Overview of the Program

The following section provides an overview of the Pedestrian Skills Program, including its goal, audience, learning objectives and program components.

Program Goal

To prepare children to safely walk independently to school and other destinations in their community.

Target Audience

Primary Audience: Children transitioning from primary to junior grades (Grades 3 and 4)
Secondary Audience: Parents of children transitioning from primary to junior grades†

Overall Learning Objectives for Students

Using the Ontario Health and Physical Education Curriculum expectations as a guide,[11] learning objectives for the program include:

- Identify the benefits of walking
- Identify safety risks associated with being a pedestrian
- Describe how to walk safely to reduce risks for injury
- Demonstrate safe pedestrian behaviours when walking

Program Components

The program is modeled after the modular format of a successful cycling education program, Cycling into the Future,[12] and includes the following components:

1. **Introductory classroom discussion facilitated by the teacher:** To set the tone and start to build a collective mindset about the value of walking, teachers will discuss with their students the benefits of walking and where they can walk.
2. **Experiential learning led by trained instructors:** Hands-on, classroom learning activities followed by outdoor learning at roadside (75 minutes each).
3. **Follow-up classroom learning by the teacher:** Cross-curricular and integrated learning with other subjects to reinforce what students have learned
4. **Parent engagement:** Parent communication and instructions to reinforce learning at home and foster positive attitudes toward walking and independent mobility.
5. **Evaluation:** Collection and analysis of information about the program's activities, characteristics, and outcomes in order to improve its effectiveness, and/or to inform programming decisions.

Key Pedestrian Safety Behaviours/Skills

Through its different components, the program emphasizes teaching students the following safety behaviours and skills:

- Preparing to walk (appropriate clothing/footwear; minimizing distractions)
- Identifying where to walk

† This secondary audience was not a target audience for the pilot program.

- Identifying safe places to cross
- Assessing risks and making safe decisions

Implementation of the Pilot Program

The pilot project was focused solely on the experiential learning and evaluation components of the Pedestrian Skills Program. In June 2019, the program was piloted with grade three and four students in two schools within the Waterloo Region District School Board: School A and B (see Table 1).

Table 1: A summary of the key characteristics of the schools and the neighbourhoods each school draws from.[13]

School characteristics	School A	School B
Type of school	Elementary (kindergarten to grade eight)	Elementary (kindergarten to grade six)
Year opened	1998	1885
Total number of students	575	330
Neighbourhood characteristics	**School A**	**School B**
Low income (LICO-BT) individuals (%)	7.1%	10.9%
Individuals without a high school diploma (%)	2.6%	11.8%
Lone parents (%)	12.8%	29.8%
No disposable income (%)	26.7%	34.7%

School A is a newer and larger school than B, and includes students of higher socioeconomic status (SES). On the other hand, School B has more low SES students attending.

At School A, the program was piloted over two separate days— two classroom sessions occurred on the first day and two roadside sessions with the same students occurred two days later. At School B, implementation of both the classroom and roadside sessions occurred on the same day. For both schools, the school library was used for the classroom learning component. Individuals from the program planning team served as the program's instructors with five instructors at each classroom session and five to seven instructors at the roadside sessions. All instructors followed a protocol to ensure consistent teaching of key pedestrian safety behaviours/skills.

In the classroom learning session, students participated in four learning activities. A "role-play" activity was completed with the large group and involved students identifying how an instructor could "fix" safety risks before going out for a walk (e.g., shoes tied, no earbuds, bright clothing, etc.). Following this initial activity, the larger group was divided into three smaller groups of approximately eight to 15 students to rotate among three stations. Each station activity was 15 minutes long and led by one instructor. A fourth instructor acted as a timekeeper and assisted

with the movement of students from station to station. A fifth instructor acted as a floater to provide any additional help when needed. These stations included the following activities:

- **'Flashcard' learning activity** – with the use of over-sized flashcards showing photos of various street scenes, students learned about where to walk in different situations (e.g., no sidewalk, multi-use pathways, driveways, construction, parking lots, etc.)
- **'Tabletop' learning activity** – with the use of a large aerial street-view tabletop mat (2D) and movable pieces, students learned about how to cross the road at intersections (with stop signs and traffic lights) and at roundabouts
- **'Thinking cubes' learning activity** – with the use of pedestrian/road infrastructure photographs and a number of influences (e.g., weather hazards, sight line hazards, group of people, dogs/animals, light conditions, and distractions), students learned how to assess risks and make decisions while walking

As a follow-up to the classroom component, students participated in a roadside learning session. During this session, small groups of students applied the concepts learned in the classroom activities to real-world situations during one of two pre-determined 800-1,000 metre walks (45-50 minutes) in the school neighbourhood. Each route allowed instructors to reinforce important concepts for being safe pedestrians at roundabouts, multi-use pathways, mid-block crossings, pedestrian crossovers, driveways, light rail crossings, etc. Each of the four smaller groups contained approximately eight to 11 students, along with one trained instructor and one or two additional adults for supervision purposes (teachers or additional instructors).

Methods

The overarching aim of this process evaluation was to assess whether the Pedestrian Skills Program is practical to be implemented in other elementary schools across Waterloo Region. A process evaluation is a type of program evaluation that applies descriptive research methods to compare the program being delivered with the program that was originally intended by planners.[14] Data collected from a process evaluation can provide insights into the strengths and weaknesses of a program's structure and delivery, which ultimately leads to improvements in the implementation and effectiveness of the large-scale program.[14] Such modifications and improvements, in turn, should lead to improved program outcomes and impacts over time. An outcome evaluation is one that assesses the effectiveness of a program in producing change.[14] Although the evaluation of the Pedestrian Skills Program was mainly a process evaluation, an outcome evaluation measure was used to assess students' change in knowledge before and after participating in the pilot program.

A range of evaluation methods was employed in order to capture the complexities of this program. These evaluation methods were collaboratively developed through a participatory process[15] with the program planning team. Using a participatory process allowed relevant community stakeholders to be actively engaged in developing the evaluation and all phases of its implementation. Ultimately, this ensured that the evaluation focused on relevant questions that met the needs of the program planning team in order to generate data that will affect and improve their work. Table 2 presents an overview of the methods used in this evaluation.

Table 2: An outline of the main purposes for this evaluation and the corresponding evaluation questions and methodology.

