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THE SCHOOL DISTRICT OF PHILADELPHIA

SNAP-Ed Funded School-Community Partnerships: Measuring Implementation for Collective Impact

Summary

This report is part of a series of four reports resulting from a case study process evaluation of the SNAP-Ed nutrition education partnership, Eat Right Philly (ERP), in 2018-19. The reports focus on the implementation and effectiveness of SNAP-Ed community partnerships. Additional reports from the evaluation can be found at philasd.org/research.

This report focuses on late stages of program implementation. We asked: what opportunities exist for ERP partners to measure, align, and coordinate programming? Participants identified three categories of activities as most important: exposure to new foods, access to fresh fruits and vegetables, and cultivating a "culture of health" in schools. ERP partners do not measure these aspects. Findings suggest that collective impact can be better achieved through a shared measurement system across ERP partners and schools that accounts for these key aspects, emphasizes their importance, and encourages partners to focus on them.

Contents

Overview

This report is the fourth in a series of four reports on SNAP-Ed funded school-community partnership implementation and success.[1] The four reports focus on (1) cultivating readiness, (2) supporting implementation (3) sustaining partnerships and (4) measuring implementation for collective impact (this report).[2] These reports resulted from a case study process evaluation of the SNAP-Ed nutrition education partnership, Eat Right Philly, in 2018-19. Through an in-depth exploration of school community partnerships within one district-wide nutrition program, this case study project provides a nuanced understanding of how schools and community partners can better collaborate to address complex problems, such as malnutrition.

Nutrition is an important consideration in engagement, achievement, and the gap between low-income and higher-income students.[3, 4] Students' mental, social, and emotional needs cannot be "rigidly compartmentalized" or separated from their physical needs.[5] Students who are food-insecure or malnourished, have inadequate water consumption, or lack opportunities to move their bodies through physical activity have a harder time paying attention in class. In fact, a recent study found that children who are non-active and have unhealthy nutrition habits scored lower on standardized test scores when compared with children who are active with healthy nutrition habits.[6] The link between health and academics is especially clear for students living in poverty, who may not have their basic needs met at home. High-poverty schools often require assistance in helping meet the needs of school-dependent students.[7, 8, 9] Assistance often comes through school-community partnerships. Engaging stakeholders at both the school and community level is an effective way to deliver the resources and support schools need[10] and is vital to improving student nutrition.[11]

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[1] The series of four reports resulting from the 2018-19 Case Studies project defines "implementation" using implementation science. For more information on implementation science see Appendix A.
[2] Additional reports from the evaluation can be found at philasd.org/research.
[3] Charles E. Basch, "Healthier Students are Better Learners: A Missing Link in School Reforms to Close the Achievement Gap," *Journal of School Health* 81, no.10 (2011): 593-598.
[4] Alicia Fedewa and Jennifer Hoffman, "Nutrition and Physical Activity as Protective Factors in Eliminating the Achievement Gap," *Communique* 42, no. 1 (2013): 1-12.
[5] Nell Noddings, "What Does it Mean to Educate the Whole Child?" *Educational Leadership* 63, no.1 (2005): 5.
[6] Fiona M. Asigbee, Stephen D. Whitney and Catherine E Peterson, "The Link Between Nutrition and Physical Activity in Increasing Academic Achievement," *Journal of School Health* 88, no. 6: 407-415.
[7] Lisa Delpit, Multiplication is for White People: Raising Expectations for Other People's Children (New York: New Press, 2012).
[8] H. Richard Milner IV, "Understanding Urban Education from the Outside In and Inside Out," *Urban Education* 47, no. 6 (2012): 1019-1024.
[9] Pedro A. Noguera and Lauren Wells, "The Politics of School Reform: A Broader and Bolder Approach for Newark," *Berkeley Review of Education* 2, no. 1 (2011): 5-25.
[10] Pedro A. Noguera and Lauren Wells, "The Politics of School Reform: A Broader and Bolder Approach for Newark," *Berkeley Review of Education* 2, no. 1 (2011): 5-25.
[11] Ying-Ying Goh et al., "Using Community-based Participatory Research to Identify Potential Interventions to Overcome Barriers to Adolescents' Healthy Eating and Physical Activity," *Journal of Behavioral Medicine* 32, no. 5 (2009): 491-502.

SNAP-Ed and Eat Right Philly (ERP)

The United States Department of Agriculture (USDA) Supplemental Nutrition Assistance Program Education (SNAP-Ed) provides nutrition education to SNAP-eligible low-income individuals and families. In Philadelphia, SNAP-Ed provides federal funding to seven community partners[12] to implement a nutrition education program known as Eat Right Philly (ERP) in 214 School District of Philadelphia (SDP) schools.

Key Terms

Direct education: Nutrition education lessons delivered through a SNAP-Ed approved curriculum and delivered either by ERP nutrition educators or classroom teachers with support from ERP staff.

ERP partners: Refers to the group of seven community partners that implement Eat Right Philly programming in SDP schools.

ERP programming: The overall set of program components Eat Right Philly delivers to a school or set of schools. Programming is typically made up of either direct education or work related to Policy, Systems, and Environment (PSE).

ERP staff: All staff members who work for Eat Right Philly partners to deliver or manage programming in schools. This includes seven ERP Directors who manage the program at the ERP Partner level, as well as ERP nutrition educators who deliver programming within schools.

Policy, Systems, and Environment (PSE): Interventions meant to facilitate people to act on their education by making healthy choices easier and preferable.

School staff: Refers to all employees who work at a particular school. For the purposes of the case study, we have grouped school staff into four main categories: 1) Administrators (principals and assistant principals), 2) Classroom teachers, 3) Other school staff (climate staff, nurses, counselors, food service managers), and 4) Partnership coordinators (anyone at the school whose key role is to manage partnerships, for example Community School Coordinators or VISTA staff).

SNAP-Ed: The United States Department of Agriculture (USDA) Supplemental Nutrition Assistance Program Education (SNAP-Ed) provides funding for nutrition education to SNAP-eligible low-income individuals and families.

ERP provides a range of programming to schools related to nutrition and physical activity to align with the SNAP-Ed requirement of using a combination of approaches. These approaches include direct nutrition education, social marketing, and Policy, Systems, and Environmental (PSE) change

[12] The seven community partners are the School District of Philadelphia, Drexel University, Agatson Urban Nutrition Initiative, Einstein Medical Center, Vetri Community Partnership, The Food Trust, and Health Promotion Council.

interventions. PSE changes facilitate people to act on their education by making healthier choices easier and preferable.

The goal of SNAP-Ed programming is to provide consultation and technical assistance to schools so that staff and administration make changes at the school level. While ERP partners provide direct programming and work with schools to implement a variety of initiatives, the school itself is "ultimately responsible for adopting, maintaining, and enforcing the PSE change."[13] Examples of school-level PSE changes include: writing a policy in the parent handbook to limit the amount of unhealthy snacks brought in for school celebrations, adopting a new intervention to increase physical activity during recess, or removing a vending machine that sells ice cream from the cafeteria.

ERP 2018-19 Case Study Project

The School District of Philadelphia (SDP) Office of Research and Evaluation (ORE) conducted a year-long case study project during the 2018-19 school year, which included 19 schools, 119 interviews of school and program staff, 7 focus groups with 41 students, document analysis, 138 hours of participant observation, and analysis of SDP District-Wide Survey (DWS) and School Support Census data.[14][15] The goal of the case study project was to: (1) understand the extent to which contexts (i.e., policies and environments, communities, and interpersonal connections) influence successful implementation of ERP programming, and (2) uncover how the seven community partners who implement SNAP-Ed nutrition education in the SDP can better coordinate programming, elevate the importance of their work to SDP administration and the public, and collect shared measures that will show the collective impact of their work over time. Collective impact is when stakeholders commit to a common agenda for solving a complex social problem that no single organization can solve alone.[16,17]

The series of reports that summarize the findings from the case study project answer four main research questions:

1. What are the factors that facilitate the initial implementation of policy, systems, and environment (PSE) changes? ("Cultivating Readiness")
2. What implementation challenges and successes do ERP partners encounter in their schools? ("Supporting Implementation")

[13] Supplemental Nutrition Assistance Program Education, FY 2019 SNAP-Ed Plan Guidance (Alexandria: VA, United States Department of Agriculture, 2018), 18.
[14] Analysis of the SDP District-Wide teacher survey was used to inform findings in report one of this series of four reports, "SNAP-Ed Funded School-Community Partnerships: Cultivating Readiness." For more information on the District-Wide teacher survey and our analysis see Appendix C.
[15] Analysis of the SDP School Support Census was used to inform report three of this series of four reports, "SNAP-Ed Funded School-Community Partnerships: Sustaining Partnerships." For more information on the SDP School Support Census and our analysis see Appendix C.
[16] John Kania and Mark Kramer, "Collective Impact," *Stanford Social Innovation Review* 9, no. 1 (2011):36-41.
[17] For more information on Collective Impact see Appendix B.

