Evaluation of *Growing a Healthier Future:*

A School Nutrition Pilot Project

Findings from phase one of the project initiation sponsored by the Ontario Greenhouse Vegetable Growers (OGVG) in collaboration with the *Jumpstart Community Nutrition Partnership of Windsor and Essex County*

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This evaluation was funded by a grant received from Greenshield

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Acknowledgements

Evaluation of Phase one of the *Growing a Healthier Future: A School Nutrition Pilot Project* included process, and pre and post evaluation components following an 8-week intervention period. This project was sponsored by the Ontario Greenhouse Vegetable Growers (OGVG), in collaboration with the *Jumpstart Community Nutrition Partnership of Windsor and Essex County (JCNP).* The OGVG generously donated, and delivered free of charge, all of the vegetables for the duration of the pilot program.

Special thanks go to the students and staff of John Campbell, Our Lady of Lourdes, St Edmond, and St. Michel elementary schools and Herman secondary school. It was only with the cooperation of the over 350 students, teachers, and staff that phase one of the evaluation project was completed. We appreciate the cooperation and teamwork of those teachers, principals, school staff and school volunteers that aided in the project implementation and made the collection of our information possible. We are grateful to the many students who enthusiastically participated in the project and shared their opinions with us. Our appreciation also extends to the Greater Essex County District School Board, and the Windsor Essex County Catholic District School Board for participating in this project and allowing us access to the classrooms and the students. Special thanks also goes to the Ontario Vegetable Greenhouse Growers for joining the Jumpstart Community Nutrition Partnership of Windsor and Essex County and making this important project possible. Finally, we would like to acknowledge the schools that participated in the pre-pilot process evaluation stage of this project. Your feedback provided us with useful information on service delivery and food storage and handling components of this school nutrition pilot project.

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Executive Summary

Background

Proper nutrition is an important component of healthy child development. Eating habits and dietary patterns are established in childhood and, once engrained, are difficult to change in adulthood. Healthy eating is associated with improved health outcomes (Neumark-Sztainer, et al., 2003). Therefore, it is important to foster healthy eating habits during childhood. Schools offer an ideal setting to influence eating habits in a positive way (Center for Chronic Disease Prevention, 2000). Educational policies and programs can aid in the creation of environments that increase the likelihood that goals of healthy attitudes toward eating and healthy consumption patterns are achieved.

Most children do not eat the recommended daily allowances of vegetables. One way to increase the vegetable consumption of our nation's children is to provide free access to these nutritional foods within the school system. All children can benefit from a comprehensive child nourishment program. Providing vegetables in schools will lead to an increase in the overall consumption of healthy foods, and may also result in an associated improvement in health and in academic performance.

Benefits of healthy eating …

- promotes growth and development and improves school performance
- helps prevent childhood and adolescent health problems
- may help prevent health problems in adulthood

CDC Guidelines for School Health (2000)

In the interest of realizing a provincial policy that is committed to the creation of a comprehensive student nutrition program, the aim of this pilot project was to examine the process and impact of the Jumpstart Community Nutrition Partnership (JCNP) program. This ground-level initiative explores the benefits of building community partnerships between schools and produce growers. The Ontario Greenhouse Vegetable Growers (OGVG) have generously agreed to sponsor this school nutrition program. It is the long-range goal of this project to inform a provincial policy that ensures the regulated and consistent provision of high quality healthy snacks to our schools, and contributes to the overall health of our children.

Toward this end, the JCNP initiative was developed. Implementation of checks and measures, through a commitment to ongoing program evaluation, has been built into the project plan. Prior to initiation of phase one of the *Growing a Healthier Future School Nutrition Pilot Project* four schools in the Windsor Essex County area with existing snack programs were approached and asked to pre-test the planned program and service delivery model. In October 2004, these schools began to receive vegetables free of charge from the Ontario Greenhouse Vegetable Growers. This process evaluation phase was designed to solicit feedback about the program and service delivery model, as well as the about quality and convenience of the snacks provided. In February 2005, organizers and those in charge of snack distribution in the participating schools were given questionnaires. Feedback offered by participants in this process evaluation shaped phase one of the Growing a Healthier Future School Nutrition Pilot Project.

> *"Most children were very enthusiastic about the vegetables and enjoyed when there was a variety of snacks."*
>
> Snack Mom volunteer

Between February and June 2005, children in schools selected for phase one of the pilot project (4 elementary schools and 1 secondary school in the Windsor Essex county area) were provided with fresh produce for a morning snack four days a week. Prior to program initiation pre-test measures were administered to selected grades in the participating schools. Following an 8-week intervention period, post-test measures were administered. The schools continued to receive vegetables for the duration of the school year.

This report summarizes the findings from this 8-week pre-post designed program evaluation of the Community Nutrition Partnership Program between Jumpstart and the OGVG. At this preliminary stage, the focus was on gaining information on student and teacher expectations, service delivery, and rudimentary measures addressing increased consumption and increased knowledge about daily nutritional allowances. Facilitated discussion sessions with the students who participated in the project were central to informing our sense of the process and obtaining suggestions for program improvement.

Objectives

The evaluation involved analysis of outcome data on issues such as perceived program benefits and increased consumption. The main objectives were as follows:

- to assess whether a perceived increase in student vegetable consumption was noted by teachers
- to assess the effects of availability of vegetables on students' self-reported vegetable consumption rate
- to assess the effects of availability of vegetables on student's self-rated liking of vegetables
- to assess the service delivery model (method of administration, distribution, and program efficacy)
- to assess pre-post intervention changes in student knowledge about daily nutritional requirements

More generally, it was hoped that the following objectives would also be fostered:

- decreased consumption of non-healthy snacks
- decreased mid-morning hunger
- allowance for positive peer influence in eating vegetables and making healthy snack choices
- decreased mid-morning hunger
- creation of a school environment that enables students to make healthy choices
- creation of a school environment that promotes healthy eating habits
- reduce stigma attached to a "needs based" program by having vegetables available for all students

Overall, the aim of the evaluation was to inform the intended service delivery process and to aid in the ongoing development of a provision and delivery partnership model that can be implemented province-wide. This evaluation lays the groundwork for the ongoing exploration of the advantages of community partnering and the adoption of a comprehensive inter-sectorial approach to nutrition provision that benefits all recipients, and ensures the provision of high quality nutritious snacks to our children.

> *"I think it is a great program (and partnership) and should continue. Many of our students do not eat breakfast before school. Many do not eat lunch."*
>
> Secondary school teacher

Benefits of the Jumpstart / OGVG community partnership program:

- introduce children to vegetables in the school environment
- all produce is fresh, washed, sliced, and delivered directly to the schools
- snacks are healthy, easy, quick, and convenient for distribution
- educational material on the produce is included
- nutritional snacks are regulated and consistently delivered to the schools

Study Design and Methodology

The evaluation included a process assessment component, followed by a short (8-week intervention) pre-post design. Survey data were collected from all teachers and from students in selected classes. Facilitated discussion sessions with students supplemented the survey information. Data were collected prior to pilot project initiation, and again following 8 weeks of program participation.

Four elementary schools representing both English and French schools and one secondary school (representing 3 periods of a food and nutrition class) participated in this evaluation. The primary short-term indicators of desired outcome were an increase in both teacher-rated and student self-reported vegetable consumption rate.

In summary, the evaluation components were as follows:

Evaluation components

- Pre-pilot process evaluation
    - 4 schools with a pre-existing snack program
    - questionnaire – program comparison and evaluation

- Pre-test phase
    - introduction of 5 new schools (4 elementary schools, 1 secondary school)
    - questionnaire
    - facilitated discussion

[PROJECT INITIATION]

- Post-test phase
    - questionnaire
    - facilitated discussion

Key Findings

Process evaluation

- Participants in the process evaluation indicated that the program was received very positively and with much enthusiasm by both teachers and the majority of students.
- The JCNP program was rated as offering improvement over the existing program on both the time needed to acquire snacks and the overall nutritional value of the snacks.
- Based on findings from this stage, the delivery schedule for vegetables was amended for the commencement of phase one of the JCNP program.
- Based on findings from this stage, the variety of vegetables delivered to the schools was increased for phase one of the JCNP program.

Program evaluation

Selected quantitative findings

- A total of 280 students from four elementary schools participated in the pre-test phase, and 283 participated in the post-test phase. At the secondary school level, 56 students participated at pre-test phase, and 51 students participated in the post-test phase. Thirty-nine teachers completed pre-test surveys and 36 completed post-test surveys.
- The overwhelming majority of elementary school students (80%) reported that they ate more vegetables since the program began than they did before the jumpstart program was in their school. At the secondary level, 57% reported an increase in vegetable consumption.
- The average response for recommended daily servings significantly shifted from pre to post test for elementary students (from 4.4 to 6.3 servings) and remained the same for secondary school students (8 servings).
- At post-test 100% of the teachers from both elementary and secondary schools indicated that they noticed an increase in student vegetable consumption.
- Two-thirds of the elementary school teachers noted an increase in efficiency regarding the acquisition of snacks.
- 91% of the elementary school teachers and 100% of the secondary school teachers reported that the program achieved its goal of providing fresh snack alternatives.

Selected qualitative findings

- At the elementary school level, the majority of students indicated that they sometimes did not bring morning snacks to school. The most common reasons cited among elementary school students for not bringing a snack were time-related (i.e., they ran out of time in the morning while getting ready for school, or were in a hurry, they wanted to rush out for recess).

> *"I just want to hurry up and go outside to play so I don't want to get my snack out of my lunch."*
>
> Grade 3 student

- At the secondary school level, most students indicated that they did not bring snacks to school but rather purchased their snacks from the school cafeteria or a local variety store or restaurant. Many secondary school students also reported that they did not eat snacks while they were at school.

> *"Sometimes I don't have money to buy snacks so I don't eat any."*
>
> Secondary school student

- Most elementary school students indicated that they do tend to get hungry by morning recess. When discussing the effects of hunger at school the most common responses included somatic references (i.e., stomach hurts or feels empty, tummy growls, feeling yucky or weak or have no energy, get a headache, get dizzy). Other responses tapped more into cognitive or emotional functioning (i.e., cannot concentrate or focus on school work, think too much about eating, makes you sleepy, get frustrated, irritable, or grumpy, cannot do your work well). At the secondary level, feeling tired and unmotivated, and being unable to concentrate were the most common responses.
- Students were asked to talk about "healthy eating" and what kinds of food were good for you. While students in higher grades reported a greater diversity of answers, their responses did not reflect the idea that a balanced diet was an important aspect of healthy eating. At all grade levels, students reported that fruits, vegetables and meats were part of a healthy diet. Students in grades five and seven provided responses that included references to dairy and grains, and answers that referred to nutritional content (e.g., calcium, protein, etc.) in one's diet.
- Following the pre-test discussion students were told about the JCNP pilot project and were given an opportunity to ask questions about the program. In all schools, the senior classes (grades five and seven) wanted to know whether the vegetables would be provided free of charge.
- At the post-test facilitated discussion most students indicated that they enjoyed the JCNP program. At all schools, the need for an increase in the variety of snacks offered by the program was consistently mentioned when discussing suggestions for program improvement.

Recommendation Highlights

This pilot project has successfully identified a number of elements that could guide future program development and evaluation efforts. Among them are:

- aim toward stratified representation in the next stage of program implementation
    - increase the number of participating schools
    - aim toward geographic representation of the target area or school board(s)
    - aim toward demographic representation of the target area or school board(s)
- consider bilingual availability for future testing initiatives
- integrate a cultural awareness component to the JCNP program
    - incorporate cultural considerations (e.g., dietary components of ethnic/cultural backgrounds, common methods of preparation etc.) and supplemental cultural information
- increase student involvement in program planning and implementation
- develop age/grade appropriate activity sheets to supplement nutritional and healthy eating information
- develop a teacher resource CD rom
- include a parent component to future evaluation efforts (e.g., focus groups, survey research)
- increase the selection of vegetables that the program delivers
- include foods from other sectors (e.g., fruits, dairy, grain etc.)
- prepare a projected cost analysis
- set short-term, long-term, and process oriented goals and objectives and put in place an evaluation plan to monitor these goals
- maintenance of efforts to build and sustain inter-sectorial partnerships

> *"A program like this one, but including milk products, would be perfect."*
>
> Elementary school teacher

Section 1: Introduction and Background Information

Evaluation of *Growing a Healthier Future: A School Nutrition Pilot Project.*
Findings from phase one of the project initiation sponsored by the Ontario Greenhouse Vegetable Growers (OGVG) in collaboration with the
Jumpstart Community Nutrition Partnership of Windsor and Essex County

Overview

Dietary changes are necessary for most Canadians if we are to become a healthier nation. Healthy eating and physical exercise are associated with improved health outcomes and may be the two most effective ways to promote optimal child and adult health. A range of factors influence dietary habits and food consumption patterns, particularly in childhood.

Schools are recognized as providing one of the most important environments for shaping the health of our youth, and thus are a primary site for health promotion initiatives (Mitchell & Laforte-Fliesser, 2003). In school settings, properly nourished students has been associated with many benefits. Included among the advantages are improved student attendance and ability to concentrate, and increased cooperative behaviour (OPHA, 2004). A report on student nourishment issued in November 2004 by the Ontario Public Health Association (OPHA) Food Security Workgroup, for the Ontario Ministry of Children and Youth Services, recommended that provincial-wide nourishment plans be implemented in school settings. The objectives of these nourishment programs would be to both improve dietary intake of nutritional foods and therefore address issues of childhood obesity in addition to improved health, and to enhance students' readiness to learn by decreasing in-school hunger.

