

BC School Fruit and Vegetable Nutritional Program Evaluation

Summary Report



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Introduction

Background

The BC School Fruit and Vegetable Nutritional Program (BCSFVNP) has been offered in BC public schools (K-12) since 2005, and in First Nations schools (K-12) since 2011, with the +Milk program enhancement available for grades K to 2 since 2013 and K to 5 since 2016. The program delivers fresh, mostly BC-grown fruits and vegetables, and BC-produced milk, directly to participating schools twelve times over the school year. It is funded by the Ministry of Health and the Provincial Health Services Authority, and administered by the BC Agriculture in the Classroom Foundation (BCAITC). Support for the +Milk program is a 50/50 partnership between the Ministry of Health and the BC Dairy Association.

Program objectives

The BCSFVNP is designed to:

- Increase students' exposure to, and willingness to try, fruits, vegetables and milk.
- Increase awareness of locally grown foods.
- Teach safe handling practices for fresh produce and milk.
- Make BC-grown fruits and vegetables, and BC-produced milk available to students in BC schools.
- Support the local economy and build relationships between industry partners by working with local growers and distributors to bring fresh BC products to schools across the province.

Evaluation objectives

In August 2017, Context Research was contracted by BCAITC to evaluate the BCSFVNP program in the 2017-2018 school year. The evaluation focused on assessing:

- Program awareness among students, teachers/coordinators, and families.
- Program impact on students and their families.
- Program use by teachers to support the delivery of the curriculum.

The evaluation aimed to answer the following key questions:

- For students: Is there a relationship between the length of school BCSFVNP participation and acceptability, preference for, willingness to try and actually tried fruits and vegetables, and milk?
- For teachers: What are the teachers' perspectives of the impact of the BCSFVNP, and how do they see it fitting with the new BC curriculum?
- For parents: Is there an impact on families' purchasing behaviour for fruits, vegetables, and milk, as a result of school participation in BCSFVNP?



Methods

Evaluation tools

Online surveys were used to gather data from students in grades 2, 4, 5, 6, 7, 10 and 12, teachers and coordinators, and parents.

The student survey was adapted and built upon from previous versions used in the 2012 and 2013 evaluations, and was designed to assess acceptability, preference for, and willingness to try fruits, vegetables, and milk, foods tried at school and at home, and awareness of BC-grown fruits and vegetables and BC-produced milk.

The teacher and coordinator survey was designed to assess awareness of BC-grown fruits and vegetables and BC-produced milk, gather perspectives of the impact of the program on students over time, and how the BCSFVNP supports and aligns with the new BC curriculum.

The parent survey was designed to assess awareness of the BCSFVNP at their child(ren)'s school, assess parents' perspectives of the impact of BCSFVNP on their families, and gather perspectives of the benefits of the BCSFVNP for their child(ren)'s school.

Evaluation timeline

Evaluation planning started in September 2017, with input from an advisory committee on the evaluation framework and survey tool development. Data collection occurred between May and June of 2018.

Recruitment

Students and parents from a select group of 150 schools were invited to participate in the evaluation. A mix of schools were invited to participate, including schools that had participated in the BCSFVNP for different lengths of time (anywhere from 1 year to 10 years), elementary schools, secondary schools and First Nations schools, a balance of schools from each health authority region, and a representative number of elementary schools that were participating in the +Milk component (approximately two-thirds of BCSFVNP schools).

Teachers and coordinators from all 1456 schools enrolled in the BCSFVNP for the 2017-2018 school year were invited to participate in the evaluation.

Participants

Evaluation participants included:

- 1945 students from 73 schools (Figure 1)
- 1547 teachers and coordinators (Figure 2)
- 1003 parents from 44 schools (Figure 3)

Figure 1. (a) Number of schools and (b) number of students participating in student survey (n=1945).

