Journal of Human Sciences and Extension

Volume 7 | Number 3 Article 13

10-28-2019

Adapting an Elementary School Nutrition Context Assessment for High School Settings and Students

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The school nutrition context is comprised of supportive environmental features, programs, policies, and social relationships that shape students' healthy dietary choices and patterns. When engaging students as change agents, advocates, and partners in making healthy nutrition choices easier, environmental assessment tools developed for adults may be too complex or inappropriately tailored for youth. Adolescents need practical, user-tailored tools that reliably measure the food and beverage environments they encounter in school to inform youth-led changes to the school nutrition context. To meet this need, an evidence-based school environmental assessment was adapted for use in high schools by students as evaluators. Cooperative Extension educators engaged students in experiential learning to adapt the nutrition component of an environmental tool (SPAN-ET) designed for elementary school contexts to high school applications. The resulting tool is a comprehensive nutrition-specific adaptation that incorporates considerations of food security, structures for youth-driven data collection, and data-identified areas for action. The tool was adapted in one high school setting and piloted in three additional high schools. Student-generated data were used to prioritize and plan policy, systems, and environmental strategies aimed at increasing healthy food/beverage access and supporting healthy eating/drinking behaviors to reduce hunger and obesity risk factors in schools.

Keywords: school context, nutrition, obesity, wellness, policy, adolescents

Background

The prevalence of childhood obesity and related chronic conditions continues to be a major concern in public health. Obesity prevalence among adolescents age 12 to 19 years doubled from 10.5% between 1988-1994 to 20.6% between 2013-2014 (Ogden, Carroll, & Lawman, 2016). Data from the 2013-2014 National Health and Nutrition Examination Survey (NHANES) showed that 17.4% of children ages 6-11, and 20.6% of children ages 12-19 are obese (Ogden et al., 2016). Behaviors associated with obesity risk, including consuming an unhealthy diet and

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being physically inactive, are associated with an increased risk of type 2 diabetes and coronary heart disease (Tirosh et al., 2011). In addition to the overall problem of obesity, behavioral patterns contributing to unhealthy weight gain in children and young adults are associated with increased risks of obesity-related cancers and strokes (de Mutsert, Sun, Willett, Hu, & van Dam, 2014).

School settings can contribute to the development of healthy behavioral patterns in youth, including dietary choices and habits, through exposure and access to healthy meals and snacks, adult role models, and support in structured food environments (Leviton, 2008; Story, Nanney, & Schwartz, 2009). Schools are influential microenvironments for adolescents who consume up to one-half of their food energy in that context and spend nearly six hours a day, nine months a year at school (Institute of Medicine, 2012). Thus, understanding the *school nutrition context*, comprised of the environmental features, programs, policies, and social relationships that shape students' healthy dietary choices and patterns at school, is critical for promoting student wellbeing and preventing a rise in obesity prevalence among youth populations (John, Gunter, Jackson, & Manore, 2016).

School-based nutrition education and healthy eating promotion tend to focus on changing student knowledge, skills, attitudes and/or behaviors (Hard, Uno, & Koch, 2014). Research supports that interventions that improve the school nutrition context, such as changing policies and systems, promoting healthy food choices in social and situational interactions, and optimizing the infrastructure around student food and beverage exposures, can reinforce student healthy dietary behaviors (Driessen, Cameron, Thornton, Lai, & Barnett, 2014; Lyn et al., 2013; Mayne, Auchincloss, & Michael, 2015; Tuckson, 2013). Researchers also suggest that programs where students are experientially empowered by adults to discover, lead, and act to improve conditions in their school in partnerships for change can be effective in supporting student wellness (Action for Healthy Kids, 2015; Jones, Spence, Hardin, Clemente, & Schoch, 2011).

Youth-adult partnerships (YAP) that specifically engage youth stakeholders as partners in discovery and decision-making to advocate for changes in their local community (Jones & Perkins, 2004), may be understood as *participatory action research* (PAR; Powers & Allaman, 2012). This approach comes with the expectation that youth will share the vision and responsibilities of the study group while developing and implementing intervention activities. YAP programs can support adults and youth in learning from one another, participating in research to understand components of the problems, building skills, promoting changes, and then taking action to influence the policies or factors that affect them (Jones & Perkins, 2004; Powers & Allaman, 2012).