3. How can ERP implement policy, systems, and environment (PSE) changes that can be sustained over time? ("Sustaining Partnerships")
4. What opportunities exist for ERP partners to measure, align, and coordinate programming? (This report, "Measuring Implementation for Collective Impact")

Research Questions Guiding this Report

This report answers one of the research questions that guided the case study project: What opportunities exist for ERP partners to measure, align, and coordinate programming? To help us answer the larger question, we considered two more focused questions about ERP programming:

1. What do school and ERP staff believe are the most important aspects of the program?
2. How can these programming components be measured across all partners?

Methods

Case studies are especially useful when it is impossible to separate variables from the context, and understanding multiple perspectives is required.[18, 19] The aim of case study research is "particularization," not generalization.[20] Thus, randomized sampling is not desirable for this method; rather, the aim should be to examine a "strategic selection of cases." Instead of examining the "typical case," we looked for "critical cases" that represent different levels of ERP presence or programming at a school.[21] To that end, we created a tiering system to categorize all partners' schools into three tiers based on 2017-18 data, data from the year before we began data collection. We quantified available qualitative data on nutrition lessons and PSE programming in each school to categorize schools into one of three tiers:

Tier 1: Schools with an intensive ERP presence
Tier 2: Schools with less intensive ERP programming
Tier 3: Schools with limited ERP presence

We then chose one "critical case" for each tier and each partner for a total of 19 schools. Schools were selected based on their tier level to ensure the inclusion of one school per tier and per partner. The study schools had a variety of other characteristics, including grades served, enrollment, geography, and demographics.

[18] Robert K. Yin, *Case Study Research: Design and Methods 4th Ed*. (Thousand Oaks: Sage Publications, 2008).
[19] Helen Simons, *Case Study Research in Practice* (London: Sage Publications, 2009).
[20] Sharan Merriam, *Qualitative Research: A Guide to Design and Implementation* (San Francisco: Jossey-Bass, 2009), 24.
[21] Bent Flyvbjerg, "Five Misunderstandings About Case-study Research," *Qualitative Inquiry* 12, no. 2 (2006): 229.

The researchers collected data from various stakeholders at the 19 schools in our sample including 119 interviews of school and program staff, 7 focus groups with 41 students, document analysis, and 138 hours of participant observation.[22] All data was coded by one team member and checked by a second team member using Dedoose.[23, 24] Disagreements about code application were discussed until a consensus was reached.

As part of the larger 2018-19 case study project on SNAP-Ed funded school-community partnership implementation and effectiveness described above, this specific report focuses on the fourth research question: "What opportunities exist for ERP partners to measure, align, and coordinate programming?" To analyze the data in relation to this research question we used The Theory of Planned Behavior.

Analytical Framework

In social psychology, The Theory of Planned Behavior (TPB) has theorized on the relationship between a person's attitude and their behavior.[25] TPB separates one's attitude from "behavioral intentions," and theorizes about what factors lead to intentions (or motivation), which is predictive of behavioral change. TPB identifies three factors that lead to intentions and then to eventual behavior change:

1. **Attitude** forms from beliefs about the outcomes of a behavior. If a person thinks a behavior will have positive results they will have a positive attitude about that behavior.[26] For example, if a student thinks eating breakfast will lead to energy and focus throughout the day they will have a positive attitude towards eating breakfast.
2. **Subjective norms** account for the social context in which a behavior occurs. They refer to "whether the behavior is likely to be approved or disapproved by the social groups of influence."[27] A person who believes influential people around them think they should perform the behavior are more likely to do so and to feel positive about it.[28] For example, if a teacher feels the administrators and teachers at their school think they should serve

[22] A detailed description of the project methods is provided in Appendix C.
[23] Dedoose Version 8.0.35, web application for managing, analyzing, and presenting qualitative and mixed method research data (2018). Los Angeles, CA: SocioCultural Research Consultants, LLC www.dedoose.com.
[24] For our complete codebook see Appendix D.
[25] For more information on the theory of planned behavior see Appendix E
[26] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. *In Health Behavior and Health Education: Theory, Research, and Practice,* ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 67-96.
[27] Mark Edberg, *Essentials of Health Behavior: Social and Behavioral Theory in Public Health*, (Sudbury, MA: Jones and Bartlett Publishers, 2007), 39.
[28] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. *In Health Behavior and Health Education: Theory, Research, and Practice,* ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 67-96.

healthy foods during class celebrations they are more likely to serve, and feel good about serving, healthy foods.

3. **Perceived behavioral control** is a "perception of the ease or difficulty of behavioral performance," which affects attitude or behavioral intention. External factors might make a behavior easier or more difficult.[29] Perceived behavioral change can lead to intentions and then behavioral change or directly to behavioral change.[30] For example, a lack of water fountains makes drinking water more difficult, which could first result in a student having a negative attitude towards drinking water or directly result in the student not drinking water.

One goal of ERP, and other school-based nutrition programming, is to change health and nutrition behaviors. We used the theory of planned behavior to guide our understanding of how ERP partners can best measure, align, and coordinate the aspects of programming that are most important to school and ERP staff.

Findings

What do school and ERP staff believe are the most important aspects of the program?

Across all case study schools, we found that both school and program staff were quite consistent in what they believed were the most important aspects of the program. Most responses fell into three themes: "exposure," which was a word used repeatedly, food access, and "wellness work," which is our category name for participant comments about changing the "culture" of the school, assembling a "wellness committee" at the school to change policies and practices, and/or building positive relationships with school staff in order to provide this type of programming in the future. Below, we describe each of the three themes in more detail. Finally, we apply the Theory of Planned Behavior to connect each of these themes and show how they are interrelated, and all necessary for behavior change.

Exposure to new foods is the most important aspect of ERP programming

Repeatedly, school staff and ERP program staff told us that "exposure" was the most important aspect of the program. Many used the word "exposure" without prompting, while others said the

[29] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. *In Health Behavior and Health Education: Theory, Research, and Practice,* ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 71.
[30] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. *In Health Behavior and Health Education: Theory, Research, and Practice,* ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 67-96.

program helped students to "try new foods" and "be aware" of what healthy foods were. One administrator believed that exposure to different or unusual fruits and vegetables led to awareness, and that this exposure could lead to interesting lessons: "I think exposure. Just exposure. The strange fruits and vegetables. Like the starfruit and it's sliced and it's a star. You could turn that into a really neat math lesson or use it as a kickoff to an art lesson. Because we know when the items are arriving and what they are, you could preplan. I think exposure because that way a child will say "oh I remember starfruit at school." I didn't taste it then, but just the fact that you are aware that it does exist. Just awareness."

Most school staff believed that at least some of their students would never have tasted certain fruits and vegetables without the program. For example, an administrator said, "I think it's just giving students the opportunity to be so hands-on and try so many foods that I'm certain that some of them have never experienced." Another administrator at a school said he believed that once students were "exposed" to healthier foods, they will "know things exist outside their little black bag of snacks from the corner store" and that they will be more willing to try new things if a parent offered them.

School and ERP program staff also believed that food tastings -- as part of a traditional lesson, a cooking lesson, or on their own -- laid important groundwork for kids trying fruits and vegetables at home or in the school cafeteria. One administrator reported observing more of her students eating salads, fruits, vegetables, beans and rice in the lunchroom since they changed meal providers. They said, "I've just been amazed and it's reinforced my thought process, is that whatever you expect of children, whatever you expose them to, that's what they'll do."

Finally, school staff and ERP program staff believed that "trying new foods" was an important outcome in and of itself. A school staff member recounted a story about their three "picky" students. Because they had the prior knowledge of eating a mango during an ERP food tasting, one girl tried an apple during lunch:

> I have three very picky little girls in here. I have to beg them, "Please just go take a plate and just try something on it. Just get some milk," or whatever, because they won't eat. They'll just sit at the table and not eat. And after, the one girl tried the mango, and now, every day after lunch she tells me, "Remember we ate the mango?" I'm like, "Yeah." She goes, "Well, I took an apple today," and then she'll say, "I like it. I do like apples," and I'm like, "Good."

This classroom teacher believed that their student was more willing to try the apples in the lunchroom because of the prior exposure to a mango in the nutrition lesson. The food tastings that are incorporated into direct education lessons exposed students to not only to a mango, but to the idea that trying new foods can be a positive experience. This led the one student described in the quote above to try another new food.