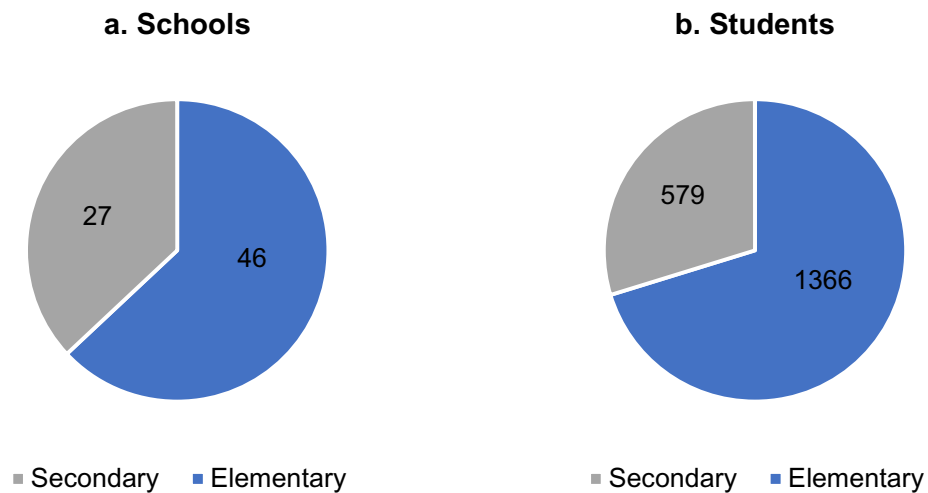


Figure 2. Proportion of respondents associated with various school types, within teacher and coordinator survey (n=1547). Proportions do not add up to 100% because respondents could select more than one school type.

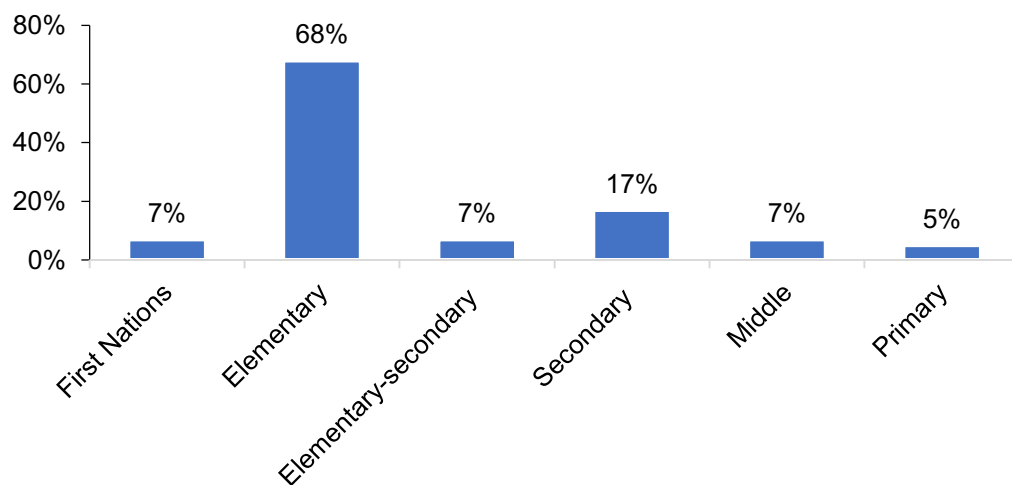
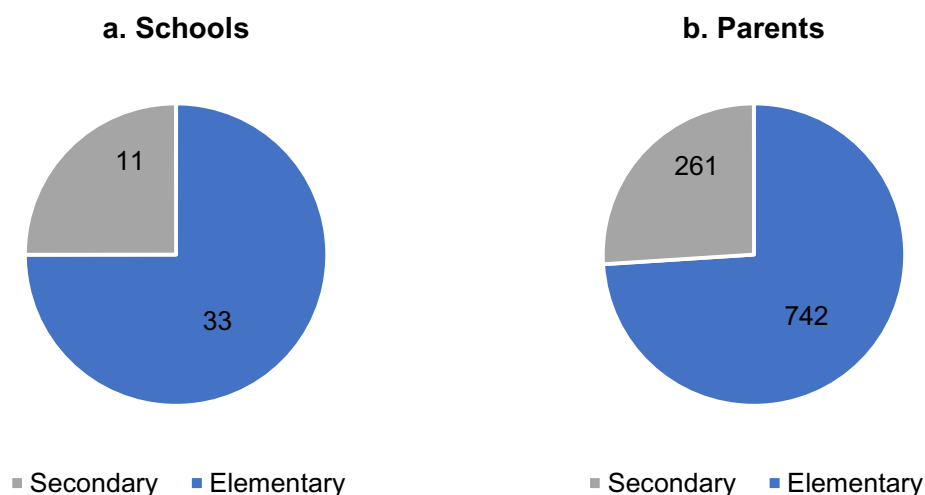


