Annex A: Nutrition Environment Assessment Toolkit for Schools (NEAT-S) for East Asia and Pacific
This annex accompanies the Nutrition Environment Assessment Toolkit for Schools (NEAT-S).

It contains a review of the school nutrition assessment tools which informed the development of the NEAT-S.
Acknowledgements

The development of this publication was coordinated by the Nutrition Section at UNICEF East Asia Pacific Regional Office (EAPRO) in Bangkok, Thailand. The lead authors Kathryn Backholer and Erica Reeve from Deakin University, supervised by Alison Feeley, Roland Kupka, and Fiona Watson from UNICEF EAPRO. The publication also benefited from contributions from the UNICEF staff members Bolorchimeg Bold, Pradiumna Dahal, Quynh Huong Duong, Munkhjargal Luvsanjamba, Do Hong Phuong, and Nguyen Dinh Quang on the development and documentation of country experiences.

UNICEF EAPRO also recognizes the valuable contributions of the following government partners:

**Mongolia**
- **Government Ministry of Health**
  - Bat-Erdene Battumur
- **National center for public health**
  - Enkhmyagmar Dashzeveg
  - Bayasgalaan Jambaldorj
  - Bolormaa Norov
  - Tsolmon Zorigt
- **Ministry of education and science**
  - Dulamkhand Bayartogtokh
  - Tsendasuren Davaasuren
  - Tumenjargal Tumurbaatar
- **General authority for education**
  - Enkhtaivan Batbold
  - Badamtsetseg Lkhagvasuren

**Fiji**
- **Ministry of Education**
  - Filisitas Antonio
  - Timoci Bure
  - Serena Davui
  - Ateca Kama
  - Alvina Karan

**Viet Nam**
- **Ha Noi Medical University**
  - Kim Bảo Giang
- **Ha Noi Public Health University**
  - Hoang Van Minh
  - Luu Quoc Toan

UNICEF EAPRO also recognizes the valuable contributions of the following research partners:

**Dikoda:** Chiara Cresta, Sophie Goudet, Viola Lesi, Mari Manger, Kristie Smith, Megan Stanley

Supported by grant SC229903 awarded to UNICEF from the German Federal Ministry for Economic Cooperation and Development and grant SC220782 from the Bill & Melinda Gates Foundation.

**Editors:** Julia D’Aloisio and Charles Boffard

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**Citation:** UNICEF East Asia and the Pacific Regional Office. Nutrition Environment Assessment Toolkit for Schools (NEAT-S) for East Asia and Pacific. Bangkok: UNICEF, 2024.

June 2024
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Review of school nutrition assessment tools

The published literature provides only partial information describing the state of school nutrition environments of low- and middle-income countries (LMICs) within the EAP region, and does not take into account existing government policies and the degree of their implementation. Assessment of the school nutrition environment (encompassing all four domains) is critical for informing effective and targeted policy design and delivery to improve nutrition outcomes for children at schools.

There already exists a range of tools and frameworks for assessing different aspects of the school nutrition environment (1,2), but these vary widely in context, content and depth. This section describes the existing tools and approaches for assessing key dimensions of school nutrition environments. The findings have informed the development of the NEAT-S for LMICs within the EAP region.

Approach to the review

Key dimensions of school nutrition environments in this review were guided by the overarching framework presented in table 1 of the NEAT-S.

The review included both academic literature and grey literature (reports), which described tools that measure the various dimensions of the school nutrition environment. Data included existing school nutrition environment monitoring and assessment tools in the EAP region, which included one or more of the four framework domains, and selected school nutrition assessment tools developed in other countries.

Tools were sourced via UNICEF EAPRO, and through a review of multiple databases and websites (including NOURISHING, GINA, Nutri-Dash, government websites and search engines (the WHO NCD database and Google). Tools sourced from outside the EAP region included those already known to (or recommended to) the team, and tools sourced through a structured Google search for school food policy-monitoring tools. National school food-monitoring systems were reviewed in three EAP countries: Samoa, Hong Kong, and Myanmar. Additional school nutrition monitoring tools were sourced from 3 LMICs (Nepal, Sri Lanka, Sudan) and 3 HICs (Australia, New Zealand and the United Kingdom).

