

Kelly Garton, Chelsea Riddell, Pippa McKelvie-Sebileau, Rachael Glassey, David Tipene Leach, David Rees and Boyd Swinburn

Not Just a Free Lunch

a logic model and evidence review for the Ka Ora, Ka Ako | Healthy School Lunch programme

Abstract

Ka Ora, Ka Ako provides free, healthy lunches for 220,000 learners in low-equity New Zealand schools. Costing over \$260 million annually, it represents the largest government investment in child nutrition in generations. *Early evaluations indicate success in achieving programme aims of delivering nutritious food, improving learners' wellbeing, and easing financial stress for families. However, international evidence and emerging local data indicate the programme can achieve the above and more. This article presents a programme logic model drawing on local data and a review of relevant international literature on universal school food provision with the aim of identifying potential long-term outcomes and impacts at multiple levels: for learners, whānau, schools,*

communities, and food systems.

Findings indicate that the Ka Ora, Ka Ako programme has the potential to:

- improve children's nutrition and educational outcomes, as well as improve child and whānau food security;
- enrich school learning environments;
- boost local economies (through creation of jobs paying a living wage) and enhance local foodscapes (including availability and affordability of healthy foods) through food system engagement in schools, with whānau and communities; and
- increase food system resilience (e.g., shorter supply chains and relationship building), and encourage broader food system transformation

Kelly Garton is a research fellow in the School of Population Health at the University of Auckland, studying food environments and transitions to healthy and sustainable food systems. **Chelsea Riddell** is a research assistant in the School of Population Health at the University of Auckland. **Pippa McKelvie-Sebileau** was project manager and founding member of Nourishing Hawke's Bay. She is now a doctoral candidate at the University of Auckland. **Rachael Glassey** is a senior research fellow at Te Pūkenga, Hawke's Bay campus and manages the Nourishing Hawke's Bay project. **David Tipene Leach**, a public health physician,

is Professor of Māori and Indigenous Research at Te Pūkenga, Hawke's Bay campus and co-director of Te Kura i Awarua Rangahau Māori Centre. **David Rees** is the founding partner of Synergia, a research and consulting firm established in the late 1990s providing systems solutions to complex problems. **Boyd Swinburn** is Professor of Population Nutrition and Global Health at the University of Auckland, and a member of the research unit at Te Kura i Awarua Rangahau Māori Centre.

(e.g., reformulation, waste and packaging solutions) with leverage from new procurement models.

While Ka Ora, Ka Ako can contribute to these pathways, some implementation areas within the programme demand further attention to achieve optimal results. Recognised areas for improvement include ensuring high quality of food, providing more avenues for engagement

from children and parents, addressing perceived challenges to integrate Ka Ora, Ka Ako effectively with mātauranga Māori, and improving waste management. Given the high potential for Ka Ora, Ka Ako to contribute to multiple beneficial outcomes, continued investment and expansion of the programme is warranted.

Keywords school food, child wellbeing, nutrition, education, food systems, equity

Background

One outcome of the New Zealand Child and Youth Wellbeing Strategy launched in 2019 is for children and young people to be happy and healthy. This is no small task given New Zealand's poor track record in children's mental health (ranked last out of 38 OECD and European Union countries) and physical health (ranked second worst on childhood obesity) (UNICEF, 2020). A further outcome states that children 'have what they need', which includes regular access to nutritious food and other aspects of material wellbeing, such as income and housing (Department of the Prime Minister and Cabinet, 2022). Yet, despite recent gains, there are still 12.5% of New Zealand children living in households where food runs out often or sometimes; for Māori and Pasifika children this rises to 22.4% and 38.2% respectively (Duncanson et al., 2022).

In 2020 a government-funded free school lunch programme was launched to alleviate food insecurity, address poverty and to improve children's wellbeing and learning at school. Named Ka Ora, Ka Ako (be well, and thereby learn well), the programme was introduced initially as a two-year pilot, providing a free and healthy lunch to 10,000 learners attending primary schools with high levels of disadvantage. In May 2020, as part of its response package to the global Covid-19 pandemic, the government expanded the scheme to reach over 220,000 learners at around 1,000 primary and secondary schools throughout New Zealand (Treasury, 2020), awarding approximately \$263 million for the 2022/23 fiscal year (Minister of Education, 2021).

Schools are selected based on the Equity Index, a measure of the socio-economic

barriers faced by enrolled students. Nationally, 25% of schools with students facing the greatest socio-economic barriers are eligible to participate. A universal approach is used and all students within a participating school receive the same lunch. Funding is allocated at a maximum 'per child, per day' cost of \$5.40–\$8.00, depending on student year level, and it must cover food purchasing, preparation and delivery (if required), packaging, kitchen hire and kitchen staff wages. Workers in the programme must receive at least the New Zealand living wage (around 5% higher than the legal minimum wage).

Schools may adopt one of four delivery models: external suppliers source the ingredients and create and deliver lunches (73% of schools); schools employ staff at the school to fulfil the same tasks (internal model: 23%); service provided by local iwi and hapū (2% of schools); or other models for remote schools where shelf-stable food is stored at the school and reheated (2%) (Vermillion Peirce et al., 2022). Schools and suppliers determine their own menus in accordance with nutrition guidelines that have been co-developed by the Ministry of Education and the Ministry of Health to ensure lunches are healthy and nutritious.

Ka Ora, Ka Ako aims

Overall, the programme aims to improve food security, wellbeing and overall health for learners, improve school attendance, support child development and learning, improve behaviour, concentration and school achievement, and reduce financial hardship for families (Ministry of Education, 2021). After more than three years of delivery in many schools, limited

independent evaluation information is available describing the impacts of the programme.

This article asks:

- What is the international evidence on what universal school food programmes can achieve?
- What is the Ka Ora, Ka Ako programme's progress to date; what are its strengths, weaknesses and risks?

Study design

This study outlines impact pathways for the stated objectives of the programme. We critically discuss other potential impacts as expected from the programme logic, and collate evidence from New Zealand and around the world to provide a consolidated evidence base for the observed and expected immediate and long-term impacts of the programme. We provide a rapid narrative review of peer-reviewed research and recent unpublished monitoring data.

We have prioritised evidence from systematic reviews and meta-analyses of school food programmes, where possible, and have supplemented this with additional peer-reviewed research, the latest findings from 'Nourishing Hawke's Bay' implementation research, and Ministry of Education programme evaluations of Ka Ora, Ka Ako. In addition, expert opinion and unpublished monitoring data gleaned through consultations with Ministry of Education staff involved in the programme and its evaluation, as well as stakeholders from other relevant agencies (Ministry of Health, Ministry for the Environment, Ministry for Primary Industries, Department of the Prime Minister and

Cabinet, Ministry of Social Development), have been included. These observations are important in highlighting potential impact pathways which may need more specific evaluation. Where necessary, we have extrapolated the potential or expected impacts of measurable programme outcomes based on available evidence.