Figure 3. (a) Number of schools and (b) number of parents participating in parent survey (n=1003).



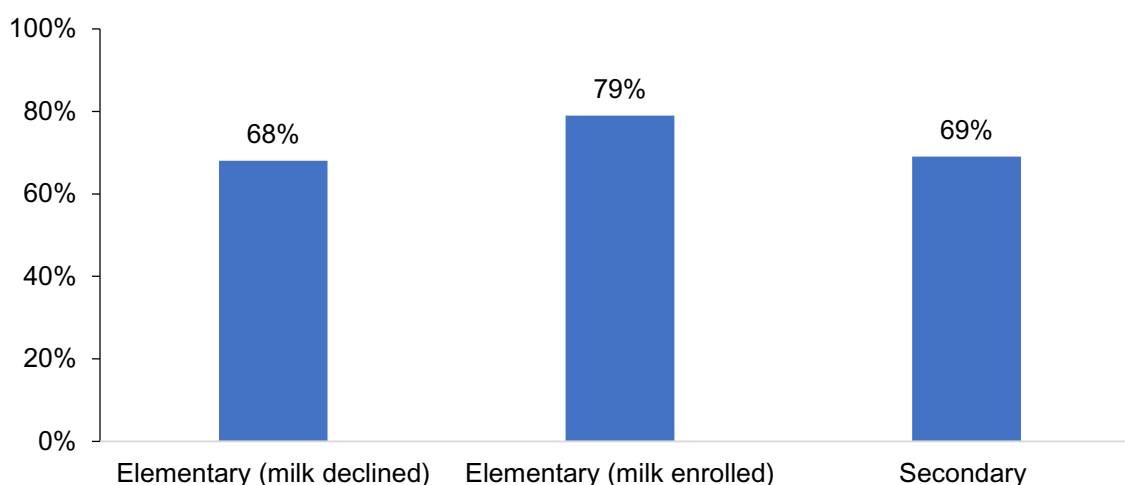
Key findings

Program awareness

Most students (73%, all schools) had heard about the BCSFVNP; however, significantly more elementary school students than secondary school students (82% vs. 71%) were aware that their school participated in the program.

Most parents were aware of the BCSFVNP or BCSFVNP+Milk (74%), though more parents with children at milk-enrolled schools were aware of the program than parents with children at milk-declined schools or secondary schools (Figure 4).

- 59% of elementary and secondary school parents were aware that the program delivers fruits and vegetables to schools 12 times in the school year.
- 60% were aware that the BCSFVNP is free for schools.
- 39% of elementary and 17% of secondary school parents were aware that the program also offers milk and soy beverages to students.

Figure 4. Proportion of parents who were aware of the BCSFVNP or BCSFVNP+Milk (n=1003).

Awareness of, and perceptions on local foods

Students

Students were asked to indicate in their survey their level of agreement with statements about BC-grown foods. Just over half of all students agreed that it is better to eat and buy fruits and vegetables grown in BC. Secondary students were more likely to agree with this statement, compared to elementary students (58% vs 50%).