The review incorporated the findings of two recently conducted global systematic reviews of tools to measure school food and physical activity environments (both published in 2020). The systematic review from Lane et al included 23 studies examining qualitative tools for assessing food and physical activity environments in schools, three of which were developed in LMICs (2). The review from O’Halloran et al reviewed 38 studies examining measures for assessing school food environments, three of which were from LMICs (1). Two global recommended tools for assessing aspects of school nutrition environments were also reviewed: the INFORMAS tool for monitoring foods and drinks provided and sold in public sector settings (2014), and the Focusing Resources on Effective School Health (FRESH) tool, developed through an intersectoral partnership, represented by UNICEF (See box 1) (3).

Data were extracted on the indicators that measured aspects of the school nutrition environment against the domains of the school nutrition environment framework (table 1). Data were also extracted on the context, approach and focus of tools sourced, as relevant to the study aim. All data from the two existing systematic reviews were extracted into the domain on school food environments (domain 2). All results are summarized according to each of the relevant domains below (table 1).
<table>
<thead>
<tr>
<th>Tool</th>
<th>Publication year</th>
<th>Setting for tool application</th>
<th>Weblink</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Nutrition Standards Checklist</td>
<td>2011</td>
<td>Samoa</td>
<td></td>
</tr>
<tr>
<td>School Environment Assessment</td>
<td>-</td>
<td>Nepal</td>
<td>(obtained through UNICEF)</td>
</tr>
<tr>
<td>Formative assessment: School Health and Nutrition Environment</td>
<td>-</td>
<td>Sudan</td>
<td>(obtained through UNICEF)</td>
</tr>
<tr>
<td>School Food Standards: checklist for school lunches, checklist for school food other than lunch</td>
<td>2013</td>
<td>UK</td>
<td><a href="https://www.schoolfoodplan.com/resources/">https://www.schoolfoodplan.com/resources/</a></td>
</tr>
<tr>
<td>The School Food Environment Review and Support Tool (School-FERST)</td>
<td>2015</td>
<td>New Zealand</td>
<td></td>
</tr>
</tbody>
</table>
Findings

Summary of available tools

A large number of tools exist for assessing different dimensions of the school nutrition environment at the global and national levels, with considerable variability in the coverage and depth of data collection. No single tool was located that fully addressed all the dimensions in UNICEF’s guiding framework. However, each tool offered a useful insight into current practice and priorities for assessing different domains of the school nutrition environment. When developing a tool to assess the school nutrition environment within the EAP region, it is useful to draw on the substantial body of knowledge and expertise already available, particularly from globally validated tools such as FRESH.

Key findings

- National food and nutrition policies (including adoption, dissemination, monitoring and governance) are critical in enabling nutritious school environments. The comprehensiveness of national school food and nutrition policies can be assessed to determine how enabling the national policy environment is.

- The overwhelming majority of questions applied in tools were offered as checklists or multiple-choice questions, suggesting that this is the most practically feasible and objective way of measuring food environments across a large number of schools on an ongoing basis. Open questions (surveys, focus groups) were only applied where more contextual data was sought (i.e. level of priority afforded to the nutrition environment by stakeholders, though many ‘checklist’-type tools were able to achieve this using binary questions and Likert scales).

- The food environment was the most widely measured dimension of the nutrition environment in schools, commonly assessed through the availability or absence of certain foods for sale. The degree of specificity for food classification varied across the tools even in the same settings. Aspects of this domain that were minimally assessed included food marketing and corporate engagement in schools, and the relative affordability of healthy compared to unhealthy foods.

- The provision of school meals (with or without fortification) (Domain 1), micronutrient supplementation and other health services (Domain 3) were often measured objectively by assessing school records.