School Physical Activity and Nutrition-Environment Tool (SPAN-ET)

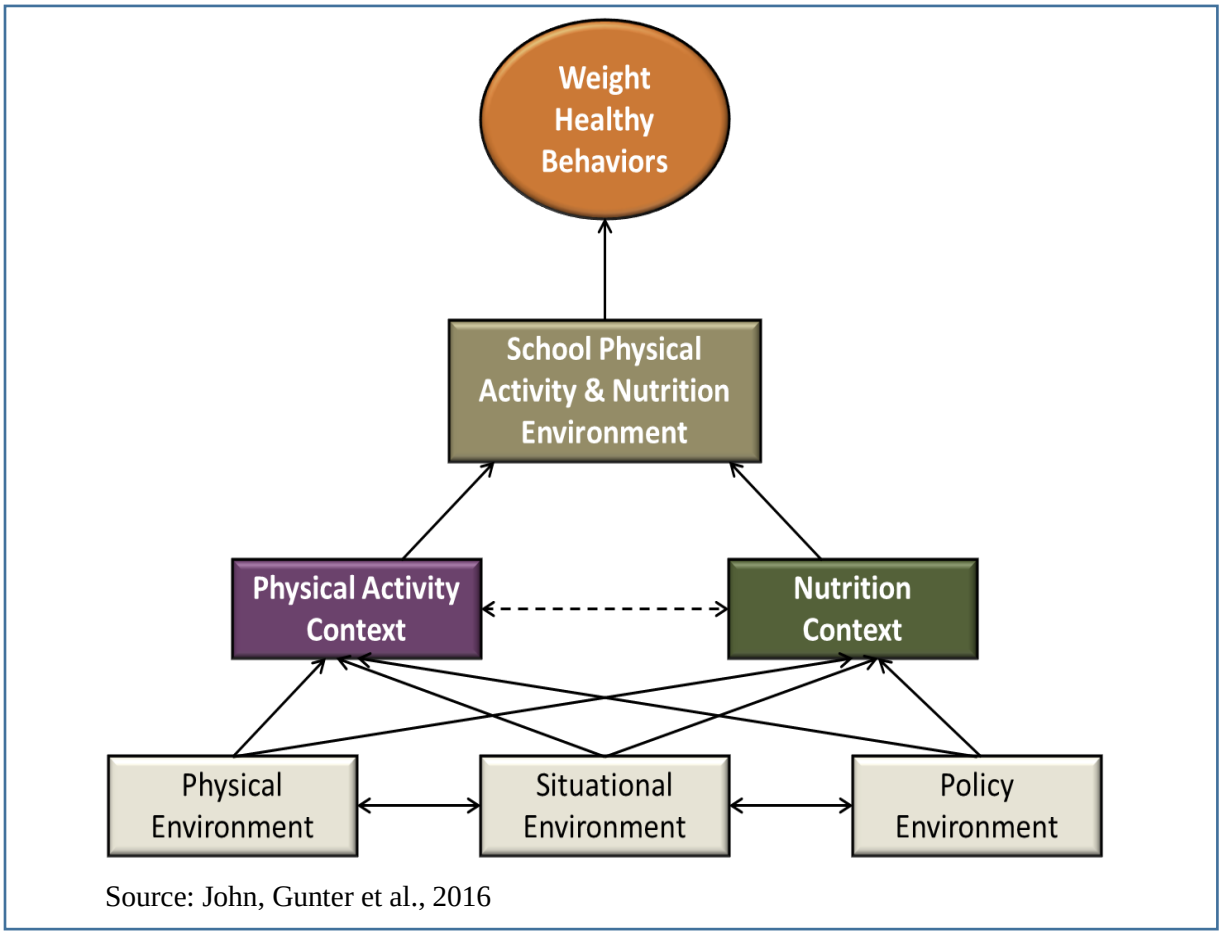
John, Gunter, Jackson, and Manore (2016) developed the School Physical Activity and Nutrition-Environment Tool (SPAN-ET) as an evidence-based PAR tool targeting elementary school physical activity and nutrition context through policy, systems, and physical environment (PSE) strategies. The SPAN-ET was designed to support adult school stakeholders and community partners, such as school staff, wellness committees, and Extension educators, in collecting valid and reliable data to inform PSE decisions that operationally change the school physical activity and/or nutrition context in an elementary school guided by a district wellness policy (John, Gunter et al., 2016).

The SPAN-ET is best described as an environmental scan assessing 27 items, referred to as *areas of interest* (AIs), organized into two main component classifications representing the targeted behavioral contexts of Physical Activity (16 AIs) and Nutrition (11 AIs). Each AI was also categorized as belonging to one of three environmental groupings: Physical, Situational, or Policy (Figure 1). Each AI is defined by a set of measurement criteria that must be met for best practice. The SPAN-ET measures the school physical activity context using 106 systematically observed criteria distributed among 16 AIs and measures the nutrition context of a school using 81 criteria distributed among 11 AIs that are further organized into measurable environments categorized as either physical, situational, or policy (John, Gunter et al., 2016).