The longer a secondary school was enrolled in the BCSFVNP, the more likely students were:

- To agree that it is better to eat and buy fruits and vegetables grown in BC.
- To correctly identify fruits, vegetables and milk items as BC-grown.

Just over half of elementary school students agreed that it is better to drink and buy milk produced in BC. Students at elementary schools participating in +Milk were more likely to indicate that milk was produced in BC, compared to students at schools not participating in +Milk (87% vs. 73%).

Teachers and coordinators

Just less than half of teachers and coordinators (42%) indicated that the program increased students' awareness of BC-grown fruits and vegetables.

- A larger proportion of teachers and coordinators (70%) indicated that their own awareness of BC-grown fruits and vegetables increased because of their school's involvement in the BCSFVNP.
- Just less than half (45%) of teachers and coordinators reported that their awareness of how milk is produced in BC increased because of the program.

Parents

- 60% of parents were aware that the fruits and vegetables are primarily BC-grown.
- Over half of parents (56%) indicated that their children knew more about local fruits and vegetables because of their school's participation in the BCSFVNP.

Program impact on students

Learning to care for their health

More elementary students (45%) than secondary students (24%) agreed that the program was a factor in learning to care for their health.

About half of elementary students (46%) and a third of secondary students (32%) reported that the BCSFVNP helped them want to eat more fruits and vegetables.

Willingness to try foods

Secondary students were more willing to try foods compared to elementary students as indicated by a 5% higher score on the food neophobia component of the student survey, which included items such as “I often try new and different fruits and vegetables”. Length of time for school enrollment in the BCSFVNP did not affect willingness to try for either elementary or secondary school students.

The majority of teachers and coordinators from all school types indicated that the BCSFVNP had a positive effect on students' willingness to try fruits and vegetables (67%) and acceptability of fruits and vegetables (71%). Looking across school types, more teachers and coordinators at primary and First Nations schools (80%, both) indicated a positive effect on willingness to try fruits and vegetables for most students than teachers/coordinators at secondary schools (63%). For elementary school teachers and coordinators at milk-enrolled schools, 53% indicated that the BCSFVNP had a positive effect on willingness to try milk, for most students.

Over half of elementary school parents (56%) and less than half of secondary school parents (48%) believed that the BCSFVNP increased their children's willingness to try fruits and vegetables.

Foods tried at school and at home

Elementary students were significantly more likely to have tried foods introduced at school than secondary students (7.1 items vs. 6.6 items, $p < 0.05$) (Figure 5). There was not a significant relationship between schools' length of enrollment in the BCSFVNP and the number of foods tried at school.

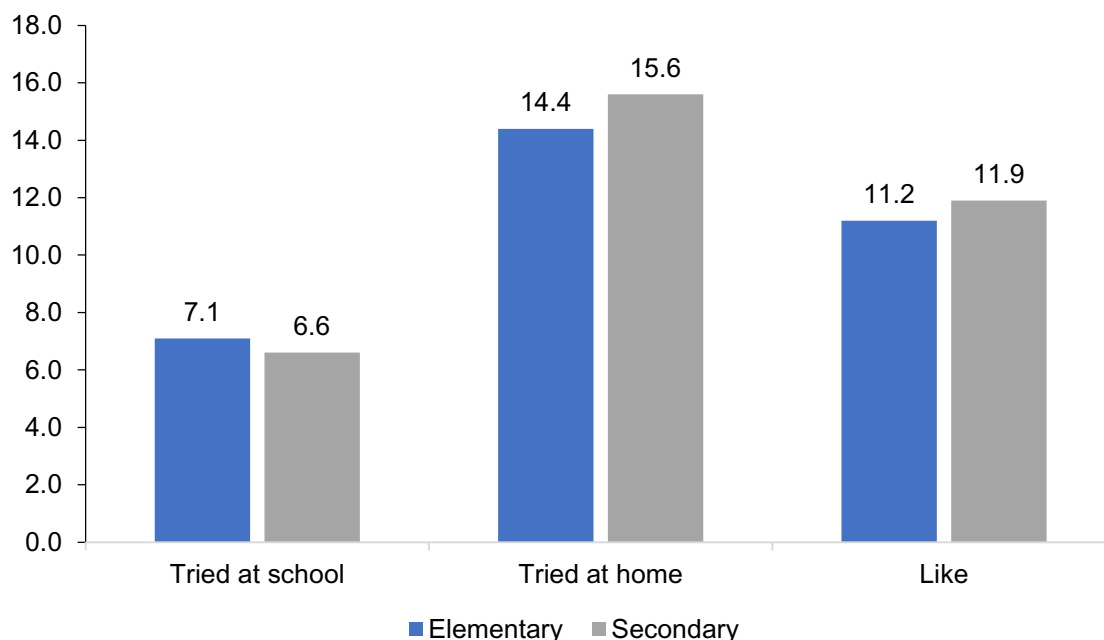
Secondary students reported trying significantly more items at home compared to elementary school students (15.6 items vs. 14.4 items, $p < 0.01$) (Figure 5).