Another important aspect of the concept of "exposure" for both food tastings and cooking lessons were their experiential, hands-on nature, as opposed to simply learning nutrition facts in a classroom setting. These were most often cited as the most successful types of lessons, regardless of whether it was part of a direct education lesson or not. When we asked the question, "In helping students eat healthier and move more, what would you say is the most important aspect of the work that they do?" a typical response (aside from "exposure" as discussed above) was the cooking lessons. For example, one ERP staff member said, "I think giving them experience. I think the cooking classes are good experience, especially if their parents aren't home all the time. They can eat healthier without going to the corner store. One ERP staff member believed that hands-on cooking lessons increased "cooking confidence," so students and families can be more familiar with cooking equipment and techniques. They said, "We hope that they share that with her family and that eventually that turns into a situation where they are more likely to cook at home, more likely to use cold vegetables, and more experienced about whole ingredients, vegetable and fruit."

Finally, staff understood that a critically important piece of "exposure" was parent exposure. After all, "as much as the kids love the food, they can't go grocery shopping," as one ERP staff put it. They went on to say that the "key" would be children "willing to taste things" plus "adults supporting them at home":

> The in-the-classroom is great, but they can't shop for themselves and that's where it falls apart. So even if it was like having the parents—like almost in an adult-appropriate way, almost doing a lesson like the kids have and getting the parents to see like "oh, I like kiwi," because a lot of food stuff comes from parents…. So even just saying "you'd be doing your child a favor if you bought apples instead of brightly-colored, fakely colored applesauce," or "you can choose all-natural, no sugar added applesauce instead of—" like little things like that. I think the parent piece is huge, nothing's going to change because the kids can't shop. And by the time they're old enough to make decisions, I feel like their taste buds and their brains have been wired to want certain things.

In this ERP staff member's opinion, children's tastes become "wired" in childhood, so even as the program tries to expose them to new and different foods, it will not result in sustainable behavior change without parent support at home. Therefore, exposing parents to healthier food options was just as important as exposing students to new foods. Importantly, these findings also suggest that children's and parents' exposure should be done in conjunction with one another – a family approach, and not simply one or the other.

Providing access to fresh fruits and vegetables is an essential prerequisite

Another equally frequent response to our question about the most important aspect of the ERP programming was "access." Some participants used that exact word (these tended to be program staff) and others specified a program such as the Share produce stands or the Philabundance backpack program, where food was given out for free or sold at cost to students and their families. Another type of response was increasing "access" to healthy foods in the lunchroom. For example, one ERP staff said, "All of it is so important but I think what I've heard from their school and teachers and students, the food access piece of getting food home [is most important]." This sentiment, that food access was the most important, or more important than other aspects of the program, was shared by many.

Similarly, a school administrator made the point that while education is important, access to healthy food is the key to ensuring that children actually make healthy changes in their diet. He said, "There's nothing better you can do. Actually, education's important. Direct education is important, but if they don't have access to the resources to make that happen, if they read about an apple, but they don't eat an apple, they're not going to grow the seed." While direct education lessons -- such as learning about apples -- is important, if students do not actually taste and experience an apple, they are unlikely to choose an apple, even when they have the choice. One ERP staff echoed this view, saying, "Well, first of all we already know that direct education is not going to – you give somebody some facts and some information it's not necessarily going to make a big difference in their actions. The thing about PSE is that it can help people think about what's happening in the context of their own environment. Then, ideally help them either to navigate the environment or make changes to that environment... The direct ed is important, yes. You're laying the foundation. But the PSE I think is where you can see the actual change."

One ERP staff member said that the most "tangible" change she had observed was the increase in produce stands they have offered. "All the produce that's going out in the community, I think, is a major change," they said. An ERP staff member described how their school's produce stand was in direct competition with a Mister Softee, and yet, students were choosing the produce:

> So we received a Share produce stand, it was very successful. It was amazing how many kids actually came up and purchased food with their own money. So that was really great…. You would think that free would be more successful, but the variety that Share brought out, and just to know that we were in competition with Mister Softee during dismissal time and how many kids actually came up and bought a 20-cent banana or a 25-cent apple or two-dollar strawberries or grapes. It was overwhelming to see that they had the money, one, and two, they could have bought a Mister Softee but they chose to buy a healthier food option, and that was pretty awesome to see.

This ERP Staff member believed that the Share produce stand was "successful" because students were choosing to spend money buying fresh fruit instead of ice cream; thus, when students had

access to fresh foods, they often chose them. Other school staff members described the Philabundance backpack program, where students received a package of perishable and non-perishable foods once a month, as the most important. One partnership coordinator said, "I would say the backpack program is the most important… It is kind of a worry with some teachers, if the students are eating enough." Produce stands and backpack programs provided increased food access for students and their families. Produce stands increased access to fresh fruits and vegetables, while backpack programs increased access to complete meals.

Other staff understood that changes to the menu in the lunchroom was another place where students could access healthy food, and it went hand-in-hand to reinforce ERP messages. One administrator said, "we switched over to a different provider last year, Revolution Foods, which is actually healthier foods so I think that that goes in with what we've been doing with Eat Right Now is having kids eat healthier." Another administrator said, "I also think we have better food in the cafeteria. They have fresh food every day. I think Eat Right [Philly], the Wellness policy was part of that. They have banana, oranges, grapes, strawberries, blueberries, salads." Other classroom teachers and school staff similarly reported observing that breakfasts and lunches have become "a lot healthier" in the last few years, specifically observing the increase in fresh fruit and vegetables offered. Another school staff member said, "We have more and more kids eating the school district food because it's healthy now. And then they come in and teach the kids. So, I think both of them [are important]." One ERP staff member cited breakfast promotion as an area of particular success in schools. Other school staff discussed breakfast and lunch participation rates as an important indicator of whether ERP was successful or not.

Importantly, we also see in this data that school and program staff believed that families' access to fresh foods, through school meals, backpack programs, and/or produce stands, was a necessary pre-requisite – and worked *in conjunction* with increased exposure through tastings and lessons – to behavior changes, such as a sustained increase in fruit and vegetable consumption. Any one of these changes alone in any given site would not suffice to achieve the long-term outcomes to which SNAP-Ed aspires. Some combination of these activities, likely dependent on the school and community's particular needs, is required to move the needle.

Cultivating a "culture of health" in schools

The third theme that emerged from our data about the most important programming elements was that program and school staff believed efforts aimed at changing the school culture to one that actively promotes health were successful. Many nutrition educators, as well, believed that their most successful activities that they did in schools was building relationships and changing the culture of the school.

One example of changing a school's culture around food and health was serving healthier food during celebrations. One teacher believed the most significant change she had seen in the past year due to ERP programming was adopting a "healthy birthday policy" because of "certain things that

we have to be more conscious of and that ties right into what we try to do with it right now in how our culture in our school should reflect what we're bringing into the classroom." This teacher felt the push for a healthier school culture should be evident to students in the classroom. In large part, these efforts aimed at shifting the culture of a school depended on an energetic push from an ERP nutrition educator who is well connected to the community. One administrator attributed their success to the personality of the nutrition educator assigned to her school. "Because of [nutrition educator] and who she is and her personality, [they've] been able to get people on board with that, and that's a wonderful thing. I think the work is the culture and changing the mindset." This administrator feels that shifting the school culture to focus on health and nutrition is an important aspect of the nutrition educator's work. One of the ERP staff members believed that hiring educators who like working with urban youth and who can connect with the school and community culture is the number one criteria:

> We have always been blown away by what [our nutrition educators] been able to accomplish with kids that really – there's lots of things to compete with kids' time, and interest, and engagement. And we're able to cut through all that noise in a lot of instances...So we hire people that have an affinity for working with urban youth. That's the number one criteria.

This ERP staff prioritized the ability of a nutrition educator to build authentic relationships with students to create that culture shift above other factors, such as nutrition training. This reflects the fact that ERP stakeholders felt changing the culture around health and nutrition in the school was one of the most important aspects of ERP programming.

A second aspect of changing a school's culture around food and health was to celebrate students' own backgrounds and food traditions. In turn, sharing each other's food traditions led to what one ERP staff member described as "a really happy time in the classroom":

> I'd show up in the class by the end of the year, they would break into cheers. They were so excited about the food, and they were so excited to know they had the opportunity to share – because it's a very diverse, international group, and they see me and they'd immediately start talking about something from their home country or something their grandmother used to make for them before they moved to America, or the fig tree in their grandfather's back yard.

The opportunity to try new foods and share their own food traditions increased student engagement in direct education. Furthermore, this ERP Staff member believed that cooking and preparing food was a great experience for English Language Learners: "And for kids who are struggling with the language, you don't really need language to cut fruit up and make something nice with someone. I felt like that was a real success." Incorporating food tasting and cooking into direct education contributed to a shift in school culture around health and nutrition by engaging

students in direct education, sparking conversations about students' own food traditions, and opportunities for relationship building through creating food together.

