

McGovern–Dole International Food for Education and Child Nutrition Program

A Learning Agenda

February 18, 2016

School Meals Learning Agenda

Objective of the School Meals Learning Agenda

The Foreign Agricultural Service's (FAS) Office of Capacity Building and Development (OCBD) created the School Meals Learning Agenda for the McGovern-Dole (MGD) International Food for Education and Child Nutrition program, as a tool to highlight key research and evaluation questions in the area of school meals. The key research and evaluation questions highlighted in the Learning Agenda are intended to identify gaps in the knowledge base within the school meals literature that should be addressed as a matter of priority. The Learning Agenda was designed to address key research and evaluation questions that align not only with the theory of change outlined in the MGD program-level Results Framework, but also the broader school meals program theory. Collectively, addressing the school meals evidence gaps will improve the design and implementation of interventions, and ultimately lead to improvements in education and nutrition for children and the sustainability of school meal programs.

A substantial body of literature exists in the area of school meals. However, key gaps in the knowledge base remain on which interventions, or combination of interventions, have the greatest impact, are the most cost-effective, lead to long-term benefits, and improve the sustainability of school meal programs. Decreasing the evidence gaps is key to prioritizing limited and often scarce resources and developing effective school meal programs and policies. As school meal programs are implemented around the world in high and upper-middle income countries and in low to lower-middle income countries using various modalities and at differing levels of scale and targeting, closing the evidence gaps is critical

The school meals theory of change and impact pathways is complex. Evidence demonstrates an effect of school meals on educational outcomes including school participation, school performance, and cognitive development (specifically memory), in addition to strengthening linkages to complementary health and nutrition interventions, such as micronutrient fortification, deworming, and water and sanitation interventions. Take-home rations, which have also been provided as components of school meal programs, show effects on children's attendance at school, particularly among girls, but also on the nutrition of younger children in the home. Further, the more recent focus on linking school



The McGovern-Dole International Food for Education and Child Nutrition Program supports education, child development, and food security in low-income, food-deficit countries around the globe. The program provides for the donation of U.S. agricultural commodities, as well as financial and technical assistance, to support school meals and maternal and child nutrition projects.

The McGovern-Dole Program is named in honor of Ambassador and former U.S. Senator George McGovern and former U.S. Senator Robert Dole in recognition of their tireless efforts to eradicate childhood hunger.

meal programs with local agricultural markets, often referred to as “Home-Grown School Feeding” and “local and regional procurement,” introduces additional impact pathways that can have an effect on the local economy, jobs, and agricultural production. The Learning Agenda provides a research platform to systematically study the complex linkages between school meals and the health, education, nutrition, and agricultural sector outcomes.

FAS will use the Learning Agenda to prioritize research and evaluation activities in future years. FAS also hopes that other governments, implementing organizations, international organizations, research institutions, and academics will use the Learning Agenda to prioritize school meals research with the aim of collectively closing the evidence gaps and improving the impact and sustainability of school meal programs.

Development of the Learning Agenda

The Learning Agenda was developed through systematic reviews and consultations with researchers, academics, policy-makers, and practitioners with expertise in implementing school meal, health, nutrition, and education interventions from a wide range of organizations, research institutions, and universities.

To reflect the complexities of school meal programs and the linkages between school meals and other interventions, the Learning Agenda is organized around four primary themes: education, nutrition, health, and agriculture. In addition to the organization around the four central themes, the Learning Agenda considers important cross-cutting themes that the evidence shows can influence school meal outcomes, such as gender and target age groups.

Measurement and Methodological Gaps

There are specific measurement and methodological gaps in the current literature that are not identified as specific research and evaluation questions in the Learning Agenda, but are key to informing the design of future studies aimed to address the literature gaps. The current literature on school meals is often characterized by studies with small sample sizes, short duration, and implemented in limited contexts. More longitudinal studies conducted at scale and designed to measure the long-term impacts of school meal programs are needed across the health, nutrition, education, and agricultural sectors. In addition, studies conducted across a variety of contexts are necessary in order to understand why and how context matters.