Elementary students at schools participating in +Milk were significantly more likely to have tried milk at school, compared to students at schools not offering +Milk (77% vs. 22%).

The proportion of students who had tried milk at home was not significantly different between students at milk-enrolled and milk-declined schools.

For all students (both elementary and secondary level), there was a small, significant contribution of longer school BCSFVNP enrollment to the number of fruits, vegetables, and milk items that students tried at home.

Figure 5. Number of items tried by students at school, at home, and liked (enjoyed); maximum possible number was 19 (n=1945).



Food preferences, and acceptability of fruits and vegetables

Food preferences

About half of teachers and coordinators (48%) believed that the program had a positive effect for most students on preference for fruits and vegetables. A similar proportion of teachers and coordinators at milk-enrolled schools (44%) indicated that the program had a positive effect for most students on preference for milk.

Secondary students indicated that they liked significantly more items on the list of fruits and vegetables provided in the student survey compared to elementary school students (11.9 items vs. 11.2 items, $p < 0.01$) (Figure 5). There was no association between length of time schools were enrolled in the BCSFVNP and fruits and vegetable preferences.

- Most elementary and secondary school students indicated that they like the taste of fruits (82%), with secondary students significantly more likely than elementary school students to like the taste of fruits.
- A lesser proportion (47%) of all students agreed that they like the taste of vegetables. Again, secondary students were significantly more likely than elementary school students to like the taste of vegetables.

Significantly more students at schools participating in +Milk indicated that they liked milk, as compared to students at milk-declined schools (71% vs. 65%, $p<0.05$).

Most students (65%) at milk-enrolled schools indicated that they liked the taste of milk, with fewer (44%) indicated that drinking milk made them “feel better”. The acceptability variables for milk were not related to the students’ schools’ length of enrollment in the +Milk component of the BCSFVNP.

Acceptability

Fruits and vegetables were significantly more acceptable to secondary school students than elementary school students. For secondary school students, longer enrollment in the BCSFVNP was positively related to acceptability of fruits and vegetables ($p<0.05$).

How students perceive the social environment in relation to fruits, vegetables, and milk relates to their acceptability of these foods. Similar proportions of elementary and secondary school students agreed that their friends (34%) and family (65%) eat lots of fruits and vegetables. There was a trend for a positive relationship between the extent of agreement with “my friends eat lots of vegetables and fruit” and secondary students’ schools’ length of enrollment in the BCSFVNP.

The results were similar for the perceptions of the social environment surrounding milk: a lesser proportion perceived that their friends drank lots of milk (31%) as compared to the proportion that perceived their family drank lots of milk (50%). The scores for perceptions of the social environment surrounding milk were not related to the length of time students’ schools were enrolled in the +Milk component.