Although low income has been found to be related to lower levels of, for example, produce consumption (Birmingham, Armstrong-Shultz, and Adlesen, 2004), income is not the sole determinant of eating patterns. All children can benefit from a child nourishment program. In addition to financial constraints, hectic schedules, early arrivals to school, and long commutes may also contribute to dietary habits and the consumption of fresh and nutritious foods.

From the OPHA Food Security Workgroup…

Goals of Ontario's Student Nourishment Program

Student nourishment programs serve both educational and health outcomes as delineated by the government's key priorities of Student Success and Healthier Ontarians (May 2004). Providing nutritious food to children and youth at the start of, or during the school day, in concert with education about the benefits of a healthy diet, will help improve nutrition and health and enhance readiness to learn. Goals set out by the government for the province's Student Nourishment Program are as follows:

- maximize the proportion of investment going toward food,
- maximize the nutritional content of the food provided,
- increase the number of children ready to learn at school by assisting in the alleviation of hunger and improving nutritional intake, and
- increase the health and well being of children and youth by assisting in the reduction of child obesity.

OPHA Food Security Workgroup (Nov. 2004).

The importance of a well-nourished healthy population cannot be overstated. As part of a growing trend that recognizes the value of health promotion from the most core level, an investment in our children is paramount. In the interest of realizing a provincial policy that is committed to the creation of a comprehensive student nutrition program, the aim of the Jumpstart Community Nutrition Partnership pilot project is to examine the process and impact of a community partnership model of snack provision. This ground-level initiative explores the benefits of building community partnerships between schools and produce growers and tests a potential process and delivery model. It is the long-range goal of this project to inform a provincial policy that ensures the regulated and consistent provision of high quality healthy snacks to our schools, and contributes to the overall health of our children.

Background Information

Organization

Jumpstart was created in Windsor-Essex County by a number of community partners to support and facilitate the development of local Child Nutrition Programs. Currently, 56 child nourishment programs exist across the Windsor-Essex County area, providing the means to ensure that thousands of children will have the opportunity to eat healthy breakfasts or nutritious snacks. Under the umbrella of Jumpstart, each nutrition program reflects the needs of the school community organization within which it operates.

The need for these programs, once defined only by economic standards has shifted to include families coping with busy schedules. To this end, Jumpstart provides access for all children to enjoy healthy well balanced food.

Organizational structure

Since 2002, the Victorian Order of Nurses (VON) has been the lead agency under which Jumpstart has operated. Included in the organization are committees encompassing Marketing and Communications, Resource Generation, and Community Action. The Board of Directors includes representation across many invested sectors. Included among the members are representatives from the following organizations:

- Victorian Order of Nurses
- Greater Essex County District School Board
- Windsor Essex County Catholic District School Board
- Windsor Essex County Public Health Unit
- United Way
- City of Windsor Social Services
- Essex Youth Association
- South Essex Community Centre
- Sandwich Community Health Centre

Jumpstart mandate

- to promote the importance of nutrition as an essential component of healthy child development, and to facilitate support for new and existing child nourishment programs within Windsor and Essex County.
- to promote the importance of child nutrition and the associated benefits of child nourishment programs.
- to cultivate awareness regarding the rising health crisis associated with poor nutrition in Canadian children.

Jumpstart vision

That Windsor and Essex County become a community that acts collectively to secure the rights of every child to maintain equal access to nutritious food as a means to support their physical, social, and academic development.

What we do...

- provide assistance with resource generation
- provide assistance with start-up of new programs
- provide supplementary funding through Jumpstart grants
- participate in public awareness and education initiatives to promote program support
- provide training workshops
- provide resource materials and toolkits to local programs
    - program management
    - safe food handling
    - volunteer management
    - nutritious menu planning
    - presentation resources (for program planning in new schools)
    - information package for parents (for explaining new program)
    - jumpstart promotional video

Jumpstart Community Nutrition Partnership

Jumpstart, in collaboration with the Ontario Greenhouse Vegetable Growers (OGVG) formed a community partnership and launched *Growing a Healthier Future: A School Nutrition Pilot Project.* Jumpstart administered and coordinated this community partnership and the OGVG provided free produce to selected schools in the Windsor Essex County area. The produce was fresh, washed, prepared in individual serving size, and delivered free of charge by OGVG to participating schools. Initial planning of this project began in April 2004, and in the fall of the following academic year a pre-pilot testing of the service delivery model commenced. Greenshield granted the funds to allow for the evaluation of this pilot project.

School nutrition

Nutritional deficiencies are prevalent in our population and among our nation's children. In a recent call to action for school nutrition the Ontario Society of Nutrition Professionals in Public Health (OSNPPH) cite that 25% of the reported vegetables consumed by children were French fries and that less than 15% of children 9-12 years of age consume four or more servings of fruits and vegetables a day (as cited by OSNPPH, 2004). Proper nutrition, while important for all people, is especially important for children and youth. A common response to these dietary deficiencies has been school nutrition programs (NBER, 2004). These programs however, are often implemented inconsistently and the nutritional value of the foods provided can vary widely from school to school with dietary guidelines often left unmet.

OSNPPH call to action …

"challenges the province, boards of education, school communities and public health units to acknowledge and act on their role in establishing supportive nutrition environments in schools."

In addition to detrimental physical effects, poor dietary habits can negatively affect childrens' ability to learn (OSNPPH, 2004). Healthy eating promotes growth, optimal development, and thriving in school environments. Young people often make unhealthy food choices and risk health problems associated with, or exacerbated by, improper nutrition. Schools offer an ideal environment to model healthy eating behaviour and supplement diet by the provision of healthy foods. If we work toward promoting healthy eating patterns while children are young we may avoid the difficult and challenging task of attempting to alter the nutritional habits of adults.

Growing a Healthier Future: A School Nutrition Pilot Project

The *Growing a Healthier Future School Nutrition Pilot Project* was developed in the interest of informing a provincial policy that is committed to the creation of a comprehensive student nutrition program. In the short-term, this initiative aims to examine the process and impact of a Community Nutrition Partnership program. The Jumpstart/OGVG partnership initiative is the first step in exploring the potential of a universal partnership program to ensure the provision of high quality nutritious foods to our school children. This pilot project investigated the benefits of building community partnerships between schools (and school boards) and produce growers and suppliers. In the long-term, this projects aims to inform a provincial policy that ensures the regulated and consistent provision of healthy snacks to our schools, and contributes to the overall health of our children.

The OGVG partnered with Jumpstart and volunteered to provide selected schools in the Windsor Essex County area with free produce. The produce was fresh, pre-washed, prepared in individual serving size, and delivered free of charge by OGVG to participating schools. Prior to commencement of phase one of the Growing a Healthier Future School Nutrition Pilot Project, four schools with existing snack programs were involved in a pre-pilot process evaluation phase. This phase, designed to get feedback about the program and the service delivery model from the coordinators at participating schools, began in October 2004. Schools with pre-existing programs were chosen to allow for comparisons of the Jumpstart partnership initiative with the program that was currently in place in the schools. Beginning in October, the OGVG began to distribute fresh individual snack size servings of washed and prepared vegetables to the schools involved in the pre-pilot project. Prior to commencement of phase one of the partnership program in February 2005, a process evaluation was conducted with the pre-pilot schools. Questions about the experience with the project and opinions on how their former program compared to the community partnership program were asked. Suggestions for improvement were also sought.

> *"Most children were very enthusiastic about the vegetables and enjoyed when there was a variety of snacks."*
>
> Volunteer from pre-pilot school

In February 2005, phase one of the pilot project began. Four elementary schools and one secondary school participated in this phase. Prior to the first scheduled delivery of produce the pre-testing was conducted. The program evaluator along with a co-facilitator distributed questionnaires in selected classrooms, and following completion of the questionnaires conducted facilitated discussion sessions with the students. The same process was repeated following eight weeks of produce delivery. All teachers were also given questionnaires both pre and post intervention period. Teachers' expectations and perceptions of the program, and of the students' response to the program, rounded out the evaluation process.

Among the many benefits of the JCNP program are:

- introduction of vegetables in the school environment
- all produce is fresh, washed, sliced, and delivered directly to the schools
- snacks are healthy, easy, quick, and convenient for distribution
- educational material on the produce is included as part of the program
- nutritional snacks are regulated and consistently delivered to the schools
- creation of a positive school environment of healthy eating
- allowance for positive peer influence in eating vegetables and making healthy snack choices
- provision of fresh and healthy snack alternatives to the students
- reduction of stigma attached to a "needs based" program by having vegetables available for all students
- promotion of healthy eating habits
- decreased consumption of less healthy snacks
- decreased mid-morning hunger

At this initial stage, the partnership between OGVG and Jumpstart will provide fresh vegetables to all children in participating schools. Ultimately, participation from multiple sectors (e.g., vegetables, fruits, dairy) would help to establish a well-balanced student nutrition program.

At this first stage of project implementation, evaluation of student and teacher response to the program is crucial. This evaluation lays the groundwork for the ongoing exploration of the advantages of community partnering, and the adoption of a comprehensive inter-sectorial approach to student nourishment programs.

Evaluation

Most programs can benefit from the application of social science methods to a defined project or initiative. In general, evaluation is an important component of program development and maintenance. Evaluation can serve many purposes and program planning that incorporates an evaluation plan and considers the goals of evaluation is crucial to program success (the following is excerpted from Capwell et al., 2000, see resource CD for expanded version).

What is the purpose of the evaluation?

➔ Need to *assess the benefits* of the program
- is it meeting the objectives as set out by the jumpstart initiative?
- have the desired changes come about (changes in knowledge or eating behaviour)?

➔ Need to allow for *assessment of program* and enable program planners to address challenges and make any necessary adjustments or improvements to program
- helps to guide or inform decisions about how to allocate human and financial resources

➔ Provide a level of *accountability* to all stakeholders in a project or initiative as well as to funders
- provides justification of the program's existence

➔ Serves to *increase community support* through increased awareness
- e.g., some evaluation findings may be suitable for media release and may serve to provide evidence of the value or benefits of the program which may then lead to increased funding at the community level

➔ Builds on the literature and *increases knowledge base*
- provides data useful for program planning and design, and future research

➔ To *inform policy* on local, provincial, and national levels
- may help guide policy formation and decisions and contribute to comprehensive wellness initiatives

From the outset, evaluation was an important component of this initiative. Overall, the aim of this initial program evaluation was to inform the intended program and service delivery process and aid in the ongoing development of a provision and delivery partnership model that can be implemented province-wide. Questions were designed to elicit base-level data on vegetable consumption and basic nutrition knowledge. The primary outcome objective is an increase in student consumption of vegetable products.

Objectives

This evaluation involved analysis of outcome data on areas such as perceived program benefits and challenges, service delivery, and increased vegetable consumption among students. The main objectives were as follows:

- to assess whether a perceived increase in student vegetable consumption was noted by teachers
- to assess the effects of availability of vegetables on students' self-reported vegetable consumption rate
- to assess the effects of availability of vegetables on student's self-rated liking of vegetables
- to assess the service delivery model (method of administration, distribution, and program efficacy)
- to assess pre-post intervention changes in student knowledge about daily nutritional allowances

"Healthy eating is fun, together with friends."
Elementary school teacher

Section 2: Evaluation Design and Methodology

Evaluation Design

Overview

This evaluation occurred in three stages. First, a process evaluation was conducted to test the service delivery model and to contrast the existing snack programs of participating schools with the JCNP program. Following the process evaluation, phase one of the program was initiated. Using a quasi-experimental pre-post design, the primary evaluation consisted of two different evaluative strategies - formative and summative.

Prior to initiation of phase one of the *Growing a Healthier Future School Nutrition Pilot Project*, four schools in the Windsor Essex County area with existing snack programs were approached and asked to pre-test the planned program and service delivery model. In October 2004, these schools began to receive vegetables free of charge from the Ontario Greenhouse Vegetable Growers (OGVG). This process evaluation phase was designed to solicit feedback about the delivery model as well as about the quality and convenience of the snacks provided. In February 2005, questionnaires were distributed to organizers and those in charge of snack distribution in the participating schools. Feedback offered by participants in this process evaluation shaped phase one of the Growing a Healthier Future School Nutrition Pilot Project.

Between February and June 2005, children in the schools selected for phase one of the pilot project (4 elementary schools and 1 secondary school in the Windsor Essex county area) were provided with fresh produce for a morning snack four days a week. Prior to program initiation both quantitative and qualitative pre-test measures were administered to students in selected grades in the participating schools. Following an 8-week intervention period, post-test measures were administered. Surveys were distributed to all teachers at both pre and post test. The schools continued to receive vegetables for the duration of the school year.

This report summarizes the findings of this 8-week pre-post designed program evaluation of the Community Nutrition Partnership Program between Jumpstart and the OGVG. At this preliminary stage, the focus was on gaining information about students' and teachers' expectations of, and responses to, the program. Issues of service and delivery, and rudimentary

measures addressing increased consumption and increased knowledge were central. Reproduction of all surveys are presented following the evaluation outline. Facilitated discussion sessions with the students who participated in the project were vital to informing our sense of the process and obtaining suggestions for program improvement.