- The promotion of local supply chains (relevant to Domains 1 and 3) was minimally assessed. In line with their agency mandate, FAO’s School Food and Nutrition Framework includes as a programming priority “stimulating inclusive procurement and value chains for school food,” in order to “create market and financial opportunities for local smallholder producers contributing to community economic development”. The growing need to consider school food environments within the context of healthy and sustainable food systems, and other development objectives, suggests that this approach could be better prioritized for assessment.

- The delivery of food and nutrition education in schools (Domain 4) was not meaningfully assessed in most tools, with most tools asking about it in a binary manner (i.e. ‘offered’ or ‘not offered’). There are more comprehensive assessments being undertaken in countries by FAO through their school food and nutrition agenda. As exhibited in the FRESH tool, there is potential to offer a meaningful set of multiple-choice questions for assessing approaches to curriculum throughout learning.
Box 1. Spotlight on the FRESH tool for assessing school health indicators

The Focusing Resources on Effective School Health (FRESH) tool provides monitoring and evaluation guidance for School Health Programmes, and was developed through an international, intersectoral partnership for monitoring approaches to promoting health within educational institutions. The tool assesses progress in implementing health programmes against four internationally agreed core pillars of school health – the curriculum, the environment, the policy context and the services delivered – with indicators given for each pillar at both the national and school levels. The tool facilitates both countries and schools to identify strengths and weaknesses in their programming and programme delivery, providing an excellent benchmarking tool for national policymakers as well as school leadership.

FRESH is designed for adaptation to context, including by recommending indicators against 15 specialist themes. The tool includes nutrition as a specialist theme, with coverage across three of the four domains of our guiding framework, including school meals, nutrition services (micronutrient supplementation), and nutrition education (e.g., curriculum standards and nutrition skills). For each domain there are multiple questions that can be drawn upon, and there is potential to build on FRESH with indicators related to the school food environment, the domain that is not currently being measured.

Monitoring and evaluation guidance for school health programs. Eight core indicators to support FRESH (Focussing Resources on Effective School Health) | Health and Education Resource Centre (unesco.org)
Approaches to measure the school nutrition environment

Most of the national monitoring tools reviewed were questionnaires provided for school-level self-assessment or policy compliance monitoring. In comparison, the tool from Myanmar and the two published tools (FRESH, INFORMAS) were all underpinned by a scoring mechanism to determine the status of school food or nutrition in schools, and the degree of policy implementation.

The FRESH tool was the only tool that generated a score critiquing both the national policy environment and school level implementation of national policies, while the INFORMAS and Myanmar assessment tools generated a score for the proportion of schools complying with school food policy. The FRESH tool was the only one that assessed the existence and dissemination of a national school nutrition policy, curriculum standards and national guidelines for the types of foods provided in school meals.

All tools (except for two) were constructed as questionnaires made up of checklists and closed-ended or multiple-choice questions. The FRESH tool and the Australian healthy school canteen evaluation toolkit offered a more hybrid approach by including quantitative questionnaires, qualitative interview questions, and focus groups with both in-person and remote methods of data collection (e.g., by phone or online survey). In the tools included in the review by Lane et al (2020), the tools reviewed largely involved in-depth observational assessments combined with other school-level data collection methods (e.g., Geographic Information Systems mapping or interviews).

Four of the tools specified recommended intervals between assessments of schools, ranging from 6 to 12 monthly. Some of the tools relied on data from assessment of school records, for instance, provision of certain school health services, participation in school supplementation or feeding programs, or time spent participating in high-intensity physical activity.

End-users of the tools reviewed were generally not defined except for the Australian healthy school canteen evaluation toolkit and the FRESH tool. In these two tools, different components of the questionnaires were directed to specific stakeholder groups (including canteen managers, school committees, administrators and students), in order to address the specific purpose of the tool. The systematic review of observational methods to assess school food environments by Lane et al (2020) reported that most studies reported on methods that were to be carried out by a team of researchers, with just one (of the 23) observational tools to be carried out by school staff.
Domain 1: Nutritious foods in schools

While a number of EAP countries are likely to have school meal programs in place, we did not locate many tools to assess these. Those we did identify were used to assess school meal programs in Nepal, Sri Lanka and Myanmar.