A third aspect that some participants mentioned was the potential for youth-led programs to be successful in changing a culture of a school. One ERP staff pointed out that, "If it's a farm stand or if it's a Backpack Program or if it's a healthy fundraiser, anything like that, that layering of having youth involved, having principal or administrative support, all of these things, I think that's what makes the biggest difference." In another example of a successful PSE strategy, students complained about not having healthy options at their local corner store, so the ERP Staff worked with students to offer fresh produce and healthy snacks at dismissal time and called it the "fruit market":

> Usually, that's what I tell the teachers at the beginning of the year, like, you all know what my deal is here. I've been here for a while. You kind of know what we do but if you're interested in working on new things, just let me know. That's how the fruit market came along. The kids in that class said - we were talking about where they go for snacks after school. I said, "Would you go buy fruit?" "No, the corner store doesn't have that." "So, could we have it here?"

Here, the nutrition educator had a longstanding relationship with the school and the teachers, and could easily implement a PSE initiative like this with student support. Similarly, another educator at a different school believes that parents are more likely to try new foods if their children have been involved somehow. She said, "when the kids take part in it, I feel like they take pride and their parents are more likely to come by and actually be a little bit more open minded." Participants believed that when students are involved in the planning and implementation of programming, PSE work, including for caregivers, is easier and more successful.

Fourth, participants also believed that engaging parents was an extension of changing the culture. Teaching students how to cook resulted in at least some kids cooking at home or making recipes with their parents. It could be that staff believe that hands-on skills, recipe, and exposure contribute to changing family social norms, in addition to school norms around food. Many school staff provided examples of students telling them that they made a recipe at home with their parents as evidence that ERP programming was successful.

While many teachers discussed positive, healthy changes, some teachers were not positive about movement breaks and physical activity. When discussing movement breaks, a teacher indicated that although she understood the benefits, felt comfortable doing them in her classroom, and students enjoyed them, she nonetheless felt they could not do them when her principal might walk in. ("I would never want the principal or assistant superintendent walking in, and my kids are exercising.") This feeling was echoed by other teachers as well, and may indicate an absence of a culture of health in the school, whether that comes from the principal, assistant superintendent, or reflects other priorities.

School staff believed that exposure, access, and school culture were interrelated and were all necessary to create behavior change

Overall, school staff believed that the three components they perceived as most important in ERP programming -- exposure, access, and school culture -- were interrelated and were all necessary to create behavior change. An administrator said that "exposure" to new fruits and vegetables was very important because students had limited "access" to these foods -- and that exposure and access, combined with parent engagement and culture-shifting activities, all tie together:

> I just think number one, the content that they're presenting is extremely important, especially in a community like our community. When we did part of our data rounds for looking at what the community needs, health and nutrition was at the top of the list. There's no grocery store in the community so students having access to fresh produce is very limited. By having a program like this, the students are exposed to a lot of different types of foods that they by default wouldn't naturally be exposed to. I think there's great benefit in that, but there's also great benefit in holding workshops for parents with students and providing recipes that people may not naturally see. We've also gotten magazines and other pieces of literature that go home with the family so I think all of those things tie into the overall picture of helping to create a well-rounded child.

This administrator views access, exposure, and culture shifting activities as inter-related components of ERP programming that are important because they contribute towards students being well rounded. This relates to the idea of schools fostering the whole child, addressing nutrition and physical activity needs, among others, in addition to academics.

The kindergarten teacher with "picky" kids believed that "exposure" to the mango through the ERP lesson changed one girl's mindset:

> For her, that fear of, "I've never had it," or, "Maybe I used to not like it," I feel like, because she saw everybody else in the class who tried the mango, and she saw everybody – a bunch of kids – go, "I want more. I want more," she kind of was like; "I guess I can try it. It's not going to hurt me." She tried it, and then now, when she sees kids at lunch and they're picking up apples, she's like, "You know what. I'll pick up an apple. I will try it," and then she found that she liked it. I think, part of – because – a little bit of peer pressure also helps if she sees her friends doing it and eating, like, "I'll try that."

Thus, "exposure" (ERP mango tasting) combined with some "peer pressure" (her friends doing it) and more regular "access" (apples in the lunchroom) all led to her choosing to eat an apple, when she might not otherwise have chosen to do so.

Another administrator agreed that there needs to be a "comprehensive approach." They went on to discuss the importance regularly demonstrating the value of health, such as through providing healthy school meals

> Like you can't serve junk at breakfast and then say, "well lunch is going to be healthy today…." If you just come and make salsa with kids, they're like, "well that's cool you made salsa," but they're not connecting all the dots, and then saying, "wow, yes, that's really important that I make healthy choices. Instead of – when I go to the corner store, instead of buying a twenty-ounce Blue Raspberry soda, I think maybe I'll take a look at the calories on there, and the sugar content, and say ooh I don't know if fifty grams of sugar is really the best thing for my brain at three in the afternoon." I'm not a health and wellness expert teacher, but anytime you want to teach kids something, you have to teach them the value of it, the importance of it, and you have to teach it to them regularly.

This administrator felt that positive health and nutrition outcomes require a multifaceted approach. Relatedly, one ERP staff member made the point that food access and trauma are interrelated issues that can only be addressed through a holistic lens. She cited research on Adverse Childhood Experiences (ACEs) that shows the connection between obesity and trauma, which has not yet been considered an important aspect of PSE work within the SNAP-Ed framework. However, they believe we must look at the "big picture" and ensure that children feel cared for and valued as human beings first and foremost, which includes ensuring access to healthy, filling meals: "The most important aspect we can have is to have children feel they are so important that they will make the choices to eat and to exercise. They will see that as a value because they are important and we care about them and want them to care about them." This ERP staff finds that before we look to behavior change, we first need ensure access to foods and then a school culture where students feel valued so that their value can be reflected in their choices about their health and well-being.

How can these programming components be measured across all partners?

Participants found three programming components most important to ERP: exposure to new foods, access to fresh fruits and vegetables, and a shift in the school culture around health and nutrition. The Theory of Planned Behavior can be applied to connect each of these themes into a coherent framework and propose possible outcomes that could be measured as part of future evaluations to better understand how PSE work is being implemented in school settings.

When we applied the Theory of Planned Behavior (TPB), we see that these three findings about what kinds of programming was most successful (exposure, access, and culture shift) aligned well to the TPB model, which describes an individual participant's outcome (attitudes, perceived behavior control, and subjective norms). We have mapped TPB outcomes onto our salient findings about what participants believed were the most important aspects of ERP programming (Table 1).

Table 1. Proposed ERP outcomes[31]

Important Aspects of ERP programming for Participants	**Specific Program Activities**	**TPB measurable outcome**
Exposure	Food tastings, hands-on cooking lessons	Student attitude change ("willingness to try")
Food Access	School meals, Produce stands, Backpack programs	Perceived Behavioral Control (students and families)
Culture Shift	Wellness work, Policy work, PD/TA for school staff	Student and Staff - Subjective Norms

Currently, using the SNAP-Ed evaluation framework, the program partners mostly collect program delivery information, such as reach numbers and the number of policy changes. They also collect population indicators, such as Body Mass Index (BMI) that would be considered "impacts." Additionally, the program collects data on behavior change outcomes, such as fruit and vegetable consumption and food resource management. However, under the Theory of Planned Behavior, we consider those long-term outcomes, since prior to changing behavior, intentions must change, and prior to that, some combination of changes in attitude, perception of subjective norms, and perceived behavioral control must happen.

Conclusions and Recommendations

Our findings show that while school staff, in general, are satisfied with the programming that the ERP partnerships offer, the program would benefit from shared measurement systems across the various partners. The systems that currently exist for the Philly SNAP-Ed partner organizations do not measure what participants see as the most important and impactful aspects of the program. Additionally, even within those systems, partners understand and report the measures differently. Finally, there are currently no common tools or outcomes collected across all partners that measure participant *experiences* of the programs. Current measures only track what the program reports they are doing. As a result, demonstrating "collective impact" is difficult to do.

Drawing from Implementation Science literature and having mapped our salient findings about what participants value most about the programs onto the Theory of Planned Behavior, we find that measuring changes in exposure, access, and school culture is more aligned to participants'

understandings of program impacts. We believe these outcomes may be helpful in short- and medium-term program planning, as programs and partners work collectively toward the established goals of SNAP-Ed.

The recommendations listed below should be considered when moving the ERP partners towards a shared measurement system. We also present these recommendations by report research question and related findings (Table 2):

- Ensure that each ERP partner organization collects and reports PEARS and STARTracks data consistently and uniformly.
- Develop a logic model for the ERP program that clearly defines program activities, and specifies what data to collect at each step.
- Collect implementation outcome data through additional surveys or other means.
- Locate validated survey tools (or develop them locally) and outcomes for the three TPB pathways: exposure to new foods, access to fresh fruits and vegetables, and shift in school culture around health and nutrition.
- Conduct a student survey that measures student attitude changes before and after "exposure" through food tastings and cooking lessons, as well as changes to "subject norms" within the school and "perceived behavioral control."
- Conduct a school staff implementation survey to measure changes to "subjective norms" and wellness/policy work.