Process evaluation

In October 2004, the Jumpstart coordinator asked four schools in the Windsor Essex County area with existing snack programs to pre-test the planned program and service delivery model of the *Growing a Healthier Future School Nutrition Pilot Project*. Schools with pre-existing programs were chosen to allow for comparisons of the Jumpstart partnership initiative with the program that was currently in place in their schools. Beginning in October 2004, the OGVG began to distribute fresh, individual snack size servings of washed and prepared vegetables to the schools involved in the pre-pilot phase. This process evaluation phase was designed to solicit feedback about the delivery model as well as about the quality and convenience of the snacks provided. Prior to commencement of phase one of the partnership program in February 2005, organizers and those in charge of snack distribution in the participating schools, were given questionnaires. Questions about the experience with the pilot project and opinions on how their former program compared to the community partnership program were asked. Feedback offered by participants in this process evaluation shaped phase one of the Growing a Healthier Future School Nutrition Pilot Project. The participants were asked to consider the following areas when comparing their existing snack program to the JCNP program:

- delivery process (what was required to get the food that was supplied to the students)
- dispensing process (e.g., what was required to hand out the snacks to the students)
    - timing
    - convenience
- quality of food (e.g., fresh, properly prepared)
- quantity of food (e.g., was there enough food to meet the needs of all of the students)
- variety of snacks
- did the food get to the location in time
- was the delivery model effective
- what challenges, if any, were encountered
- suggestions for program improvement

Phase one program evaluation

Four elementary schools in the Windsor Essex county area representing both English (N = 2) and French (N = 2) schools and one secondary school (representing 3 periods of a food and nutrition class) participated in this evaluation. Between February and June 2005, children in the participating schools were provided with fresh produce for a morning snack four days a week. Prior to program initiation both quantitative and qualitative pre-test measures were administered to students in selected grades in the participating schools. Following an 8-week intervention period, post-test measures were administered. Surveys were distributed to all teachers at both the pre and post-test phase. Participating schools continued to receive vegetables for the duration of the school year. The primary short-term indicators of desired program outcome were an increase in both teacher-rated and student self-reported vegetable consumption rate.

Summative evaluation

Primarily quantitative in nature, the pre-test summative evaluation component began with the establishment of baseline data. Following an 8-week intervention period, post-testing was conducted using procedures identical to the pre-testing procedures. Surveys were administered to students in the selected grades and teacher surveys were available for all teachers and school staff or volunteers (i.e., secretaries, snack distribution volunteers).

Students

Students from grades 1, 3, 5, and 7 from the English elementary schools and two senior classes from each of the French elementary schools formed the elementary student sample. Access to primary grades in the French schools was not allowed because the facilitators were not able to provide discussion in French. Similar information was sought across all grade levels with the style of presentation and the level of interaction adjusted to suit the developmental stage of the participants. At the secondary school level, students from three periods of a food and nutrition class comprised the sample. At the post-test phase, the same students were surveyed following 8 weeks of program participation.

The project evaluator and a co-facilitator distributed surveys to all students in the classroom setting. Each question was read out loud by the facilitator to help ensure consistent comprehension. At the primary grade level, the co-facilitator assisted the children when necessary. Baseline vegetable consumption rate, vegetable preferences, and knowledge of recommended daily allowances, were the central focus of the survey (reproduction of surveys follows the evaluation outline).

In order to provide evidence of change, pre-test data were analyzed and compared with post-test data. This evaluation will focus on evidence of change in the following key areas:

- increased vegetable consumption
- basic increase in knowledge (i.e., recommended daily allowances)
- vegetable preferences

Teachers

Upon entering each of the participating schools, an envelope containing the teacher surveys with an attached cover letter introducing the project, and a list of teaching and school staff was left with the staff in the principal's office. All teachers and school staff were invited to complete the survey and return it to the principal's office. Completed surveys were collected from each school and analyzed. The same process was followed at the post-test phase.

Information addressing issues about the program itself (including perceived short-term impact on students) and aspects of program delivery and service provision were central. The key areas included:

- increase in student vegetable consumption
- decrease in student mid-morning hunger
- improvement in student eating habits
- positive student response to the program
- efficient distribution process (no long line-ups, garbage etc.)
- provision of fresh, healthy snack alternatives to the students
- regulated quality and product standards
- perceived benefits of this model (partnership with greenhouse growers)
- perceived challenges of this model

Formative evaluation

This evaluation strategy is primarily qualitative in nature. The formative evaluation component was conducted through the use of facilitated discussion sessions with students in grades 1, 3, 5, and 7. The project evaluator and co-facilitator met with each of the classes, and following administration of the survey described in the summative evaluation section, engaged the students in a facilitated discussion session. This occurred at two points in time. The first, preceded program initiation and the second, followed the 8- week intervention period. The facilitated discussions were modified to reflect the age of the target class. The information that was sought shifted slightly based on the grade level (i.e., more advanced information was asked of secondary school students and the wording reflected the age group).

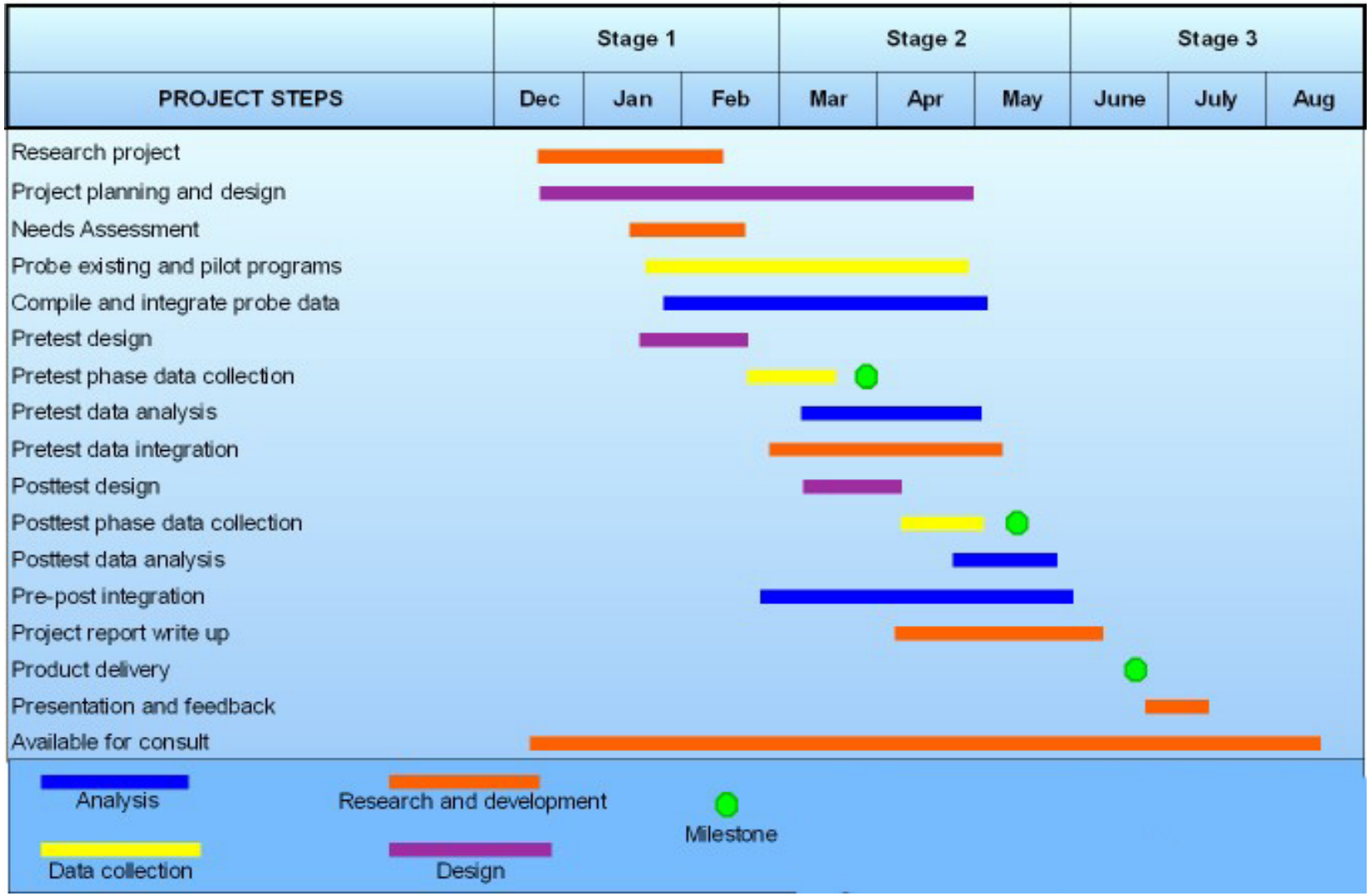
All discussion sessions were started by a brief statement about why we were there. At the pre-test phase, the information about the JCNP program was held to the end of the session and questions were phased in terms of perceptions and expectations. At the post-test phase the discussion was framed in terms of how students responded to the program and how they felt the program influenced their (or other's) eating habits. Suggestions for program improvement were solicited at the post-test phase. Results from this freer exchange of information were used to inform program development and direct future evaluation efforts. The following areas of focus were included in the discussion session:

- vegetable consumption patterns
- decreased intake of less healthy snacks
- peer influence in snack choice
- snack choice (own versus program, shifts in preference)
- snack provision (reasons may not have a snack)
- effect of hunger on self and on academic performance
- basic dietary knowledge (i.e., recommended daily allowances, healthy eating etc.)
- dietary information or perception of foods as fattening (and body image issues)

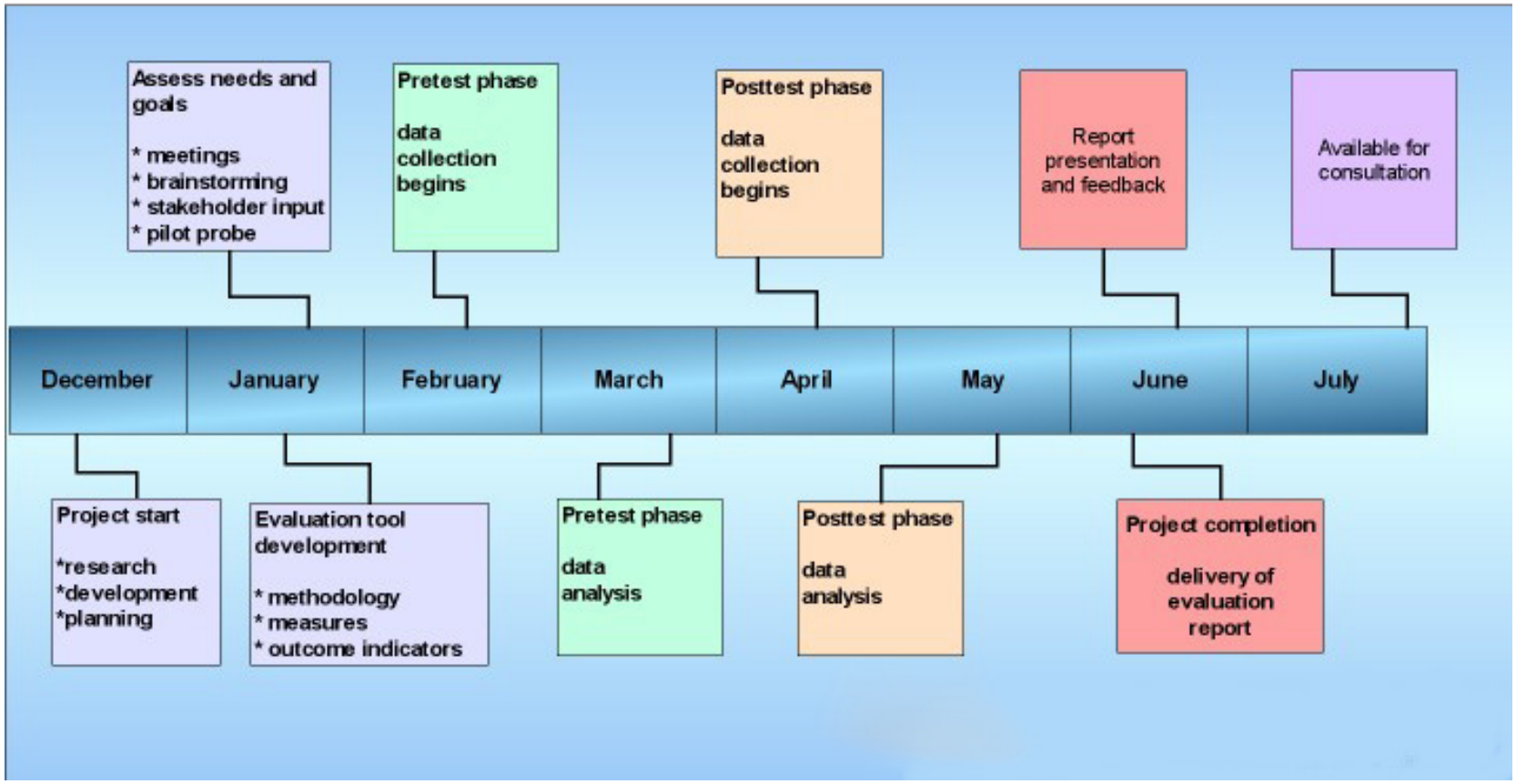
Project progression and timeline

Following graphical representation of the project development and planning, process and pre-post student and teacher versions of the evaluation surveys are presented

Project Development Schedule



Jumpstart Timeline Summary



Process Evaluation Survey

JUMPSTART
Nutrition Fuels Young Minds

In October, your school joined our Jumpstart Community Nutrition Partnership's Healthy Snack pilot project. We are currently preparing to enter phase one of this project and would like your feedback before we begin.

