

**California Public Education Situational Analysis: Opportunities to Expand Nutrition
Education**

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Abstract

Introduction: The COVID-19 pandemic has transformed the school environment. Thus, an understanding of how nutrition education fits in the school environment is needed. Before developing or enhancing future nutrition education programs, it is crucial to understand the dynamics of the school and after-school environments to ensure successful implementation.

Areas covered: This perspective systematically identifies changes to the school environment that impact nutrition education and evaluates the current landscape to target new approaches. The project began with a comprehensive review of scientific literature, government reports, popular media, and related publications, and was subsequently supplemented by key informant interviews.

Expert opinion: The authors recommend aligning equitable, culturally relevant curricula, tools, and programs with future standards for social and emotional health. Partnerships with external educators and collaborations between state agencies, nonprofits, consultants, and college student interns could help achieve the long-term goal of integrating nutrition education in schools.

Keywords: Covid-19, education recovery, food and health literacy, nutrition education, social and emotional learning

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Nutrition-related health conditions, such as type 2 diabetes and cardiovascular disease, present significant public health challenges in the United States and have a substantial impact on the growth, development, and health of children and adolescents (He et al., 2022; Mitchell et al., 2011). Over the last several decades, the prevalence of obesity has noticeably increased in young populations (“*Global Obesity Observatory*,” *n.d.*). According to recent BMI data collected by the Centers for Disease Control and Prevention, 12.7% of 2- to 5-year-olds, 20.7% of 6- to 11-year-olds, and 22.2% of 12- to 19-year-olds were classified as obese (Stierman et al., 2021). Kanellopoulou et al.(2022) reported that excess body fat is associated with mental health concerns, such as depression, anxiety, and low self-esteem. Moreover, children with obesity are more likely to grow up to be adults with obesity and have related chronic health conditions, including cardiovascular disease, premature vascular aging, and type 2 diabetes (Abbasi et al., 2017; Simmonds et al., 2016).

One potential approach to improving health and dietary patterns in children and adolescents is through school nutrition education programs (Cotton et al., 2020). Educational efforts within the traditional classroom setting aimed at teaching students, families, and caregivers about the importance of nutrition have demonstrated positive health outcomes through cost-effective methods. Here, “traditional” refers to in-school education delivered during class time, as opposed to during out-of-school time or after-school programming. Research indicates that providing equitable resources and a comprehensive nutrition curriculum in schools can serve as an effective and affordable method for health promotion (Scherr et al., 2017). Integrating

nutrition education into the general curriculum has the potential to equip children and adolescents with the knowledge and skills needed for lifelong healthy dietary and lifestyle habits.

However, challenges arise due to the rapidly evolving school environment. Traditional nutrition education usually encompasses classroom education taught by various educators and tends to be resource-intensive, often requiring a partnering agency to provide materials, an educator, or both (Scherr et al., 2021). Teachers may be reluctant or unable to teach nutrition due to time constraints, knowledge of the subject matter, personal interest, or school support (Jones & Zidenberg-Cherr, 2015). Consequently, it can be challenging for schools to add nutrition education to the already demanding teaching requirements. The COVID-19 pandemic further exacerbated these challenges by introducing new obstacles to the learning environment and student population. Limited resources, staff shortages, and the shift to remote learning heightened the difficulties in implementing effective nutrition education.

In this perspective, the authors use California as a case study to (1) identify and address current challenges facing youth and educators, (2) highlight differences between the goals of government initiatives and the actual outcomes, and (3) propose strategies to effectively integrate nutrition education into the dynamic and evolving K-12 landscape.

Discussion

Current Challenges

Disruptions to the school environment due to the COVID-19 pandemic brought a new set of challenges to the school setting and exacerbated existing disparities in educational achievement (Haderlein et al., 2021). A sophisticated analysis of this achievement gap indicated that declines were greater in areas of low socio-economic status and that students' prior educational success was the most influential factor on academic achievement (*National*

Assessment of Educational Progress, 2022). Significantly related to this changing environment is the teacher shortage, with nuance as to where shortages are occurring: schools in wealthier areas tend to be experiencing far less turnover, further widening the achievement gap (Jones, 2022). As a result of the pandemic, an emphasis on social and emotional learning (SEL) also emerged as youth needed to learn in a new environment that required critical self-regulation tools that they may not have possessed (Kamei & Harriott, 2021). Despite returning to an in-person traditional learning environment, the effects of educational setbacks and remote learning on the development of students' self-regulation, social, and emotional skills must be acknowledged and addressed (Loades et al., 2020).