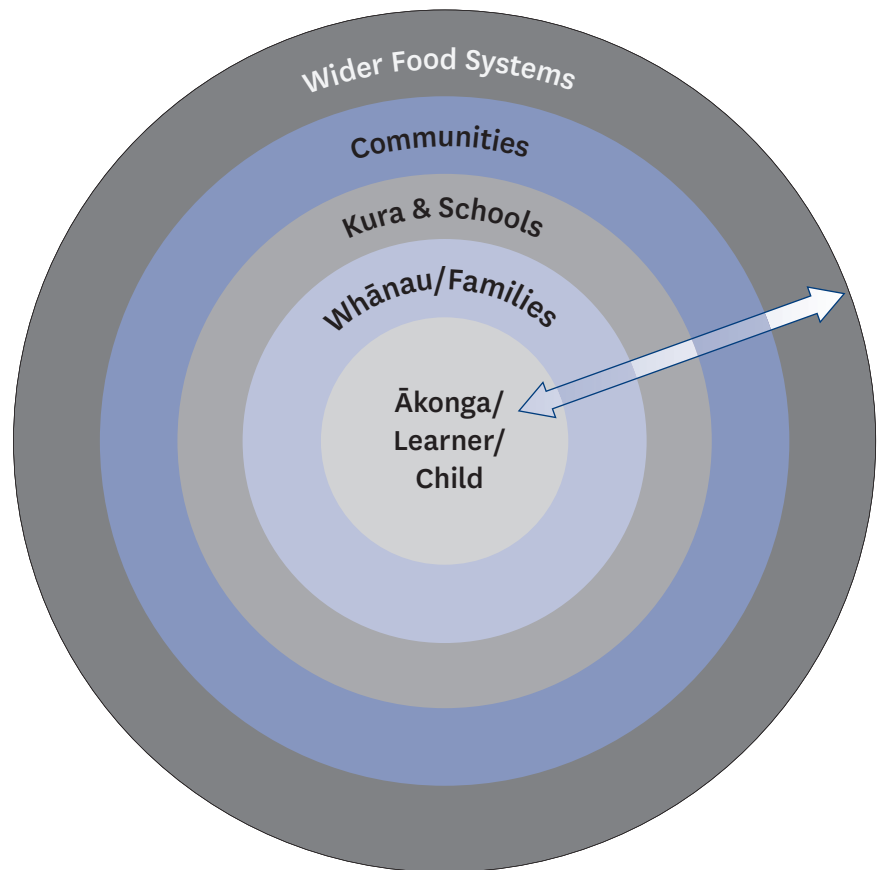
Outcomes and pathways to achieving the potential impacts of the programme are described at five levels: child, whānau, school, community and food system. We categorise the outcomes into three classifications: what Ka Ora, Ka Ako is already achieving; potential outcomes not yet achieved; and theoretical (potential) outcomes. Detailed programme logic tables including comprehensive evidence collected can be found at: <https://figshare.com/s/b6f737b6c137f80ee520>

Theory/framework

The social-ecological model conceptualises the social world in five spheres, or levels, of influence: individual; interpersonal; institutional/organisational; community; and social structure, policy and systems (McLeroy et al., 1988). The social-ecological model is popular in the field of health promotion, including nutrition, interventions. In particular, this model has been used to assist in the planning and evaluation of multiple-component nutrition programmes (Gregson et al., 2001).

In this instance, the individual is the ākonga/child/learner, the interpersonal level is the child’s family/whānau/household, and the institutional/organisational level is the participating school or kura they attend (Figure 1). After the community, the fifth level is conceptualised as the New Zealand food system as a whole, both regional and national. Notably, here the effects flow both ways between levels. The system, for example, influences the community, and thereby the school, household environments and, ultimately, the child. By the same token, impacts on the child have flow-on effects that expand to the broader food system over time. Thus, the programme logic underpinning Ka Ora, Ka Ako conceptualises inputs, outcomes and impacts at these different, but interlinked, levels.

Figure 1: A modified social-ecological model for school food programme impacts



We start by presenting evidence related to observed and potential programme outcomes and effects at the level of ākonga/learner/child, followed by whānau/families, kura and schools, the community, and, finally, broader food systems. These terms will be used interchangeably throughout the article except for kura and schools. A kura is a school which uses Māori language as the medium of teaching, and we will refer to kura and schools throughout.

Outcomes and impacts

Ākonga/learner/child impacts

Figure 2 illustrates the multiple outcomes that can be achieved at the ākonga level and the pathways to achieving these positive outcomes. Specific pathways are selected for discussion below.

Satiety and food security

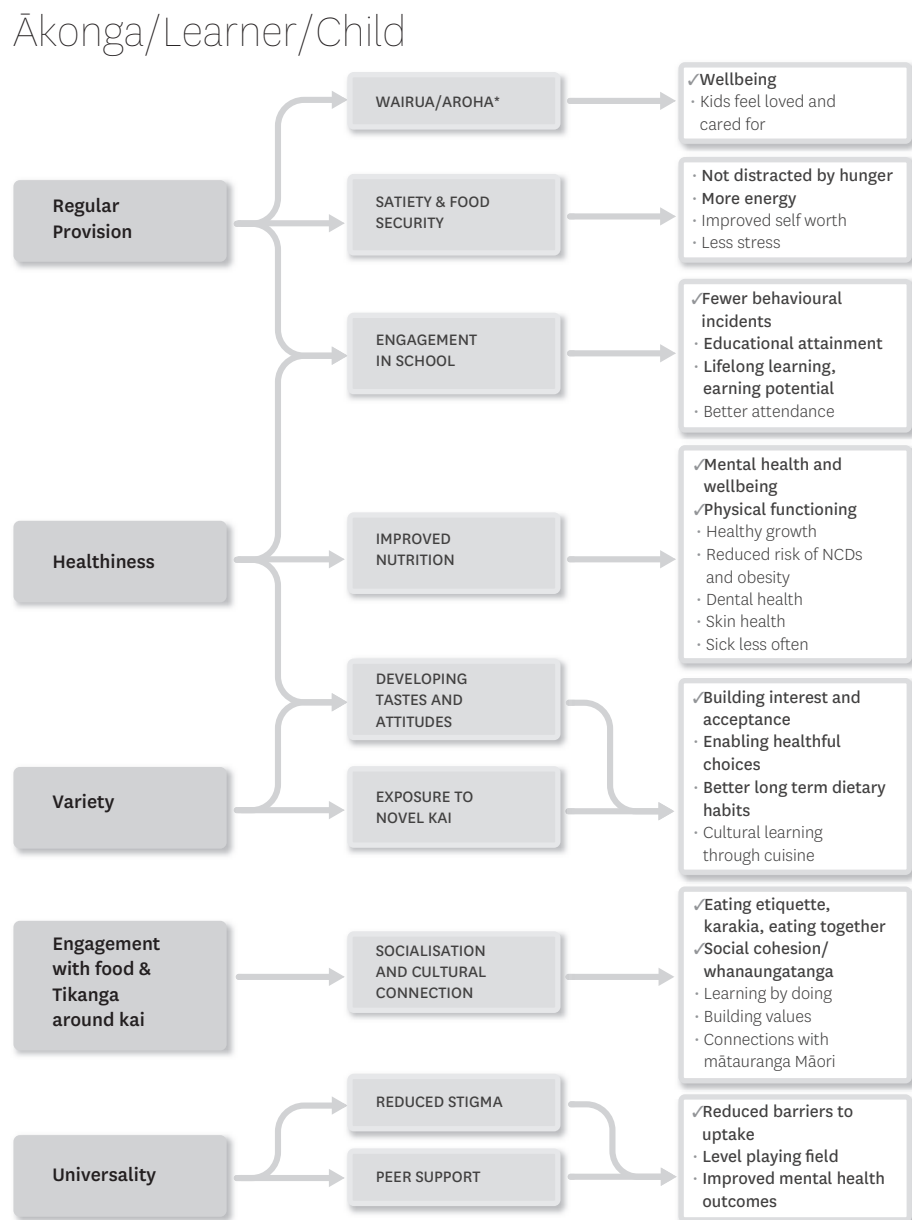
The first interim evaluation in two regions asserted that Ka Ora, Ka Ako contributed significantly to reducing hunger and food insecurity in primary schools, in terms of students’ self-reported satiety (feeling of fullness), and the reliable availability and consumption of healthy