John, Gunter and colleagues (2016) found the original SPAN-ET to be valid, reliable, and sensitive for measuring the elementary SPAN context and identifying areas for improvement when used by trained Extension educators in partnership with schools. Further evaluation research revealed areas for improvement in training and/or the tool, including a) increasing practice opportunities and applied training before tool implementation, b) improving clarity/explanation of certain criteria, and c) clarifying/explaining data collection methods (John, Jackson, Gramlow, & Gunter, 2016, November).

The SPAN-ET model shown in Figure 1 considers the multidimensional and interactive nature of the school context. The model provides an evaluation framework for quantifying the quality of the school contexts across the three environmental categories as influencers of students' physical activity and/or dietary behaviors at school. The development and validation of the original SPAN-ET for use with elementary schools, including implementation, scoring, and strategy identification protocols, were established by John, Gunter et al. (2016).

Figure 1. School Physical Activity and Nutrition Environment Tool (SPAN-ET) Model



Source: John, Gunter et al., 2016

Purpose of the Study

To meet the scarcity of tools that are informed by and tailored to support high school students' participatory discoveries of the school nutrition context, and support those students' use of data to prioritize changes, in this YAP project, a team of researchers, staff and students adapted the nutrition component of the original SPAN-ET tool for use with high school level students. The adapted high school tool, hereby the **H**igh **S**chool *PA* and **N**utrition-**E**nvironment **T**ool (**HS***PA***N-ET**), is intended to support adolescent students' experiential assessments, issues identification, and comprehension as well as to inform actions to improve the school nutrition context for healthy dietary choices.

Both the original tool (SPAN-ET) and the high school adaptation developed as a part of this study (**HS***PA***N-ET**) apply a population exposure approach (Lyn et al., 2013) and PSE strategies for changing the school nutrition and/or physical activity context to which the population of students are exposed, and thus support obesity prevention in schools. The school context includes the physical, situational (or system), and policy environments, including how students and staff relate with and within those environments (John, Gunter et al., 2016). For example,

visual displays on the cafeteria wall (physical environment) may affect student impressions and skills. Students may then interact with available options or with one another differently (situational environment) when making food or beverages choices. Further, food systems and policies influence what is included, or not, in those settings.

Developing the HS*PA*N-ET

The goal for developing the **HS*PA*N-ET** in partnership with students was to enable students' perspectives and experiential learning while applying the tool to assess the school nutrition context, generate and use data to prioritize PSE strategies to change the context to make healthy dietary choices at school easier for all students. Thus, this high school adaptation focused solely on the school nutrition context. The YAP team developed and content-validated the new tool for use by high school students implementing the **HS*PA*N-ET** as a component of a Healthy Eating Active Living (HEAL) Communities grant funded by Kaiser Permanente to the Clackamas County health department. The HEAL Communities grant program aimed to: 1) create or improve the places and/or systems that provide conditions for individuals to make healthier choices leading to better obesity-related chronic-disease outcomes, and 2) reduce the risk, and increase the protective factors, for communities disproportionately affected by obesity-related chronic disease. The goal of this Clackamas County HEAL project was to engage and empower high school students to identify and address PSE barriers to healthy eating at school for student populations, with a particular emphasis on understanding healthy food access for the subpopulation of students reporting hunger and food insecurity experiences. For example, students could aim to increase healthy food/beverage access, support healthy eating/drinking behaviors, and reduce hunger and energy consumption behaviors associated with increased obesity risk at school.

Adaptation of previously validated instruments for use in a different setting, with a different population, or for implementation by a new group of practitioners can be a cost-saving strategy of ensuring accurate, standardized data collection because one does not have to spend time "reinventing the wheel" by creating a new tool for new practitioners (Laake, Benestad, & Olsen, 2007; Sullivan, 2011). Since researchers developed the original SPAN-ET for use in elementary schools by adults acting as evaluators (referred to as auditors in the instrument), adults in this study worked with high school level youth to adapt and culturally tailor the **HS*PA*N-ET** for high school settings and adolescent students as evaluators (auditors).

Methods

The study team began adaptation of the SPAN-ET tool for use with and by students in a high school setting within two years of the development of the original SPAN-ET tool. The scheduling of this adaptation likely helped limit shifts in validation factors based on societal changes over time (Herdman, Fox-Rushby, & Badia, 1998). The team focused only on the adaptation of the nutrition context of the SPAN-ET tool to align the adapted tool with the

purpose of the HEAL Communities grant. The adaptation process was undertaken in Clackamas County, Oregon, a county with both rural and suburban high schools, which was a geographic context that supported the development of the original elementary school tool (John, Gunter et al., 2016). Researchers who developed the original SPAN-ET informed this adaptation process to support consistency, serving as study consultants and content experts for the adapted tool.