Prior to joining this project, your school had an existing snack program. We would like to ask you a few questions about your experience with the pilot program. We would also like your opinion on how your former program compares to the community partnership program.

➔ In what way were you involved in the healthy snack program?

☐ Volunteer ☐ Teacher ☐ School staff ☐ Coordinator ☐ Other_____

➔ What was your role, or what part did you play in the healthy snack program? Please check all that apply.

☐ Coordinated delivery to classrooms
☐ Looked after storage of supplies
☐ Handed snacks out to the students
☐ Oversaw distribution process
☐ Cleanup
☐ Other _____

➔ What types of snacks did your school provide before switching to the healthy snack program?

_____

_____

➔ How do you feel the students responded to the healthy snack program?

_____

_____

➔ For the following questions we would like you to compare your former snack program with the Jumpstart Community Partnership Nutrition program. Please check the box that matches your choice.

	Former program was better		Programs are about the same		Partnership program is better
Time involved in acquiring the snacks for the program	☐	☐	☐	☐	☐
Time involved in preparing the snacks for the students	☐	☐	☐	☐	☐
Efficiency in handing snacks out to the students	☐	☐	☐	☐	☐
Does not cut into classroom time	☐	☐	☐	☐	☐
Nutritional value of snacks provided	☐	☐	☐	☐	☐

➔ ➔ Please feel free to include additional comments below (you may use the back of this paper if you need more room). Thank you for your participation!

_____

_____

_____

_____

Pre-Test Primary Level Survey

JUMPSTART
Nutrition Fuels Young Minds


How old are you? _____


Did you eat breakfast this morning? ☑ Yes ☒ No


Did you bring a morning snack to school today? ☑ Yes ☒ No


Do you like to eat vegetables? ☑ Yes ☒ No


Do you eat vegetables every day? ☑ Yes ☒ No


How many servings of vegetables should you eat every day? _____

Circle all of the vegetables that you like.


cherry tomatoes


green peppers


red pepper


cucumbers


baby carrots


broccoli

Pre-Test Secondary Level Survey

- How old are you? _____
- Did you eat breakfast before coming to school this morning? **YES** **NO**
- Do you normally eat breakfast before going to school? **YES** **NO**
- Will you be eating a snack at school today? **YES** **NO**
- What types of snacks do you typically eat during the school day? _____
- Do you eat vegetables? **YES** **NO**
- How many servings of vegetables **do** you eat each day? _____
- How many servings of vegetables **should** you eat every day? _____
- Is eating healthy food important to you? **YES** **NO**
- Would you like it if your school provided fresh vegetables for snacks? **YES** **NO**

From the list below, please check all of the vegetables that you like.

☐ cherry tomatoes	☐ baby carrots	☐ corn
☐ green peppers	☐ broccoli	☐ eggplant
☐ red pepper	☐ cauliflower	☐ squash
☐ cucumbers	☐ peas	☐ green beans
☐ onions	☐ celery	☐ beets

Pre-Test Teacher Survey

JUMPSTART
Nutrition Fuels Young Minds

Welcome to the Jumpstart Community Nutrition Partnership's Healthy Snack pilot project. As part of our planning and evaluation we would like to ask you a few questions about your expectations of the program and what you feel the program will add to the school environment.

➔ In what way will you be involved in the healthy snack program?

☐ Administration ☐ Teacher ☐ School staff ☐ Support staff ☐ Other_____

➔ What role, or part do you expect to play in the healthy snack program? Please check all that apply.

☐ Coordinate delivery to classrooms
☐ Look after storage of supplies
☐ Hand snacks out to the students
☐ Oversee distribution process
☐ Cleanup
☐ Other _____

➔ What do you see as some of the objectives of the healthy snack program? Please check all that apply.

☐ Increase student vegetable consumption
☐ Decrease student hunger
☐ Improve student eating habits
☐ Efficient acquisition of snacks
☐ Decrease non-healthy snack choices of students
☐ Provide students with fresh snack alternatives
☐ Ensure regulated quality and product standards
☐ Other _____

➔ What types of snacks do you notice the students currently bring to school?

_____

_____

➔ How do you feel the students will respond to the new healthy snack program?

_____

_____

➔ What challenges, if any, do you anticipate with the new healthy snack program?

_____

_____

➔ What benefits, if any, do you anticipate with the new healthy snack program?

_____

_____

➔ What are some of the potential benefits of a partnership between the greenhouse growers of Ontario and municipal or provincial school boards?

_____

_____

➔ ➔ Please feel free to include additional comments below (you may use the back of this paper if you need more room).

Thank you for your participation!

_____

_____

_____

_____

Post-Test Primary Level Survey

JUMPSTART
Nutrition Fuels Young Minds

How old are you? _____

Did you eat breakfast this morning? ☑ Yes ☒ No

Did you bring a morning snack to school today? ☑ Yes ☒ No

Do you like to eat vegetables? ☑ Yes ☒ No

Do you eat vegetables every day? ☑ Yes ☒ No

Do you eat more vegetables since the snack program came to your school? ☑ Yes ☒ No

How many servings of vegetables should you eat every day? _____

Circle all of the vegetables that you like.


cherry tomatoes


green peppers


red pepper


cucumbers


baby carrots


broccoli

Post-Test Secondary Level Survey

- How old are you? _____
- Did you eat breakfast before coming to school this morning? **YES** **NO**
- Do you normally eat breakfast before going to school? **YES** **NO**
- Will you be eating a snack at school today? **YES** **NO**
- What types of snacks do you typically eat during the school day? _____
- Do you eat vegetables? **YES** **NO**
- How many servings of vegetables **do** you eat each day? _____
- How many servings of vegetables **should** you eat every day? _____
- Is eating healthy food important to you? **YES** **NO**
- Did you eat the vegetables provided at your school for snacks? **YES** **NO**
- Do you eat more vegetables now, since having them provided at school? **YES** **NO**

From the list below, please check all of the vegetables that you like.

- cherry tomatoes
- green peppers
- red pepper
- cucumbers
- onions
- baby carrots
- broccoli
- cauliflower
- peas
- celery
- corn
- eggplant
- squash
- green beans
- beets

Post-Test Teacher Survey

Thank you for participating in the Jumpstart Community Nutrition Partnership's Healthy Snack pilot project. As part of our planning and evaluation we would like to ask you a few questions about your perceptions of the program and how you feel the program has contributed to the school environment.

➔ In what way were you involved in the healthy snack program?

☐ Administration ☐ Teacher ☐ School staff ☐ Support staff ☐ Other_____

➔ What role, did you play in the healthy snack program? Please check all that apply.

☐ Coordinated delivery to classrooms
☐ Looked after storage of supplies
☐ Handed snacks out to the students
☐ Oversaw distribution process
☐ Cleanup
☐ Other _____

➔ What did you see as some of the results of the healthy snack program? Please check all that apply.

☐ Increased student vegetable consumption
☐ Decreased student hunger
☐ Improved student eating habits
☐ Allowed for efficient acquisition of healthy snacks
☐ Decreased non-healthy snack choices of students
☐ Provided students with fresh snack alternatives
☐ Ensured regulated quality and product standards
☐ Other _____

➔ Did you notice any changes in the types of snacks students brought to school?

_____

_____

➔ How do you feel the students responded to the healthy snack program?

_____

_____

➔ What challenges, if any, did you observe with the healthy snack program?

_____

_____

➔ What benefits, if any, did you observe with the healthy snack program?

_____

_____

➔ Was the benefit of a partnership between the greenhouse growers of Ontario and municipal or provincial school boards evident in this pilot project?

_____

_____

➔ ➔ Please feel free to include additional comments, or suggestions about the program below (you may use the back of this paper if you need more room). Thank you for your participation!

_____

_____

_____

_____

Section 3: Evaluation Findings

Process Evaluation Results

Quantitative

Beginning in October 2004, four schools with existing snack programs were involved in the JCNP pilot project. Prior to commencement of phase one of the partnership program in February 2005, a process evaluation was conducted with the pilot schools. Designed to get feedback from the respondents at participating schools, questions about the experience with the pilot project and opinions on how their former program compared to the community partnership program were asked. Suggestions for improvement were also sought.

80% of the respondents saw their role as involving some aspect of coordinating the delivery of provisions to classrooms, while 40% saw their role as primarily involving distribution of the vegetables to the students. Respondents indicated that volunteer or student helpers allowed for a fairly smooth distribution process. Most respondents also participated in cleanup (80%).

Comparison of former snack program to the Jumpstart Community Partnership Program.

Program aspect	Score out of 5
Time to acquire snacks	4.0
Preparation time	3.0
Distribution	3.2
Class time	3.0
Nutritional value	4

Note: items on a 5 point scale anchored by 1 = former program was better, to 5 = partnership program is better (N = 5)

In summary, both the nutritional value of the snacks provided and the time that was involved in acquiring snacks for the students was rated as superior in the JCNP program. Ease of the distribution process was only somewhat improved, and preparation time and the class time absorbed by the distribution process was constant across both the former and the pilot project.

Qualitative

A central concern identified by 60% of the respondents was the (in)ability to store the vegetables properly. Most respondents indicated that they did not have access to the necessary refrigeration, or did not have the space to adequately store the vegetables.

All respondents indicated that the students reacted to the JCNP program in very positive ways. General comments included references to the cooperation of teachers and school volunteers to the success of the program within individual schools, a need for more variety in the types of vegetables provided, and the need to address in-school vegetable storage issues. The inclusion of various fruits, and some dairy products were one common recommendation for improvement of the snack program. Some respondents provided suggestions as to the scheduling of the vegetable deliveries to the school. These suggestions were made to address both storage and refrigeration concerns.

> "We strive to get nutrition to the children and they in turn like a change in their snacks. We, therefore, feel that they should have mixed days of fruit, vegetables, and something like yogurt or trail mix."
>
> Elementary school volunteer snack distributor

Feedback from participating program distributors in the pre-pilot schools was incorporated into the planning of phase one of the partnership program. The delivery schedule was increased to twice a week (for a four day a week program) to address the storage and refrigeration concerns of the respondents. The variety of vegetables that were provided to the schools was also increased.

Selected quotes from participants

- students love the snack program!
- the teachers have also been very appreciate and are constantly helping in anyway possible [from a volunteer]
- the cucumbers were very well received by the students and we look forward to providing them again. Thank you so much – Jumpstart is a good thing
- more variety in the snacks they receive [noted as a suggestion for improvement by a volunteer]
- most children were very enthusiastic about the vegetables and enjoyed when there was a variety of snacks
- we definitely enjoyed the partnership program

Summary

In summary, in the two most vital areas the JCNP program offered modest improvements over the existing snack programs. Most importantly, respondents indicated that the snacks that were provided to the students by the OGVG were of higher nutritional value than were the snacks provided in the original snack program. The Jumpstart program was also ranked as more efficient in terms of time to acquire the provisions to distribute to the students than the snack program that was previously in place at the respective pilot schools. No differences were noted in preparation time or in the amount of time the distribution process absorbed of class time. There was consensus among the participants that the children responded very positively to the vegetables provided by OGVG, and to the JCNP program more generally.

All respondent feedback and suggestions for improvement were considered and, where possible, suggestions were incorporated into the planning of phase one of the partnership program. The OGVG increased the variety of vegetables that they provided to the schools, and the produce delivery schedule was increased from once, to twice a week to address the storage and refrigeration concerns of the respondents.

Phase One Program Evaluation Results

Quantitative findings

Students

A total of 280 students from four elementary schools participated in the pre-test phase, and 283 participated in the post-test phase of the Growing a Healthier Future School Nutrition Pilot Project. Elementary school students ranged in age from 6 - 14 with an average age of 10.4 years at pre-test and 10.6 years at post-test. At the secondary school level, 56 students participated in the pre-test phase and 51 students participated in the post-test phase. Students ranged in age from 14 to 19 years at both pre and post test with the average age slightly increasing from 16.1 years to 16.4 years of age.

Of primary interest, are the findings related to vegetable consumption. First, the overwhelming majority of elementary school students (80%) reported that overall, they ate more vegetables since the JCNP program began than they did before the program was in their school. At the secondary level, 57% reported an overall increase in vegetable consumption. Although, on average more than 85% of the students at both the elementary and secondary level did indicate at the pre-test phase that they ate some vegetables, far fewer (mean = 46%) indicated that they consumed vegetable every day. Regarding the self-reported rate of daily vegetable consumption, on average significantly more elementary school students ($p < .001$) reported eating vegetables every day at post-test (mean = 64%) than they did at pre-test (mean = 46%). Across elementary schools the pre-test means ranged from 41% to 52%, and the post-test means ranged from 57% to 80%. The mean number of self-reported daily servings of vegetables consumed by secondary school students did not significantly increase from the pre to post test phase.