Purpose of Evaluation	Key Evaluation Questions	Methodology
Program fidelity: To determine if the program is being implemented as planned.	1. How was the program initially intended to be implemented? 2. What actually happens during the implementation of the pilot program?	• Natural field experiment
Program improvement: To determine what needs to continue and what needs to be changed in order to result in a more effective program design.	3. Do the program's activities meet the specified students' learning objectives? 4. What goes well during implementation of the pilot program and what challenges take place (if any)?	• Student pre/post hands up assessment • Teacher online feedback • Focus group
Program accountability: To determine if the best possible use of program resources is being made.	5. What resources are needed for implementation of the pilot program? 6. Are the used resources adequate and if not, how could they be used more effectively?	• Administrative data collection

1. **Natural field experiment**

   The first component of the process evaluation involved having observers take field notes during the implementation of the pilot program in both schools. Field notes are widely used in qualitative research as a means of documenting needed contextual information.[16] The lead evaluator who was responsible for taking field notes for this evaluation was an "outside observer" who was not involved in the initial planning stages or actual delivery of the program. The lead evaluator's notes were complemented with additional field notes taken by instructors who acted as floaters during some of the classroom and roadside sessions.

   Field notes were taken according to the data collection tools (see Appendix A) in order to track, document, and summarize the inputs, activities and outputs of the pilot program, and describe any other relevant characteristics and/or its context during both the classroom and roadside sessions. These were observations recorded both during and directly after the implementation of both sessions. Once recorded, the raw data from all of the field notes were transcribed using Microsoft Word, and categorized into different themes based on the patterns that were identified. The observations were combined for both schools because the notes were very similar.

2. **Student pre/post hands up assessment**

   In order to measure students' knowledge before and after participating in the program, a hands up assessment was completed at the beginning of each classroom session and

again at the end of each roadside session. The hands up assessment was a type of oral formative assessment that involved students raising their hands if they agreed with something the instructor said. If they did not agree, students were told to keep their hands down. Before beginning, the students were asked to form a large circle facing outwards, close their eyes, and leave a space in between each other so they could not see or sense when the other students raised their hands. The instructor leading the classroom session read 13 different true/false statements (See Appendix B) that addressed pedestrian safety behaviours/skills in the following categories:

- Preparing to walk
- Assessing risks and making safe decisions
- Identifying where to walk
- Practicing pedestrian safety

The lead evaluator counted and recorded the number of hands raised for each statement. Once recorded, Microsoft Excel was used to perform descriptive statistics and represent the results as the per cent of students who answered correctly for each statement. The results from all three sessions were averaged together using the mean value. Corresponding bar graphs were created.

3. Teacher online feedback

After implementation of the pilot program was complete in both schools, the corresponding principals were emailed questions to send out to the teachers that participated. These questions (see Appendix C) focused on gathering the teachers' feedback about how the program went, specifically the effectiveness and quality of the activities that took place. There were also questions that asked about the connection of the program to Health and Physical Education curriculum expectations. These questions were first drafted by the lead evaluator, then reviewed by the program leads before they were sent out to the schools. An online survey tool was used to collect the responses.

4. Focus group

An in-person discussion, facilitated by the lead evaluator with the program planning team, was conducted after implementation of the pilot program was complete. This discussion involved debriefing about what went well and did not go well during implementation, as well as thinking about next steps on moving forward a launch of the full program (see Appendix D). Focus group attendees included a representative(s) from Region of Waterloo Public Health and Emergency Services, Cycling Into the Future, Waterloo Region Walking School Bus, Region of Waterloo Transportation Division, and Student Transportation Services of Waterloo Region. All of the attendees had participated as instructors for the pilot program's classroom and roadside sessions.

During the focus group, the facilitator recorded the discussion notes on flipchart paper. After the discussion was complete, these notes were transcribed and categorized into different themes based on the patterns that were identified.

5. Administrative data collection

The last component of the process evaluation involved gathering data on what resources were used to both plan and implement the program. Data was obtained in order to answer the following set of questions:

- **Finance**: How much money was spent in total to run the pilot program and what was this money spent on?
- **Time**: How many group meetings, personal time, and/or training sessions were used prepare for and run the pilot program?
- **People involved**: How many and what types of people were involved for planning and implementation of the pilot program?

A list of resources was prepared by the lead evaluator after implementation of the pilot program was complete (see Appendix E). This list was then confirmed by consulting the program leads.

Following data collection and analysis, all of the evaluation results were taken into consideration to develop recommendations for each of the main program components:

- Introductory classroom discussion facilitated by the teacher
- Experiential learning led by trained instructors
- Follow-up classroom learning by the teacher
- Parent engagement
- Evaluation

Results

The following section provides the results from each of the different components of the evaluation.

Natural field experiment

In total, 98 students, in Grades 3 and 4, participated in the pilot program. Table 3 below provides more details regarding participation in each school.

Table 3: A breakdown of the participation in both schools.

	School A	School B
# of student participants in total	57 (approximately 28 per each session)	41
Grade(s)	All Grade 3	Grade 3 and 4
# of sessions	2 classroom sessions 2 roadside sessions	1 classroom sessions 1 roadside sessions
Location of classroom session	Library	Library
# of trained instructors present	5	5
# of teachers present	1-3	5-6*
# of students in subgroups	8-10	10-15

*Twice as many teachers/educational assistants were present at School B, likely due to an increased number of students with special needs.

Table 4 below provides a summary of the key observations (divided into six themes) that were made during the implementation of each session during the pilot program.

Table 4: A summary of the key observations in each session.

	Classroom sessions	Roadside sessions

Duration of session	- Length of each station activity (15 minutes) as well as the overall session was adequate and took less time than the expected 75 minutes
	- Actual time of session:
	  - 10 minutes introductions and role-play
	  - 45 minutes for three stations
	  - 5 minutes wrap up
	  - TOTAL: 60 minutes
	- It took longer than anticipated to sign in at the office and set up the stations (5 minutes in addition to 60-minute session time)
		- Length of each walking route (800-1000m / 45-50 minutes) as well as the overall session was adequate and took less time than the expected 75 minutes
		- Actual time of session:
		  - 10 minutes introductions and assigning students into groups
		  - 45-50 minutes walk
		  - 5 minutes wrap up
		  - TOTAL: 60-65 minutes
		- More time was needed before the walk (extra 5 minutes) to review key concepts (preparing to walk; where to walk) in a large-group setting when the roadside session wasn't on the same day as the classroom session