Program use by teachers and coordinators

Satisfaction with BCSFVNP resources and with the program in general

Almost all (97%) teachers and coordinators indicated that they were satisfied with the BCSFVNP. As well, most (84%-94%) of those who used the BCSFVNP resources ($n=45$ to $n=430$, depending on resource, e.g., Double Scoop Activity Sheets, Scoop Activity Sheets, A Cow’s Tale) were satisfied with the resources.

Use of BCSFVNP resources

The majority of classroom teachers who responded to the survey (64%) indicated they did not use the Teacher Resource Guide.

The student/parent brochure was most frequently used to support program delivery (48%), followed by the Scoop Activity Sheets (35%). Thirty-six percent of respondents did not use any BCSFVNP resources to support program delivery.

Use of the BCSFVNP to support delivery of the BC curriculum

- 57% of classroom teachers (308 out of 542) reported that they sometimes used the BCSFVNP to support delivery of curriculum in the classroom.
- 8% indicated that they use it frequently.
- 93% of teachers who used the BCSFVNP to support curriculum delivery used BCSFVNP resources once or twice a month.
- 72% of teachers who used the BCSFVNP to support curriculum delivery indicated that the core competency of “Personal Awareness and Responsibility” was supported by the BCSFVNP.
- 70% of teachers reported that the BCSFVNP was most useful in delivering the curriculum in Physical and Health Education.

Teachers used the program to:

- Help teach cooking or nutrition in the classroom (61%).
- Supplement their lessons on the local surroundings – from what is grown locally, to local economies, to sustainability, and beyond (20%).
- Support the science curriculum (11%).
- Support the delivery of their classroom curriculum (8%).

Program benefits for schools

Enjoyment and benefits of program

The vast majority (98%) of teachers and coordinators indicated that they believed their school benefited from the program and that they enjoyed having the program at their school. There were no differences in these results by school type (e.g., secondary school compared to elementary school).

How the program is received by students

Across all school types, most teachers and coordinators (72%) reported that the “majority of students at their school were excited and look forward to the produce”. The highest proportion of teachers and coordinators who agreed with that statement (83%) was at primary schools. The lowest proportion (59%) was at secondary schools.



For teachers and coordinators at milk-enrolled schools, 69% indicated that the “majority of students were excited and look forward to the milk”.

Program impact at home

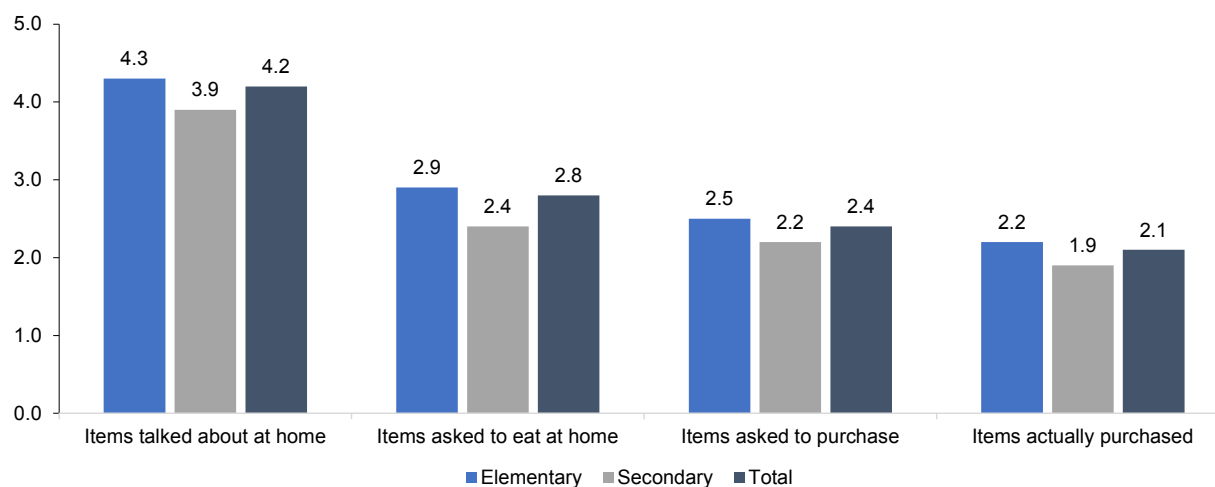
Talking about the program at home, and purchasing fruits and vegetables

Compared with parents of secondary school students, parents of elementary school students reported:

- Talking about more fruits and vegetables at home.
- Getting significantly more requests from their child(ren) to eat fruits and vegetables at home.
- Getting more requests to purchase items.
- Purchasing more BCSFVNP fruits and vegetables based on their child(ren)’s requests (Figure 6).