Table 2. Report research questions, key findings, and recommendations for moving the ERP partners towards a shared measurement system

Research Question	Finding	Recommendation

• What do school and ERP staff believe are the most important aspects of the program?	• Participants found three programming components most important to ERP:
	  ○ Exposure to new foods
	  ○ Access to fresh fruits and vegetables
	  ○ Shift in the school culture around health and nutrition.
		• The program would benefit from shared measurement systems across the various partners that measure what participants see as the most important and impactful aspects of the program: exposure to new foods, access to fresh fruits and vegetables, and a shift in school culture around health and nutrition

• How can these programming components be measured across all partners?	• Within the measurement systems that currently exist for Philly SNAP-Ed, partners understand and report the measures differently.	• Ensure that each ERP partner organization collects and reports PEARS and STARTracks data consistently and uniformly. • Develop a logic model for the ERP program that clearly defines program activities and data collection at each step.
	• There are currently no common tools or outcomes collected across all partners that measure participant experiences of the programs. Current measures only track what the program reports they are doing. As a result, demonstrating "collective impact" is difficult to do.	• Locate validated survey tools (or develop them locally) and outcomes for exposure to new foods, access to fresh fruits and vegetables, and shift in school culture around health and nutrition. ○ Conduct a student survey that measures student attitude changes before and after "exposure" as well as changes to "subject norms" within the school and "perceived behavioral control." • Conduct a school staff implementation survey to measure changes to "subjective norms" and wellness/policy work. • Collect implementation outcome data through additional surveys or other means.

Appendix A

This appendix, Appendix A on Implementation Science, can be found in all four reports in this series on SNAP-Ed funded school-community partnerships.

Implementation Science

As a field of research, implementation science promotes the adoption and uptake of evidence-based practices. Rather than focus on traditional outcomes of interventions or practices, implementation science tries to figure out why an evidence-based intervention is not being implemented (i.e., the barriers and facilitators of implementation).

Implementation outcomes, the effects of purposeful actions to implement new programming,[32] are useful in evaluations that need to account for the influence of contextual factors when implementing change: "Examining implementation outcomes (e.g., extent to which an intervention is adopted by teachers) provides context for intervention outcomes (e.g., change in children's BMI) and is needed to ensure that interventions are effectively adopted, translated, and sustained in community settings."[33] Implementation outcomes are based in the larger field of implementation science, focused on the uptake of evidence-based practices in real-world settings.[34]

With its roots in health-care and public health, implementation outcomes are used increasingly in research on health and nutrition interventions in K12 schools. Implementation Science has been applied in public health and educational research studies on nutrition lessons and related activities[35] as well as PSE changes, such as school food policies[36] and food backpack programs.[37] Prior research has highlighted factors in implementation outcomes, such as the presence of

[32]Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.
[33] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 2.
[34] Martin P. Eccles and Brian S. Mittman, "Welcome to *Implementation Science," Implementation Science* 1, no. 1 (2006): 1-3.
[35] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 1-14.
[36] Claudia-Santi F. Fernandes et al., "Educator Perspectives: Selected Barriers to Implementation of School-Level Nutrition Policies," *Journal of Nutrition Education and Behavior* 51, no. 7 (2019): 843-849.
[37] Russell E. Glasgow, Thomas M. Vogt, and Sean M. Boles, "Evaluating the Public Health Impact of Health Interventions: The RE-AIM Framework," *American Journal of Public Health* 89, no. 9 (1999): 1322-1327.

supportive school staff that can serve as "champions" for the intervention.[38, 39] Prior research has also examined the ways in which implementation outcomes interact, such as higher penetration leading to long-term sustainability.[40]

There are eight conceptually distinct implementation outcomes: acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability.[41] These outcome categories provide useful short- and medium-term indicators for the successful implementation of ERP programming, which in turn can provide context for evaluations of the effectiveness of the intervention itself. Each of the outcomes is described below.

Acceptability

Acceptability is the perception among stakeholders that an intervention is agreeable, palatable, or satisfactory. Acceptability refers to specific aspects of an intervention, while satisfaction references a general experience. Acceptability is dynamic and should be assessed based on stakeholder knowledge of, or experience with, various dimensions of an intervention, such as its content or complexity.[42] Factors found to influence acceptability include pre-existing wellness activities, parental involvement, strong principal support, and sensitivity to the community.[43, 44]Moreover, acceptability is impacted by changing administrative priorities (e.g., towards standardized testing) that compete with health and nutrition initiatives.[45] As an outcome, acceptability can occur throughout implementation. It needs to occur early for intervention adoption, must be ongoing to facilitate penetration, and must occur late into implementation to allow for sustainability.[46]

[38] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 1-14.

[39] Carmen Byker Shanks and Samantha Harden, "A Reach, Effectiveness, Adoption, Implementation, Maintenance Evaluation of Weekend Backpack Food Assistance Programs," American Journal of Health Promotion 30, no. 7 (2016): 511-520.

[40]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[41]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[42]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[43] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 1-14.

[44] Claudia-Santi F. Fernandes et al., "Educator Perspectives: Selected Barriers to Implementation of School-Level Nutrition Policies," *Journal of Nutrition Education and Behavior* 51, no. 7 (2019): 843-849.

[45] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 1-14.

[46]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

Adoption

Adoption refers to the intention, initial decision, or action to try an intervention at the beginning to middle stages of implementation.[47]Supportive school staff that are invested in the intervention, often called "champions," can facilitate adoption by coordinating logistics and garnering school support. The presence of a champion is a critical factor in adoption.[48]It is important to assess adoption readiness at both leadership and staff levels.[49]

Appropriateness

Appropriateness is the perceived fit, relevance, or compatibility of an intervention for a given setting, provider, or consumer and/or the perceived fit of the intervention to address a particular issue or problem. It is salient in early implementation, prior to adoption.[50] Appropriateness is important for understanding pushback to implementation, such as when stakeholders feel an intervention doesn't fit with the mission of a setting or is inconsistent with their role. As an example, research has found educators to be less motivated to implement school food policies intended to encourage healthy eating behaviors because they found the policies incompatible with the culture of the students and families in their school.[51]

Feasibility

Feasibility is the extent to which a new intervention can be successfully used or carried out within a given setting. This outcome is salient early in implementation, during adoption, because an intervention may be appropriate for a setting but not feasible due to a lack of resources.[52] Quality training, competing priorities, and burnout are factors that can impact feasibility. As with acceptability, competing priorities have been found to impact feasibility.[53]

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[47]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[48] Carmen Byker Shanks and Samantha Harden, "A Reach, Effectiveness, Adoption, Implementation, Maintenance Evaluation of Weekend Backpack Food Assistance Programs," *American Journal of Health Promotion* 30, no. 7 (2016): 511-520.

[49] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 1-14.

[50]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[51] Claudia-Santi F. Fernandes et al., "Educator Perspectives: Selected Barriers to Implementation of School-Level Nutrition Policies," *Journal of Nutrition Education and Behavior* 51, no. 7 (2019): 843-849.

[52]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[53] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 1-14.

Fidelity

Fidelity is the degree to which an intervention was implemented as intended and is apparent during the early to middle stages of implementation.[54] SNAP-Ed evaluation materials refer to fidelity as the extent to which the nutrition education program is being implemented as designed.[55] It involves adherence to protocol, the amount of program delivered, and the quality of delivery. It is measured through self-reporting and observations.[56] Fidelity is impacted by administrative changes and turnover.[57]

Implementation Cost

The cost of an implementation effort varies according to (1) treatment complexity, (2) implementation strategy complexity, and (3) setting. Cost-effectiveness is salient throughout implementation: early for adoption and feasibility, middle for penetration, and late for sustainability.[58]

Penetration

Penetration is the integration of a practice within a setting during the middle to late stages of implementation, and is necessary for an intervention to be successful in terms of reach.[59] Reach is defined as the percentage and risk characteristics of persons who receive or are affected by a policy or program.[60] SNAP-Ed evaluation materials refer to reach as helping to quantify the proportion of the target population participating in a program.[61] Penetration is often measured quantitatively as the number of providers who deliver the intervention out of the total number of providers expected to deliver the intervention. Higher penetration may lead to greater long-term sustainability.[62]

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[54]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[55] Altarum Institute and RTI International for the U.S .Department of Agriculture, *Addressing the Challenges of Conducting Effective Supplemental Nutrition Assistance Program Education (SNAP-Ed) Evaluations: A Step-by-Step Guide*. Sheryl Cates, et al. 2014. http://www.fns.usda.gov/research-and-analysis

[56]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[57] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 1-14.