The school nutrition assessment tool from Nepal asked whether school meals were provided for free, to which age group, and whether the composition of the school meal was in alignment with WFP meal standards. Schools providing meals not in alignment to WFP standards were asked for their menus. The tool we examined from Sri Lanka centered on school meals only and therefore provided a much more comprehensive assessment. In this tool, schools were required to maintain records of the number of dispersed meals or milk supplements, and undertake quarterly growth assessment for participating children. The Myanmar tool documented the percentage of children receiving the school feeding program, and the number of meals served per year.

The FRESH monitoring tool included in its domain indicators the number of ‘school-based nutrition services’ being offered at school level, including:

- The percentage of schools providing school meals,
- Number of schoolchildren receiving school meals,
- Number of days that the school meals are offered,
- Cost of the school meal
- Time of day the school meal is offered, and
- Percentage of schools that offer fruit or 100% fruit juice during a typical week.

This tool also includes specific questions on the proportion of nutrients and micronutrients that were provided via meals and supplementation, compared with what was planned. At the national level, this tool included indicators for the number of meals served each year, compared with the number of opportunities to receive them (for the recipients of the program).

Promotion of local supply chains was not considered in any tools, though the tool from Samoa asked schools whether they promoted the local supply and sale of local foods in the school food environment (e.g., growing their own or directly purchasing from a local plantation, grower or market).
Domain 2: Healthy food and physical activity environments

In the tools we reviewed, the school food environment was the most commonly assessed domain. However this was limited to tools developed for HICs, with few tools from LMICs including an assessment of the school food environment. Measurement indicators for this domain differed across food environment components, contexts, and with varying depths of inquiry.

Availability of healthy foods and drinks relative to unhealthy items

The availability of foods in the school environment was given as including those foods retailed in school canteens, tuckshops, cafeterias and school vending, and foods provided to children during after-school programmes or as a reward or gift. The food environment also included foods available during school celebrations and events, and the foods being used for fundraising. No tools explicitly assessed the availability of food introduced from home or in lunchboxes, though a few did enquire about policies to govern these.

The healthfulness of food available in school settings was most commonly assessed by the availability of food items or the frequency of sales (1). In most tools, assessing food availability was performed either against the availability of prohibited/unhealthy ‘indicator’ foods (for instance the availability of SSBs and confectionery), or by asking whether minimum standards had been met on the availability of essential ‘indicator’ foods, including grains, vegetables and fruits, or non-hydrogenated oils.

For instance, the tool from Samoa assessed the sale of three categories of prohibited ‘indicator’ foods and three essential foods, as well as asking whether all snacks consumed by staff and students on school grounds were consistent with national dietary guidelines. The tools from New Zealand and Australia both provided a list to assess the number or proportion of ‘green’ or ‘red’ items being retailed based on a traffic-light classification system, and the Australian tool queried whether this had increased or decreased since the last assessment. The tools from Hong Kong and the United Kingdom both provided specific portions and ratios against which to assess food provision; for example, assessing meals by the recommended ratio of vegetable to meat to grains in meals, and in Hong Kong by then specifying characteristics of those foods (e.g., meat that has had all visible fat removed). Some of the measures applied had less specificity, compromising monitoring and enforcement measures. For example, there were checklists asking about the available of ‘salty foods’ (Samoa), ‘fried foods’ (Nepal) or ‘sausages high in sugar and fat’ (Hong Kong).