Participants

Community-based project partners and Extension educators familiar with the original SPAN-ET tool (N = 5) involved high school students (N = 38) and school personnel (N = 6) volunteers from four high schools in Clackamas County, a metropolitan county in Oregon, targeted for this project because each hosted a school-based health center. One school was located in a suburban community, and three schools were in rural communities. Student recruitment occurred through school personnel who reached out to juniors and seniors to become advocates for school wellness. School staff and students partnered in experiential learning to adapt and apply the nutrition component of the **HS*PA*N-ET** for use by youth evaluators as learners.

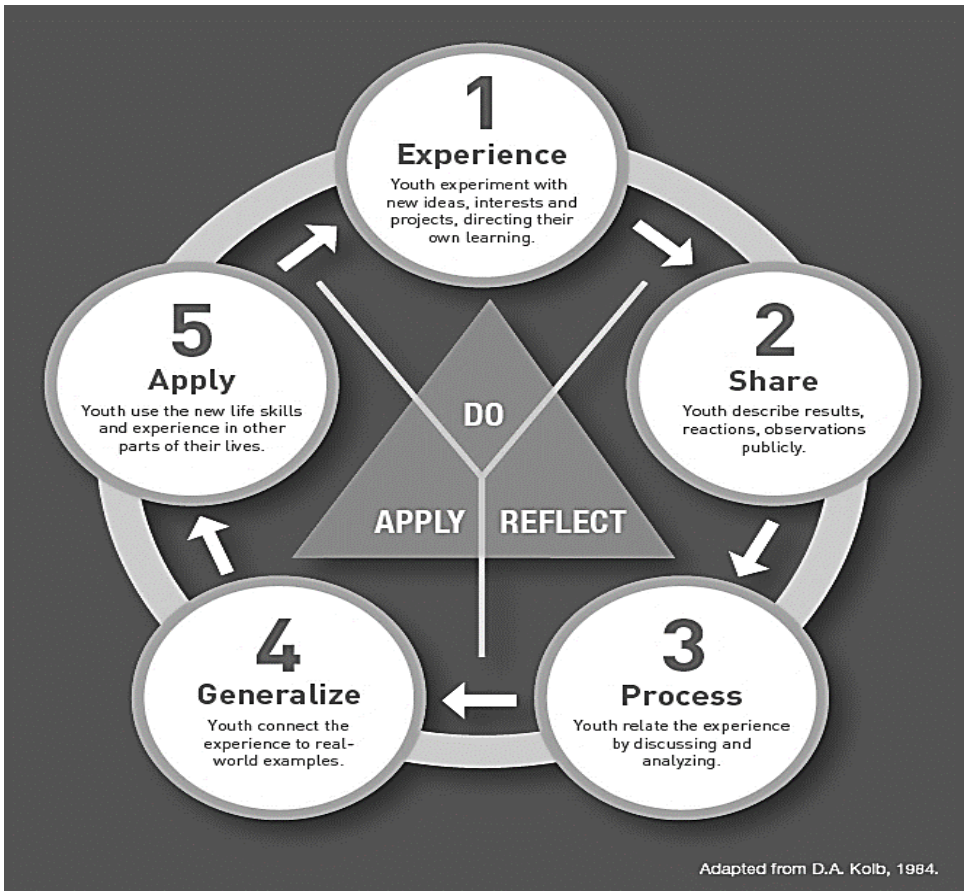
Adaptation Procedure

Adult members of this project's adaptation team, the Adult Adaptation Team (AAT), represented two organizational partners, Clackamas County Public Health and Oregon State University (OSU) Extension, working together under the guidance of OSU campus-based SPAN-ET developers. The AAT members followed several recommendations from the literature in adapting this tool (Alonso, Prieto, & Antó, 1994). First, the AAT involved at least one of the original scholars and/or organizations (i.e., Extension faculty) that developed the original tool and measures. Second, the AAT involved a lay panel of intended beneficiaries (i.e., high school students) in the experiential adaptation process. Third, the AAT practice-tested the characteristics of the adapted instrument in its intended setting.

To adapt the tool to the high school setting, the AAT team facilitated three learning experiences that followed Kolb's (1984) experiential cycle of "DO-REFLECT-APPLY" shown in Figure 2 (Cooperative State Research, Education and Extension Service [CSREES], 1992) over the course of one month with a Student Adaptation Team (SAT), a self-selected group of students (N = 7) who were enrolled in an alternative service learning class required for high school graduation.

During the first experiential encounter, the AAT trained the SAT on the basics of the original SPAN-ET tool and had them utilize the nutrition AI's of the tool, i.e., (*Do*) by applying Nutrition AI 18 (Table 1) to the high school garden. After the *experience*, the SAT reconvened to REFLECT and *share.* The AAT members took notes while students openly described aspects of AI 18 that were confusing or unclear and revealed how those observations influenced their results. At the end of the first session, the AAT provided the original nutrition AI's of the SPAN-ET to the SAT and their advisor, a member of the high school faculty. Instructions were

Figure 2. Experiential Learning Model



for the SAT to apply a *reflective process* (*Reflect*) to all aspects of the nutrition AIs, including the formatting of the original tool, review and discuss content for understanding, and analyze items and criteria for applicability and/or gaps in a high school versus an elementary school setting. The AAT asked the SAT to document their reflective process using a paper form of the nutrition AI's that paralleled the SPAN-ET.