People involved	- Only one instructor was present per station, with one additional lead instructor for the large group portion who acted as timekeeper, and one additional floater (however, floater rarely jumped in to assist other instructors) - Having one or two teachers present in the room was helpful to set the level of expectations for behaviour and intervene when needed - When groups had more than 10 students, the assistance of a teacher was needed more frequently in order to help them focus	- One instructor led each sub-group, with one or two additional adults (teachers and/or extra instructors) who were helpful to deal with behaviour issues, keep the group together, and assist with crossing roadways when the group needed to be divided into two - When groups had more than eight students, crossing the road together was dangerous, especially at roundabouts and busy roads/intersections, as it was difficult to keep students together
Student engagement	- Majority of students were engaged (paying attention, actively participating, asking questions), however, student engagement appeared to decrease as they approached their last (third) station - For those students who were having difficulty focusing, a teacher often had to intervene	- Students asked many questions during and after the walk - Many students were easily distracted during the route (by signs, nature, construction, etc.) and also needed to be continuously reminded to respect private properties (i.e., not walking on the grass) - Since students were walking in a line during the walk, those at the

	Classroom sessions	Roadside sessions
	- It was sometimes too loud to hear in each individual station due to a smaller/cramped library space	back of the group often could not hear the instructor and were less attentive - Students were often walking all over the place; difficult to keep them in pairs

Content knowledge	- Many students knew a lot more than expected (answered the instructors' questions well)
	- All instructors were knowledgeable with the content and were able to present it in a standardized format
	- Concepts and/or questions students struggled with:
	  - What a multi-use trail is
	  - Where to walk when there is not a sidewalk
	  - When to cross at a pedestrian crossover
	  - Pedestrian islands and crossing a roundabout
	  - What to do to make sure drivers see you
	  - Why walk and not run
	  - What to do when there is something unexpected (an animal, collision, etc.)
		- Many examples were found along the routes to talk about key concepts and help students learn important terms (e.g., "mid-block crossing", "pedestrian island")
		- Although instructors knew the material well, information was not presented in a standardized manner across all subgroups (different styles) and not all instructors reiterated key messages or asked questions constantly along the way

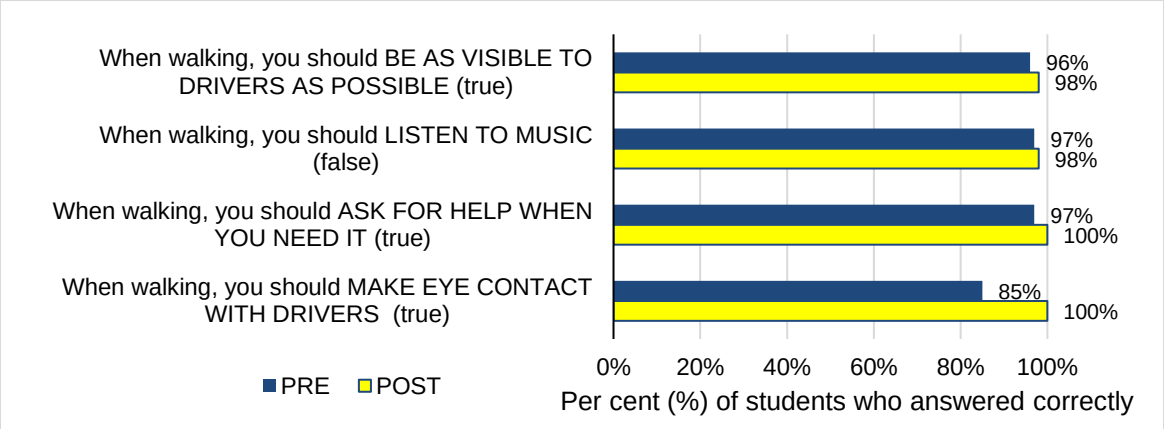
Use of learning resources	- **Thinking cube station:** Using dice to run this station kept students engaged and willing to participate; however, it also resulted in the same cards getting picked over and over again (removing the dice helped the instructor better control which cards were picked). Only three out of six cards were completed during the allotted 15 minutes (too much content). - **Tabletop Station:** Many comments were made by students about how unrealistic the tabletop mat was due to proportion of moveable pieces to the width of the streets. Keeping extra pieces off the tabletop mat was helpful to not get the students distracted.	- Having pre-made maps of the walking routes was helpful for the instructors

Student pre/post hands up assessment

1. **Preparing to walk**

   Most students were already knowledgeable in many areas related to preparing to walk (see figure 1). However, it appeared that making eye contact with drivers was an area where students had the largest knowledge gain.

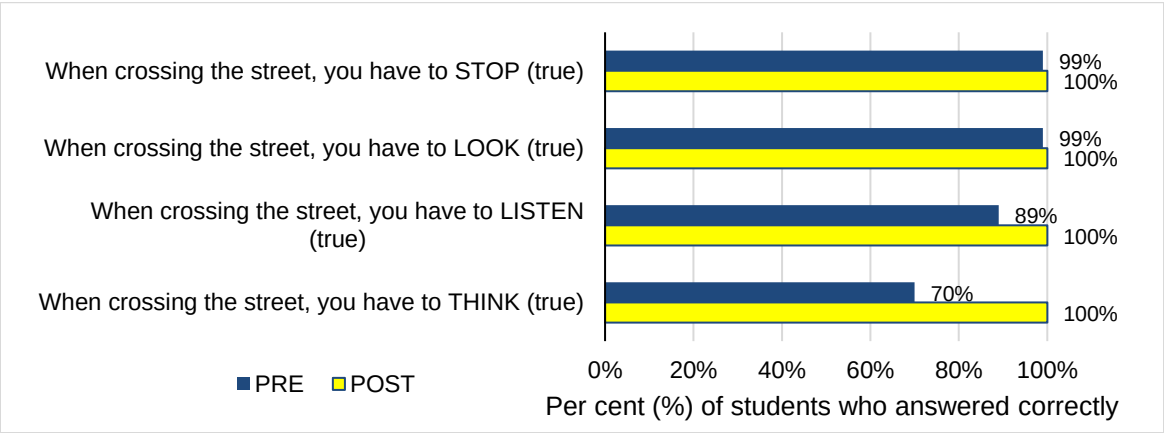
   Figure 1: Per cent of students who answered correctly for the true/false statements on "preparing to walk."



2. **Assessing risks and making safe decisions**

   Majority of students already knew the importance of stopping and looking when crossing the street. However, not as many knew the importance of "listening" and "thinking" (see figure 2). The concept of "stop-look-listen-think" was an essential one that was emphasized throughout both the classroom and roadside sessions, and by the end of the program, 100 per cent of students understood this.