Regarding vegetable preferences, some evidence was found for a vegetable exposure effect. At the elementary school level liking ratings of the six vegetables included in the questionnaire significantly shifted for green ($p < .05$) and red ($p < .001$) peppers (from a 41% to 50% liking rating for green peppers and from a 35% to 50% liking rating for red peppers). For all other vegetables, the overall ratings did not significantly change. At the secondary school level, there were no significant shifts in the liking rating for any of the vegetables served in the program.

There was also preliminary evidence of an increase in basic nutrition knowledge at the elementary school level. The average response for recommended daily allowance significantly shifted toward greater accuracy from pre to post test for elementary students (from 4.4 to 6.3 servings). There was no significant shift at the secondary school level (8 servings at both pre and post) but the majority of students provided answers that fell in the correct range at both testing times.

To allow for a more detailed examination of the findings at both the elementary and the secondary school level, as well as at the individual school and grade-level, tables and graphs are included in the following section. Quantitative finding are presented both as a group and by school.

Elementary School Summary Data

School	N		Mean age (Range)		Ate breakfast (%)		Brings or eats a snack* (%)		Eats veg's (%)		Eat veg. every day (%)		Suggested # of servings (mean)		% of students who said they eat more veg since program
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
John Campbell	99	94	9.7 6-14	10.1 6-14	83.8	80.9	52.5	53.8	89.9	94.7	43.4	57.4	4.4	7.0	77.4
Our Lady	82	86	9.3 6-13	9.6 6-13	82.7	81.4	72.0	80.2	90.2	87.2	52.4	59.3	5.2	5.4	81.2
St. Edmond*	43	43	12.2 11-14	12.4 11-14	65.1	55.8	79.1	72.1	86.0	83.7	48.8	62.8	3.6	5.7	81.4
St Michel*	56	60	11.2 9-13	11.6 10-13	87.5	86.7	85.7	95	89.3	96.7	41.1	80.0	3.4	6.9	83.3
Total Elementary	**280**	**283**	**10.3 6-14**	**10.6 6-14**	**81.1**	**78.4**	**68.9**	**83.4**	**89.3**	**91.2**	**46.4**	**63.6**	**4.4**	**6.3**	**80.4**
Paired samples t-test					t = .83 df =279 p =.41		t = -1.37 df =278 p =.17		t = -.87 df = 279 p =.39		t = -3.97 df = 279 **p < .001**		t = -6.36 df = 279 **p < .001**		Average 80.7%

* French school: only allowed access to senior students

Secondary School Summary Data

School	N		Mean age (Range)		Ate breakfast (%)		Brings or eats a snack* (%)		Eats veg's (%)		Servings eat each day (mean)		Suggested # of servings (mean)		Healthy eating NB (%)	
Herman Secondary	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Total	**56**	**51**	**16.2 (14-19)**	**16.4 (14-19)**	**53.6**	**52.9**	**69.6**	**68.6**	**87.5**	**88.2**	**2.8**	**2.9**	**8.1**	**7.9**	**82.1**	**79.6**

* in secondary school sample the purchase of snacks was included in this question

Individual Elementary School to Total Sample Comparison Data

John Campbell

School	N		Mean age (Range)		Ate breakfast (%)		Brings or eats a snack* (%)		Eats veg's (%)		Eat veg. every day (%)		Suggested # of servings (mean)		% of students who said they eat more veg since program
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
John Campbell	**99**	**94**	**9.7 6-14**	**10.1 6-14**	**83.8**	**80.9**	**52.5**	**53.8**	**89.9**	**94.7**	**43.4**	**57.4**	**4.4**	**7.0**	**77.4**
					no significant difference		no significant difference		no significant difference		t = -1.77 df = 93 **p. = .08**		t = -4.79 df = 82 **p. < .001**		
Comparison to total sample															
Total Elementary	280	283	10.3 6-14	10.6 6-14	81.1	78.4	68.9	83.4	89.3	91.2	46.4	63.6	4.4	6.3	80.4
Paired samples t-test					t = .83 df =279 p =.41		t = -1.37 df =278 p =.17		t = -.87 df = 279 p =.39		t = -3.97 df = 279 **p < .001**		t = -6.36 df = 279 **p < .001**		

Our Lady of Lourdes

School	N		Mean age (Range)		Ate breakfast (%)		Brings or eats a snack* (%)		Eats veg's (%)		Eat veg. every day (%)		Suggested # of servings (mean)		% of students who said they eat more veg since program
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
Our Lady	**82**	**86**	**9.3 6-13**	**9.6 6-13**	**82.7**	**81.4**	**72.0**	**80.2**	**90.2**	**87.2**	**52.4**	**59.3**	**5.2**	**5.4**	**81.2**
					no significant difference		t = -1.82 df = 80 **p. = .07**		no significant difference		no significant difference		no significant difference		
Comparison to total sample															
Total Elementary	280	283	10.3 6-14	10.6 6-14	81.1	78.4	68.9	83.4	89.3	91.2	46.4	63.6	4.4	6.3	80.4
Paired samples t-test					t = .83 df =279 p =.41		t = -1.37 df =278 p =.17		t = -.87 df = 279 p =.39		t = -3.97 df = 279 **p < .001**		t = -6.36 df = 279 **p < .001**		

St Edmond

School	N		Mean age (Range)		Ate breakfast (%)		Brings or eats a snack* (%)		Eats veg's (%)		Eat veg. every day (%)		Suggested # of servings (mean)		% of students who said they eat more veg since program
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
St. Edmond*	**43**	**43**	**12.2** **11-14**	**12.4** **11-14**	**65.1**	**55.8**	**79.1**	**72.1**	**86.0**	**83.7**	**48.8**	**62.8**	**3.6**	**5.7**	**81.4**
					no significant difference		no significant difference		no significant difference		no significant difference		t = -4.53 df = 39 **p < .001**		
Comparison to total sample															
Total Elementary	280	283	10.3 6-14	10.6 6-14	81.1	78.4	68.9	83.4	89.3	91.2	46.4	63.6	4.4	6.3	80.4
Paired samples t-test					t = .83 df =279 p =.41		t = -1.37 df =278 p =.17		t = -.87 df = 279 p =.39		t = -3.97 df = 279 **p < .001**		t = -6.36 df = 279 **p < .001**		

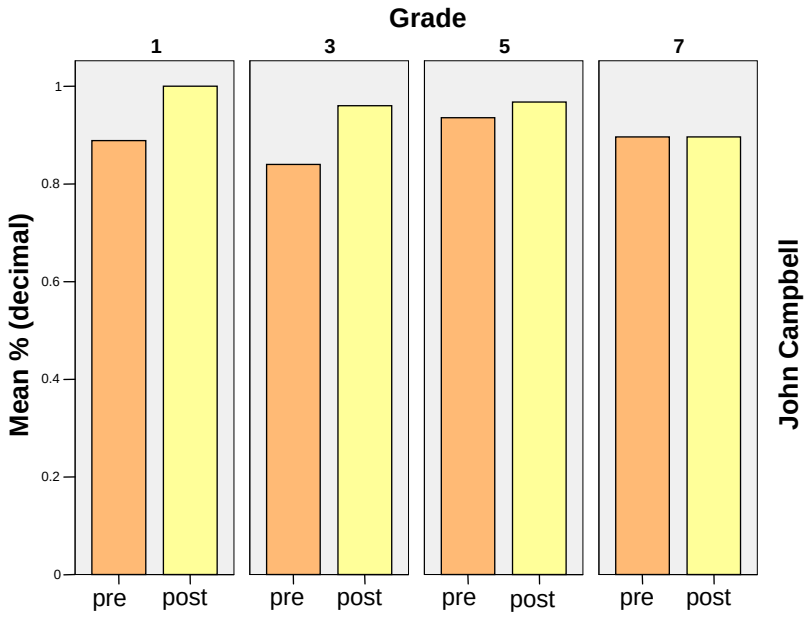
* French school

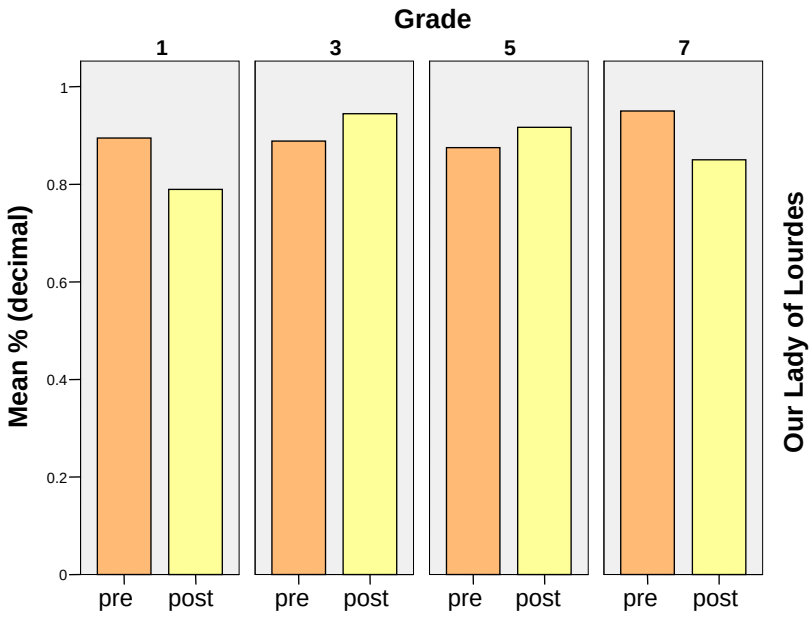
St Michel

School	N		Mean age (Range)		Ate breakfast (%)		Brings or eats a snack* (%)		Eats veg's (%)		Eat veg. every day (%)		Suggested # of servings (mean)		% of students who said they eat more veg since program
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
St Michel*	**56**	**60**	**11.2 9-13**	**11.6 10-13**	**87.5**	**86.7**	**85.7**	**95**	**89.3**	**96.7**	**41.1**	**80.0**	**3.4**	**6.9**	**83.3**
					no significant difference		t = -2.19 df = 55 **p. = .03**		t = -1.94 df = 55 **p. = .06**		t = -4.72 df = 55 **p < .001**		t = -6.19 df = 53 **p < .001**		
Comparison to total sample															
Total Elementary	280	283	10.3 6-14	10.6 6-14	81.1	78.4	68.9	83.4	89.3	91.2	46.4	63.6	4.4	6.3	80.4
Paired samples t-test					t = .83 df =279 p =.41		t = -1.37 df =278 p =.17		t = -.87 df = 279 p =.39		t = -3.97 df = 279 **p < .001**		t = -6.36 df = 279 **p < .001**		