The second AAT-SAT interactive experience involved the students sharing with the AAT their reflective process specific to one AI from each of the three environmental categories. The discussion included the students' reviews of the nutrition AI content for understanding, analysis of item descriptions, and criteria for applicability and/or gaps in a high school versus an elementary school setting. Next, the AAT and SAT visited the high school campus, where the SAT was able to *Apply* each environmental category of nutrition AIs included in the original SPAN-ET. That is, they *generalized* the tool and connected the experience to the realities of the high school nutrition context. The SAT identified both high school features that were absent from the elementary school SPAN-ET and SPAN-ET items and/or criteria that were not generalizable in the high school context. The students suggested improvements to the information gathering methods and showed the AAT observable aspects of the high school nutrition context. The AAT pointed out observed situations that were not measurable using the

original SPAN-ET. These observations included tobacco chew in a water fountain, a barrier to water access, vending machines timed to turn off during mealtime, a barrier to high energy food access, and vending machine options that did not meet school meal/snack standards. These observations were noted as criteria gaps, instrumental differences between the elementary and high school nutrition context that may influence the accuracy of assessments. Finally, the SAT provided feedback to the SPAN-ET on a collection form provided by the AAT, including their reflections of similarities and gaps, and ideas for new ways to apply the tool. The form included suggestions for new AIs and/or criteria not in the original tool for in-depth review during the second session.

The third and final AAT-SAT interaction clarified information from the students that was specific to their high school application and feedback. The SAT was also given the opportunity to *Apply* their learning. They considered how and why student groups that were empowered to lead and act to improve conditions in different schools might experience varying levels of success and positive outcomes.

The AAT synthesized all input gathered from the SAT. Researchers used the students' shared insights to make changes to the nutrition component of the SPAN-ET content and structure and to create the high-school adapted **HS*PA*N-ET**. The series of iterative changes to the original SPAN-ET that incorporated input from the intended beneficiaries (i.e., high school students) spanned approximately three months with involvement of one of the OSU campus-based SPAN-ET developers.

Results

The **HS*PA*N-ET** adaptation retained the SPAN-ET core structure of environmental groupings and AIs to preserve the structure and applicability of the tool. For example, if an organization decided to use the tools to scan the nutrition context in elementary or middle school settings (SPAN-ET) and junior or high school settings (**HS*PA*N-ET**) within a district, the versions are complementary and findings could be integrated into a cohesive report of nutrition PSE needs and priorities by school across the school district. Each AI is operationally defined by a set of observable measurement criteria reflecting the current research-based, performance-based, or emerging practice elements for each AI (John, Gunter et al., 2016). Each AI becomes an area of opportunity for school communities to direct resources for positive change. Table 1 provides a comparison of differences between the original SPAN-ET and the **HS*PA*N-ET** adaptation.

The cultural adaptation process resulted in three instrumental changes to the original SPAN-ET tool. The three changes included: (1) modifications to the tool content and format, (2) changes to the instructions and directives for auditors in one-on-one trainings, and (3) the addition of explicit food security elements. The study researchers made these changes, as shown in Table 1.

Table 1. Comparison of Nutrition Areas of Interest and Criteria in the Original SPAN-ET versus the Adapted High School Tool (HSPAN-ET)

Area of Interest (AI) and (✓) Revisions Made	SPAN-ET No. of Criteria	HSPAN-ET No. of Criteria
Physical Environment		
AI 17 Cafeteria/Meal Service Areas	5	5
✓ Criteria terms and/or unclear language clarified		
AI 18 Garden Features	2	2
✓ "Other" option added lists of features and edible plants grown ✓ Terms describing types of edible plants grown were clarified		
Situational Environment		
AI 19 School Meals	9	9
✓ Nutrition standards applying to school snacks and meals appended and referenced ✓ Food security language added to this item		
AI 20 Food and Beverage Habits	7	7
✓ Criteria terms and/or unclear language clarified		
AI 21 Food and Beverage Practices	5	5
✓ Terms "a la carte" and "compete" were clarified ✓ Vending locations for coffee carts, sports concessions, food pantries, and "special day" snacks were specified		
AI 22 Drinking Water	8	8
✓ Term "palatable" defined		
AI 23 Cafeteria Atmosphere	10	10
✓ Criteria terms and/or unclear language clarified ✓ Criterion for maintaining ambient noise level was modified		
*AI 24 Before/After School Extracurricular Programs and Summer Food Access	7	9
✓ Criteria terms and/or unclear language clarified ✓ Food security language added to this item ✓ New criterion 'H' for after school sports concessions ✓ New criterion 'I' that school stores, snack shops, food pantries, vending machines and other locations that serve, sell or give away food and/or drinks before and/or after school must meet USDA standards for healthy snacks and beverages		
Policy Environment		
AI 25 Nutrition and Wellness Policy	15	15
✓ Criteria content referencing recess removed ✓ Criteria modified from lunch "between 11am and 1pm" to "3 hours after start time" ✓ Criteria term "marketing" clarified using an example		
AI 26 Nutrition and Wellness Committee	5	5
✓ Criteria terms and/or unclear language clarified		