A two-part assessment of the school landscape was conducted to understand where the needs exist: a review of the literature and interviews with key stakeholders. Because of the prospective nature of the literature review, in addition to scientific literature, the types of documents reviewed included reports from government agencies and university research centers, California Assembly bills, popular press articles, California propositions, the Dairy Council of California evidence-based library, and other relevant publications. This initial step was taken to elucidate infrastructure that may be pertinent to the nutrition education landscape, and this process resulted in the identification of common themes. Ultimately, 133 documents were included in the literature review. Twenty-eight interviews were conducted with key stakeholders, including community partners, such as state-implementing agency leadership, school nutrition services, district administration, nonprofit directors, and other experts, to discuss their experiences and expertise related to the school environment and nutrition education, and gain a deeper understanding of the implications of the common themes.

Differences and Impacts

As a result of the literature review, nine key themes were identified as critical to schools: SEL, food and health literacy, Farm-to-School, equitable learning, body acceptance, schools as a hub for health care, universal school meals, education recovery, and youth career readiness. Stakeholder experiences and feedback demonstrated notable inconsistencies between the critical issues identified by California government officials and the school/classroom-level experiences. It is interesting to note that during interviews, only two themes were mentioned in high frequency, despite nine key themes being identified within the literature review: SEL and food and health literacy. Education recovery, while not explicitly mentioned, was encompassed by many of the nine key themes. As part of the California budget through 2023, funds were allocated to address select issues facing schools. Funds supported universal school meals, education recovery, and Farm-to-School efforts. However, stakeholder experiences and feedback demonstrated a need for more infrastructure to support much of the work. For example, California is one of eight states with universal free school meal policies following the COVID-19 pandemic, which provides meals to all students regardless of household income (Bylander et al., 2024). While most interviewees felt positive about universal school meals, they disclosed that increased meal service created staffing shortages. Several interviewees mentioned that universal school meals removed the stigma associated with free and reduced-price meals, reinforcing the priority for equity.

Additionally, a disconnect between findings from the review of the literature and interviews with key stakeholders emerged regarding education recovery efforts. This disconnect illuminates the difference between administrative priorities and the priorities of those implementing educational efforts, including nutrition services directors, educators, representatives from the California Department of Education, Supplemental Nutrition Assistance

Program-Education (SNAP-Ed) state implementing agency leadership, Farm-to-School, policy influencers, representatives from select nonprofits, and representatives from school-based health centers. Interviews highlighted challenges stemming from COVID-19, including deficiencies in teacher preparedness due to lack of time, training, administrative support, and SEL incorporation into curriculum. Although the literature review and key stakeholder interviews focused on changes within California, these issues are prevalent across states nationwide (*National Center for Education Statistics, 2023*).

Education Recovery

The COVID-19 pandemic resulted in setbacks for children within the classroom (Kuhfeld et al., 2022). From 2020 through 2022, reading and math scores from the National Assessment of Educational Progress demonstrated the largest average score declines in the past 20 years (“National Assessment of Educational Progress”, 2023). In response, many schools have implemented after-school programs to provide academic assistance in a structured and safe environment to help close academic gaps and improve performance. The National Center for Education Statistics (NCES) reported that among public schools surveyed, 51% offered academic assistance programs, 28% provided academic enrichment, and 59% held school-related activities and clubs. However, 37% of schools reported limited staff as a barrier to offering these programs to all interested students (*National Center for Education Statistics, 2023*). As part of education recovery efforts, California created the *Expanded Learning Opportunities Program* to provide \$4.6 billion for summer and after-school programs. However, discussion surrounding education recovery and career readiness demonstrated a disparity between administrator goals and actual implementation. While education recovery is underway, interviewees also mentioned

concerns related to the finite availability of funds. State funding was viewed as a temporary bandage to an ongoing issue with limited sustainability.