kai (food) (Vermillion Peirce et al., 2021). While satiety and food security are separate concepts, increased food security as a programme outcome is supported with convincing international evidence. A systematic review of universal free lunch programmes found that the two studies focusing on food security (Dalma et al., 2019; Petralias et al., 2016) reported significant reductions in food insecurity. The review found the greatest decreases occurred among food-insecure households with hunger (Cohen et al., 2021). The second evaluation of Ka Ora, Ka Ako with secondary school learners found that with regard to satiety, 54% of participating learners had enough food everyday compared to 40% in schools not receiving the lunches (Vermillion Peirce et al., 2022).

Engagement in school

A core proposition underpinning Ka Ora, Ka Ako is that providing a lunch to those who need it will help keep them in school. Neither the pilot nor the final Ministry of Education evaluation of Ka Ora, Ka Ako detected overall increases in attendance

Figure 2: Child-level programme outcomes and impacts



From the left to the right: the columns refer to mechanisms, outcome areas, and outcome impacts, respectively. These outcomes are categorised as: observed in the Ka Ora, Ka Ako programme already (bold text with a tick mark); not necessarily observed in New Zealand but international evidence exists for the outcome (bold text); and potential / theoretical outcomes (plain text). NCDs: non-communicable diseases. *Te reo Māori (language) terms are used in the Figures to reflect the terms generally used during conversations with school staff and stakeholders. Wairua: the spiritual; aroha: love and compassion; tikanga: customary and cultural practices; kai: food; karakia: ritual incantation/prayer; whanaungatanga: connections and relationships; mātauranga: knowledge.

*Te reo Māori (Māori language) terms are used in the figures to reflect the terms generally used during conversations with school staff and stakeholders. Wairua: the spiritual; aroha: love and compassion; tikanga: customary and cultural practices; kai: food; karakia: ritual incantation/prayer; whanaungatanga: connections and relationships; mātauranga: knowledge.

(Vermillion Peirce et al., 2021, 2022), though the aggregate data may not show significant differences in the most at-risk individuals. Systematic review evidence has also shown mixed results for attendance (Cohen et al., 2021). However, a study investigating the long-term impact of universal primary school lunch provision in Sweden over ten years found that the programme had substantial positive effects on educational attainment (years of

education completed) (Lundborg, Rooth and Alex-Petersen, 2022).

Improved nutrition and health impacts

In the first interim evaluation, Ka Ora, Ka Ako performed ‘exceptionally well’ concerning diet quality, wherein 39% more lunches had at least one vegetable, and 15.7% fewer lunches had snacks and sweets when compared to the lunches eaten by primary and intermediate

ākonga in non-participating schools. Participating primary and intermediate learners consumed on average 0.9 more servings of vegetables, and 0.5 fewer snack items, with the largest gains observed in disadvantaged learners (Vermillion Peirce et al., 2021). A separate nutrition evaluation of programme menus across all school levels found that 77.5% of the 18 analysed key nutrients were above 30% of recommended daily intakes (RDI) for the given age groups. However, five nutrients (energy, carbohydrates, iron, calcium and iodine) were consistently below 30% of RDI or international standards, and sodium levels were slightly higher than recommended upper limits and international standards, indicating some space for improvements, which are now underway (de Seymour et al., 2022). Significant self-reported improvements in children’s physical functioning and reduced disease (impaired health-related quality of life) risk were also measured as programme outcomes of Ka Ora, Ka Ako (Vermillion Peirce et al., 2021, 2022).

A positive association has been established between consumption of nutrient-rich foods – including wholegrains, fish, fruit and vegetables – and cognitive processing in children (Cohen et al., 2016). A systematic review found that school meal provision policies increased learners’ overall intake of fruit and vegetables (Micha et al., 2018), and experimental research further suggests potential benefits to long-term eating behaviour (DeCosta et al., 2017). Moreover, increased dietary quality has been associated with improvements in mental health, dental health and skin health among children (Conner et al., 2017; Evans and Johnson, 2010; Hernández-F et al., 2021; Jacka, 2017; Puloka et al., 2017; Vora et al., 2020). However, further research is needed to establish the connection between free school meals – independent of other public health interventions – and health outcomes, with particular attention to the more immediate theorised effects, such as improved dental and skin health.

Peer support and reduced stigma

Due to the stigma effect of assigning a selective group of students to receive a free meal, evidence indicates the importance

of implementing a universal school lunch programme for all students (Ansell, 2016; Bhatia, Jones and Reicker, 2011; Jonkers, 2021; Leos-Urbel et al., 2013; Mirtcheva and Powell, 2009; Spray, 2021; Wahlstrom and Begalle, 1999). A comparison between selective and universal programmes in a South Korean longitudinal analysis observed that students in selective groups had significantly lower self-esteem and academic performance compared to their counterparts in universal school meal programmes (Yu, Lim and Kelly, 2019).

Socialisation and cultural connection through food

The second Ka Ora, Ka Ako evaluation suggested that all students eating together – consistent with tikanga Māori – may contribute to social cohesion without judgement among students (Vermillion Peirce et al., 2022) and student reports from focus groups support this (McKelvie-Sebileau, Swinburn et al., 2022).