Number of years the school had participated in the BCSFVNP was not significantly related to the indicators reported in Figure 6. However, parent awareness of the program was significantly (positively) related to selection of fruits and vegetables for each of these indicators (talking about fruits and vegetables at home, asking to eat fruits and vegetables at home, asking to purchase and actually purchasing fruits and vegetables).

Figure 6. Number of BCSFVNP fruits and vegetables discussed at home, asked to eat at home, requested for purchase, and purchased by parents (n=1003).



Parents reported discussing and purchasing some fruits and vegetables with higher frequency than others. Most parents indicated that they talked about apples at home (63%), with mini cucumbers (50%) and carrots (39%) being the next most frequently reported. These trends were similar between elementary and secondary school parents.

Many of these parents indicated that they actually purchased the items based on their child(ren)'s request, for example, 61% of those who talked about apples at home purchased them, and 52% of those who talked about mini cucumbers at home purchased them.

Within milk-enrolled elementary schools, 40% of parents indicated that their child(ren) had asked them to purchase milk since they started at the school or in the program, with 94% of these parents indicating that they purchased the milk that their child requested.

Overall, a third of parents (33%) agreed that their family buys and eats more fruits and vegetables since their children's schools were involved in the program. Similar proportions of elementary school parents agreed with statements regarding increased preferences, knowledge and purchasing of milk (31% to 36%).

Parent perceptions of changes in preferences and knowledge of local foods

About half of parents reported that their children knew more about local fruits and vegetables because of their school's participation in the program. More parents of elementary school students reported an increase in their child(ren)'s knowledge about BC-grown fruits and vegetables as a result of their school's participation in the program, compared to parents of secondary school students (58% vs. 51%, $p < 0.05$).

Similarly, just over half of parents indicated that their child(ren) were more willing to try fruits and vegetables since their school was involved in the program. More parents of elementary school students reported that they perceived a change in willingness to try fruits and vegetables than parents of secondary school students (56% vs. 48%, $p < 0.05$).