Social and Emotional Learning

During the shift to emergency remote instruction, parents/guardians nationwide reported challenges, including tantrums, under-stimulation, and anxiety associated with children having limited social interaction (Egan et al., 2021). In turn, administrators and teachers have encouraged the incorporation of SEL within the classroom. SEL supports students in gaining critical social development skills and emotional awareness essential for well-being (Ashdown & Bernard, 2012). The use of SEL has been documented to improve academics and reduce behavioral issues (Ho & Funk, 2018). State leaders are responsible for developing guidelines, requirements, and funding for SEL. Consequently, while some states lead the way in establishing comprehensive SEL standards, others have yet to implement any guidelines. Despite clear evidence of the benefits of SEL within the classroom, several states, including Montana, Oklahoma, and South Dakota, have yet to successfully implement SEL (*An act establishing requirements, 2023; The definition of a discriminatory practice, 2023-2024; Establish requirements for science, 2023*). As of 2022, 27 states have adopted K-12 SEL competencies (*SEL policy at the state level, 2023*). In a 2023-2024 study conducted by the NCES across all US states and in 116 public schools, 63% of schools reported using a formal curriculum for SEL skill development (*National Center for Education Statistics, 2023*). California has issued a requirement for the integration of more SEL and mental health curricula through the *Advance SEL in California Campaign* (Ramsey, 2020). The current study's stakeholder interviews demonstrated the importance of SEL while simultaneously discussing the need for professional development for teachers and partnerships with outside agencies to achieve these new

expectations. Similar challenges were observed among educators surveyed nationally in the NCES study. Among schools with a formal curriculum, 72% reported limitations and barriers related to time and mentioned that the program material only moderately impacted student outcomes (*National Center for Education Statistics, 2023*).

Further, 37% of schools without a formal SEL program attributed the lack of implementation to insufficient funding (*National Center for Education Statistics, 2023*). These challenges regarding time and budgetary constraints have also complicated the incorporation of nutrition education within traditional classroom learning. Interviewees noted the urgent need to address academic setbacks caused by the pandemic and the necessity of equipping students with essential social and emotional skills. As a result, nutrition education has been sidelined to prioritize education recovery and SEL.

Nutrition Integration

Despite the shift toward addressing pandemic-related academic and emotional recovery, integrating nutrition education into the classroom remains valuable in improving health and academic performance (Cotton et al., 2020; Wall et al., 2012). Adequate nutrition is fundamental to supporting mental and physical well-being, with research linking it to reduced stress and improved cognitive function (Bleiweiss-Sande, 2019; Muscaritoli, 2021). Similarly, improved dietary habits can significantly enhance cognitive abilities and support better academic performance (Bleiweiss-Sande, 2019), and nutrition education is one way to improve diet quality. Moreover, it should be emphasized that nutrition education within the classroom may serve as a powerful tool to teach and reinforce SEL for students, particularly through food and health literacy (*School Health Guidelines to Promote Healthy Eating and Physical Activity, 2011*). A growing body of literature, particularly since the onset of the pandemic, has

highlighted effective strategies for integrating SEL into nutrition education interventions. As schools continue to balance competing priorities, incorporating nutrition education can enhance student well-being and academic recovery, particularly when paired with universal meal programs and external partnerships (*School Health Guidelines to Promote Healthy Eating and Physical Activity*, 2011).

In combination with the universal meal program, nutrition education offers opportunities to reduce stigma, promote equity, and provide students with hands-on learning experiences that reinforce the importance of healthy eating habits (Murphy et al., 1998; *School Health Guidelines to Promote Healthy Eating and Physical Activity*, 2011). Within the structure of the universal meal plan, strategies such as taste tests, enhancing meal palatability, offering pre-sliced fruits, and implementing sharing tables can significantly improve students' access to healthier food options. However, research indicates that while introducing more nutritious foods at school may positively influence students' preferences, it is often insufficient to change their actual selection or consumption (Mumby et al., 2018). Thus, the universal meal plan must not be viewed as a standalone solution but as a complementary tool that enhances nutrition education through experimental learning opportunities.

In the last few decades, the most successful nutrition interventions have relied upon a holistic, comprehensive approach focused on the school and community environment with an emphasis on overall health. These interventions have been consistently associated with beneficial outcomes in knowledge, skills, and behaviors and have most often been conducted in partnership with external entities (Scherr et al., 2017). Programs offered through Leah's Pantry and Dairy Council of California have successfully transitioned their nutrition education materials to more dynamic, online learning models. By incorporating interactive tools, such as videos, educational

games, virtual field trips, and quizzes, these online programs engage students in learning in a way that is both informative and enjoyable (Scherr et al., 2021). These resources are designed for flexibility, allowing these programs to be easily integrated into the classroom setting as part of the standard curriculum or as supplementary learning activities. Teachers can assign these materials for completion at home, where students can engage with the content independently or collaboratively with their families. This approach enhances students' understanding of nutrition and encourages family involvement in reinforcing healthy eating habits outside the classroom (Rosales et al., 2023).