Area of Interest (AI) and (✓) Revisions Made	SPAN-ET No. of Criteria	HS*PA*N-ET No. of Criteria
AI 27 Health and Nutrition Education	8	8
✓ Criteria expanded to include health, food, and nutrition education concept incorporation into relevant science, history, geography, PE, home economics in family and consumer sciences, social sciences and/or trade classes at every grade level ✓ Nutrition education criteria modified from "set number of minutes in grades k-5" to "instructional time equivalent to a required course or credit" ✓ Clarified that student learning outcomes are assessed in health and nutrition courses.		
*AI 28 Closed Campus Policy	n/a	1
✓ New AI describing school policy as closed campus during scheduled mealtimes limiting students' access to off-site food and beverages ✓ Includes set of neighborhood elements (not factored into scoring) for students to consider as aspects of the food environment off-site that influences students' food and beverage choices with an open campus policy		
**Note:* Instrumental differences explained in detail in the narrative		

Tool Content and Format

Researchers first revised the school nutrition AIs and criteria to apply to the high school context in adapting the SPAN-ET for use with and by high school students. The majority of the nutrition AIs and associated criteria translated from the elementary to the high school settings.

The AAT made changes based on the SAT, describing features that needed to be added or changed that are unique to the high school setting. As noted in Table 1, the AAT made the following revisions:

- Modified AI 24 'Before/After School Extracurricular Programs and Summer Food Access' with the addition of two new criteria relevant to assessing the high school before/after school and summer programs that provide food access on the high school campus.
- Added Criterion 'H' to enable assessment of school sports concessions.
- Added criterion 'I' to enable assessment of the locations that serve, sell or give away food and beverages, such as school stores, snack shops, food pantries, vending machines, and others as meeting USDA standards.
- Created AI 28 'Closed Campus Policy' with one criterion describing a closed campus policy that prevents students from leaving school during/for meals off-site. This revision was based on SAT observations that open campus policies enable access to food and beverages not available on campus, including "unhealthy" options. This AI also includes a list of neighborhood elements, which are not factored into the AI

score. These neighborhood elements make food and beverages easily accessible in close proximity to the school.

A review of these elements will help student evaluators consider how the physical environment promotes students' food and beverage choices and reinforces habits with an open campus policy.

The resulting **HS*PA*N-ET** adaptation includes 12 Nutrition AIs and 84 measurement criteria, in contrast to the original SPAN-ET with 11 Nutrition AIs measured using 81 criteria, and available on the SPAN-ET webpage: https://extension.oregonstate.edu/span-et.

Instructions and Structures for Evaluators

Study teams made a second major adaptation to the high school version of the tool by including specific instructions and directions for use in assessing each AI and its detailed criteria. The **HS*PA*N-ET** includes a hands-on, in-person instructional curriculum to build students' knowledge and skills in using the tool. The skill-building curriculum includes an overview of the tool, its content, the community HEAL context, instructions for and practice using the tool in the school food environment, and Q&A for clarifications based on instructional use of the tool. For example, the instructional staff guide students through a sample AI to learn the structure of the tool. Then as a group, students review all other AI's together before splitting into two-person evaluator teams. One or more teams (2-4 students) are assigned to evaluate each AI.

For each AI, the description is operationalized by the set of measurement criteria that reflect current *best practice* standards for school environments to support students' healthy choices (John, Gunter et al., 2016). The binary criterion scoring system, i.e., *met* (score of 1) or *not met* (score of 0), was retained in the high school adapted tool. The **HS*PA*N-ET** also retained the practice of two auditors per AI to improve score reliability. As instructed, two students independently and simultaneously apply the tool to the AI being evaluated. Working as a team, each student evaluator observes the AI and uses two of three types of observable qualitative evidence to establish whether each criterion is met or not. This assessment process maintains direct observation of the settings, conducting interviews, and/or reviewing documents. Finally, the two students discuss the similarities and differences in their independent observations, use evidence to resolve differences, and finalize scores for each of the criteria and AI.