Whānau impacts

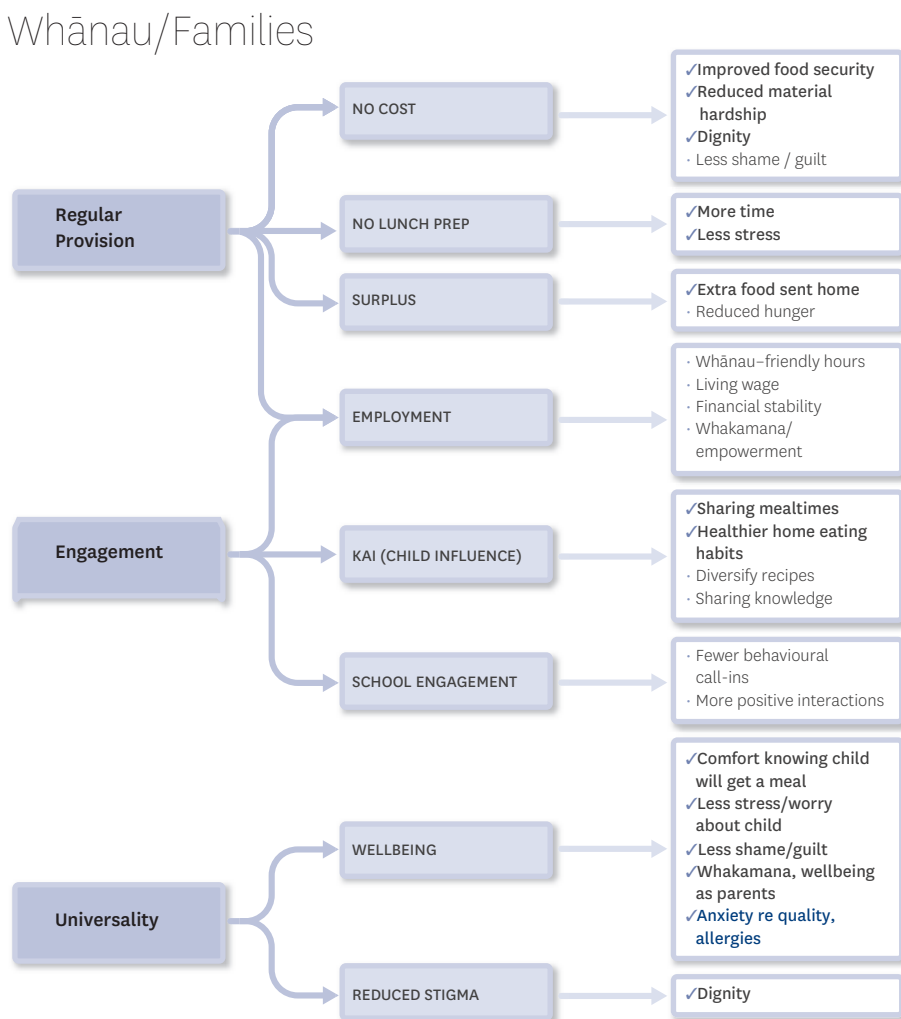
Figure 3 displays the multiple outcomes and flow-on effects for households. Specific pathways are selected for discussion below.

Lower cost and less time on meal preparation

Several studies suggest that universal free school meal provision, particularly among low-income families, may be positively associated with improved household finances (Cohen et al., 2021). For example, annual savings of £330 per child for food insecure families were observed by the Scottish government as a result of its free school meals programme (Beaton, Craig and Jepson, 2014). In Ka Ora, Ka Ako, whānau attested to the programme’s financial assistance in keeping up with the high cost of living (Vermillion Peirce et al., 2022). While household savings have been observed in Ka Ora, Ka Ako, parents have noted the challenge of providing lunches when the programme pauses during school holidays (McKelvie-Sebileau, Swinburn et al., 2022).

A counterargument exists that similar gains in household income can be achieved through an exact cash transfer to households, which would empower parents to provide school lunches for their children at the same cost. This argument, however,

Figure 3: Whānau-level programme outcomes and impacts



From the left to the right: the columns refer to mechanisms, outcome areas, and outcome impacts, respectively. These outcomes are categorised as: observed in the Ka Ora, Ka Ako programme already (bold text with a tick mark); not necessarily observed in NZ but international evidence exists for the outcome (bold text); and potential / theoretical outcomes (plain text). Disadvantageous outcomes shown in blue text. Te reo Māori terms used in the Figures reflect the terms generally used during conversations with school staff and stakeholders. Whakamana: empowerment.

does not account for the parents’ ability to provide nutritional meals – a central component and understanding of Ka Ora, Ka Ako – due to insufficient nutritional knowledge, time, purchasing power, discretionary spending, abilities/beliefs of parents, and a surrounding obesogenic environment (ibid.; Swinburn et al., 2019).

Engagement – diffusion of knowledge

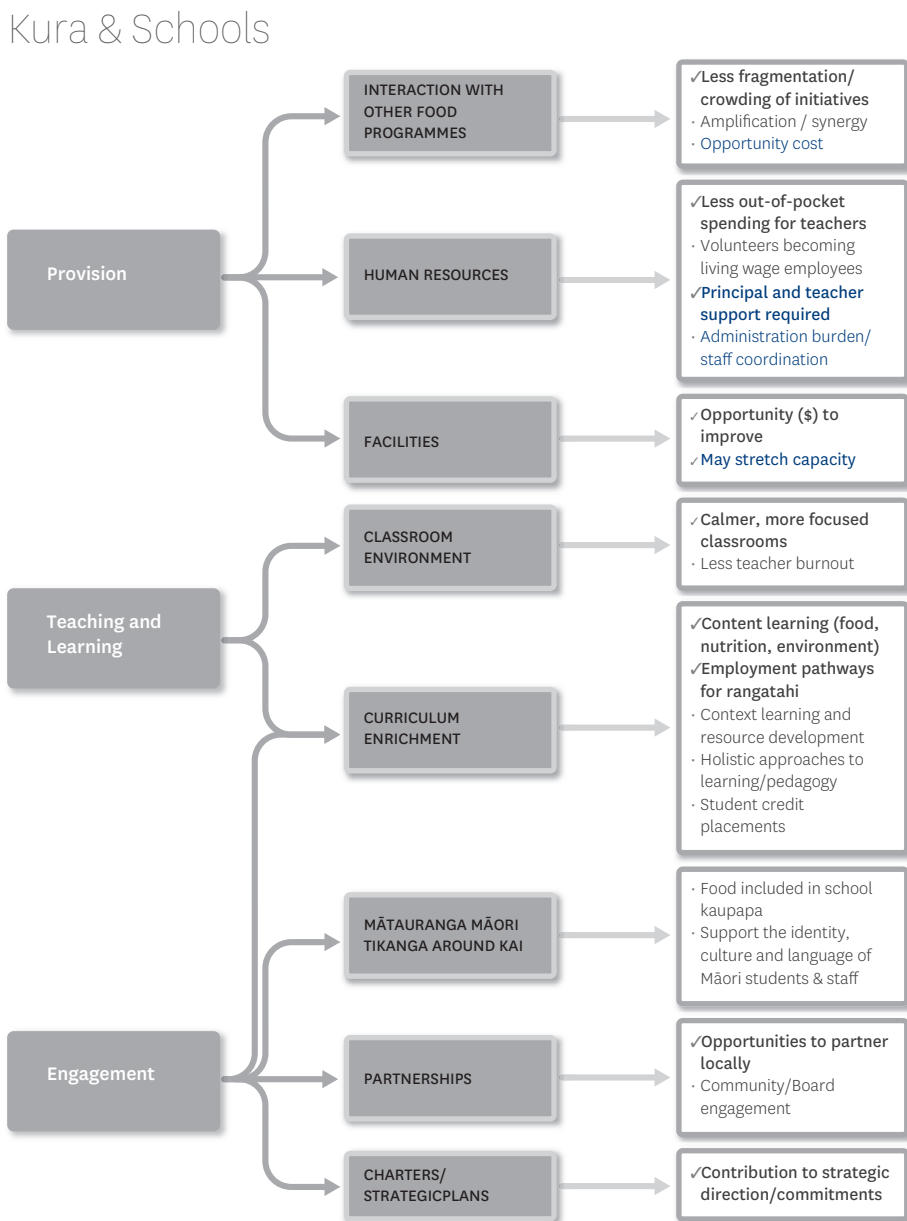
A growing body of evidence suggests a reciprocal relationship whereby children’s fruit and vegetable consumption affects that of their parents, and vice versa (Heim et al., 2011; Reagan et al., 2022). Whānau participating in focus groups in Hawke’s Bay believed that the programme was making children more adventurous eaters and this was benefitting those cooking for the household (McKelvie-Sebileau,