As many schools have expanded after-school programming to address the instructional time lost during the pandemic, integrating nutrition education into these extended hours offers a unique opportunity to provide students with structured lessons on healthy eating habits (*Afterschool Suppers*, 2021). Using this approach, schools can create a supportive learning environment that reinforces important health concepts beyond the time restrictions within the regular school day. Collaborations with external organizations can play a pivotal role in the success of after-school nutrition programs by providing specialized and culturally relevant education materials, access to trained educators, and innovative activities that go beyond what schools may have the capacity to deliver on their own. Collaboration with programs like “Fuel Up to Play” and “Eat. Learn. Play” promotes well-being by encouraging healthy eating and physical activity with a focus on overall health rather than weight. By adopting a pro-health approach, these initiatives reduce weight stigma and create an inclusive environment where students of all body types feel empowered to make healthy choices without judgment. By relying on outside experts to lead these initiatives, schools can alleviate the implementation burden on their teachers while ensuring high-quality instruction for students. Collaborating with food

literacy organizations like “FoodCorps” and the “Expanded Food and Nutrition Education Program” can provide valuable resources, including cooking demonstrations, interactive workshops, and access to locally sourced produce. These partnerships not only enrich the educational experience but also promote hands-on learning and healthier food choices (*Afterschool Suppers*, 2021).

Conclusion

The authors recognize that disparities between the current school environment and the goals for the future are largely due to a need for more sustainable infrastructure for nutrition education implementation. Integrating nutrition education into students' learning experiences, after-school programs, and the universal meal plan has the potential to significantly bolster healthy eating behaviors and enhance overall wellness. However, several limitations can hinder the effectiveness of these initiatives, including insufficient resources, funding challenges, staffing shortages, and difficulty finding qualified nutrition educators, which make it hard to maintain consistent, high-quality programming. Additionally, competing priorities, varying student participation rates, and a lack of parental involvement can diminish the overall impact. While nutrition education can promote healthier habits, translating these lessons into lasting behavioral change is difficult, especially when cultural differences and home environment factors come into play. In addition, future nutrition education programming should focus on creating relevant and equitable materials that support SEL. To assist schools in teaching food and health literacy as a pathway for SEL, it is recommended that new curricula, tools, and programs align with established standards and competencies for SEL. Additionally, materials should address food literacy learning experiences that highlight the health benefits of foods offered in school meal programs.

To successfully integrate nutrition education into the traditional classroom setting, challenges surrounding limited resources, time, and staffing could be mitigated through partnerships, such as collaborating with state agencies, commodity groups, universities and colleges, nonprofits, and consultants. These creative partnerships would enable schools to enhance nutrition education without overwhelming staff by leveraging the strengths of a third-party educator to achieve the long-term goal of implementing nutrition education in schools and informal learning settings.

Schools can also benefit from using the online and after-school programming resources these external partners provide. Administrators and staff should receive information about the wide range of external educators and agencies available for nutrition education implementation and the advantages associated with collaboration. Federal, state, and community nutrition organizations can provide culturally relevant, evidence-based, and cost-effective resources to students both in and out of the classroom, all while reducing barriers and setbacks associated with time, resources, professional development, and teacher hesitancy. By working together, schools can create opportunities for students to not only learn about nutrition but also develop essential SEL skills and lifelong healthy eating habits, while minimizing the burden on educators and resources (Rosales et al., 2023).

Reflection

While this perspective aimed to gather data from various regions across California, it is essential to recognize that the challenges faced in California may be different from those encountered in other states. Each state has unique demographic, socioeconomic, and educational landscapes that influence the implementation of SEL and nutrition education. Therefore, the findings of this perspective may not be completely generalizable. Further, the current policies regarding

education and SEL are still in the early stages of implementation. Longitudinal studies and ongoing assessments will be necessary to determine the true effectiveness of these initiatives and their long-term impact on student well-being and academic achievement.

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