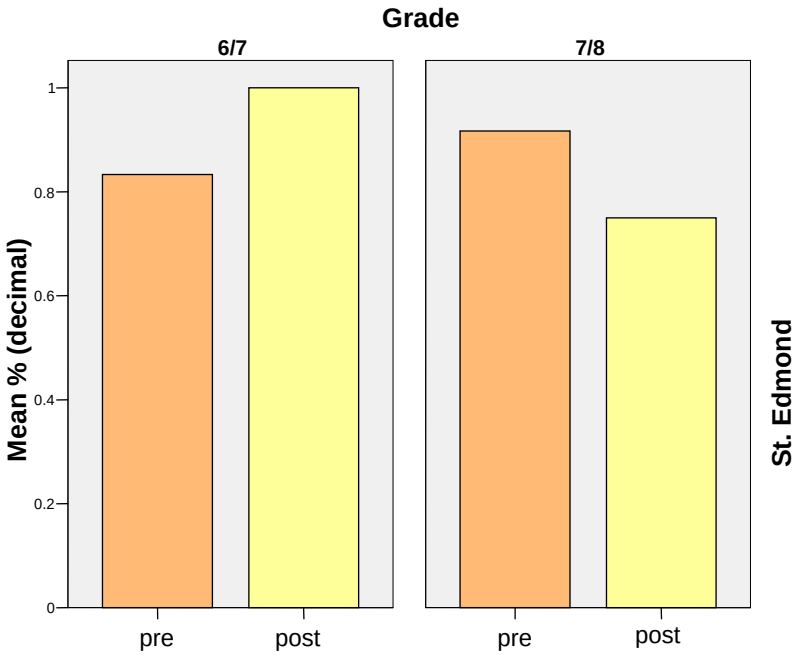
* French school

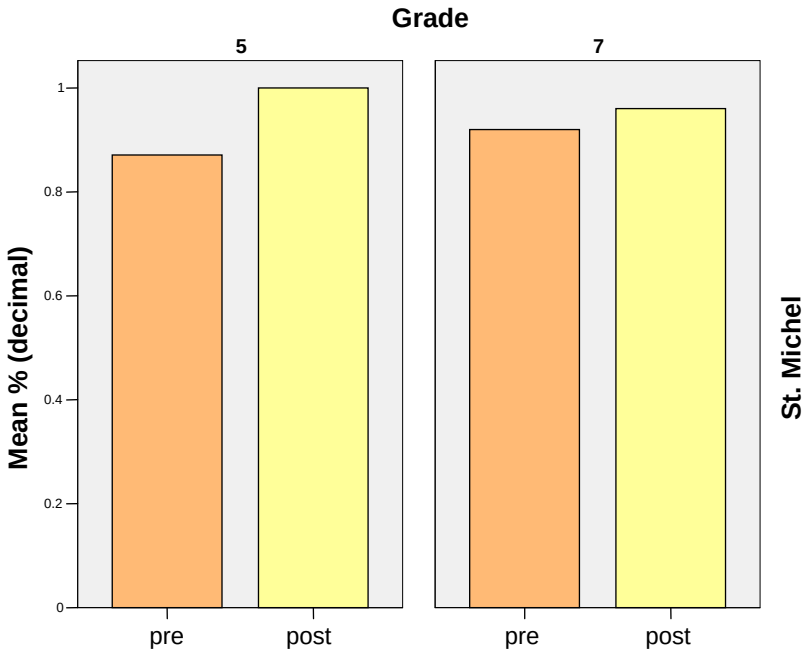
Likes to eat vegetables



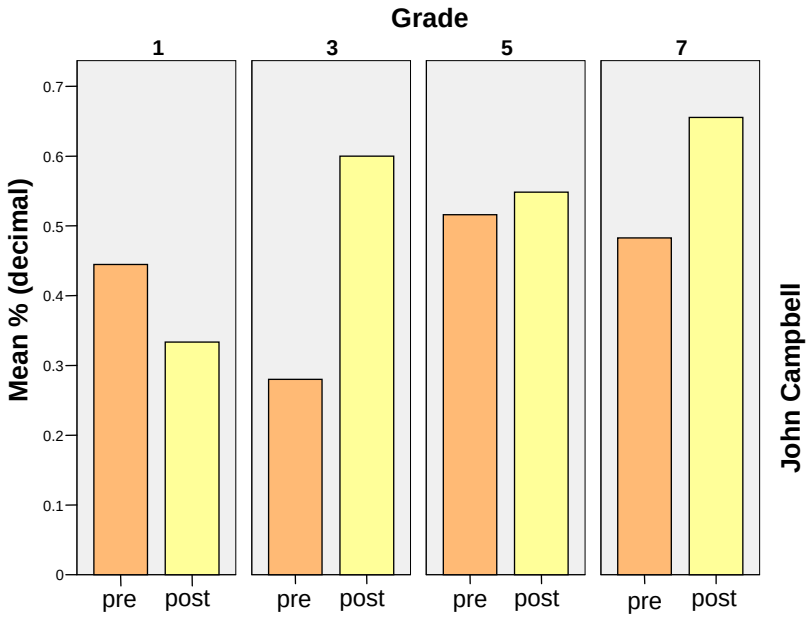


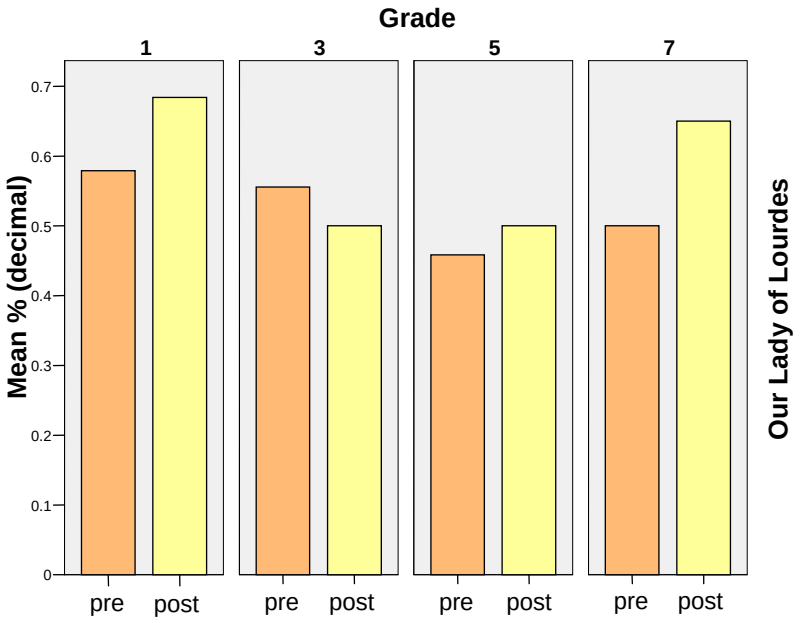
Likes to eat vegetables



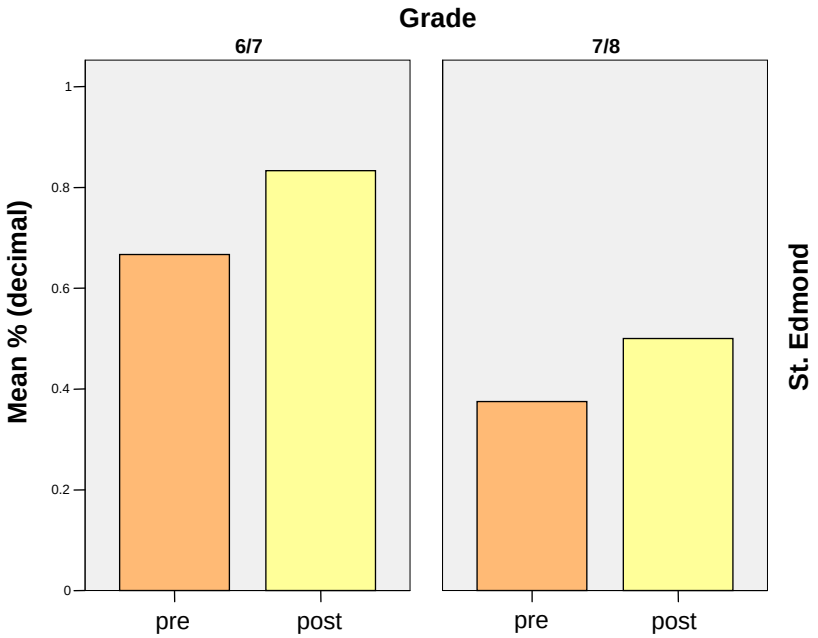


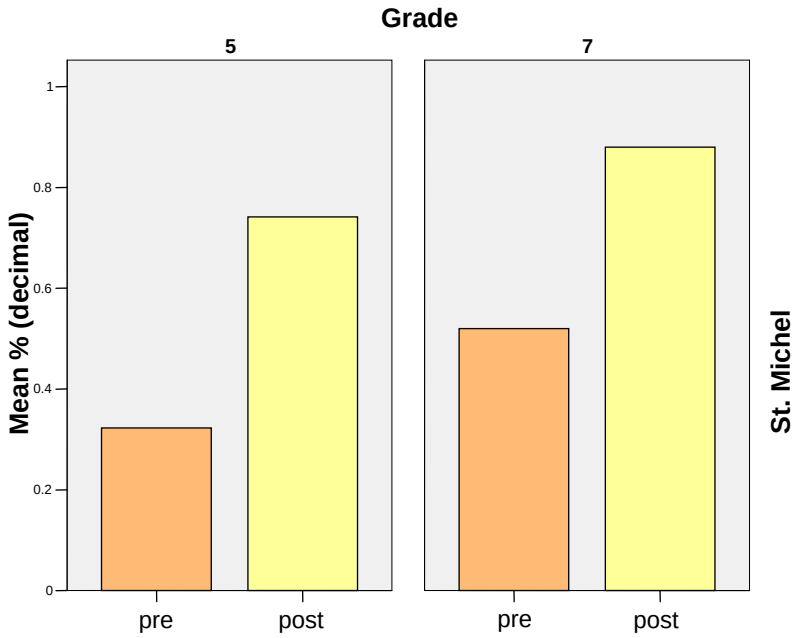
Eats vegetables everyday



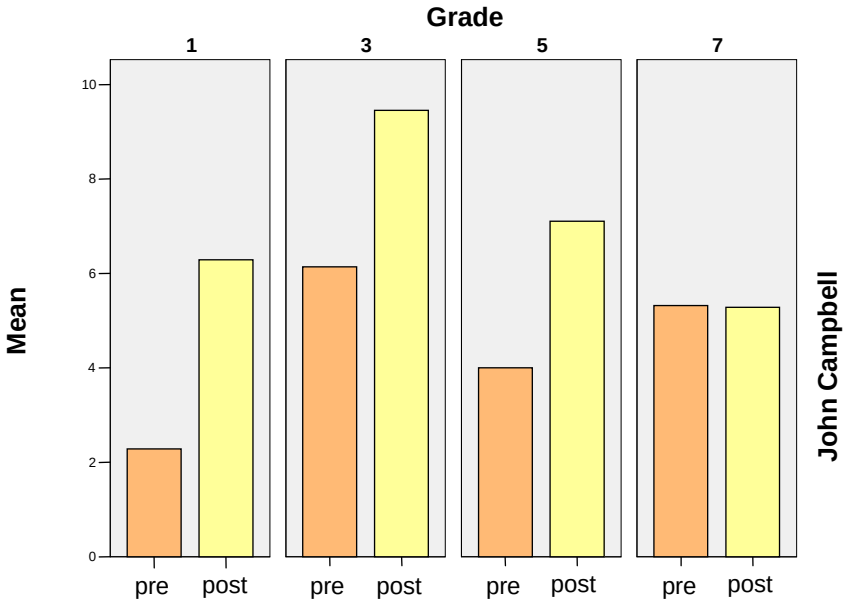


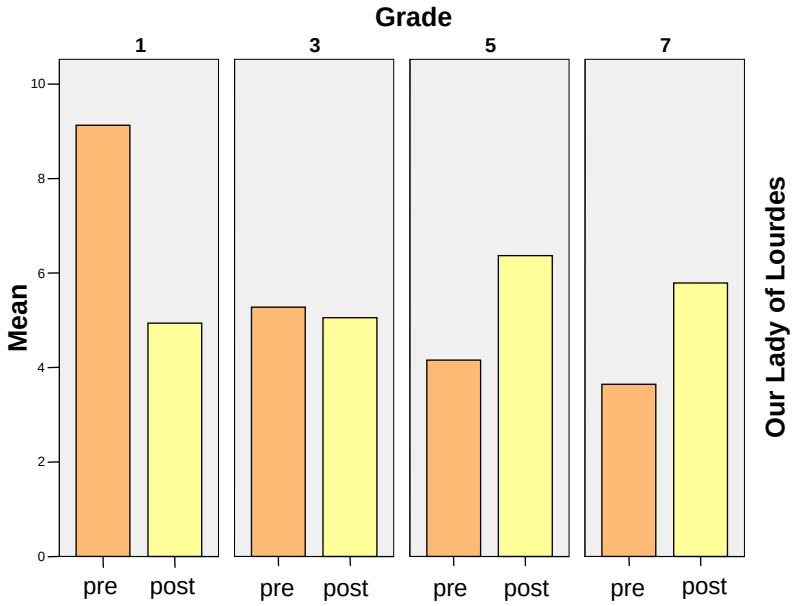
Eats vegetables everyday



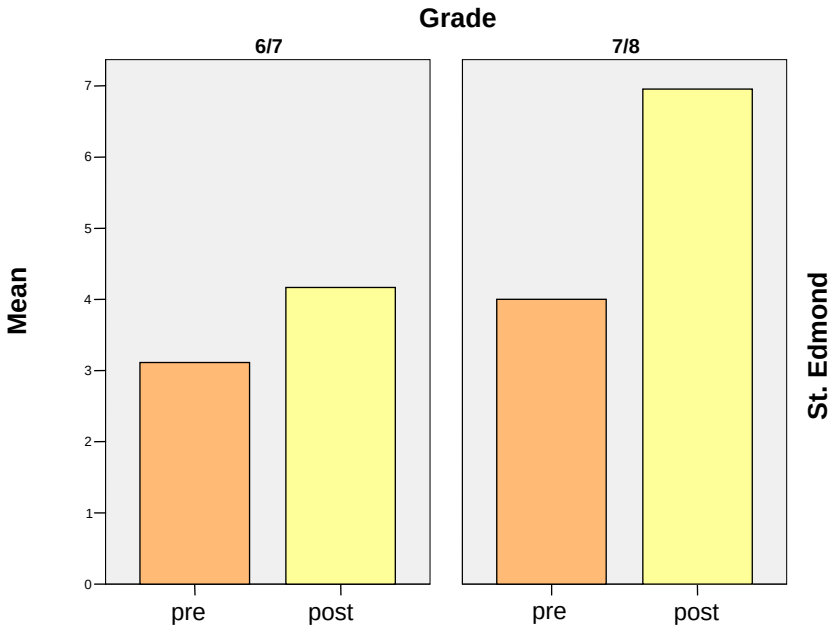


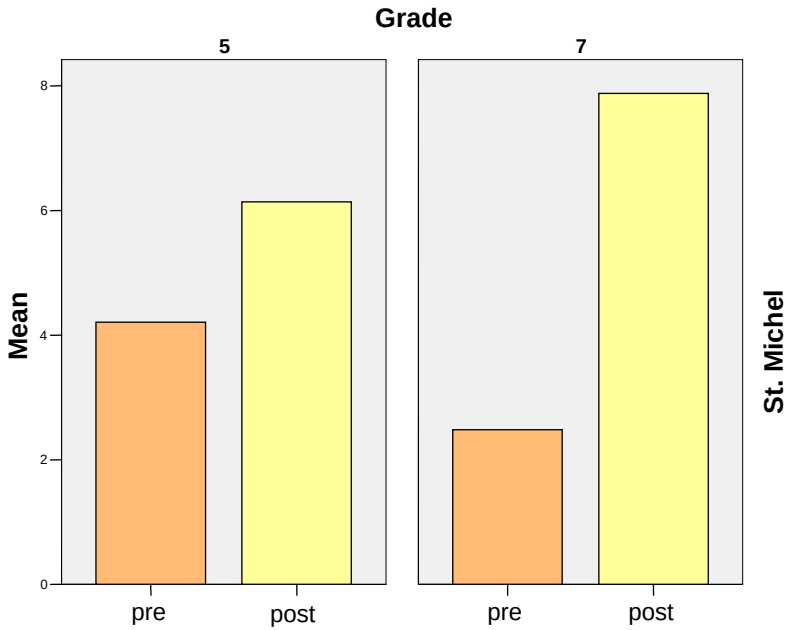
How many servings of vegetables should you eat every day?