Students' feedback that the original format of instructions for a single evaluator team was hard to follow for multiple evaluator teams focusing on separate AIs was incorporated in the adaptation as instructional directives for each AI. The resulting structure of the **HS*PA*N-ET** allows the tool to be divided up among teams with each AI acting as a set of worksheets with an embedded checklist for the criteria (see Figure 3). The SAT also reflected that the original tool and guidance format encompassing multiple elements for each AI and requiring different data sources among criteria were confusing. The adapted tool, therefore, is organized for each criterion into three labeled columns specifying the required action associated with collecting

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information from suggested sources: see, hear, document. For example, youth evaluators are directed in the *see* column to visibly observe the feature or situation. In the *hear* column, youth evaluators interview and listen to specified interviewees, either staff or students. In the *document* column youth evaluators read and review written materials, such as signs, policies, and websites for embedded information.

Based on feedback from the SAT, a feature of the original tool, a parenthetical example listing several observable points related to one criterion statement, was reorganized into a checklist of conditions to observe. For example, "Space for meals (e.g., serve, buy, and eat) is adequate." became the checklist included in the example worksheet criterion A shown in Figure 3.

Figure 3. Example HSPAN-ET AI Worksheet

School Observation Description:

Student Auditor Names: Each assessor writes their name here in their separate form.
Date (day/month/year) of completing the Area of Interest: Write in the day you are completing the audit.
School: Write in your school's name.
Weather conditions: Write in sunny, raining, cloudy, etc. as this affects your impressions.
Special or unusual circumstances (i.e., first or last day of school, half-day, atypical school day schedule, high rate of student absence, etc.): If the school day is different than usual or some other situation affects what you observe, write that description here.

Required Data Sources:	Informants:
☑ Direct Observation Time : AM / PM	☐ School Administrator
☑ Interview	☐ Teacher, specify:
☐ Document Review	☑ District Food Service Director
☐ Other, please specify: _____	☑ Meal Service Manager/Cafeteria Staff
	☐ Classified Staff/Volunteer, specify:
	☐ Wellness Committee Member
	☐ Other, specify:

Description:
Cafeteria or alternative meal service area (e.g., classroom) offers a clean, pleasant, and safe setting with adequate space for students to eat meals.
Criteria:

Observe (See)	**Interview (Hear)**	**Document (Written or Image)**
☐ **A** – There is enough space for school staff to serve meals, and for students to buy meals and sit down to eat. Need all of the boxes in columns below filled [■] as seen or heard to meet this criteria.		
See Criteria A: You observe and take photos that show… ☐ Space to serve meals is adequate. ☐ Space to buy meals is adequate. ☐ Space to eat meals is adequate.	**Hear Criteria A:** **Meal Service Manager/Cafeteria Staff** District Food Service Director Meal Service Manager/Cafeteria Staff You hear (from the people above) that… The eating space has the following…(find a third person if the first two do not agree). ☐ ☐ Space to serve meals is adequate. ☐ ☐ Space to buy meals is adequate. ☐ ☐ Space to eat meals is adequate.	**Document Criteria A:** Not needed.

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Youth evaluators reported that the checklist adaptation helped them be certain that all conditions required to rate the criterion as either met or unmet were observed. The **HS*PA*N-ET** worksheets also include a checked list directing youth to the specific key informants to be interviewed while maintaining color-coded prompts associated with each criterion as shown in Figure 3. The SAT suggested additional space for notes within each AI, which was accommodated to enable students' comments and annotations specific to the AI and their unique interpretation of the criteria for their school. Finally, the SAT identified that written instructions were generally difficult for youth to comprehend. Based on the SAT's constructive feedback, the tool's language was simplified throughout the tool to align the readability of each section to no more than high school level, thus enabling consistent comprehension among new evaluators, youth, or adults.

Thus, the resulting **HS*PA*N-ET** presents each AI as a distinct worksheet that includes specific instructions for gathering evidence associated with each criterion from multiple sources at or below a high school level of readability. Although modifications contributed to an increase in the number of pages per AI, because the adaptation occurred in close collaboration with the SAT, the utility and practicality of the emergent tool for use by diverse student evaluators and in high school settings was supported. For example, the culturally adapted format enabled discussion among students on priorities for remedial actions in their school and identified specifically which of the criteria, and listed items for each criterion, were observed or met, and which were not.

Food Security Elements

A third **HS*PA*N-ET** modification included in the high school adaptation is new content within selected AIs that makes food security elements more explicit, which is a secondary emphasis of the Clackamas County Healthy Eating Active Living (HEAL) Communities project, specifically, understanding healthy food access for the subpopulation of students reporting hunger and food insecurity experiences in school. The **HS*PA*N-ET** aimed to raise awareness of the linked risks for adolescents who experience food insecurity with limited access to healthy dietary choices as also being at increased risk of obesity-related chronic conditions, such as type 2 diabetes (Franklin, Jones, Love, Puckett, Macklin, & White-Means, 2012).