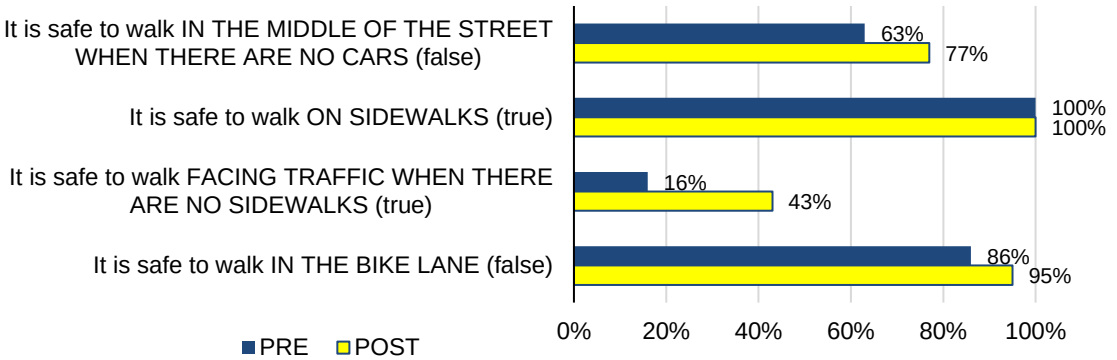
   Figure 2: Per cent of students who answered correctly for the true/false statements on "assessing risk and making safe decisions."



3. **Identifying where to walk**

Out of all the key pedestrian safety skills, identifying where to walk was the concept that students struggled with the most (see figure 3). Although 100 per cent of students knew it was safe to walk on sidewalks before starting the program, only 16 per cent knew it was also safe to walk facing the traffic when no sidewalks were present. Several students also did not know the danger of walking in bike lanes (14 per cent) or the middle of the street (37 per cent). After completing the program, more students were better able to identify safer versus dangerous places to walk, with the largest knowledge gain around where to walk when there are no sidewalks.

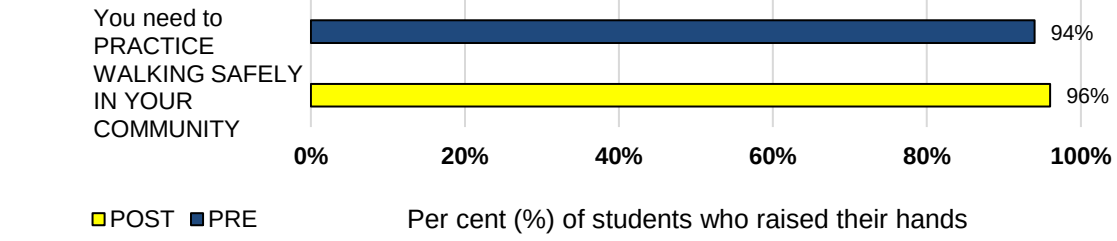
Figure 3: Per cent of students who answered correctly for the true/false statements on "identifying where to walk."



4. **Practicing pedestrian safety**

Both before and after completing the program, majority of students indicated that they need to practice walking safely in their community (see figure 4). This demonstrates that in general, most students are aware of the importance of actively and regularly practicing safe pedestrian skills.

Figure 4: Per cent of students who indicated a need for practicing pedestrian safety.



Teacher online feedback

Only one teacher responded with feedback following the program implementation. It is important to note that a singular response cannot accurately capture the views and opinions of all the teachers that participated in the program. Due to this low response rate, the findings from the teacher online feedback are not reported.

Focus group

The facilitated focus group discussion enabled the program planning team to debrief about the pilot project in order to discuss how implementation of the pilot went, issues that came up, and what changes could be made before implementation of the full program to more schools.

Prior to the discussion, the group reviewed the program's key outcomes (students' learning objectives) in order to define what "success" for the program looked like. As a group, it was decided that the program would be considered "successful" if students:

- understand that the decisions they make on the road are complex; and
- actively and regularly practice the pedestrian skills that they learned.

After the discussion was complete, all of the planning team members agreed that although they were able to achieve success for the pilot project by helping students realize the complexity of pedestrian safety, the skills learned from the program should be continuously applied as they will take months or even years of practice in order to change behaviours.

Below is a summary of the main points that were discussed during the focus group (divided into two main themes with their corresponding sub-themes).

a) Overall program logistics

- **Venue:** Schools were supportive and happy to have us there. The school libraries were a great space for delivering the program as compared to a classroom. For future programs, a large space like the school library would be ideal.
- **Timing:** Timing of each overall session (75 minutes), individual station activity (15 minutes) and walking route (45-50 minutes) were appropriate and should be continued for future programs. Additional time (approximately five to ten minutes) was needed for signing into the schools and setting up, which was not initially accounted for. For future programs, it should be discussed with the school administration about the appropriate time to arrive.
- **People involved:** Having a variety of staff (e.g., instructors, floaters, timekeeper) was helpful for successfully running the different sessions. The teachers were great at giving instructors the opportunity to lead and teach their students. However, they were also able to intervene at certain points to keep the students focused or make connections from the program to concepts learned in class.
- **Delivery:** For future programs, instructors should continue to:
  - reinforce key pedestrian safety messages and big ideas about the importance of walking
  - emphasize the thinking process during all learning activities (stop-look-listen-think)
  - find opportunities to ask students questions throughout the duration of the sessions and have engaging conversations about the content with them

b) Specific program components

- **Classroom sessions:**

- Introduction piece (including “role-play” activity) by the lead instructor was helpful for setting the tone for the rest of the program.
- Having teachers prep their students prior to the program helped to keep them engaged during this session
- For future programs, there should be a minimum of four staff members in each session (three instructors and one floater)
- ***Flashcard station*** – the content for this station flowed well and was easily adaptable to the students’ needs.
- ***Tabletop station*** – students were engaged and able to apply the skills they learned from this station to the roadside session. However, several students were distracted by how unrealistic the mat was.
- ***Thinking cubes station*** – instructor found it difficult to run the station using dice and was also limited in terms of time and the viewpoints presented on the photographs. A revised version of this station should be implemented for future programs in order to incorporate changes such as removal of the dice, decreasing the amount of content being presented, and creating new photographs