There is a significant need for research that generates economic evaluation evidence that considers cost-effectiveness of different school meal modalities, nutritional composition of meals and products, local procurement, and new technologies. There is also a need for consistency in the measurement of educational outcomes, in addition to a focus on the measurement and standards of health and nutrition outcomes for children over the age of five. It is well understood, for example, that the greatest health and nutritional benefits occur in children under the age of five. However, gains in health and nutrition status may be achieved and/or sustained in children over the age of five. Limited research exists on the

physical growth and health impacts for children over five, including the studies that assess the minimum acceptable diet for this population of children.

Evidence Gaps

The research questions outlined in this section are familiar questions of school meal effectiveness. An important distinction between the questions of effectiveness outlined in the Learning Agenda, and previously published studies of effectiveness, is that the Learning Agenda seeks to address the gap in evidence of effectiveness at scale. The results from three systematic reviews commissioned by FAS and additional published literature indicate that the reliability and validity of results is often low due to small sample sizes and short duration of the study. The inherent features of the Learning Agenda questions are to measure school meal program interventions at scale and over time.

Another key objective of the Learning Agenda is to provide additional evidence to high-level impacts of school meal programs on student learning and cognition. The research literature includes a number of studies that demonstrate school meal programs can increase short-term measures of school participation, including enrollment and attendance, but research has produced less compelling results on the effect of school meals on actual student learning¹. Furthermore, there have been no rigorous evaluations of the long-term impacts of school meal programs on economic productivity, morbidity and mortality, and any spillover effects on to the next generation.

The Learning Agenda is segmented into five general categories of outcome inquiry. The first section focuses on the broad systematic level of outcomes of school meal programs, while the remaining four sections focus on areas of outcomes relevant to school meal interventions including: education, health, nutrition, and agriculture. The research questions presented are followed by an overarching discussion of the ways in which sustainability fits into the School Meals Learning Agenda.

SCHOOL MEAL PROGRAM IMPLEMENTATION

There is a variety of interventions and implementation systems that comprise international school meal programs. Each system requires a set of complex stakeholder relationships that are often region or country specific and therefore difficult to measure and compare. Over the past five years, the McGovern-Dole Program alone has worked with 24 implementing partners to leverage U.S. agricultural food commodities, as well as financial and technical resources, to provide assistance to numerous school systems in developing countries. These partners in turn must cultivate bilateral, municipal, and community relationships in order to coordinate efforts and to maximize the impact of school meals on health, education, and nutritional outcomes. The research questions presented in this section focus on the systems required to leverage resources and improve the sustainability, effectiveness, and overall impact, both short and long-term, of school meal programs.

Key Questions:

¹ The studies have largely been limited by small sample sizes and lack of standardization regarding measures of learning.

1. What are the key institutions (i.e. international, national, provincial/district and local stakeholders) and governance structures required to effectively deliver, implement, and sustain school meal interventions? What relationship structures among these institutions yield the most successful and effective school meal programs?
2. What community-level systems of governance and management are required for the successful implementation and sustainability of school meal programs?
3. Which components of school meal programs, including food production, procurement, and preparation of meals, are the most sustainable in terms of operational efficiency and why? Does the cost-effectiveness of these programs change over time and if so, how and why?
4. What variables impact the resiliency of school meal program community support systems and in what ways?
5. What types of incentives (and in which contexts) are the most effective at securing local or national government investment into school meal programs? What are the barriers and challenges in securing investment?
6. What are the most effective methods for ensuring food safety within school meal programs taking into consideration the different systems of national, regional, local and community governance?
7. What aspects of school meal interventions are the most sensitive to internal and external system pressures? For example, internal pressures may include changes in policy related to human resources and external pressures may include fluctuations in local agriculture commodity prices. Moreover, are there combinations of interventions that are more or less resilient to these pressures?
8. What are the most successful policies affecting the success of school meal programs, and what are the necessary conditions for these policies to be implemented and to be effective?
9. In what ways do school meal programs impact health equity in terms of poverty, gender, or geography?
10. How do health and educational outcomes linked to school meal programs differ in rural versus urban school settings?