[58]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[59]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[60]Russell E. Glasgow, Thomas M. Vogt, and Sean M. Boles, "Evaluating the Public Health Impact of Health Promotion Interventions: The RE-AIM Framework," *American Journal of Public Health* 89, no. 9 (1999): 1322-1327.

[61] Altarum Institute and RTI International for the U.S .Department of Agriculture, *Addressing the Challenges of Conducting Effective Supplemental Nutrition Assistance Program Education (SNAP-Ed) Evaluations: A Step-by-Step Guide*. Sheryl Cates, et al. 2014. http://www.fns.usda.gov/research-and-analysis

[62]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

Sustainability

Sustainability is the extent to which an intervention is maintained or institutionalized within a setting's ongoing operations. It is marked in the late stages of implementation by (1) a transition from temporary to permanent funding, (2) repetitive reinforcement of the intervention through inclusion in organizational or community procedures and behaviors, and/or (3) integration into all subsystems of an organization.[63] Barriers to long term sustainability include staff turnover, lack of leadership from principals, and lack of a champion.[64]

Implementation Science served as a particularly useful framework for this project for three reasons. First, this study takes place in a district where schools take on a variety of educational models and serve a diverse population of students. Implementation outcomes are useful in evaluations that need to account for the variation in school and community contexts: "Examining implementation outcomes (e.g., extent to which an intervention is adopted by teachers) provides context for intervention outcomes (e.g., change in children's BMI) and is needed to ensure that interventions are effectively adopted, translated, and sustained in community settings."[65] Second, this project employs qualitative case study methods, which are used in conjunction with Implementation Science: "qualitative data, reflecting language used by various stakeholders as they think and talk about implementation processes, is important for validating implementation outcome constructs."[66] Across the literature, qualitative methods often include semi-structured interviews to capture the language used by various stakeholders, which can aid in validating implementation outcome constructs.[67] Finally, SNAP-Ed guidance suggests that formative research, process studies, and outcome assessments are useful for evaluating different phases of health and nutrition programming and can inform the ongoing improvement of health and nutrition programming. Formative research develops the implementation of intervention programs and process studies measure the implementation of intervention programs, while outcome assessments examine the extent to which an intervention program achieves its goals.[68] Outcome assessments of an intervention will not show positive outcomes if the intervention was not implemented well.

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[63]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[64] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 1-14.

[65] Rachel E. Blaine et al., "Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014," *Preventing Chronic Disease* 14, no. 3 (2017): 2.

[66]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 71.

[67]Enola Proctor et al., "Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda," *Administration and Policy in Mental Health and Mental Health Services Research* 38, no. 2 (2011): 65-76.

[68]Altarum Institute and RTI International for the U.S .Department of Agriculture, *Addressing the Challenges of Conducting Effective Supplemental Nutrition Assistance Program Education (SNAP-Ed) Evaluations: A Step-by-Step Guide*. Sheryl Cates, et al. 2014. http://www.fns.usda.gov/research-and-analysis

Appendix B

This appendix, Appendix B on Collective Impact, can be found in all four reports in this series on SNAP-Ed funded school-community partnerships.

Collective Impact

Collective impact addresses complex problems where the answer is not known and no single entity holds the resources or authority to drive the required change.[69] The concept of collective impact stems from the idea that "large-scale social change comes from better cross-sector coordination rather than from the isolated intervention of individual organizations."[70] There are five conditions of collective impact:[71]

(1) A common agenda that includes a shared vision for change, a shared understanding of the problem and goal, and a joint approach for problem solving.
(2) Shared measurements that involve measuring results based on the same criteria. This facilitates identifying patterns and coming to solutions.
(3) Mutually reinforcing participant activities that are different from, but supportive of and coordinated with, the actions of other participants. In other words, each participant plays a different role based on what they are capable of and where they excel.
(4) Continuous and frequent communication that serves to develop trust among differing organizations and build common vocabulary.
(5) Backbone support organizations that manage the collaboration of participating organizations; for example, handling logistical and administrative details.

The literature on collective impact has helped shape our understanding of the long-term vision of the overall Case Studies project, particularly how shared measurements can be defined and used,[72] as well as common challenges to achieving collective impact among partnership organizations. This literature has also informed how we designed the study, our interview and observation protocols, and our analysis.

[69] John Kania and Mark Kramer, "Collective Impact," *Stanford Social Innovation Review* Winter (2011): 36-41.
[70] John Kania and Mark Kramer, "Collective Impact," *Stanford Social Innovation Review* Winter (2011): 38.
[71] John Kania and Mark Kramer, "Collective Impact," *Stanford Social Innovation Review* Winter (2011): 36-41.

Appendix C

This appendix, Appendix C on the methods and data used in the ERP 2018-19 case study project, can be found in all four reports in this series on SNAP-Ed funded school-community partnerships.

Methods and Data

The ERP community partners seek to understand how to leverage programming and resources to better achieve SNAP-Ed goals given the factors that hinder or facilitate implementation. Case studies are especially useful for this purpose when it is impossible to separate variables from the context and understanding multiple perspectives is required.[73, 74] Case studies are also helpful to understand and explore "the process and dynamics of change."[75]

The aim of case study research is "particularization," not generalization.[76] Thus, randomized sampling is not desirable for this research method; rather, the aim should be to examine a "strategic selection of cases."[77] Instead of examining the "typical case," we should look for "critical cases" that are rich in detail.[78] To that end, we created a tiering system to categorize all partners' schools into three tiers, quantifying the available qualitative data on nutrition lessons and other programming in each school. We then chose one "critical case" for each tier for each partner, for a total of 19 schools.

We created an initial tiering system to ensure that the schools where we conducted research had varying levels of programming. Tier 1 schools were schools with an intensive ERP presence, including in-class nutrition lessons as well as additional programming such as produce stands, lessons offered to parents/caregivers, backpack programs, health fairs, after-school cooking clubs, and school breakfast promotions. Tier 2 schools had less intensive programming, and Tier 3 schools had the most limited ERP presence. Schools were selected based on their tier level to ensure the inclusion of one school per tier and per partner. Our study schools had a variety of other characteristics, including grades served, enrollment, geography, and demographics.

We collected qualitative data from a variety of stakeholders at the 19 schools in our sample during the 2018-19 school year. First, we conducted semi-structured interviews with three to seven key staff per site (e.g., classroom teachers, principals, cafeteria staff, nurses, and health and PE teachers) and ERP program staff, for a total of 119 interviews. Additionally, a total of 41 fourth-grade and fifth-grade students participated in seven focus groups in Tier 1 schools. We also observed 138

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[73] Robert K. Yin, Case Study Research: Design and Methods, 4th ed. (Thousand Oaks: Sage Publications, 2008).
[74] Helen Simons, Case Study Research in Practice (London: Sage Publications, 2009).
[75] Helen Simons, Case Study Research in Practice (London: Sage Publications, 2009). 23.
[76] Sharan Merriam, Qualitative Research: A Guide to Design and Implementation (San Francisco: Jossey-Bass, 2009), 24.
[77] Bent Flyvbjerg, "Five Misunderstandings About Case-study Research," Qualitative Inquiry 12, no. 2 (2006): 229.
[78] Bent Flyvbjerg, "Five Misunderstandings About Case-study Research," Qualitative Inquiry 12, no. 2 (2006): 229.

hours of nutrition lessons, recess, lunchtime, and school events. Finally, we conducted a document analysis of statements of work, budgets, grant reporting data, tracking and fidelity tools, and curricula.

We composed analytic memos and met regularly to discuss common codes, categories, concepts, and themes[79] emerging from the data at all stages of data collection. In the first stage of data analysis, we coded interview transcripts using open coding, where any code ideas were recorded to capture all insights and connections.[80] We then developed and revised a working codebook through several iterations of focused and open coding of interview data, resulting in a final codebook of 19 root codes and 25 subcodes.[81] We mapped implementation outcomes onto the codes we saw emerge from the data when applicable.[82] The codebook included a definition and examples for each code to increase inter-rater reliability.

In the second stage of data analysis, we imported our codebook into web-based data analysis software[83] and began focused coding of interview data from Tier 1 schools, revising the codebook as needed. Focused coding takes a more deductive approach, applying codes that represent pre-defined categories.[84]We took a case study approach to coding,[85] treating each tier as a case in order to compare findings across tiers. When a variety of interview transcripts had been coded representing different participant roles (e.g, school nurse, teacher, ERP staff, school administrator) we began to establish inter-rater reliability through Dedoose's training feature as measured by a pooled Cohen's Kappa between 0.6 and 0.8, which constitutes good agreement.[86,87] Each coding team member completed several rounds of training tests using excerpts from a variety of interview transcripts until inter-rater reliability was established. The team discussed results and made changes to the codes, codebook descriptions, definitions, and examples after every test until saturation, when we felt we were no longer making changes to the codebook that moved our data analysis forward.