Swinburn et al., 2022). They related instances of children asking for food they had discovered at school to be served at home. However, the study noted that such benefits could be undermined in circumstances when there was a negative perception of the quality or palatability of the school lunches, or where other unhealthy food could be bought in or around the school or brought from home, reducing uptake of the lunches (ibid.). This requires further in-depth investigation.

Whānau wellbeing

In the Ka Ora, Ka Ako impact evaluation report, a case study described a parent who previously experienced stigma with their child receiving food parcels; however, this was no longer the case with Ka Ora Ka Ako, and they reported experiencing increased

Figure 4: School-level programme outcomes and impacts



From the left to the right: the columns refer to mechanisms, outcome areas, and outcome impacts, respectively. Outcomes are categorised as: observed in the Ka Ora, Ka Ako programme already (bold text with tick mark); not necessarily observed in NZ but international evidence exists for the outcome (bold text); and potential / theoretical outcomes (plain text). Beneficial outcomes are shown in black text and disadvantageous outcomes in blue text. Te reo Māori terms used in the Figures reflect the terms generally used during conversations with school staff and stakeholders. Mātauranga: knowledge; tikanga: customary and cultural practices; kai: food; kaupapa: principles; rangatahi: young people.

self-esteem and confidence instead (Vermillion Peirce et al., 2022). Several whānau participating in the Nourishing Hawke’s Bay focus groups shared that it is a relief to know their children were fed at school (McKelvie-Sebileau, Swinburn et al., 2022). Providing the same food for everyone, eating together, and learning about the kai was believed to be mana-enhancing, and to fit well with whānau aspirations. The Ka Ora, Ka Ako programme was further described as ‘less whakamā (shame-inducing) than having to ask for food parcels through agencies.’

Whānau did note that, if the programme was removed, childrens’ learning would suffer and it would increase family strain (ibid.) This is important, as studies have suggested that the most likely reason for reluctance of families to participate in selective school meal programmes is the associated welfare stigma (Leos-Urbel et al., 2013; Yu, Lim and Kelly, 2019). Offering universal free access to a school meal programme can create more equitable outcomes whereby more students of lower-income whānau participate in the programme.

School and kura impacts

Figure 4 depicts the potential effects of Ka Ora, Ka Ako on participating schools and kura. Specific pathways are selected for discussion below.

Classroom environment and curriculum

Benefits for children receiving school lunches are expected to flow into the classroom, even if such benefits are concentrated among the most food-insecure children (Pianta, la Paro and Hamre, 2008). These benefits may include classroom environments where students are more ready to learn. One of the school principals involved in the Nourishing Hawke’s Bay study asserted that full stomachs lead to better capacity to learn (McKelvie-Sebileau, Swinburn et al., 2022). Students at Rotorua Girls’ High School were described as being ‘more alert’ since the start of the programme and ‘the afternoons are more calm’ (Vermillion Peirce et al., 2022).

In addition, employment pathways for senior students can be provisioned through student credit placements in the Ka Ora, Ka Ako programme. While this has obvious benefits for the child, it also exists as a form of curriculum enrichment for the school (Vermillion Peirce et al., 2021). Some principals in the Nourishing Hawke’s Bay study mentioned that involvement in the meal process provided children with opportunities to improve their financial literacy or organisation (McKelvie-Sebileau, Swinburn et al., 2022). Internationally, school mealtime is also utilised as a pedagogical tool, wherein students are educated on food and sustainability (Pellicka, Manninen and Taivalmaa, 2019).

Operational considerations

Principals participating in the Nourishing Hawke’s Bay study from schools and kura using internal models noted more administrative burden, as they became an employer of more staff and needed to oversee the purchasing of food and management of the kitchen (McKelvie-Sebileau, Swinburn et al., 2022). However, they felt the benefits outweighed the burden with respect to educational values and better quality kai. Further, internal model schools are paid directly, which