EDUCATION/LITERACY EVIDENCE GAPS

Existing literature on educational outcomes linked to school meals indicate a significant correlation between school meals and positive impacts on school participation, measured through attendance and enrollment. Research has also shown a greater effect on girls. The evidence correlating school meals, cognitive function and learning achievement is more limited, with some indication that there is little to

no effect across the combined school meal interventions of in-school meals and take-home rations. However, the provision of take-home rations correlated with a greater effect on educational outcomes than the in-school provision of food. Generally, learning takes longer to materialize and observe through the limited short-term studies available. In addition, the achievement pathway for learning may be less direct than school participation because of the dependence on education quality. In terms of cognitive development, studies are limited primarily to memory outcomes, with evidence lacking related to verbal fluency and reasoning.

There are multiple ways to increase student attendance with school meals being just one.² The complexity of interactions when measuring educational outcomes of school aged children is evident and the literature suggests that school meals may be one valuable tool in a range of instruments to achieve a more effective education system. For example, the literature indicates school meal programs may be more effective if combined with quality education programs, including an appropriate curriculum, quality teachers, high teacher to student ratios, and suitable textbooks. Further, for optimal results, school meals and quality education systems may need to be implemented in combination with supplementary services such as health and nutrition interventions.

A solid understanding of the desired intermediary outcomes and community context is essential in the selection of an intervention or combination of interventions and in the interpretation of evaluation results.³ For example, the impact of school meals is larger when school participation rates are low and nutritional deficits are high. However, if school attendance is already satisfactory and nutritional deficits are high, a health intervention providing nutritional supplements may be a more cost-effective way to address nutritional deficiencies. Additionally, if poor school performance is attributed to poor quality instruction and/or a lack of teaching resources, interventions that directly target school quality and instruction may be more effective at achieving educational improvements.

Researchers consulted during the development of this Learning Agenda agreed on several additional educational outcomes linked to school meal programs or interventions supplementing school meals. For example, providing breakfast or mid-morning meals produces better student concentration than just the provision of lunch. Also, access to light and reliable electricity is linked to improved school performance. In addition, school enrollment is positively impacted by better, more reliable teacher housing, as well as interventions designed to improve safety and security, like improving transportation or providing separate latrines for students and teachers by gender. Finally, according to researchers there is discussion in the literature on the importance of the language of instruction and the provision of culturally appropriate learning materials. However, there is still debate surrounding the right context for its implementation or the right combination with other interventions.

The research questions listed below were designed first and foremost to address issues of effectiveness. In addition, there are two other important research domains: (1) process and context evaluations that

² Sarah W. Adelman, Daniel O. Gilligan, and Kim Lehrer (2008). How effective are food for education programs? : a critical assessment of the evidence from developing countries. Food policy review vol. 9

³ Sarah W. Adelman, Daniel O. Gilligan, and Kim Lehrer (2008). How effective are food for education programs? : a critical assessment of the evidence from developing countries. Food policy review vol. 9

provide qualitative data to answer the ‘why’ and ‘how’; and (2) economic evaluation data that provides critical evidence on cost-effectiveness, cost-benefit, and value for money. In order to avoid repetition, each question outlined below would also include a qualitative research component, and when applicable, an economic evaluation component.

Key Questions:

1. In what ways do the combination of school meal interventions and educational interventions improve education and literacy levels? How can these combinations improve cost-effectiveness?
2. What school meal modality (breakfast, lunch, snack, or a combination thereof) is the most effective at improving immediate outcomes, such as attendance or concentration, versus longer-term outcomes, such as cognitive development or learning achievement?
3. How do educational outcomes linked to school meal interventions among preschool children compare with the impacts among primary school aged children? What factors affect any differences in outcomes?
4. What are the differences in educational outcomes from school meal programs between children from families living below the national poverty line and those above the poverty line?
5. What are the differences in educational outcomes from school meal programs between malnourished or undernourished children and those who are not?
6. What are the long-term impacts of school meals on economic productivity and well being into adulthood?
7. In what ways do school meal interventions impact the resources of teachers, such as classroom time, teacher incentives, and teacher capacity?
8. What is the impact on educational outcomes of school meal program interventions that require teachers to deliver health and nutrition curriculum, or training in a school setting, in addition to the standard academic curriculum?