Additionally, and perhaps more importantly, the **HS*PA*N-ET** was developed and purposed as an experiential learning tool. Thus, the inclusion of food security elements raised awareness among youth and school decision-makers as to the aspects of the school nutrition context that were observed and potentially experienced differently among high school students, particularly among youth with disparate monetary and healthy food access occurrences.

Limitations

The **HS*PA*N-ET** adaptation and piloting process was limited in that a small number of students from one school informed the adaptation, and students were involved in only two of three pilot implementations. Further, evaluations of tool validity across high school settings, particularly when used by youth evaluators in YAP or solely by adults, and tool reliability among student evaluators in diverse high school settings are ongoing. For example, student interpretation of criteria being met or unmet may differ between students and from adult understanding of the same criteria when applied to different school contexts. Instructions that accompany the tool emphasize the importance of discussing subjective opinions using objective data to address potential disagreement.

The **HS*PA*N-ET** is by design more comprehensive for student evaluators than other school nutrition and wellness assessments and therefore benefits from adult support in helping youth understand how to navigate school PSE changes within school district systems. The tool was successfully adapted and piloted as part of a larger HEAL grant-funded, place-based initiative focused on changing healthy food access in schools to improve students' healthy eating behaviors. The availability of sponsored resources was noted as a supportive, driving force in adapting, piloting, and evaluating the tool. The grant also provided financial incentive for school-level changes, an incentive that was observed to increase student and school motivation. Others may not be able to conduct or replicate such a project without similar instrumental support.

Discussion and Implications

The entire **HS*PA*N-ET** adaptation and ongoing implementations required significant AAT oversight to align necessary, practice-based revisions to the tool and evaluator education with the evidence-base and oversee student-prioritized changes as they were enacted in each school. The **HS*PA*N-ET** (https://extension.oregonstate.edu/high-school-physical-activity-nutrition-environment-tool-sample) was implemented in three high schools participating as HEAL intervention grantees. At two participating schools, students with an interest in improving food quality and addressing food security joined a club supported through 4-H Youth Advocates for Health (YA4H) programming that led **HS*PA*N-ET** implementation. The third school site decided to implement the tool by having adult school staff leading the assessment and engaging youth in various classes with discrete activities, rather than have students leading the assessment process. The **HS*PA*N-ET** retained evaluator education and action implementation guidance as components of the adaptation, as will be explained in a subsequent paper focused on the effectiveness of the **HS*PA*N-ET** as an experiential learning curriculum for student-led changes to the school context.

We contend that the **HS*PA*N-ET** is an experiential learning tool useful for building shared knowledge of healthy food access issues as well as high school students' agency intentions and advocacy skills to act in solidarity with peers and adults toward a healthier, food-equitable

school nutrition context. The tool is also useful when implemented in conjunction with YAP, PAR, or other student engagement and activism endeavors.

The tool is a good fit for YAP because changes to PSE strategies involve understanding levels of decision-making and power usually held by adults in a school setting. Adult mentors play a critical role in learning with students as they discover what is and what is not, supporting healthy eating behaviors. An underlying premise of the **HS*PA*N-ET** is empowering co-creative solutions - adults and youth advocating together for change in school environments, particularly related to food available for purchase. We contend that adults, responsible for deciding food options, need to hear that students will consume the choices, as this affects the financial viability of a school nutrition program. Additionally, youth benefit from listening to adults and learning how school district, school, and programmatic decisions are made.

The Extension YA4H curriculum utilizes a YAP model and supports PAR selected by, or developed with, students. Other youth programs such as the Family, Career and Community Leaders of America (FCCLA) and Health Occupation Students of America (HOSA) may also find the tool helpful. The tool can support any youth group's efforts in understanding how schools may address food security or as a way to understand the relationship between nutrition; health outcomes; and policy, systems, and environments. Student teams who work together around a central goal to improve the school food environment can use the **HS*PA*N-ET** tool as a mechanism to identify potential actions that are a priority for the group. The **HS*PA*N-ET** tool can support adolescents and adults in collaboratively collecting data on the school food environment to support making evidence-based changes.

Adults using the **HS*PA*N-ET** tool with youth will benefit from considering a specific aim and rationale that supports diverse student interests. For example, youth who experience economic hardship and limited healthy food access, or report living with hunger and/or food insecurity, may interact with the nutrition environment in a school in unique ways relative to their peers. Adults and students may be more invested in the data collection step as a means for applying and receiving grant funds they can then use to make changes in the school nutrition environment that are supportive and just for all.

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Journal of Human Sciences and Extension Volume 7, Number 3, 2019