Other aspects of the food environment were measured to varying degrees. Adoption of school gardens was included in tools used in Nepal, Myanmar, Sudan and New Zealand, usually via a binary checklist of whether school gardens were present or not (Nepal, Myanmar). The tool from Sudan included a more comprehensive set of questions on the function of the school garden, types of fruits and vegetables grown, frequency of harvesting, consumption of produce by children, and the involvement of children in managing the garden. Some tools assess the presence of unhealthy vendors around the school perimeter (Sri Lanka, Nepal), and children’s ability to access those vendors during school hours (Nepal, Samoa and New Zealand). One tool asked about vendor licensing and contracting (Samoa). The tools from Australia and New Zealand both provided opportunity for stakeholder views on food provision, asking about enablers and barriers to menu change.

A number of countries asked about the availability and management of clean drinking water. In Samoa, Sudan, New Zealand, Myanmar and Nepal, tools asked questions about
access to safe or improved drinking water (e.g., provision, opportunity and location) while the Sri Lanka tool asked about the maintenance of drinking water facilities.

**Pricing of healthy foods and drinks relative to unhealthy items**

The relative affordability of healthy and unhealthy foods was assessed in a several ways. A tool from Nepal asked whether the school had adopted pricing guidelines that promote healthy food sales. Tools from other countries asked whether food services were being contracted out to a private business or run not-for-profit, or they recorded and assessed food prices (1).

**Promotion of unhealthy foods and drinks**

Unhealthy food marketing was not commonly assessed, with only the tool from Samoa asking about food marketing and sponsorship. INFORMAS offers a tool for assessing outdoor advertising around school zones, and an approach to systematically identify and monitor the corporate political activity of the food industry, but these are both highly resource intensive and unsuited to assessment of holistic school nutrition environments where data must be collected across multiple domains.

**School-level support for promoting nutrition**

A few of the tools attempted to assess engagement with the policy by the broader school community (families, community, school staff), or the sense of priority for the policy among key stakeholders (management, food vendors and parents). The knowledge, perception and acceptance of policies by key stakeholders (teachers, parents, vendors) was examined in a number of tools, mostly in terms of steps that schools had taken to promote and maintain awareness of school standards to promote healthy food (Samoa, Myanmar and Australia), and whether food vendors had been trained in using the standards. The tool from New Zealand used a Likert scale for assessing the culture of healthy eating in schools (with detail on indications of support), and for assessing the level of priority expressed by school leavers, engagement of leadership, and role modelling through the school community. The tool from Australia and the FRESH tool both directed specific questions to different stakeholders that would enable assessment of their knowledge and acceptance of school nutrition policies.

Tools asked about the training being provided to implementers, parents’ views on the healthfulness of school meals, the number of school events promoting healthy eating, or nutrition education provided to parents. One tool (Australia) tested the knowledge and confidence of canteen workers in applying the classification tools and the standards. This tool also questioned the level of support being offered to food vendors, and the impact of the standards on canteen profitability.

**The physical activity environment in schools**

Tools from both Myanmar and Nepal assessed physical activity in terms of frequency and intensity of physical activity opportunities, and the availability of sports equipment. The Myanmar tool took a comprehensive approach to assessing physical activity, which included generating statistics on the number of children active for over 60 minutes for seven days in a row. This tool also asks for schools to rank their ‘implementation’ against 15 approaches to promoting physical activity.

The FRESH tool provided a more comprehensive module specifically for assessing the physical activity environment, including physical activity infrastructure, skills and sports being offered, and opportunities to participate in non-competitive activities.
Domain 3: Micronutrient supplementation and deworming

Three of the tools included in their assessment the delivery of supplementation and deworming services (Nepal, Sudan, FRESH). In Sudan, this assessment was undertaken with a checklist assessing whether schools had a policy for, and were delivering on, a range of complementary health services. Checkboxes were offered for the delivery of deworming, micronutrient supplementation (gender disaggregated), and routine screening services (vision, hearing, height and weight measurement) with referrals. This tool offered a separate checklist to assess which services were recommended under a regional health policy for school health services, which services were specified in the school’s own policy, and which services were actually being provided. A separate table was used to chart frequency against the provision of those services. Nepal offered a more concise checklist, asking whether deworming, iron-folate supplementation, dental services and growth assessment were offered annually (with separate checkboxes for grades 6-10 and 11-12). The FRESH tool offered a module specifically drawing on school records to collate the national percentage of schools providing micronutrient supplementation, and the percentage of students receiving them.
Domain 4: Nutrition education in school curricula