How many servings of vegetables should you eat every day?





Teachers

Overall, 39 teachers completed the pre-test surveys and 36 completed the post-test surveys. At both the elementary school and the high school level 75% of the respondents indicated that their involvement in the process of the JCNP program was in the role of teacher.

Most importantly, at post-test, 100% of the teachers from both elementary and secondary schools indicated that they noticed an increase in student vegetable consumption. Almost all (91%) of the elementary school teachers and 100% of the secondary school teachers also believed that the program achieved its goal of providing fresh snack alternatives to the students. The program was also perceived as successful in alleviating student in-school hunger, and effect that was more pronounced at the secondary school level (100% at post-test) than at the elementary school level (61% at post-test). In the areas of improved eating habits and decreased non-healthy snack consumption, elementary school teachers perceived the program to fall short of their initial expectations (pre-post ratings of 97% to 61%, and 91% to 39% respectively). The majority (67%) of the elementary school teachers noted an increase in efficiency regarding the acquisition of snacks above that which was anticipated at the pre-test phase. While the value of the JCNP program in ensuring regulated quality and product standards was not evident by the majority of respondents at the pre-test phase, such rating did increase among elementary school respondents at the post-test phase. Interpretation of these findings is aided by the qualitative data that follows.

> *"I am amazed at how my students jumped into the program. They would even eat the leftovers of the other classes."*
>
> Elementary school teacher

To allow for a more detailed examination of the findings at both the elementary and the secondary school level, see the following table.

Teacher Pre-test and Post-test Comparative data

	Elementary school		Secondary school	
Program effect	Pre-test (n = 34) %	Post-test (n = 33) %	Pre-test (n = 5) %	Post-test (n = 3) %
Coordinate role	11.8	3.0	60.0	100.0
Increase consumption	97.1	100.0	80.0	66.7
Decrease hunger	64.7	60.9	80.0	100.0
Improve eating habits	97.1	60.6	80.0	100.0
Improved acquisition	47.1	66.7	20.0	100.0
Decrease non-healthy snack choices	91.2	39.4	80.0	66.7
Provide fresh alternatives	79.4	90.9	80.0	100.0
Ensure quality standards	32.4	45.5	40.0	33.3

Qualitative Findings

Students

The facilitated discussion sessions began with talking to the students about school snacks. Areas such as the reasons one may not bring a snack to school, if one needs to eat a snack to reduce in-school hunger, and the effects of not having a snack if one is hungry were discussed. At both the elementary and the secondary school level the majority of students indicated that they sometimes did not bring morning snacks to school. The proportion of students indicating that they did not bring snacks to school increased with grade level. The most common reasons cited among elementary school students for not bringing a snack were time-related (i.e., they ran out of time in the morning while getting ready for school, or were in a hurry, they wanted to rush out for recess). Other common responses included: mom (or dad) forgot to pack a snack or they did not like what mom packed, the student forgot to put a snack in their own lunch, they were not hungry, or they ran out of snacks at home. At the secondary school level, most students indicated that they did not bring snacks to school but rather purchased their snacks from the cafeteria or local variety store or restaurant. Many secondary school students also reported that they did not eat snacks while at school. Among the reasons for not having a snack provided by secondary school students were because they were too lazy to pack one, they did not have money to buy one, or they were not hungry.

> *"If we run out of snacks at home, I don't get to bring any."*
>
> Grade 3 student

Most elementary school students indicated that they do tend to get hungry by morning recess. When discussing the effects of hunger at school the most common responses included somatic references (i.e., stomach hurts or feels empty, tummy growls, you feel yucky or weak or have no energy, get a headache, get dizzy, get nauseous). Other responses tapped more into cognitive or emotional functioning (i.e., cannot concentrate or focus on school work, think too much about eating, makes you sleepy, get frustrated, irritable, or grumpy). Finally, some elementary school students made explicit references to hunger affecting their academic performance (i.e., "you do not have your 'brain food' so you will not work as good" and "you will do bad on a test because

your brain will not turn on"). At the secondary level, feeling tired and unmotivated, and being unable to concentrate were the most common responses when asked about the effects of in-school hunger.

When asked what kinds of foods they typically brought to school for snacks the students gave a variety of answers. Although some students did respond with healthy alternatives (fruit, vegetables, cheese, etc.) the majority indicated that they most often brought less desirable snacks (cookies, chips, chocolate bars, dunk-a-roos, candy, mini donuts etc.). This was consistent across all grades. The same pattern of response was noted when discussing what kinds of foods the students preferred for snacks. Again, although some students did respond with healthy alternatives (fruit, vegetables, cheese, chicken etc.) the majority indicated that they preferred less desirable snacks (McDonalds, French fries, hot dogs, ice cream, pop, cookies, chips, chocolate bars, candy etc.). This was consistent across all grades.

Students were asked to talk about "healthy eating" and what kinds of foods were good for you. While the students in higher grades reported a greater diversity of answers, their responses did not reflect the idea that a balanced diet was an important aspect of healthy eating. At all grade levels students reported that fruits, vegetables and meats were part of a healthy diet. Students in grades five and seven provided responses that included references to dairy and grains, and answers that referred to nutritional content (e.g., calcium, protein, etc.) in one's diet.

Reasons why one should eat a healthy diet were also explored. As expected, the level of detail provided by students increased with grade level. Common responses included: so that you can grow, to make you strong, to give you energy, to develop your muscles, bones, and teeth, to keep yourself healthy, to get the vitamins and minerals that your body needs, to help you think better, and to stay fit.

> *"You should eat healthy so that you don't get fat!"*
>
> Female, grade 3 student

At the primary grade levels, very few students knew the recommended daily allowance for fruits and vegetables. This knowledge increased with grade level but, at pre-test even many of the senior students provided incorrect answers. At the secondary school level the majority of students provided information that was correct.

Following the pre-test facilitated discussion sessions students were told about the JCNP pilot project and were given the opportunity to ask questions about the program. In all of the schools, the senior classes (grades five and seven) wanted to know whether the vegetables would be free. This was the only question that was asked consistently. Other questions involved issues such as the time the vegetables would be distributed, where in the school they would be distributed, if you could take as many vegetables as you wanted, what other schools were a part of the project, whether eating the vegetables would be required, and whether eating the vegetables would allow you to lose weight. As early as the grade three level, the notion of eating healthy was already linked to weight.

Although, when asked about their expectations of the JCNP program, some students indicated that they would not enjoy a program that provides free vegetables because they do not like vegetables, the majority of students indicated that they thought that they would like having the program in their schools.

At the post-test phase, most students indicated that they did enjoy having the snack program at their school. They found that it was easy and convenient for them to grab a snack. The majority of students also reported that they ate more vegetables since the program, and a few suggested that they only ate vegetables when they were at school. Some students indicated that they now ask their parents to buy certain vegetable while they are grocery shopping.

> *"I thought that I hated red peppers, and then my friend triple-dog dared me to try one, so I did – and I said…*
> *'hey, that is pretty good'"*
>
> Male, grade 5 student

Many students reported that they did try something new. Evidence of one mode of preference shifting emerged. A number of students indicated that they thought that they did not like a particular vegetable, but decided to try it because their friends were all eating them. Students sometimes found that the vegetable did not taste how they thought it would taste and they actually liked it. Students also reported liking the fact that many of the vegetables were mini-sized, and they were especially fond of the mini cucumbers. A few students were also surprised to learn that you could eat a cucumber that was not peeled.

Students were also asked about their perceptions of the JCNP program and were offered an opportunity to provide comments or suggestions for program improvement. The following were included among the students responses:

Benefits or positive aspects of the program

- it was free
- you could get it when you were hungry
- the veggies were fresh
- they tasted good
- it was handy and easy
- it lets you have veggies if you don't get them at home
- I learned to eat raw vegetable and I feel more healthy
- before we got this program, I wasn't eating vegetables at home
- I learned to like something new
- it was good because we didn't have to buy them
- we got to try new stuff
- it saved my mom money and work
- I liked that it cam ready to eat
- I tried peppers and found out that they were not hot
- I didn't like cherry tomatoes before and then I saw other kids eating them so I tried and now I like it
- I ate them because they were there

Suggestions or areas for improvement

- it would be good to have salt with the veggies
- it would taste even better if we could get dip
- we need more different kinds of veggies
- I would like to have some fruit too
- some of the veggies got squished
- we should do it next year too
- you need to market the program better, maybe with a poster contest (secondary school student) – get the message out there

Teachers

Teachers were able to provide their comments on a number of open-ended questions that appeared on their surveys. Most respondents did take this opportunity to provide their perceptions of the program and offered some insight into how the program was received in their schools. Much of this feedback can be used to guide further program development.

When asked about student response to the JCNP program the overwhelming majority of replies referenced positive student response. Almost all respondents indicated that the students enjoyed the vegetables, as the following quotes illustrate.

- students enjoyed eating healthy snacks and there was a high participation rate
- students seemed to have more energy after the snacks
- students were willing to try new vegetables; they ate the vegetables with little or now prompting from teacher
- students responded positively to the new program. They looked forward to it, and tried some new things that hadn't eaten before
- I am amazed at how my students jumped into the program. They would even eat the leftovers of the other classes
- most students really enjoyed the program -- especially the cucumbers
- they loved them [the vegetables] and anxiously awaited them on a daily basis
- they loved the veggies. They asked for veggies all of the time
- some stopped bringing snacks relying instead on jumpstart

As was demonstrated in the student feedback, even at the teacher-report level, some evidence for an exposure effect was also reported. In some cases, the program appeared to allow for shifting preferences of certain vegetables. For example:

- they enjoy vegetables now – at first they did not want to try peppers or tomatoes
- understanding that other kids like veggies too and they can be cool; showing veggies can make a great snack
- initially some students were hesitant about the program but their acceptance and enthusiasm increased and grew
- some of the children had never eaten peppers before and found that they liked them.

Many of the teachers also made references to behavioural or attitudinal changes in their students' snacking behaviour and preferences. This is illustrated in the following quotes:

- some students told me they now ask their parents to buy veggies for snacks
- approximately two-thirds of [her] students are now asking their parents, while grocery shopping, to buy vegetables
- the kids came to like veggies because of this program.
- students are eating more vegetables and trying the ones that they may not have in the past so there was a positive change in student snacks and choices

Respondents were also asked to report on what they perceived to be some of the benefits of the JCNP program. Generally, the benefits that the teachers mentioned tended to fall into two categories. The first category, addressed the overall program and the health and nutrition aspects of healthy eating.

- it was a well coordinated program, consistent distribution of vegetables
- it provided a healthy snack for the kids and decreased hunger
- the kids got to taste vegetables they may not have been exposed to before
- the program exposed the children to healthy snacks and encouraged them to make better choices
- it is wonderful! The kids came to like the veggies because of this program
- it helped to promote healthy eating, and provided the children with nutritious snacks.
- we are working together promoting a positive necessary message therefore students are receiving a strong united message
- it always benefits students and schools when there is community support
- vegetables were provided free of charge and healthy produce was evident
- if the impact of a healthy food program is spread outside of the school premises then we have succeeded to change habits and hopefully for the better. The impact is the long-term goal

The second category of responses about program benefits reflected how the program addressed student need. Many of the comments centered on the provision of nutritious food for students who may otherwise not have access. The following are some of the teacher quotes that illustrate this aspect of program benefit:

- the children that wouldn't eat breakfast were eating the vegetables
- the benefits at our school is tremendous as close to 40% are underprivileged or newly arrived to Canada
- providing low income family with healthier lifestyle choices
- feeding the kids who do not get enough at home
- providing healthy food for those students who wouldn't normally bring them from home
- kids who didn't usually bring a snack had something to eat during snack time
- kids who usually eat junk food had a healthy snack alternative (which they would not have brought to school)
- students who wouldn't normally have access to a snack now do
- kids also worked better because they always have snacks (which they didn't always get from home)

The perceived potential benefits of creating a partnership model between the Ontario Greenhouse Vegetable Growers and District School Boards were also evident to many of the teachers. For example:

- a partnership between OGVG and the school board would definitely be beneficial
- a partnership would promote vegetables while providing children with healthy snacks
- consumer awareness - health benefits and boosting local industry
- communities would be working together
- it is an excellent way to promote healthy snacks in schools
- it will increase the children's awareness of what we can find in greenhouses. Good for our science unit on plants
- hopefully, the students will be able to convince the parents to buy more vegetables and fruits making it beneficial for the farmers too

Prior to program initiation many teachers believed the getting the students to eat the vegetables would be a challenge. However, several teachers reported that they were surprised at how, for most children, this was not an issue as they had expected. The challenges that were identified were as follows:

- the challenges [will be] with ongoing healthy eating
- getting parents to purchase these items because it takes more time and it costs more
- the cost for families of purchasing fruits and vegetables
- a challenge to continue good healthy eating after the program is finished
- storage and classroom delivery
- a lot of tomatoes were smashed up or broken which was a mess
- rotation of snacks and increasing the variety
- keeping the vegetables fresh

Several teachers also provided thoughtful suggestions for program development and program improvement. Among the suggestions are:

- a program like this one, but including milk products, would be perfect
- I would like educational resources for health and nutrition
- I would like to be able to have somewhere to go to ask for resources to help me teach healthy eating in my classroom
- a good idea would be a possible tour or field trip program to the greenhouses
- I would really like to see the students learning how to grow their own vegetables. Wouldn't it be something to see green houses at every school
- it would be fun to have theme days in the school i.e., health day etc. as a group we could participate in all day health related activities
- it would be great (if possible) that a nutritionist come to school, into our classrooms, and discuss the benefits of healthy eating and the consequences of their choices regarding one's health and well-being now as well as for the future. They could do mini-presentations with the students and have them participate in choosing healthy snacks and healthy meals.