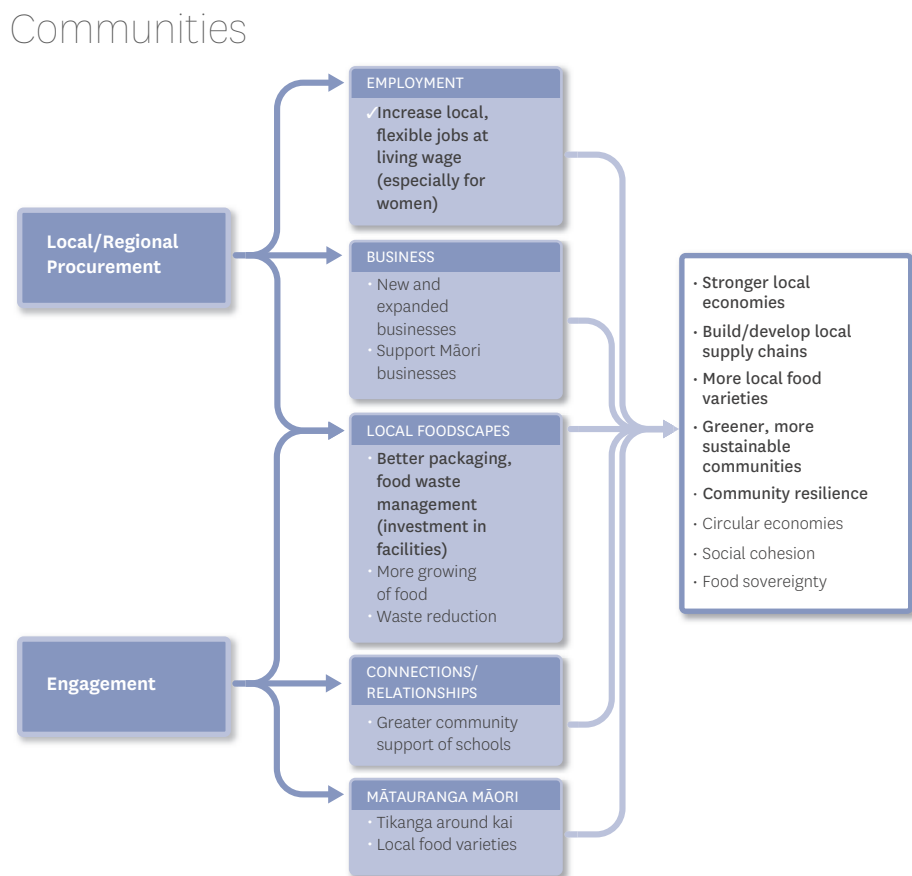
means that in the same way a supplier pays their staff to fulfil administrative tasks, so, too, can an internal model school fund their administrative costs. External model school principals generally reported less administration, unless there were problems with the quality of the food or deliveries from the external supplier (ibid.). Some principals noted increased food waste, though added that direct comparisons cannot be made as several children did not previously bring food to school (Glassey, 2023; McKelvie-Sebileau, Swinburn et al., 2022).

Local partnerships and engagement with mātauranga Māori

Programme outcomes of Ka Ora, Ka Ako extend to opportunities for community partnerships between schools, councils, experts and local food suppliers, which, in turn, improve community engagement, social cohesion and resilience. Through the direct inclusion of an iwi/hapū provision model and engagement processes, including teaching and learning around kai and strengthening school connections with Māori businesses and iwi providers, the Ka Ora, Ka Ako programme aims to provide a pathway for integration of mātauranga Māori in school lunch provision. This is important when we consider that around half of the students receiving the lunches are of Māori ethnicity (Vermillion Peirce et al., 2022). For Owhata School, with an iwi/hapū provider model, the programme created valued connections between the kura, hapū, whānau and community (ibid.).

Recent qualitative research with principals of five Ka Ora, Ka Ako schools actively incorporating mātauranga Māori in their school environment revealed a perception that the programme does not fit with their school values, which are bound in a te ao Māori worldview (Glassey, 2023). The principals stated that essential elements for the incorporation of mātauranga Māori were missing. Many struggled specifically with perceived rigid requirements of the nutritional guidelines in place at the time and felt that due to this, their children or their whānau could not be a part of the process around kai – i.e., the growing or preparing of it. Schools acknowledged the programme’s value in achieving food security at school, but

Figure 5: Community-level programme outcomes and impacts



From the left to the right: the columns refer to mechanisms, outcome areas, and outcome impacts, respectively. Outcomes are categorised as: observed in the Ka Ora, Ka Ako programme already (bold with tick mark); not necessarily observed in NZ but international evidence exists for the outcome (bold); and potential / theoretical outcomes (plain format). Te reo Māori terms used in the Figures reflect the terms generally used during conversations with school staff and stakeholders. Tikanga: customary and cultural practices; kai: food

felt it could be improved so that tamariki and whānau could learn more about how to be food-secure at home (e.g., by growing their own food) and provide food for their family with limited nutritional ingredients. It was important for this group of principals to teach about kai based on mātauranga Māori and a te ao Māori worldview, and this was more difficult within the Ka Ora, Ka Ako programme structure (though there is no indication of whether this was for internal or external models). Of note also, the nutritional guidelines have been updated in 2023 to provide more flexibility (Ministry of Education, 2023).

Community impacts

Figure 5 displays the multiple outcomes and flow-on effects for communities. Specific pathways are selected for discussion below.

Local economy, businesses and employment

The programme design was expected to increase local, and flexible, jobs at living wage, benefitting particularly those ‘on

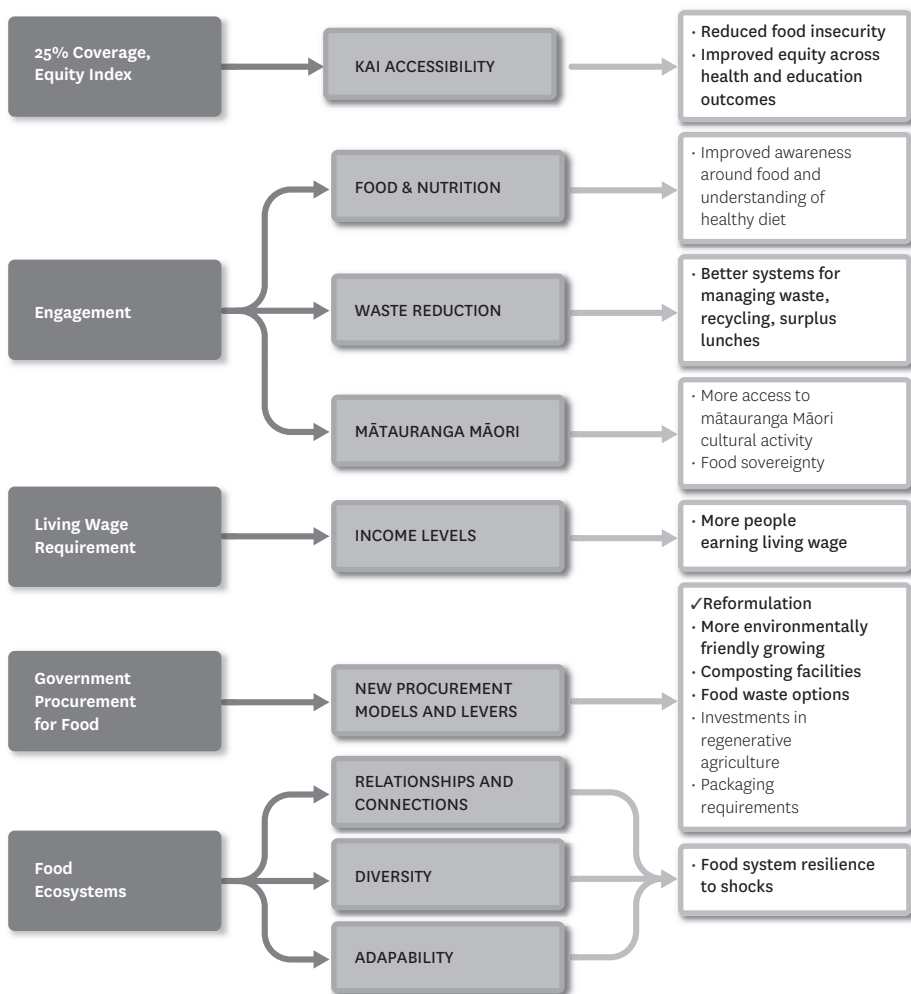
the periphery of employment’. The Ka Ora, Ka Ako supplier survey conducted by the Ministry of Education in March 2022 indicates that at least 2,455 jobs (1,306 full-time and 1,149 part-time) were retained or created in supplier businesses or school kitchens by Ka Ora, Ka Ako (Ministry of Education, unpublished data). However, further research is required to assess the economic impacts for communities from increased employment from the lunch programme, in particular looking at the effects of different supplier models (i.e. internal, external, iwi/hapū).