- **Roadside sessions:**
  - This session was flexible based on situations on the road, which led to many learning opportunities for the students.
  - Having two different walking routes was helpful to divide up the large group. Both walking routes were a good length and had appropriate level of traffic, as well as real-life learning at roundabouts.
  - Having ten students was too many for the roadside subgroups. For future programs, there should be a threshold for maximum number of students in each session so that it is reasonable and manageable for the instructors (i.e., maximum of eight students in each subgroup). At certain places during the walk (i.e., roundabouts), the groups can also split up to be safer.
  - Students that did not follow instructors in the subgroups made it difficult to complete the components of the walk, especially when certain teachers did not actively help support student safety. For future programs, there should be a minimum of eight adults in each session (one instructor and one to two volunteers/teachers per subgroup). It should also be reinforced to instructors that it is okay to go back to the school if they do not feel safe with the students in their roadside subgroup.
  - Since not all groups came back from the walk at the same time, those students that came early were easily distracted. For future programs, a game could be developed for students to play to keep them constantly engaged.
  - Although having a map of the route was helpful for instructors, for future programs, unique features on the maps where the concept of “stop-look-listen-think” could be reinforced should be marked. Copies of the map should also be provided to the school administration.

- For future programs, after students complete the program, they could be given something to take home with them (e.g., certificate, badge, passport, etc.).

- **Evaluation:**
  - For future programs, providing a paper test at the end of the roadside session to evaluate what the students learned instead may be more effective than doing a pre/post hands up assessment.
  - For future programs, testimonials (i.e., qualitative data) could be collected from students, teachers, parents, etc. to gather information about what people think about the program.
  - Once the full program is implemented, the Planning Team should follow up with instructors to ask if they have enough and appropriate tools for running both the classroom and roadside sessions.

Administrative data collection

Data was obtained regarding the resources (finances, time, and people involved) for planning and implementing the Pedestrian Skills Program Pilot Project (see Table 5).

Table 5: A summary of the resources used.

Finance	Time	People
Learning resources: - One tabletop mat with pieces (cars, people, signs, etc.) - Two dice - Printed photographs and flashcards - Printed maps for roadside session **Instructor attire:** - Six reflective safety vests (in-kind) - 10 whistles (in-kind) **Administrative resources:** - Clipboards - Printed instructor booklets - Pens for observers	**Planning:** - Monthly two to three hour group meetings with the planning team over a 12 month period from June 2018 to 2019 - Additional personal time for resource/program development **Implementation:** - Three four hour days to run a total of three classroom and roadside sessions in two elementary schools	**Planning:** - 10 planning team members from the following organizations: • Region of Waterloo Public Health and Emergency Services (1) • Student Transportation Services of Waterloo Region (3) • Region of Waterloo Transportation Division (1) • Canadian Cancer Society's Walking School Bus Program (1) • Cycling Into the Future (2) • Waterloo Regional Block Parent Program (1) • Waterloo Region Children's Safety Village (1) **Implementation:** - Seven planning team members - One lead evaluator (Master of Public Health Student from Region of Waterloo Public Health and Emergency Services)

Finance	Time	People
TOTAL: approximately $300	**TOTAL:** Planning – occurred over a 12-month period Implementation – 12 hours	**TOTAL:** Planning – 11 individuals Implementation – eight individuals

Discussion and recommendations

Summary of evaluation results

Overall, through various data collection methods, the evaluation results suggest that along with continued practice, the Pedestrian Skills Program is capable of helping elementary school students become safer, more confident pedestrians on residential streets in the school community.

a) Program fidelity: *Was the program implemented as planned?*

The Pedestrian Skills Program was originally designed with the goal of preparing students transitioning from primary to junior grades to safely walk independently to school and other destinations in their community. Although the full program may be offered during the months of November to April to take advantage of weather related factors, the pilot program was implemented in June. Only the experiential learning and evaluation components were implemented for the pilot program; the teacher-led and parent engagement components were not. Instead of a classroom, the sessions took place in the school libraries.

The results from the natural field experiment demonstrated that all of the activities in the classroom and roadside sessions were implemented as planned, with minor changes along the way to improve effectiveness. For the most part, the students, teachers and instructors were all engaged and participated actively during the activities. Although both of the classroom and roadside sessions were planned to be run for 75 minutes each, they only took 60 minutes each due to longer time needed to sign in at the school office and set up the stations. The timing for the individual station activities and walking routes went according to schedule. There was no difference, in terms of feasibility, whether the two sessions were run on the same day or two days apart.

b) Program improvement: *What needs to continue and what needs to be changed in order to result in a more effective program design?*

In terms of meeting the specified students' learning objectives, the results from the hands up assessment indicated that although students were already quite knowledgeable in certain key pedestrian safety behaviours/skills (e.g., walking on sidewalks, not listening to music when walking, the importance of being as visible to drivers as possible, asking for help when needed), they also learned several new concepts, or expanded their knowledge on some concepts (e.g., stop-look-listen-think, walking facing traffic when no sidewalks, making eye contact with drivers).

Overall, this evaluation provided an opportunity for the planning team to consider making several small, but important changes to the Pedestrian Skills Program to result in a more effective program design that could successfully meet all of the students' learning objectives.

From the focus group discussion, changes were recommended for:

- the number of people involved – e.g., having a minimum number of instructors and additional adults present; having a maximum threshold for number of student participants in subgroups (no more than eight students);
- replacing the pre/post hands up assessment with a written assessment;
- redesigning the tabletop mat; and
- revising the Thinking Cubes Station in the classroom session.

New ideas for the program were also recommended:

- providing a giveaway for students;
- collecting testimonials from parents about what they think about the program and what their children have learned; and
- having pedestrian skills-related games incorporated within the program.

Despite all of these changes, several things were recommended to be kept the same, such as:

- the key pedestrian safety messages that were being taught;
- structure of the program; and
- length and type of walking routes.

c) Program accountability: *Was the best possible use of program resources made?*

The main resources that were needed for implementation of the Pedestrian Skills Program included learning materials for the different classroom station activities, maps for the roadside sessions, and instructor attire. Additional administrative resources included clipboards, instructor booklets, and pens (for the observers). In terms of people, a team of seven trained instructors was needed to run a total of three classroom and three roadside sessions for 98 students (approximately 26-41 students per session). In general, these resources were adequate and used effectively to implement the pilot program.