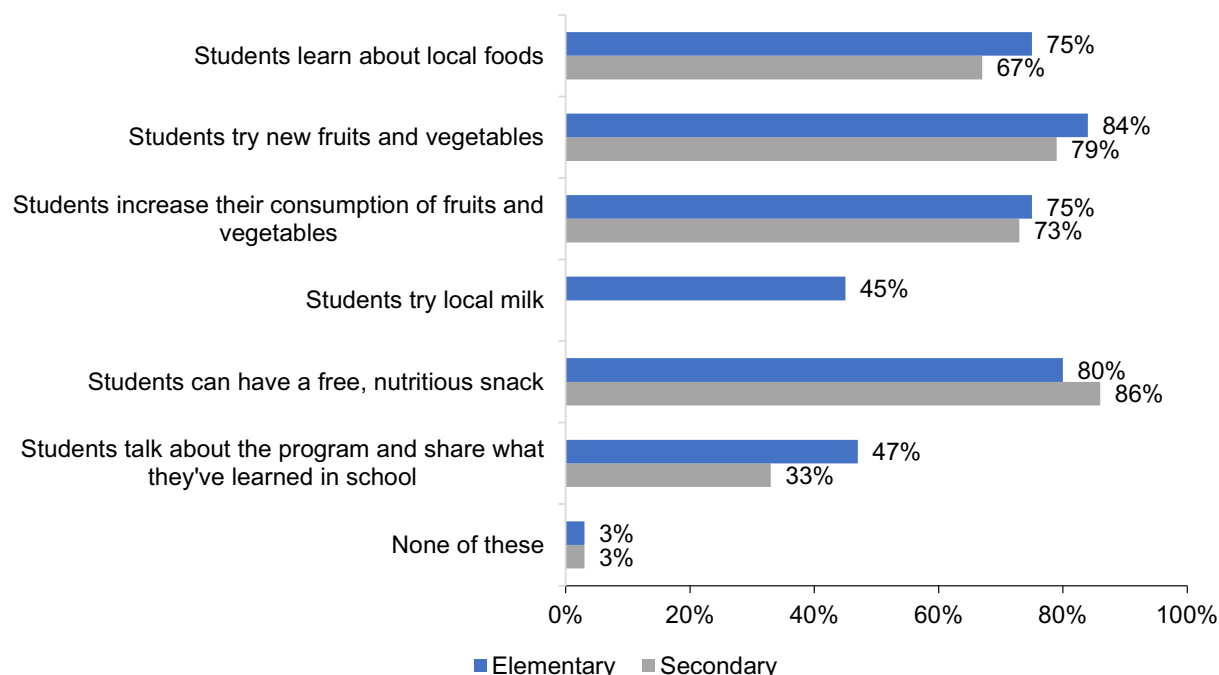
Parent perceptions on program benefits

The majority of parents from both elementary and secondary schools (67% to 86%, depending on benefit) indicated that student learning, trying new fruits and vegetables, increasing consumption of fruits and vegetables, trying local milk, and having a free and nutritious snack were benefits of the BCSFVNP (Figure 7).

Fewer parents (47% for elementary and 33% for secondary school parents) indicated that students talk about the program and share what they've learned in school as a program benefit. Just 3% perceived no benefits of the program.

There was no relationship between schools' years of enrollment in the BCSFVNP and the number of perceived benefits of the BCSFVNP by parents.

Figure 7. Proportion of parents with elementary and secondary school children who perceived specific benefits of the BCSFVNP (n=1003).



Conclusions

The BCSFVNP evaluation highlights that students in both elementary schools and secondary schools are aware of the program and report that they enjoy fruits, vegetables and milk. The program is well received by teachers, coordinators and parents. Though over half of parents and a majority of teachers and coordinators perceived that the BCSFVNP had a positive effect on students' willingness to try fruits and vegetables, there was no relationship between the length of time a school was enrolled in the program and students' survey scores on willingness to try.

There were limitations associated with demonstrating program impact on students within this cross-sectional evaluation design. However, there was some evidence to suggest that the BCSFVNP promoted acceptability and awareness of local fruits and vegetables in older students, and over time, increased the number of fruits and vegetables tried. More students at +Milk schools had tried milk at school, and enjoyed milk, as compared to students at schools not enrolled in +Milk.

Ninety-eight percent of teachers and coordinators believed that their schools benefit from the program and enjoyed having the program at their school. Teachers and coordinators tended to report a positive impact of the BCSFVNP on acceptance and willingness to try fruits and vegetables, and milk, for most students. Most teachers who used the BCSFVNP to support curriculum delivery indicated that the core competency of "Personal Awareness and Responsibility" was supported by the BCSFVNP. For teachers who used the BCSFVNP to support curriculum delivery, it was most common to use the BCSFVNP resources once or twice a month in doing so.

According to parents, the BCSFVNP had some influence on food purchasing habits for their family, with parents reporting that their child(ren) requested they purchase items such as apples, mini cucumbers, carrots and mandarin oranges. Further, a third of parents agreed that their family buys and eats more fruits and vegetables since their child(ren)'s schools were involved in the program (33%). From this, we can interpret that one out of three families' fruit and vegetable purchasing habits were influenced by the BCSFVNP. As well, within milk-enrolled schools, 40% of parents indicated that their child(ren) had asked them to purchase milk since they started at the school or in the program.