Local foodscapes

Ka Ora, Ka Ako seeks to improve engagement between learners and their food, and between schools and the community. This in turn offers potential to improve the healthiness and environmental sustainability of local ‘foodscapes’, connecting rural and urban landscapes (Sonnino, 2013). An example of local foodscapes in action is

Figure 6: Food system-level programme outcomes and impacts

Wider Food Systems



From the left to the right: the columns refer to mechanisms, outcome areas, and outcome impacts, respectively. Outcomes are categorised as: observed in the Ka Ora, Ka Ako programme already (bold with tick mark); not necessarily observed in NZ but international evidence exists for the outcome (bold); and potential / theoretical outcomes (plain format).

the school meal reform in Scotland. The East Ayrshire Council sought to partner with local producers, loosening rigid guidelines of class 1 vegetables to welcome organic producers and attract small-scale producers (Morgan and Sonnino, 2008). Starting with just 12 schools, the programme evolved to include every primary school in the district. Ninety per cent of the food is fresh and unrefined, 70% is local and 30% is organic, and food miles were reduced by 70% (Sonnino, 2013). Alongside its environmental benefits and reinforcement of food system resilience at a community level, there were also economic benefits for local suppliers and the programme’s social return on investment was estimated to be £6 for every £1 invested (Sonnino, 2013). No equivalent data or investigation is yet available for the impact of Ka Ora, Ka Ako.

Connections and community resilience

It is well recognised that strong and diverse networked community relationships contribute to increased resilience. For example, adaptable supply chains and interdisciplinary partnerships with the incorporation of local and regional food markets were key to increasing the effectiveness of food aid by the United States Department of Agriculture in the wake of Covid-19 (Thilmany et al., 2021). In Finland, several schools serve surplus from school meals to the local community at a discounted price. This initiative enhances social sustainability by providing cheap and nutritious meals to the community, while concurrently reducing food waste (Pellikka, Manninen and Taivalmaa, 2019). In Hawke’s Bay, surplus lunches are redistributed through the food rescue network (McKelvie-Sebileau, Swinburn et al., 2022).

Mātauranga Māori and food sovereignty

As briefly covered in the section on school impact, there have been challenges observed in the full incorporation of mātauranga Māori within Ka Ora, Ka Ako, indicating that the programme is not achieving optimal engagement in this area. Therefore, while Ka Ora, Ka Ako has demonstrated a reduction of food insecurity for children in communities, it may be limited in its ability to contribute to food sovereignty without further concerted action and support.

Food system impacts

Figure 6 displays the multiple outcomes and flow-on effects for the broader food systems. Specific pathways are selected for discussion below.

Reducing inequities

Reduced inequities in communities have broad benefits to health systems and the economy. Nutritious school meal programmes have the potential to improve both nutrient intake and food security, which have flow-on effects to attendance and cognition, with greater educational attainment leading to higher income, and, thereby, positive impacts on the economy (Nugent et al., 2020; World Food Programme, 2013). Improving children’s nutrient intake is likely to result in a lower burden of non-communicable diseases, which therefore reduces the pressure on the health budget (Nugent et al., 2020). A systematic review reported that universal free school meals may (by reducing food insecurity) reduce associated societal costs of education systems and health care, which were estimated to account for US\$1.2 billion in 2015 in the United States (Cohen et al., 2021). This kind of food system-level impact is not yet available in New Zealand, though trends in food security will soon be available nationally (Ministry of Health, 2019) and regionally (McKelvie-Sebileau, Gerritsen et al., 2022).

New government procurement models

Government food procurement models can drive change at a systems level, with opportunities to enable shifts towards a healthier and more sustainable food system. For example, Copenhagen has recently transitioned their public procurement

of foods to organic foods, without increasing the government food budget. An investment of below 2% of the budget was paid over ten years, which required a transition in production, purchasing, meal preparation and consumption, in order to make the processes more efficient and lower cost (Martinez, 2015).

South Korea offers a universal free, eco-friendly school lunch programme, costing about US\$2.6 billion (or NZ\$4.2 billion) annually (Gaddis and Jeon, 2020). The government has extended its relationships with the corporate environmental regime and local food networks to facilitate an eco-friendly programme. For food companies and farmers to access the multi-billion-dollar school meal market, precautionary infrastructure – activities that create a stable market for sustainable producers, such as sourcing policies, development of supply chains and certification standards – are employed by the government which require sustainable production practices by food companies and farmers. This example demonstrates how market-driven approaches can help drive systemic change.

The Ka Ora, Ka Ako school food procurement model includes novel approaches such as the contractual wage requirement – set by the Public Service Commission – for suppliers and internal schools to pay at least the living wage, and a commitment to a ‘social procurement model’ involving participatory agreement design with iwi and hapū partner suppliers.¹ There have been reports of product development and reformulation, showing the potential of Ka Ora, Ka Ako – and its associated nutrition guidelines for procurement – in changing the landscape of foods available in New Zealand through demand for healthier options and reduced waste.²

Food system resilience and environmental footprint

As highlighted in the above example of South Korea’s eco-friendly school lunch programme, building cross-sector relationships is a key driver of food system resilience (Gaddis and Jeon, 2020). Knowledge shared, and connections made around growing food, eating and food rescue, and shortening and diversifying supply chains, may contribute to greater

[I]nternational evidence indicates the potential of universal school food programmes to: improve dietary habits over time, for children and their households; reduce children’s risk of dietary non-communicable diseases later in life; increase participating learners’ educational attainment and earning potential in the long-term (generating inter-generational social mobility), and contribute to positive changes in the community and broader food system

food system resilience at a larger scale. A global systematic review of sustainability in school feeding programmes found that economic benefits included access to markets for farmers, price support

and increases in income. Social benefits involved better livelihood, food security and social inclusion. Environmental benefits included increased production of organic foods and diversification of crops (dos Santos et al., 2022).

An additional environmental benefit pathway could exist if Ka Ora, Ka Ako were to increase provision of plant-based meals. For example, in 2019, France introduced mandatory meat-free Monday for school meals. From 2022, meals for French school canteens must consist of 20% organic products, and at least 50% ‘quality and sustainable’ products (Ministère de L’agriculture et de la Souveraineté Alimentaire, 2022). Given the relatively large scale of school lunch provision, this could be expected to have a modest effect on food-related greenhouse gas emissions (Kidd et al., 2021). This procurement focus could also have wider impacts on product development. Moreover, a normalisation of plant-based eating through school lunch provision could have cascading effects on children’s dietary preferences outside school (Lazor, Chapman and Levine, 2010). Further, extension of the school lunch programme could justify further investment in waste management facilities and infrastructure that could benefit wider food systems.