Limitations

There are some complexities and challenges unique to this program evaluation that are worth noting. First, the results and data that were collected during the natural field experiment were limited to the scope and perspectives of the observers. Second, the method for the student pre/post hands up knowledge assessment is a major limitation. In order to avoid any type of bias during this assessment, students were told to close their eyes and stand apart from each other while facing outward in a circle. However, not all students followed this— a few students had their eyes open and put their hands up according to what they saw their peers doing. Therefore, it is conceivable that extraneous factors contributed to the how students responded. Another limitation was that there was only one respondent for the teacher feedback questions. Due to this, an informed conclusion was could not be made about how the pilot program went, from the teachers' perspective. The lack of response from teachers was likely due to timing as the program was implemented during the final month of the school year. Teachers may have been too busy with end-of-year responsibilities to respond with their feedback. In addition, since many of the key stakeholders during the focus group discussion were directly invested in the project, there may have been a positive reporting bias. Lastly, another limitation was the

collection of administrative data retrospectively. In particular, it was not feasible to obtain the exact number of hours that were spent for planning and developing the program as the data collection did not occur as the program was being developed.

Recommendations

The following recommendations are based on the results outlined above. The recommendations have been developed according to the original structure of the Pedestrian Skills Program, specifically the different components identified in the program overview. The purpose of these recommendations are to provide suggested next steps for each program component and help guide implementation of the full program to ensure its continued success.

1. **Continue to provide experiential learning by trained instructors through both classroom and roadside sessions that emphasize on key pedestrian safety behaviours/skills.**

   As demonstrated through the evaluation results, the activities that take place during the classroom and roadside sessions are practical ways of teaching Grades 3 and 4 students about pedestrian safety. Although the program planning team felt that it was valuable for instructors to continue to deliver activities that emphasize all four areas of the key pedestrian safety behaviours/skills (preparing to walk; identifying where to walk; identifying safe places to cross; assessing risks and making safe decisions), the results from the hands up assessment indicated that they should emphasize more on teaching students about identifying where to walk and the concept of “stop-look-listen-think.” Instructors should also place emphasis on the following key concepts as these were the areas students appeared to struggle with during the pilot program, based on the field notes:

   - What is a multi-use trail
   - Where to walk when there is not a sidewalk
   - When to cross at a pedestrian crossover
   - How to use a pedestrian island
   - How to cross at a roundabout
   - What to do to make sure drivers see you
   - Why should we walk and not run
   - What to do when there is something unexpected (animal, blocked sidewalk, etc.)

   In terms of the structure of the program — a classroom learning session followed by a roadside session — this should remain consistent across all schools as the skills discussed in the classroom were able to be easily applied to the walking routes during roadside to reinforce learning. The classroom activities (role-play, flashcard, tabletop, and thinking cubes) worked well for the pilot program and are likely to for future programs as well, as long as they use appropriate resources that ensure consistent student engagement. Although the field notes demonstrated that 60 minutes per session was enough to complete the 800 to 1000 metre walking routes and all four of the classroom activities, taking into consideration the additional time required for signing into the office, set-up and clean-up, it is recommended for each session to remain 75 minutes long. In the winter, this extra 15 minutes would also be beneficial as children may take more time to prepare for the walk due to additional clothing (jackets, hats, mittens, etc.) and the same routes may take longer to walk due to weather-related factors. To ensure that this program is inclusive for all students, it is also recommended

that an alternative to the roadside session be developed for those students who cannot participate in the 800 to 1000-metre walk due to accessibility, lack of appropriate winter clothing, and/or absence of permission from their parents. More detail regarding specific improvements to the program are noted in the 'Summary of Evaluation Results' section above.

Prior to implementation, instructors should be provided with sufficient training in order to equip them with the relevant skills and knowledge for delivering a successful session. It is also recommended for the program to not be implemented in isolation of other activities/initiatives – it should be part of a more comprehensive plan to address school traffic safety. For example, School Travel Planning (STP) is a process that combines Active and Safe Routes to School programming to encourage active and sustainable travel modes to and from school.[17] As such, the recommended course of action would be to first offer the program to those schools already working on STP initiatives. In addition to this, the group may want to consider prioritizing low-income neighbourhoods as a recent study published by Sick Kids Hospital found that children from poorer areas of Ontario are more likely to be hit by drivers of cars than those from wealthier areas.[18] Locally in Waterloo Region, the five-year average rate of motor vehicle collision-related emergency department visits (2013-2017) have also been higher among people with lower household incomes.[1]

2. **Encourage students to actively and regularly practice pedestrian safety outside of the experiential learning sessions, through both teacher and parent engagement.**

   According to the results of the hands up assessment, majority of students indicated that they need to practice walking safely in their community. From the focus group discussion, planning team members also felt that it was important to ensure that the students who participate in this program are exposed to pedestrian safety education outside of the experiential learning sessions. This exposure can be accomplished in two different ways: teacher and parent engagement. Originally, the program model planned to include both of these components however the pilot program focused solely on implementing the experiential learning component. Therefore, it is recommended that the full program be piloted again (including teacher and parent components), in order to:

   - Enhance teacher engagement in pedestrian safety education by creating resources and learning activities they can use in other subject areas
   - Enhance parent engagement in practicing pedestrian safety by developing an action-oriented pedestrian skills guide for students to take home

   Although some introductory classroom discussion resources have already been developed by the Pedestrian Skills Program Staff, additional follow-up learning activities should also be developed. As originally planned, teachers should be encouraged to use the introductory discussion to start to build a collective mindset about the value of walking with their students and discuss with them the benefits of walking and where they can walk. This will not only prepare students and help set the tone for pedestrian safety, but also ensure that teachers are more engaged during the experiential sessions. After the instructor-led sessions, teachers should also be encouraged to review with their

students the main concepts they learned and to integrate this learning into other subject areas. In order to ensure that teachers use these resources, it will be important to have consistent communication with the teachers both before and after implementation of the program at each school. This is why offering the program to schools already working on improving traffic safety in the school neighbourhood is beneficial, as extending the learning into follow up learning activities in the classroom is not just part of the Pedestrian Skills Program, but is also able to help support the other activities the school is working on.

Once knowledge about pedestrian safety is given, it needs to be complimented with frequent and regular practice outside of the classroom.[8] Parents have the opportunity to practice safe pedestrian behaviours/skills with their children at home. However, it is critical to understand that, while parents are significant safety role models for their children, most parents overestimate their own child's knowledge of safe pedestrian practices and do not always model correct pedestrian behaviors.[4] Therefore, it is important for the curriculum to extend beyond the classroom and provide educational guidance for parents and caregivers. Pedestrian Skills Program Staff could develop a pedestrian skills guide that can be used by children and their parents to extend the school-based lessons and practice into the home. These guides would be distributed to each student at the end of the experiential learning sessions and contain key concepts and further practice options. They could also include information about how to know when children are ready to walk alone, tips for teaching children to be safe pedestrians, and a walkability tool for the neighbourhood.