HEALTH EVIDENCE GAPS

This Learning Agenda considers both the physical health, as well as educational outcomes of school-aged children. Specific emphasis is given to linking the health implications of malaria, deworming, and water, sanitation, and hygiene (WASH) interventions with educational outcomes and school meal programs. Preventable diseases like malaria contribute to significant declines in school attendance. It is estimated that malaria alone accounts for 13-50 percent of school days missed per year.⁴ Prevention

⁴ UNICEF and WFP (2005). The Essential Package: Twelve Interventions to Improve the Health and Nutrition of School-Age Children.

activities delivered in school settings, such as the distribution of bed nets and education on malaria risk factors, symptoms, and treatment have been very successful at decreasing malaria rates. Other preventative interventions, such as human immunodeficiency virus (HIV) education among school-aged children, have also contributed to a decrease in high burden diseases such as HIV and tuberculosis. The delivery of common disease treatments in a school setting has proven to have high levels of acceptability by students, parents, and teachers, to be efficient to administer, and cost-effective. A review of relevant literature indicates that malaria treatment positively correlates with increased math and language test scores of school children, with chloroquine treatment demonstrating the greatest impact.

According to the World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF), more than 32 percent of the world's population (2.4 billion people) in 2015 still lack access to improved sanitation facilities, and 663 million people still use unimproved drinking water sources.⁵ The United Nations estimates that more than 340,000 children under five (almost 1,000 per day) die annually from diarrheal diseases due to poor sanitation, poor hygiene, or unsafe drinking water. In addition to saving lives, research has shown that WASH interventions positively correlate with improved educational outcomes such as increased enrollment and reduced school absences and dropouts, particularly among girls. Further, research shows that these positive outcomes result from a combination of all WASH interventions, including hand washing, water quality, water supply, and sanitation as opposed to a subset of WASH interventions with water supply a determining factor in success. The impact of WASH programs on student health is less understood and little is known about the sustainability of school-based WASH programs.

Stunting is a condition that affects an estimated 171 million children (167 million in developing countries). Globally, childhood stunting decreased from 39.7 percent in 1990 to 26.7 percent in 2010. In Africa, stunting has remained relatively consistent since 1990 (approximately 40 percent) and little improvement is anticipated.⁶ Stunting starts before birth and is caused by many factors including poor maternal nutrition, poor meal practices, poor food quality, and frequent infections that can slow down growth.⁷ Given that many school age children are stunted when they start school, and stunting cannot be reversed, school meal programs have limited value at increasing growth. However, little is known about the effect of school meals in combination with health interventions that can decrease infections (i.e. deworming) on mitigating stunting during the second growth spurt that occurs in adolescence.

Over 270 million preschool-age children and over 600 million school-age children live in areas where soil-transmitted helminthes caused by parasitic worms are intensively transmitted, and are in need of treatment and preventive interventions. Deworming programs are relatively easy to implement in school settings. Teachers need only a few hours of training to understand the rationale for deworming,

⁵ United Nations (2015). The Millennium Development Goals Report 2015; United Nations: New York, NY, USA.

⁶ Onis M, Blössner M, Elaine Borghi (2012). Prevalence and trends of stunting among preschool children, 1990–2020. *Public Health Nutrition*, vol 15, issue 1, Jan 2012.

⁷ <http://data.unicef.org/nutrition/malnutrition.html>

to learn how to give out the pills, and how to keep a record of their distribution.⁸ Although deworming outcomes in school settings are based on a limited number of countries, indications are that it has minimal impact on school attendance. However, the limited research does indicate some impact on improving weight, physical well-being, and cognition. Further research is needed on the effectiveness of deworming interventions in various prevalence settings and on the cost-benefit of deworming at various prevalence levels.

The various combinations of health treatment and prevention interventions coupled with school meals are largely known to be effective in achieving program outcomes of increased student attendance and enrollment. However, the most cost-effective combinations and frequency across various socio-economic and age groups are less understood. Moreover, the long-term impacts on literacy and cognition are uncertain.