Discussion

Impacts of the Ka Ora, Ka Ako programme in Aotearoa New Zealand

Evaluations and qualitative studies of Ka Ora, Ka Ako have highlighted the programme’s success at three levels. For students, the programme has provided them with more nutritious food, reducing hunger, broadening their taste preferences, and improving physical functioning and mental wellbeing – especially for those who self-reported being most food insecure prior to the programme. For whānau, financial and other stresses are reduced. And at the school level, the programme contributes to calmer classroom environments, more conducive to learning. Further, there is evidence of a modest boost to community employment.

Potential future impacts for Ka Ora, Ka Ako from international evidence

In addition to observed impact,

international evidence indicates the potential of universal school food programmes to: improve dietary habits over time, for children and their households; reduce children’s risk of dietary non-communicable diseases later in life; increase participating learners’ educational attainment and earning potential in the long term (generating intergenerational social mobility); and contribute to positive changes in the community and broader food system. Specifically, the size of Ka Ora, Ka Ako means that it has the potential to have a significant impact upon local and regional food systems. The provision of nutritious school lunches currently responds to needs arising from food insecurity. A future in which Ka Ora, Ka Ako supports the transformation of local and regional food systems could see the root causes of food insecurity being addressed by increasing local control over food resources, and increasing knowledge amongst young people about the physical, social, cultural and environmental effects of the food they eat.

Gaps for further monitoring and evaluation

Several theorised programme outcomes and impacts have yet to be observed, such as improvements in children’s dental health and skin health, which are known early markers of improved nutrition; changes to participating learners’ educational attainment; and economic impacts to communities as a result of increased employment opportunities. These gaps in data should be prioritised for further monitoring and evaluation.

Further development in the design of Ka Ora, Ka Ako

This evidence review also highlights areas where Ka Ora, Ka Ako may not be reaching its full potential. First, the question is raised about inclusion. Research has shown that many children experiencing food insecurity attend schools that are not currently eligible to receive the lunches (McKelvie-Sebileau, Gerritsen et al., 2022). Based on the benefits of Ka Ora, Ka Ako, health groups such as the Health Coalition Aotearoa are calling for the programme to be extended from 25% to 50% of schools in Aotearoa. Where the programme is

implemented, three areas were recognised as shortcomings: alleviating hunger compared to increasing food security and long-term food sovereignty; enhancing uptake through whānau and student involvement and quality of food; and allocating benefits to Māori learners.

While Ka Ora, Ka Ako addresses the symptoms of food insecurity, the programme does little to address the root causes of the issue, which also prevents long-term food sovereignty. There are a number of examples of school food programmes having a significant effect on local and regional food systems. These changes have led to much greater local involvement in production – changes to how and what food is produced – providing a way of addressing the three interlinked issues of food insecurity, environmental sustainability, and population health and nutrition (Rojas et al., 2017). Ka Ora, Ka Ako has the potential to support further investment in local employment – beyond programme food preparation – leading to a more widespread increase in household incomes. Further, better understanding is needed of how more engagement could leverage healthier and more affordable foodscapes. Though this is not currently a focus of Ka Ora, Ka Ako, it is worth noting that this theoretical pathway exists, as an area where further investment could achieve greater system-level benefits. It is also a pathway that has been followed in several international cases.

Uptake of the lunches is an important pathway to achieving the potential of this programme. Some parents have expressed the view that Ka Ora, Ka Ako needs to provide whānau with more agency – for example, through consultation on menus and addressing anxiety around allergies. Research and media coverage have highlighted issues with perceptions of poor quality or insufficient amounts of food being served, particularly when the food is provided by an external caterer (Clark-Dow, 2023; Northland Age, 2022). Much research already exists on the factors that influence uptake of lunches (Everitt et al., 2023) and parental perceptions are fundamental, particularly for primary school-aged children (Bailey-Davis et al., 2013; Martinelli et al., 2020, 2021). Opportunity remains, therefore, to

strengthen children and whānau engagement in food through curriculum and other strategies.

The third area of shortcoming pertains to Māori learners. The interim evaluation of Ka Ora, Ka Ako observed negative impacts on mental wellbeing for participating Māori students (Vermillion Peirce et al., 2022). The impact upon health and wellbeing for Māori children is less certain when viewed through the lens of ākonga hauora, a framework for measuring Māori wellbeing. Still, a tension exists for schools already trying to implement mātauranga Māori and develop ‘kai culture’. These findings indicate that the current model of delivery is missing out on the opportunity to do broader things, primarily through learning and engagement. Notably, the Ministry of Education has commissioned further work to understand and respond to these concerning findings through an independent kaupapa Māori evaluation of Ka Ora, Ka Ako, which will closely examine the programme’s impacts on ākonga and whānau Māori.

Conclusion

Ka Ora, Ka Ako is much more than a programme to fill hungry children’s stomachs. As shown in this evidence review, the provision of universal school meals is vastly more impactful than other food provision services, such as food parcels. The programme has much to offer for learners, whānau, schools and kura, communities, and the food system more broadly. Our social-ecological model illustrates how impacts at these various levels then flow on and influence each other, reaching well beyond the New Zealand government’s stated programme aims (Ministry of Education, 2021).

Outstanding elements of the programme, among others, were highlighted as:

- provision of highly nutritious food;
- significantly reducing hunger at school among ākonga taking part in the programme, particularly the most underserved;
- participating children experiencing significant benefits in physical functioning and mental wellbeing, particularly the most underserved;

- reducing financial stress for whānau of participating ākongā;
 - universality of the programme, reducing stigma and other barriers to uptake;
 - fostering school environments more conducive to learning;
 - creation of community jobs at living wage;
- Further potential benefits, not yet monitored, include:
- opportunities for food system engagement in schools and kura, with whānau and communities;
 - potential to increase food system resilience (e.g., shorter supply chains and relationship building); and
 - opportunities for broader food system transformation (e.g., reformulation, waste and packaging solutions) with leverage from new procurement models.

While Ka Ora, Ka Ako can contribute to these pathways, recognised areas for improvement include ensuring the quality of food (particularly from external suppliers) for children's uptake, providing more avenues for engagement with parents,

addressing perceived challenges to effectively integrating Ka Ora, Ka Ako with mātauranga Māori, and improving waste management. Further work by the co-authors to build a simulation model of Ka Ora, Ka Ako and to assess the value for investment is underway.

¹ Personal communication, Sheryl Ching, director of special projects, Ministry of Education, 8 September 2022.

² Personal communication, Jasmin Jackson, service delivery manager – special projects, Ministry of Education, 28 September 2022.

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