3. **Ensure continued evaluation efforts as new components are added or as the program evolves.**

   This current evaluation focused mainly on assessing the implementation of the experiential learning components led by trained instructors for the Pedestrian Skills Program. Moving forward, the recommended course of action is to continue a process evaluation in order to evaluate any changes that are made to the program. For example, once the teacher and parent engagement components are incorporated into the full program, it would be beneficial to gather their feedback regarding the resources used. Insight about the program's overall impact could also be obtained through testimonials from parents and teachers about what they think about the program and what their children/students have learned. An iterative process evaluation will ultimately enable program staff to make modifications as needed in order to strengthen the quality of the program.

   As indicated in the evaluation results, the program planning team also felt that an assessment of student learning should continue being implemented before and after each experiential learning component. Therefore, replacing the hands up with a written version should be considered in order to ensure that pre/post knowledge data among students is collected with limited bias. Conducting a full outcome evaluation for this program may not be needed as the research already demonstrates the effectiveness of such interventions in increasing children's pedestrian skills.[8–10]

It is important to note that this program is one part of a broader strategy that aims to change pedestrian safety behaviour among children; therefore, it cannot be evaluated in isolation. Instead, to ultimately lead to improved pedestrian safety outcomes, it is recommended that the data obtained from this program be incorporated into a larger, more comprehensive evaluation for all school travel planning initiatives.

Conclusion

Overall the Pedestrian Skills Program appears to have stimulated energy and momentum in the area of pedestrian safety in Waterloo Region. However, it is important to note that a single intervention alone cannot change behaviours but can be used as a tool to start the critical learning about pedestrian safety at home with parents— this is fueled by consistent key messages both in other classroom subjects as well as across the various road safety programs that children participate in. Given this, the strengths of this program are in its experiential learning sessions in the classroom and roadside, while areas for growth are identified in teacher and parent engagement. As suggested, there are also many opportunities for evaluation efforts moving forward to capture the evolution of the Pedestrian Skills Program at different elementary schools throughout Waterloo Region.

References

1. Ambulatory Emergency (2008-2017), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. 2018.

2. Inpatient Discharges (2008-2017), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. 2018.

3. Barton BK, Huston J. The roles of child, parent and environmental factors in pedestrian supervision. *Int J Inj Contr Saf Promot*. 2012;19(2):153-162. doi:10.1080/17457300.2011.635210

4. Muir C, Devlin A, Oxley J, Kopinathan C, Charlton J, Koppel S. Parents as Role Models in Road Safety. 2010:77.

5. xU C. Understanding decision-making associated with children being driven to school and moving toward Active School Travel. 2017. https://theses.ubn.ru.nl/bitstream/handle/123456789/5530/Xu%2C_Chang_1.pdf?sequence=1.

6. Faulkner GE, Richichi V, Buliung RN, Fusco C, Moola F. What's "quickest and easiest?": Parental decision making about school trip mode. *International Journal of Behavioral Nutrition and Physical Activity*. 2010;7(1):62. doi:10.1186/1479-5868-7-62

7. Marzi I, Reimers AK. Children's Independent Mobility: Current Knowledge, Future Directions, and Public Health Implications. *Int J Environ Res Public Health*. 2018;15(11). doi:10.3390/ijerph15112441

8. Systematic review and meta-analysis of behavioral interventions to improve child pedestrian safety. - PubMedâ□"NCBI. https://www.ncbi.nlm.nih.gov/pubmed/24864275. Accessed July 11, 2019.

9. Hawksley R, Fylan F. Evaluation of the Stepping Out pedestrian training scheme for 7-9 year olds. 2010. https://www.roadsafetyobservatory.com/Evidence/Details/10671.

10. Whelan K, Towner EML, Great Britain, Department for Transport. *Evaluation of the National Child Pedestrian Training Pilot Projects*. London: Department For Transport; 2008.

11. Ontario G of. Health and Physical Education. http://www.edu.gov.on.ca/eng/curriculum/elementary/health.html. Accessed July 11, 2019.

12. Cycling Into The Future. http://www.cyclingintothefuture.com/. Accessed July 11, 2019.

13. Holliday C. A Community Fit for Children: A Focus on Young Children in Waterloo Region. 2016. http://www.earlyyearsinfo.ca/uploads/2/1/4/6/21464250/community_fit_2016.pdf.

14. Types of Evaluation. Centres for Disease Control and Prevention. 2014.

15. Zukoski A, Luluquisen M. Participatory Evaluation. 2002. https://depts.washington.edu/ccph/pdf_files/Evaluation.pdf.

16. A Guide to Field Notes for Qualitative Research: Context and Conversationâ□"Julia Phillippi, Jana Lauderdale, 2018. https://journals.sagepub.com/doi/abs/10.1177/1049732317697102. Accessed July 11, 2019.

17. Waterloo Region School Travel Planning. 2015. https://www.regionofwaterloo.ca/en/regional-government/resources/Reports-Plans--Data/Public-Health-and-Emergency-Services/2015WRSTP_Presentation.pdf.

18. Rothman L, Macarthur C, Wilton A, Howard AW, Macpherson AK. Recent trends in child and youth emergency department visits because of pedestrian motor vehicle collisions by socioeconomic status in Ontario, Canada. *Injury Prevention*. April 2019:injuryprev-2018-043090. doi:10.1136/injuryprev-2018-043090

Appendices

Appendix A

CLASSROOM SESSION: FIELD NOTES

Name of school: _____ **Date:** _____

Description of school: _____

Location(s) for session: _____

Agenda for program implementation: _____

Total # of instructors: _____ **Total # of students:** _____ **Total # of teachers:** _____

Demographic characteristics: _____ *girls* _____ *boys* _____ *Grade 3* _____ *Grade 4*

Observations for individual sub-group during each station:

# of instructors in sub-group: _____ **# of students in sub-group:** _____

	Roleplay	Flashcard	Table-top	Thinking cubes
Are students engaged? (i.e. Paying attention, actively participating) If no, why not?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Does the teacher need to intervene at any point? If yes, how/why?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Does the instructor have difficulty with the material? If yes, why?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Are the used learning resources appropriate? Why or why not?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Are the right numbers of people (students, instructors) involved? If no, why not?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Is the length of each station appropriate?	_____ mins	_____ mins	_____ mins	_____ mins
	☐ Yes ☐ No, too long ☐ No, too short	☐ Yes ☐ No, too long ☐ No, too short	☐ Yes ☐ No, too long ☐ No, too short	☐ Yes ☐ No, too long ☐ No, too short

What questions do students ask?	What questions do students have difficulty responding to?