Generally, the majority of additional comments supplied by the teacher referred to a desire to see the JCNP program continue at their schools (e.g., “I hope we will do it again next year”). Many respondents thanked the program coordinator for providing the program to their schools (e.g., “Thank you for including Lourdes. What a fantastic program”), and some teachers also thanked OGVG for donating and delivering the vegetables (e.g., “give the OGVG a big thanks for helping the youth in this project!”). And, as stated by one participant, “hopefully, young children will now become lifetime vegetable eaters.”

Qualitative Summary

In summary, the JCNP program was well received and appeared to be a success from both the students’ and the teachers’ perspective. Most teachers believed, and the overwhelming majority of students indicated, that student vegetable consumption increased from pre to post test. In fact, some students even said that they now ask their parents to buy certain vegetable while they are grocery shopping. These qualitative findings build on the survey findings and add support to the contention that the primary outcome indicators of program success were met for phase one of this pilot project.

The qualitative findings also offer initial support for some of the more general program objectives. For example, both students and teachers mentioned vegetable exposure and peer influence as a motivating factor in students trying some of the vegetables. In some cases, this led to a shift in preference and students discovered that they actually liked a vegetable that they previously thought that they did not like.

Benefits perceived by teachers reflected both the health and nutrition aspects provided by the program, as well as the provision of nutritious food for students who may otherwise not have access. And while the goal of decreased consumption of non-healthy snacks did not clearly emerge for all students at this stage of program implementation (it seems that some students often ate both the vegetables and their non-healthy snack) the program did provide students with a healthy snack alternative.

This qualitative data has provided the program developers with some insight, and a rich source information from which to draw future program considerations.

Section 4: Recommendations

The Growing a Healthier Future School Nutrition Pilot Project has successfully identified a number of elements that could guide future program development and evaluation efforts. The following recommendations include suggestions in two areas: program development, design and integration, and ongoing evaluation planning. These recommendations and suggestions are listed below. It is not intended that all recommendations are adopted simultaneously, as the incremental and progressive nature of the JCNP program are among one of its strongest features.

Program Development, Design, and Integration

- integrate a cultural awareness component to the JCNP program
    - incorporate cultural considerations (e.g., dietary components of ethnic/cultural backgrounds, common methods of preparation etc.) and supplemental cultural information
- aim toward more stratified representation in the next stage of program implementation
    - increase the number of participating schools
    - aim toward geographic representation of the target area or school board(s)
    - aim toward demographic representation of the target area or school board(s)
- consider bilingual availability for future testing initiatives
- increase student involvement in program planning and implementation
    - allow for meaningful (and not token) student participation
        - e.g. pilot with a “kid team” questionnaire. Allow the students to make a part of the program their own.
        - increased student participation would allow the program to reflect an individual school’s flare, personality, or environment
        - schools can have “community service hours” students assist the with distribution of snacks for the primary grade students
        - role-modeling opportunities – older kids can help younger with nutrition and healthy eating information

- as noted in the OSNPPH (2004) call to action, the school curriculum offers an ideal place to teach children about healthy eating and proper nutrition
    - both formal and informal exposure to healthy eating can be met through classroom instruction and through modeling and exposure
- develop age/grade appropriate activity sheets to supplement nutritional and healthy eating information
    - ensure that activities are developmentally suited to the various age groups
    - ensure that the activities are fun
    - develop visual hands-on activities and methods of marking goal achievement
        - e.g., cut outs of vegetables that children can stick onto a picture of something like a bushel basket or a shopping cart to illustrate what vegetables they consumed the previous day. This can be done on an individual, a classroom, or a school level.
    - encourage schools to establish a bulletin board, banners, or posters
- develop a teacher resource CD rom that allows teacher the ability to modify and print the information
    - include student activities or worksheets
    - include potential lesson plans
    - include nutritional information
- include a parent component to the program
    - parent education seminars or workshops
    - create parent information booklets (e.g., provide tips, recipes etc.)
        - supplement information with a “highlight” version on something that is less likely to be thrown away or placed in a drawer (e.g., a fridge magnet).
        - include information that will increase parents knowledge about produce selection and integrating produce into meals and snacks
- increase the selection of vegetables that the program delivers
- include foods from other sectors (e.g., fruits, dairy, grain etc.)
- prepare a projected cost analysis
- develop a communication strategy to make the program and the initiative known
- set short-term, long-term, and process oriented goals and objectives and put in place an evaluation plan to monitor these goals
- maintenance of efforts to build and sustain inter-sectorial partnerships

Ongoing Evaluation Planning

Regular evaluation is a key component to the success of any large scale initiative. It is important to set short-term, long-term, and process-oriented goals and objectives and put in place an evaluation procedure that monitors these goals and reflects and is amenable to any changing circumstance or need. Ensure that ongoing evaluation planning is responsive to input and suggestions from all target groups and program participants.

The following are a few suggestions to consider in the evaluation planning. Evaluation resources are also included in the resource manual that accompanies this evaluation report.

- ultimately, comprehensive evaluation would incorporate measures related to school academic and social functioning associated with improvements in nutrition
- incorporate school demographics in the data collection process to enable predictive analyses
    - describe schools in terms of compensatory education school (e.g., may tend to be lower achieving, experience a greater transition, exhibit a lower average parent education and income level)
    - consider city/district demographics
- aim toward more stratified representation in the next stage of evaluation
    - greater geographic representation of the target area or school board(s) would allow for exploration of cross-region differences
    - greater demographic representation of the target area or school board(s) would allow for exploration of differences related to factors such as average parent education and income level
- include a parent component to future evaluation efforts (e.g., using survey and focus group methods)
    - gain information on purchasing habits
    - gain information on perceptions of the healthy snack program
    - gain information on perceived barriers to getting children to eat vegetables
- consider bilingual accessibility for the next evaluation phase

Section 5: Evaluation Summary

Overall, the Growing a Healthier Future School Nutrition Pilot Project appears to offer a community partnership model that is worthy of ongoing exploration and development. The long-term goal of informing a provincial policy that commits to the creation of a comprehensive student nourishment program is well-served by this pilot initiative. Initial evidence suggests that community partnerships may present a viable and mutually beneficial service delivery model of student nourishment provision. Implementation of program checks and measures, through a commitment to ongoing program evaluation, have been incorporated into this pilot project from the outset. Both Jumpstart and the OGVG have been responsive to participant feedback and this has been reflected in both the program and the service delivery model planning and development. This pilot project represents an important first step in exploring the advantages of a comprehensive inter-sectorial approach to student nourishment programs. The following section presents a brief summary of the key program evaluation findings.

First, the process evaluation revealed that in the two most vital areas the JCNP program offered improvements over the existing snack programs. Most importantly, respondents indicated that the snacks that were provided by the OGVG were of higher nutritional value than were the snacks provided in the original snack program. The Jumpstart program was also ranked as more efficient in terms of time spent to acquire the snacks. There was consensus among the participants that the children responded very positively to the vegetables provided by OGVG, and to the JCNP program more generally. Feedback from program distributors in the pre-pilot schools guided program modifications for phase one of the project. The OGVG increased the variety of vegetables that they provided to the schools, and the produce delivery schedule was increased from once, to twice a week to address the storage and refrigeration concerns of the respondents.

The evaluation of phase one of the Growing a Healthier Future School Nutrition Pilot Project revealed that both of the primary outcome indicators of program success were realized. Both student self-report and teacher-rated vegetable consumption rate showed significant increases at post test. The overwhelming majority of elementary school students (80%) reported that overall, they ate more vegetables since the JCNP program began than they did before the program was in their school. At the secondary level, 57% reported an overall increase in vegetable consumption. The elementary student self-reported rate of daily vegetable

consumption, on average, significantly increased from pre-test (mean = 46%) to post-test (mean = 64%). Notably, at post-test 100% of the teachers from both elementary and secondary schools indicated that they noticed an increase in student vegetable consumption. This finding of increased student vegetable consumption was echoed in the qualitative research.

Regarding vegetable preferences, some evidence was also found for a vegetable exposure and peer influence effect. At the elementary school level liking ratings of the six vegetables included in the questionnaire significantly shifted for both green and red peppers (from a 41% to 50% liking rating for green peppers and from a 35% to 50% liking rating for red peppers). The qualitative data revealed that both students and teachers mentioned vegetable exposure and peer influence as a motivating factor in students trying some of the vegetables. In some cases, this led to a shift in student preference. Almost all (91%) of the elementary school teachers and 100% of the secondary school teachers reported that the program achieved its goal of providing fresh snack alternatives to the students. The program was also perceived as successful in alleviating student in-school hunger, and effect that was more pronounced at the secondary school level (100% at post-test) than at the elementary school level (61% at post-test).

There was preliminary evidence of an increase in basic nutrition knowledge at the elementary school level. The average response for recommended daily allowance significantly shifted toward greater accuracy from pre to post test for elementary students (from 4.4 to 6.3 servings). There was no significant shift at the secondary school level (8 servings at both pre and post) but the majority of students provided answers that fell in the correct range at both testing times.

Some future challenges were also evident however. Implementation of a province wide healthy snack program that required refrigeration would present a challenge for many schools. This issue was raised consistently both in the process evaluation and the post-intervention phase of this evaluation research. Storage of the produce, both space (where to storage the vegetables) and manner (having enough refrigeration room) would have to be built into a comprehensive planning initiative. That each school designate a coordinator or a coordination team would facilitate overcoming this challenge.

This pilot project has met its primary objectives as outlined in the introduction. Preliminary data have provided a base-rate reference and qualitative data have provided the program developers with a rich source information from which to draw future program considerations.

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Ontario Society of Nutrition Professionals in Public Health School Nutrition Workgroup Steering Committee (OSNPPH, March, 2004). Call to action: Creating a healthy school nutrition environment (9pp.).

Supplemental material

Resource Manual

Included with this evaluation final report is a resource manual designed to assist the JCNP coordinators and interested members of the OGVG with ongoing program development, program evaluation, and grant-writing objectives. The resource manual is divided into three sections. In the first section articles related to school health or nutrition initiatives, fruit and vegetable consumption, and general child nutrition issues are the focus. Section two of the manual reproduces some hardcopy examples of student activities and worksheets, and teaching aids. Selected articles on the basics of program evaluation, particularly for community groups or organizations, comprise the third section of this resource manual. All resources included as hardcopies in the resource manual can also be found on the resource CD.

Resource CD

A CD Rom is included with this resource manual. For ease of reproduction, this CD includes the files for the hardcopy materials. In addition to these files, further information on nutrition programs, and a clip art section is also included. The table of contents for the CD follows.

Resource CD Contents

Articles

Birmingham, B., Armstrong Shultz, J., Edlefsen, M. (2004). Evaluation of a five-a-day recipe booklet for enhancing the use of fruits and vegetables in low-income households. *Journal of Community Health, 29*(1), 45-62.

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Activities and worksheets

Breads, cereal, rice, and pasta
Daily record sheet
Favourite dinner
Find the fruit
Fruit
Lunch rating examples
Meat, poultry, and fish
Milk maze
Milk, yogurt, and cheese
Oils, fats, and sweets
Search for the stars wordfind
Shopping list
Vegetables
Healthy Eating Manual: Part One (some activities excepted from manual)
Healthy Eating Manual: Part Three (some activities excepted from manual)

Evaluation resources

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Butterfoss, F., Francisco, V.T. & Capwell, E. M., (2001). Stakeholder participation in evaluation. *Health Promotion Practice, 2*(2), 114-119.

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Programs or program information

Grab 5: School fruit and vegetable project

Healthy youth places: Promoting nutrition

Nutrition services: An essential component of school health programs

Obesity prevention program

OPHA review of student nourishment programs.

Predictors of fruit and vegetable consumption in adults

School lunch salad bars

School-based health promotion: A nutrition education program

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