In the third stage of data analysis, all data across all three tiers was coded by two team members for relevant themes using Dedoose, starting with interview data, followed by observational and focus

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[79] Marilyn Lichtman, *Qualitative Research in Education: A User's Guide,* 3rd ed. (Los Angeles: Sage Publications, 2013).
[80] Robert M. Emerson, Rachel I. Fretz, and Linda L. Shaw. *Writing Ethnographic Fieldnotes*, (Chicago: University of Chicago Press, 2011).
[81] Robert M. Emerson, Rachel I. Fretz, and Linda L. Shaw. *Writing Ethnographic Fieldnotes*, (Chicago: University of Chicago Press, 2011).
[82] For more information on Implementation Science see Appendix A.
[83] Dedoose Version 8.0.35, web application for managing, analyzing, and presenting qualitative and mixed method research data (2018). Los Angeles, CA: SocioCultural Research Consultants, LLC www.dedoose.com.
[84] Robert M. Emerson, Rachel I. Fretz, and Linda L. Shaw. *Writing Ethnographic Fieldnotes*, (Chicago: University of Chicago Press, 2011).
[85] Marilyn Lichtman, *Qualitative Research in Education: A User's Guide,* 3rd ed. (Los Angeles: Sage Publications, 2013).
[86] Richard J. Landis, and Gary G. Koch. "The Measurement of Observer Agreement for Categorical Data." *Biometrics* 33, no. 1(1977): 159-174.
[87]Joseph L. Fleiss, "Measuring Nominal Scale Agreement Among Many Raters." *Psychological Bulletin* 76, no. 5 (1971): 378-382.

group data. The team discussed codes and made changes to the codebook throughout the coding process, collapsing codes or creating new codes as needed. In addition, we used Dedoose's qualitative analysis tools to identify salient categories that needed to be further divided into concepts, or subcodes, for analysis. Initially data were analyzed across the three tiers of schools to identify common implementation outcomes or other common concepts and to develop themes in analytic memos. The team met regularly to discuss our memos and list salient topics for an integrative report that would clarify and relate the analytic memos.[88]

To focus specifically on PSE implementation, we realized that to compare schools with similar levels of PSE programming, we would need to re-tier the 19 case study schools based only on the current data on PSE programming during the 2018-19 school year (which are somewhat different from the original tiers because those included both Direct Education and PSE programming, and used the previous year's data). We separated the schools into four groups based on each schools' level of programming and support/buy-in from school staff and administration. At this point in the data analysis process, we presented our methods, codebook, and findings from our analytic memos to ERP directors and staff. This served as a form of member checking as ERP was invited to ask probing questions and provide feedback.

Integrative report writing was an iterative process of individual and collaborative interpretation and writing. Each team member drafted a report section based on related themes. We drafted our sections individually, but in shared documents where we could provide feedback to team members throughout the writing process. We met regularly to share drafts and provide feedback, which "confirmed and crosschecked" our decisions.[89] After we had established drafts, we again presented our findings to ERP directors and staff for feedback, which was incorporated into this final report. Finally, this report was read by SDP Office of Research and Evaluation staff outside of the Health and Nutrition team who provided critical feedback. The following is a summary of the phases of data collection and analysis.

Phase I: Tiering and Case Study School Selection (Summer 2018)

In order to help ERP community partners understand how to leverage programming and resources to better achieve SNAP-Ed goals, we quantified available qualitative data on nutrition lessons and PSE programming in each school to categorize schools into one of three tiers:

Tier 1: Schools with an intensive ERP presence
Tier 2: Schools with less intensive ERP programming
Tier 3: Schools with limited ERP presence

[88] Robert M. Emerson, Rachel I. Fretz, and Linda L. Shaw. *Writing Ethnographic Fieldnotes*, (Chicago: University of Chicago Press, 2011).
[89] Trena M. Paulus, Marianne Woodside, and Mary F. Ziegler, ""I Tell You, It's a Journey, Isn't It?" Understanding Collaborative Meaning Making in Qualitative Research," *Qualitative Inquiry* 16, no. 10 (2010): 858.

We then chose one "critical case" for each tier and each partner for a total of 19 schools. Schools were selected based on their tier level to ensure the inclusion of one school per tier and per partner. The study schools had a variety of other characteristics, including grades served, enrollment, geography, and demographics.

Phase II: Data Collection (2018-19)

We collected qualitative data from a variety of stakeholders at the 19 schools in our sample during the 2018-19 school year. Table 1 provides an overview of data collected, including details of participants and activities.

Table C1. Data collection

Data Collection Activity	Participants and Activities
Semi-Structured Interviews (119)	• 3-7 key staff per site (e.g., classroom teachers, principals, cafeteria staff, nurses, and health and PE teachers) • ERP Nutrition Educators and Directors
Focus Groups (7)	• 41 fourth-grade and fifth grade students
Observations (138 Hours)	• Nutrition Education Lessons • PSE Activities • School Activities (e.g., recess, breakfast/lunch, physical education classes)
Document Analysis	• Statements of Work • Grant Reporting Data • Tracking and Fidelity Tools • Curricula
Other Data	• District-wide Survey 2018-19 • Support Census 2019

Phase III: Codebook Creation and Data Analysis (Fall 2019)

We composed analytic memos and met regularly to discuss common themes emerging from the data at all stages of data collection. We developed and revised a working codebook through several iterations of coding and discussions, resulting in a codebook of 19 root codes and 25 subcodes. The codebook included a definition and examples for each code to increase inter-rater reliability.

After finalizing the codebook and importing it into web-based data analysis software (Dedoose Version 7.0.23), we began to establish inter-rater reliability through Dedoose's training feature as

measured by a pooled Cohen's Kappa between 0.6 and 0.8, which constitutes good agreement.[90, 91] Each coding team member completed several rounds of training tests using excerpts from a variety of interview transcripts until inter-rater reliability was established.

Finally, the team coded all available data and continued to write analytic memos to explore common concepts and themes. The team met regularly to discuss our memos and list salient topics for a final integrative report, and presented our methods, codebook, and preliminary findings to ERP directors and staff for feedback.

PSE Grouping and Analysis

After data collection and preliminary analysis, we realized that in order to compare schools with similar levels of programming, we would need to group the 19 case study schools based on actual ERP programming during the 2018-19 school year. The 19 case study schools were selected as critical cases from three tiers based on 2017-18 data. Thus, after considering the amount of ERP programming, as well as the level of involvement of school staff in implementing program components in 2018-19, we separated the schools into four groups (Table 2).

Table C2. The groups representing levels of PSE programming in the 19 case study schools

Group	Description	# Schools
Group 1	Schools with a high level of programming and support/buy-in from staff and administration. These are schools where staff members take on a larger role in programming, and the schools have more potential to make PSE changes because of the level of staff involvement.	5
Group 2	Schools with a medium to high level of programming. Programs are mostly ERP-led and have less involvement from school staff, which means there is less potential for PSE changes.	4
Group 3	Schools with a medium to low level of programming. Programming is mostly Direct Education, and any PSE is ERP-led with little to no staff involvement. ERP staff report actively trying to increase programming in these schools and struggle to increase engagement and buy-in.	5
Group 4	Schools with little to no programming, and ERP is not trying to increase activities due to a lack of capacity, ERP staff turnover, or other higher-level programming decisions.	5

[90] Richard J. Landis and Gary G. Koch. "The Measurement of Observer Agreement for Categorical Data." *Biometrics* 33, no. 1(1977): 159-174.

[91] Joseph L. Fleiss, "Measuring Nominal Scale Agreement Among Many Raters." *Psychological Bulletin* 76, no. 5 (1971): 378-382.

2018-19 District-Wide teacher survey

In addition to case study interview data with ERP and school staff, ORE used data from the 2018-19 District-Wide teacher survey[92] to analyze differences in the school culture, leadership, and staff capacity that determined the ability of the school to implement *any* interventions across and between schools and PSE Groups. We selected three District-Wide teacher survey questions to highlight key factors that might influence a school's ability to implement innovations, including student behavior, principal leadership, and staff time constraints:

1. To what extent is student behavior a challenge to student learning at your school? (*A great challenge, a moderate challenge, a slight challenge, not a challenge*)
2. The principal at this school creates buy-in among faculty. (*Strongly Agree, Agree, Disagree, Strongly Disagree)*
3. To what extent is the lack of teacher planning time built into the school day a challenge to student learning at your school? *(A great challenge, a moderate challenge, a slight challenge, not a challenge)*

These three District-Wide teacher survey questions were used to look at differences in question responses by school and by PSE Group in order to determine the extent to which attributes of a school (student behavior, principal leadership, and teacher planning time) affect their capacity to implement new programming.