Overall length of classroom session: _____

Was this amount of time appropriate? ☐ **Yes** ☐ **No, too long** ☐ **No, too short**

Are there any unexpected occurrences that take place during the course of the classroom session?

Overall, what went well?	Overall, what didn't go well?

Is there anything additional that should be done to help ensure that the classroom session runs more smoothly (i.e. suggestions/changes)?

ROAD-SIDE SESSION: FIELD NOTES

Name of school: _____ **Date:** _____

Description of school: _____

Agenda for program implementation: _____

Total # of instructors: _____ **Total # of students:** _____ **Total # of teachers:** _____

Demographic characteristics: _____ *girls* _____ *boys* _____ *Grade 3* _____ *Grade 4*

Observations for individual sub-group during the session:

# of instructors in sub-group: _____ **# of students in sub-group:** _____

Are students engaged? (i.e. Paying attention, actively participating) If no, why not?	☐ Yes ☐ No
Does the instructor have difficulty with the material? If yes, why?	☐ Yes ☐ No
Are the used learning resources appropriate? Why or why not?	☐ Yes ☐ No
Are the right numbers of people (students, instructors) involved? If no, why not?	☐ Yes ☐ No
Is the length of the walking route appropriate?	_____ mins ☐ Yes ☐ No, too long ☐ No, too short

Are there any unexpected occurrences that take place during the course of the road-side session?

Overall, what went well?	Overall, what didn't go well?

Is there anything additional that should be done to help ensure that the roadside session runs more smoothly (i.e. suggestions/changes)?

Appendix B

STUDENT HANDS-UP ASSESSMENT

Name of school: _____ **Date:** _____

Total # of students in classroom session: _____

Total # of students in roadside session: _____

Statement	Number of hands up			
	PRE (before classroom session)		POST (after roadside session)	
1. When crossing the street, you have to _____				
a. Stop (correct) b. Look (correct) c. Listen (correct) d. Think (correct)	A		A	
	B		B	
	C		C	
	D		D	
2. It is safe to walk _____				
a. In the middle of the road when there are no cars (not correct) b. On sidewalks (correct) c. Facing traffic when there are no sidewalks (correct) d. In the bike lane (not correct)	A		A	
	B		B	
	C		C	
	D		D	
3. When walking, you should _____				
a. Be as visible to drivers as possible (correct) b. Listen to music (not correct) c. Ask for help when you need it (correct) d. Make eye contact with drivers (correct)	A		A	
	B		B	
	C		C	
	D		D	
4. You need to practice walking safely in your community.	Yes		Yes	
	No		No	

Appendix C

In your opinion, how effective were the following activities at engaging students in learning about pedestrian safety?

	5 Very effective	4	3	2	1 Not effective at all	Please provide any suggestions on how to make the activity more engaging.
'Roleplay' learning activity (students identified how to "fix" safety risks on Alex when preparing to walk)	○	○	○	○	○	
'Flashcard' learning activity (students used photographs to learn about where to walk in different situations)	○	○	○	○	○	
'Table-top' learning activity (students learned about safe crossing locations using a large aerial street-view table-top mat and movable pieces)	○	○	○	○	○	
'Thinking cubes' learning activity (students learned about different locations and how various factors can influence their thinking and decision-making when walking)	○	○	○	○	○	
Roadside learning session (students applied concepts learned in the classroom to real-world situations in the school neighbourhood)	○	○	○	○	○	

How well did this program meet the curriculum expectations related to Healthy Living for Grades 3 and/or 4?

Expectations not met				Expectations exceeded
1	2	3	4	5

If you have any suggestions for how to better meet Healthy Living curriculum expectations, please provide them below.

Have you extended the learning from this program into other subject areas outside of Healthy Living (e.g. science, geography, social studies, etc.)?

- No
- Yes (please explain)

If we were to provide you with curriculum support resources that incorporate pedestrian skills information into other subject areas (e.g. science, geography, social studies, etc.), how likely are you to use them?

Not likely to use				Very likely to use
1	2	3	4	5

If you have any additional comments or suggestions about curriculum support resources, please provide them below.

Overall:

What do you think went well in this program?

What did not go so well?

Do you have any suggestions/changes to improve the program?

Would you recommend implementing this pedestrian skills program to other elementary schools in Waterloo Region?

- Yes
- No (please explain why)

Appendix D

Pedestrian Skills Program: Focus Group Discussion

Opening (10 min)	
• **Purpose of the meeting**: To discuss how implementation of the pilot pedestrian skills program went, address key issues and decide on next steps on moving forward in regards to implementation of the full program. • Before starting: hand out a summary of the field notes [give 5 min to read over]	
Debrief (30-40 min)	**Next Steps (30-40 min)**
Overall, what went well throughout the duration of the program's activities? What didn't go well? • What were some key observations made during implementation? What key issues arose? • What are the strengths and weaknesses of this program? • What does success for the program look like? Did we achieve this? • Were the program resources/input adequate? How could the resources be used more effectively?	**Taking the previous Q's/A's into consideration, what changes are needed to develop the most effective program design for achieving the intended program outcomes?** • What are the intended program outcomes? (refer to learning objectives) • What will we continue to do moving forward? What will we do differently? *(this includes all phases: planning, implementation and evaluation)* • What are the next steps for modifying this program?
Closing (5 min)	
• Summarize how the conversation went and if it met the initial purpose	

Appendix E

ADMINISTRATIVE DATA COLLECTION

FINANCE	**Newly-bought Items**	**Quantity**	**Cost ($)**
	• • •		
	In-kind Contributions	**Quantity**	**Cost ($)**
	• • •		
	TOTAL:		
TIME	**Date(s) of Group Meetings and/or Training Sessions**	**Time (hrs)**	
	• • •		
	Additional Time for Resource/Program Development	**Time (hrs)**	
	• • •		
	TOTAL:		
PEOPLE	**Type/Position**	**Number**	
	• • •		
	TOTAL:		