Across the tools review, nutrition integration into the curriculum was much less frequently assessed than other nutrition environment domains. Those that did assess school curriculum predominately used closed-ended questions to ask whether nutrition education was being offered and how often, and whether healthy foods were being promoted at sporting events (in alignment with the curriculum). The FRESH tool included the most comprehensive assessment of the delivery of health and nutrition teaching to children. It achieved this by assessing national-level curriculum standards for health education with a focus on nutrition, and the degree to which that content reflected national health priorities. It also asked about delivery models, for instance whether delivery was incrementally offered under a logic of lifelong learning, and whether the curriculum was based on participatory and skills-based approaches. This included the presence of physical education in the national curriculum, and a range of measures on the delivery of physical education sessions.

The review of tools from O’Halloran et al. (1) reported including tools that measured student or teacher perceptions on the role of the classroom in offering nutrition education, as well as their interest in receiving training.

FAO’s School Food and Nutrition Education Model introduces core principles for enhancing the effectiveness of nutrition curricula, including:

- Needs-based learning with practical, real-life aims,
- Building on existing experience and expertise,
- Plenty of observation, action and practice in real-life settings (e.g., school, home),
- Interactions with physical and social environments in all learning activities,
- Consolidation and maintenance of practices,
- Ownership of the process,
- Family and community support and involvement, and
- Enabling food environments (4).

In the EAP region, FAO has used this model to assess the nutrition curricula in Cambodia, Bhutan, Philippines, Timor-Leste and the Pacific island countries, which could be drawn on for a set of consistent indicators.

Assessment of national school nutrition policy frameworks

In many countries the school nutrition environment is shaped by a set of national policy frameworks. Comprehensive, multi-component national school nutrition policies, informed by local situational analysis, are associated with positive dietary and weight-related outcomes among school children, including in LMICs (5). Therefore, assessment of the national policy environment can inform policy-oriented learning, and provide opportunity for cross-country comparisons.

Tools mostly assessed national policy frameworks from the school perspective (i.e. questions on how policies had been adopted, disseminated or implemented and enforced at the school level). However, the FRESH tool assessed the extent to which a national-level school health policy or strategy existed and had been disseminated, the extent to which the policy addresses national health priorities, and the educational strategies used in national curricula to impart knowledge to children. This tool provided a national set of indicators that could be used for cross-country comparison, including existence of a national school nutrition policy and national-level curriculum standards, and the percentage of schools that
have (or follow) a written policy on school meals composition. Similar to the FRESH tool, the tool from Myanmar included assessment of national targets against each domain (of which one domain is related to nutrition promotion and food safety), expressed as a percentage of schools that comply with the specified criteria.

Assessment of school-level policy dissemination and governance

Communication of school food policies in schools, and policy monitoring and enforcement, are all enablers of implementation (6). A number of tools questioned how nutrition policies had been disseminated and implemented at school level. For instance, the Nepal tool asked general questions about whether the national nutrition policies were being implemented at the school level, and whether the school was monitoring compliance or enforcing the policy. The tool from Samoa queried whether the policy was on display for staff and students, and whether staff and school committee members had all signed it. The tool from Australia queried schools on where guidelines were kept and how often they were referred to, while the Myanmar tool provided a scale to gauge school committee meetings and oversight.

Other tools asked about the complementary policies that had been implemented in each school. For example, both the Samoa and the New Zealand tools asked whether students were required to stay on school grounds during school hours. The Samoa tool additionally queried school standards for home-packed lunchboxes, and whether food vendors operating within schools were registered or informal.
References from main document