2018-19 School Support Census

We used the School Support Census to understand (1) how visible ERP is across the District and in the 19 case study schools and (2) how many schools identified health and wellness as an area where their school needs support. In the fall of each school year, the School Support Census asks principals of 215 SDP schools (excluding charter schools) to confirm which partners from the previous school year are maintaining support in the current school year and what new partners are working in their schools. The School Support Census also asks principals to select from a list of general need areas (e.g., health and wellness supports, behavior supports, or support with sports) and indicate if their school is in current need of support in that area. Principals identify each area on a scale of "no need" to "slight" to "moderate" to "critical."[93] In the School Support Census, nutrition is grouped together with other health and wellness issues, such as sexual health. In 2018-19, 207 Principals responded to The School Support Census. There are limitations to the School Support Census data. While a principal not identifying ERP as a partner might indicate that ERP is not as visible in that school, it could also be a one-time oversight by that principal or an indication

[92] The District-Wide teacher survey asks SDP teachers their perspective on numerous topics related to their work. For more information on the SDP District-Wide teacher survey see https://www.philasd.org/research/programsservices/district-wide-surveys/.

[93] For more information on The SDP School Support Census see https://www.philasd.org/research/programsservices/projects/school-support-census/.

that ERP communicates more with other staff at that school. In addition, because nutrition is grouped together with other health and wellness issues, such as sexual health, principal responses may indicate a need for support related to other health issues at their school, apart from nutrition.

Appendix D

This appendix, Appendix D listing the Codebook used in the ERP 2018-19 case study project, can be found in all four reports in this series on SNAP-Ed funded school-community partnerships.

Codebook

Category/Code	Subcodes
Key Quote	N/A
Program Structure	Importance of Frequency/Visibility Lack of Awareness/Confusion Decision Making Description Staffing
Coordination/Communication (School Level)	N/A
Direct Education	N/A
PSE	Activities (What ERP is Doing): *Hydration* *Movement Breaks* *Produce Stands* *Backpacks* *Event Tabling* *Healthy Fundraisers* *Healthy Celebrations* *Gardening* *Promotion*
ERP Parent/Family Engagement	N/A
Taste Test	N/A
Opportunities (What ERP Could Do)	N/A
Successful Outcomes	N/A
Ease/Difficulty of Implementation	N/A

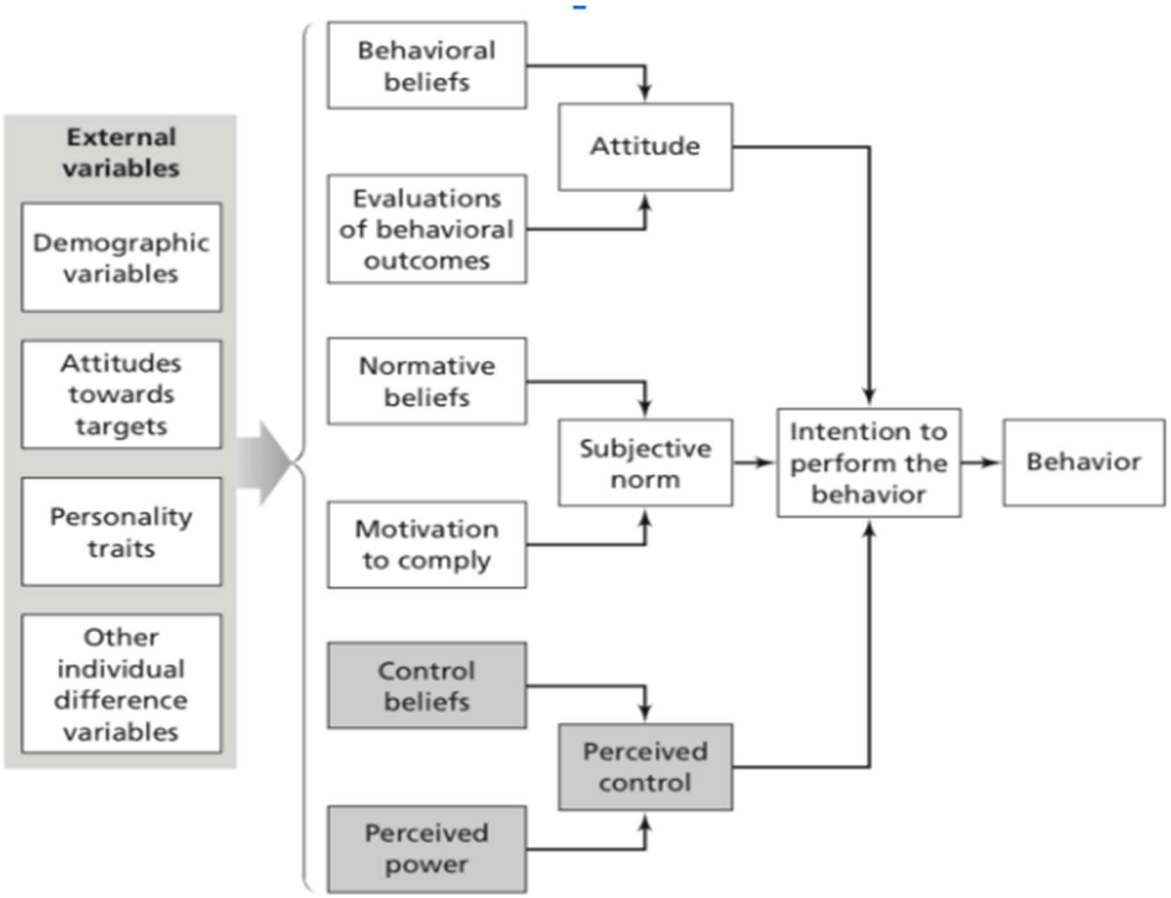
Family/ Neighborhood Context for Health/Nutrition	N/A
School/District Context	School Climate Competing Priorities Parent Engagement School Staff Turnover
Health/ Nutrition Context	District Food Service Wellness: School Wellness Teams, SHI, Wellness Policy School: *Health/PE class* *Recess/Movement breaks*
School Staff	School Staff Roles Satisfaction/Acceptability School Staff Buy-in
Relationships	N/A
Student Reactions to ERP	Engagement Acceptability Awareness
Resources/ Materials	N/A
Nutrition Educator Delivery	N/A
Sustainability	N/A

Appendix E

The Theory of Planned Behavior

The final body of literature that informed our analysis was the Theory of Planned Behavior, which provided a useful framework with which to interpret our results. Social psychology has theorized about the relationship between a person's attitude and their behavior. The Theory of Planned Behavior is an attempt to describe the decision-making process, separating out one's attitude from "behavioral intentions," and theorizing about what factors lead to intentions (or motivation), and then to behavior change (Figure 1).[94]

Figure E1. Theory of Planned Behavior[95]



[94] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. In Health Behavior and Health Education: Theory, Research, and Practice, ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 67-96.
[95] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. In Health Behavior and Health Education: Theory, Research, and Practice, ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 70.

A person's perception of "subjective norms" attempts to account for the social context in which a behavior occurs. It refers to "whether the behavior is likely to be approved or disapproved by the social groups of influence for the person who is deciding whether or not to do the behavior."[96]Attitudes are the "individual's beliefs about outcomes or attributes of performing the behavior (behavioral beliefs), weighted by evaluations of those outcomes or attributes."[97] "Perceived behavioral control" is "a person's perception of the ease or difficulty of behavioral performance will affect his behavioral intention."[98]

Together, these three factors (attitude, perception of subjective norms, and perceived behavioral control) lead to "intention," which, according to the theory, is predictive of behavior.[99] However, perceived control is thought to be an independent determinant of behavioral intention.[100] Another consideration is that "relative weights of these three factors in determining intentions should vary for different behaviors and populations".[101] This theory was useful for us as we began to categorize the common activities that ERP partners engaged in within SDP schools and move toward shared measurable outcomes, particularly for PSE work.

[96] Mark Edberg, Essentials of Health Behavior: Social and Behavioral Theory in Public Health, (Sudbury, MA: Jones and Bartlett Publishers, 2007), 39.
[97] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. In Health Behavior and Health Education: Theory, Research, and Practice, ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 71.
[98] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. In Health Behavior and Health Education: Theory, Research, and Practice, ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 71.
[99] Mark Edberg, Essentials of Health Behavior: Social and Behavioral Theory in Public Health, (Sudbury, MA: Jones and Bartlett Publishers, 2007), 39.
[100] Icek Ajzen, "The Theory of Planned Behavior," *Organizational Behavior and human Decision Processes* 50: 179-211.
[101] Daniel E. Montaño and Danuta Kasprzyk, "Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. In Health Behavior and Health Education: Theory, Research, and Practice, ed. Karen Glanz, Barbara K. Rimer, and K. Viswanath (San Francisco: Jossey-Bass, 2008). 71.