Key Questions:

1. Which combination of school meal programs and disease treatment (i.e. malaria) and/or prevention interventions (i.e. diarrheal illnesses) reduce and/or prevent health related absences?
2. What are the impacts of using local health resources (i.e. local community nurses) to deliver health interventions through school meal programs?
3. How does the provision of public health training and services to children in a school setting compare with other avenues of similar service delivery in terms of health outcomes and behavior change? What are the specific variables that affect the differences in outcomes?
4. What systems of community health care governance are the most effective at sustaining the delivery of health interventions through school meal programs?
5. How do WASH programs impact learning and literacy outcomes?
6. What are the impacts of providing WASH infrastructure for adolescent girls and what are the best ways to quantify these impacts?
7. What are the best practices in sustaining WASH interventions delivered through a school meal programs? What are effective exit strategies used by programs to ensure sustainability after donor funding has been removed?
8. Over the long-term (greater than two years), how effective are deworming interventions, in combination with school meals in mitigating stunting during the second growth spurt occurring in adolescence?

⁸ Deworm the World (2010). School-Based Deworming: A Planner's Guide to Proposal Development for National School-Based Deworming Programs.

9. What is the effect of school meals on the growth of school-aged children who are malnourished compared to adequately nourished children?
10. What intergenerational effects (i.e. low birth weight) do school meal programs have on the children of females who were enrolled in school meal programs?
11. What are the priority health interventions that are required to meet specific program outcomes? For example, if an outcome of a school meal program is to increase the body mass index (BMI), what are the necessary health interventions that must be in place to achieve this outcome?

NUTRITION EVIDENCE GAPS

The MGD program results framework recognizes that improved nutrition and knowledge of nutrition will support the ultimate objective of improving literacy in school-aged children by reducing health related absences and improving attendance. A recent analysis of school meal programs by the World Food Program (WFP) recommended fortified foods as a routine part of school-based programs.⁹ The WFP made clear that a major gap in the evidence is identifying the operational challenges and facilitators of success associated with delivering micronutrient programs in school settings (versus health care settings).¹⁰

There remains a substantial gap in the evidence about micronutrient supplementation among children beyond the common “first thousand days.” Justifiably, nutritional interventions have focused on ensuring that pregnant women, infant, and young children during the first two-year postpartum period, receive essential micronutrients. There is a lack of evidence of the cost-effectiveness of micronutrient supplementation delivered through school settings for older school children (ages 15 and older), and for girls of reproductive age. However, there are other specific nutrition benefits that deserve a more in-depth examination to determine what impacts beyond school attendance that nutrition may have on literacy and education. For example, there is a direct relationship between the intake of micronutrients and student energy levels. However, there may be a lack of reliable research on the effectiveness of blended fortification and how effective, iron supplements may be in impacting cognition or psychomotor skills. There is also no consistent measure to determine the efficiency and effectiveness of school meal programs on the delivery of micronutrients. In addition, the long-term benefits and cost-benefit return of fortification versus supplementation are less understood in the context of improved education and health status.

Key Questions:

1. What are the immediate and long-term effects on health outcomes as a result of improved nutrition

⁹ World Food Program (2013). State of School Feeding Worldwide.

¹⁰ World Food Program (2013). State of School Feeding Worldwide.

between fortified school meals versus unfortified school meals?

2. What is the effect of school based micronutrient supplementation and/or fortification on long-term educational outcomes such cognition and knowledge acquisition?
3. How effective are school based micronutrient supplementation interventions at preventing and/or decreasing health related absences?
4. How are nutritional outcomes affected by different food sourcing modalities of school meal programs? Outcomes to consider may include iron deficiency, body mass, and other measurements or behavior changes related to nutritional intake and dietary diversity.
5. What are the most effective pedagogical approaches to teaching nutrition through school meal programs and to what age group?
6. How does the provision of nutritional training to children in a school setting compare with other avenues of similar behavior change interventions in terms of nutritional outcomes? What are the specific variables that affect the differences in outcomes?

AGRICULTURE EVIDENCE GAPS

Food sourcing is a crucial element of school meals, both as a program input and as an area of potential economic outcomes relevant to local communities. There has not been extensive research on the impact of locally sourced and produced food, not only as it relates to nutrition and education, but also in terms of sustainability and the impact on the local agricultural production systems and markets. Similarly, the impact of school meal programs on government policies surrounding subsidies, supporting infrastructure, food diversity, and the structure of social safety nets are areas for further examination.

