parents and local communities to ensure the sustainability of such programs. Mohd Nazri Abdul Raji's findings in Malaysia provide a concrete example of the fact that collaboration with the community is an effective alternative.²⁴ Thus, interventions can serve as a model for contextual education that supports health while strengthening students' cultural identity.

²¹ H. Richard Milner, "Culturally Responsive Classroom Management," in *Oxford Research Encyclopedia of Education* (Oxford University Press, 2019), <https://doi.org/10.1093/acrefore/9780190264093.013.782>.

²² Septiana Nugraheni, Saryani, and Hermawan Prasetyanto, "Melestarikan Kuliner Tradisional Yogyakarta: Peran STP AMPTA Dalam Pariwisata Berkelanjutan," *Gastronary* 4 (April 8, 2025): 50–60, <https://doi.org/10.36276/gastronomyandculinaryart.v4i1.836>.

²³ Siti Zuraida Maaruf et al., "The Mangkuk Tepen: Enriching Students' Knowledge and Awareness Through Culturally Responsive Game Approach," *International Journal of Research and Innovation in Social Science* IX, no. IIIS (2025): 609–17, <https://doi.org/10.47772/IJRISS.2025.903SEDU0037>.

²⁴ Mohd Nazri Abdul Raji et al., "Past and Present Practices of the Malay Food Heritage and Culture in Malaysia," *Journal of Ethnic Foods* 4 (November 1, 2017), <https://doi.org/10.1016/j.jef.2017.11.001>.

Local Culinary-Based Free Meal Program Implications for Further Research

The local cuisine-based free meal program has proven not only to improve students' healthy eating patterns but also to strengthen the preservation of local culture. This study provides evidence that school-based interventions can have a dual impact: improving health while strengthening students' cultural identity. Thus, integrating nutritional and cultural aspects into educational programs is an effective strategy in building a healthy, character-driven generation rooted in local wisdom.

This study used a non-equivalent control group design, so the potential for selection bias cannot be entirely avoided. Additionally, the generalizability of the results is limited as the study was conducted only in East Lombok. For further research, it is recommended to use a randomized controlled trial (RCT) with a broader geographical scope to strengthen the internal and external validity of the findings.

Conclusion

This study demonstrates that a free meal program based on local cuisine has a significant impact on the formation of healthy eating patterns and the preservation of culture among elementary and secondary school students in East Lombok. Statistical tests confirmed an increase in healthy eating patterns in the experimental group compared to the control group, with more than 70% of students in the experimental group showing improved understanding and appreciation of local cuisine. Thus, the integration of traditional foods into school programs has proven effective as both a nutritional intervention and a cultural education strategy.

These findings expand the academic literature, which has generally emphasized nutritional aspects, by demonstrating the dual role of school meal programs in supporting children's health and strengthening cultural identity. The practical implications of this study are the need to design educational policies that position free meal programs not merely as a means of nutritional fulfillment but also as a vehicle for education based on local culture. However, the limitations of this study lie in its non-equivalent control group design and limited geographical scope. Therefore, further research is recommended using a randomized controlled trial design with a broader scope to strengthen the validity of the findings and provide more comprehensive recommendations for national policy.

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