It is well established that school meal activities greatly benefit from private sector involvement. As far back as 2003, the WFP stated that active private-sector involvement had greatly helped develop capacity and expertise among key political and economic leaders.¹¹ The WFP stated that the early involvement of the private sector into school meal programs was critical to success and sustainability. However, the WFP also stated that more studies were needed in order to monetize the value of the private sector contribution or generate return on investment (ROI) data in order to incentivize the private sector.¹²

Global and regional partnerships have emerged that are attempting to link a broad array of actors to strengthen ties between the health, education, and production or supply aspects of school meal programs. These include national governments and international agencies like the World Bank, UN Food and Agriculture Organization (FAO), the Global Partnership for Education, and WFP. For example, the Bill and Melinda Gates Foundation has supported a “structured demand” model based on a theory of

¹¹ World Food Programme (2003). Exit Strategies for School Feeding: WFP’s Experience.

¹² World Food Programme (2003). Exit Strategies for School Feeding: WFP’s Experience.

change that large, predictable sources of demand, such as school meal programs, can be linked to small farmers as a way to encourage improvements to local agricultural production systems, increase quality and incomes, and reduce risk.¹³ One well-known example of such a model is Home-Grown School Feeding (HGSF), but others exist including local and regional food aid procurement (LRP), and in India, the Public Distribution System (PDS). Studies of these systems focus on impacts on local pricing, the importance of local market analysis, and benefits to commercial food traders or middlemen.¹⁴ For example, a study of HGSF in Kenya suggests that one pitfall is the overall production capacity of local systems. Often schools are located in areas not equipped with agricultural production resources, so care must be taken that systems have adequate support from local and national leadership and have ways to monitor issues related to corruption or market favoritism that can disrupt the fabric of the safety net, in this case school meals.¹⁵

The following questions explore gaps in these aspects of school meal programs relative to food sourcing and agricultural production.

Key Questions:

1. How do the impacts of local procurement models and other community and nationally sourced models compare with those that rely on international food sources?
2. How can a combination of local procurement during harvest time be supplemented with international food aid to promote locally and/or nationally sustainable school meals programs?
3. What are the long-term impacts (five or more years) of school meal programs on local agriculture production and food safety and what variables affect these changes?
4. What long-term impacts do school meal programs have on local agriculture markets, employment, and infrastructure development, given the potential for a sustained and predictable demand?
5. What kinds of partnerships with the private sector and/or host country governments are the most effective at ensuring program sustainability? Among successful partnerships, who are the key players and what are their roles? In what contexts do private sector and/or government partnerships work best and which contexts may be more challenging?
6. In what ways does the additional demand of school meals impact decision making on agricultural policies related to subsidies and the promotion of diversity in production?

¹³ Simon McGrath and Qing Gu (2015). Routledge Handbook of International Education and Development.

¹⁴ Christopher Coles (2013). What is Known About the Impacts of Structured Demand Activities on Resilient food Systems?

¹⁵ Nica Langinger (2011). School Feeding Programs in Kenya: Transitioning to a Homegrown Approach.

Sustainability

A common and overarching thread linking gaps in research and evidence across all of the sectors discussed in this Learning Agenda is the issue of sustainability of school meal programs and outcomes. While several research questions presented here directly and indirectly seek to address sustainability, it is important to recognize that there are many layers to and definitions of the term. Topics related to sustainability discussed above include policy level decision-making, programmatic efficiency, and cost-effectiveness. There is no common measurement for the level of sustainability of school meal programs because the term itself can be applied to these and other layers of programming. For example, sustainability in the context of school meal programs might refer to funding and political support from a partner government with the aim of operating programs after donor support has ended. Or it might be specifically focused on the local sourcing of food to help maintain the necessary supply chain. Additionally, sustainability may be defined by the longevity of observable outcomes and benefits of the program. Sustainability may even refer to the level of inclusiveness required to gain momentum and support at the local and community levels. All of these nuances cut across the sectors presented here in which researchers and implementers attempt to measure the outcomes and impacts of school meal interventions. While this Learning Agenda cannot define and differentiate all of these perspectives on sustainability, an attempt has been made to incorporate the most important or relevant issues of sustainability into the selection of questions presented here.