

TABLE OF CONTENTS

<i>Atii Gameshow</i>	<i>3</i>
<i>Background</i>	<i>3</i>
<i>Implementation</i>	<i>4</i>
<i>Partnerships</i>	<i>4</i>
<i>Evaluation</i>	<i>5</i>
<i>References</i>	<i>10</i>

ATII GAMESHOW

Healthy Living Intervention for School Children in Nunavut.

Winter 2011-2012

BACKGROUND

The purpose of this project was to improve the ability of Inuit children to make healthy choices about food and activity and carry health knowledge forward with them into adolescence and adulthood; to improve health literacy in Inuktitut; to engage children in a fun, team-style health promotion game; to promote and evaluate a local intervention developed by young, motivated Inuit youth workers in Nunavut.; to hire and train youth to lead and implement and deliver the intervention.

The mandate of the Qaujigiartiit Health Research Centre is to improve northern health outcomes through research and program development - this network is and must be a community driven, northern lead, health and wellness research network that facilitates the identification of and action on health priorities to address health disparities of Nunavummiut. This project is a group effort and the partners are partners Nunavut Tunngavik Inc.; Qikiqtani Inuit Association; and University of Toronto.

We worked together to improve and validate the health and nutrition-related content of the game; to formalize the game with the development of a manual in English and Inuktitut for the game's operation; the fine-tuning of a special wheel and posters; and the index cards with questions and answers in Inuktitut. We worked with a Nunavut-based graphic design company to produce the pilot games; pilot the game in Iqaluit and Arviat, Nunavut in Fall 2011; and evaluate the game and the process followed by the partners. The evaluation format oral evaluations through sharing circles and group dialogue with teachers and student participants, as well as the use of pedometers to monitor physical activity.

The project results will be celebrated and shared with communities and partners via community radio; website; meeting of the partner organizations and dissemination through local networks among the partner organizations; through the school and parent organizations in Nunavut; with government partners in health promotion through information-sharing through out website, discussions, meetings, and presentations.

PROJECT OBJECTIVES

1. To improve the ability of Inuit children to make healthy choices and carry health knowledge forward with them into adolescence and adulthood
2. To improve health literacy in Inuktitut
3. To engage children in a fun, engaging health promotion activity
4. To promote and evaluate a local intervention developed by young, motivated Inuit youth workers in Nunavut.
5. To hire and train local youth (30 or less years in age) to lead and implement the project

IMPLEMENTATION

Three separate pilots of the Atii! Game were conducted in November 2011 (Table 1). Schools were notified 6 weeks prior to pilots and pilots were incorporated into existing curriculum goals around healthy lifestyles. One day prior to each pilot, the research team visited the schools, brought game materials, met with principals and staff and selected a location within the school for the game activities. On the day of the pilot, the research team assembled the game and conducted the pilot with classroom teachers participating as assistant facilitators. Verbal assent was elicited from each child prior to placement of accelerometers. Anonymity of children was preserved; the only identifying information collected was the age of each child, which was provided by teachers (age of child is needed to evaluate physical activity data from accelerometry).

Table 1. Selected information on Atii! pilots

<i>Location</i>	<i>Date</i>	<i>Facility</i>	<i>No. of child participants</i>	<i>Age range (years)</i>	<i>Duration (minutes)</i>
Arviat NU	16 Nov 2011- am	Levi Angmak Elementary School	8	9-11	50
Arviat NU	16 Nov 2011 - pm	Levi Angmak Elementary School	22	9-11	45
Apex NU	22 Nov 2011 - pm	Nanook School	20	5-11	76

PARTNERSHIPS

Each members of the partnership team played a specific role in the project:

Qaujigiartiit health Research Centre: Gwen Healey provided overall project support and administration, coordination and team leadership. An admin person from Qaujigiartiit also provided support to the project. Gwen hired and supported the project coordinator, and

provided intervention research and evaluation knowledge to the design and implementation of the intervention.

Qikiqtani Inuit Association: Becky Kilabuk designed the game and worked with Gwen Healey (QHRC) and Tracey Galloway (UofT) to improve the content of the game with a greater focus on northern foods, country foods, Inuit games and activities, and Inuktitut language. Becky led the 3 pilots of the game in 2 schools in Nunavut and was the creative mind behind the visual design of the materials as well as the content.

University of Toronto: Tracey Galloway supported Becky Kilabuk in the implementation of the pilots, collected notes, took photographs, and monitored the use of pedometers before and after the game. Tracey analysed the final evaluation data for the game use and developed the academic poster presented at the International Polar Year conference in Montreal in April 2012.

Nunavut Tunngavik Inc.: Sharon Edmunds-Potvin provided support-in-principle for the project and guidance when needed. This organization will take the findings of the project and potentially move research and policy forward within their organization.

Overall, the partnership team was very strong and all members made excellent and positive contributions. This team will pursue the Phase 2 call for proposals from the Public Health Agency of Canada to continue this project and expand it into other schools in Nunavut and communities in Canada.

EVALUATION

i. Quantitative assessment of children's knowledge

The game facilitator (Kilabuk) conducted pre- and post-game surveys to assess both general knowledge and the level of enthusiasm among children for game subject matter. Surveys consisted of five questions asked of participants who were seated consuming pre- and post-game snacks. Questions were asked using an energetic, upbeat style that reflected the facilitator's approach to conducting the game. The questions required yes/no, show-of-hands and shout-out responses. An observer (Galloway) measured the prevalence of correct and incorrect answers. The pre- and post-tests included identical questions, to evaluate changes in knowledge level and enthusiasm among participants. Table 2 summarizes the results of pre- and post-game surveys:

Table 2. Responses to pre- and post-test surveys

<i>Question</i>	<i>Pilot and survey</i>	<i>Group response</i>
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Do children need to eat fruit and vegetables every day? (Yes) <i>Follow-up:</i> How many servings of fruit and vegetables do children need to eat every day to stay healthy? (5-10)	Arviat am pre-test	Responses were generally hesitant. Children responded “yes” to the first question and gave a range of hesitant responses to the follow-up (1-3 servings).
	Arviat am post-test	Responses were enthusiastic. Children quickly responded “yes” and “5-10” servings.
	Arviat pm pre-test	Responses brisk and enthusiastic. Answered first question correctly. Responses to follow-up ranged from 1-5 servings.
	Arviat pm post-test	Responses brisk, correct.
	Apex pre-test	All said “yes” but only a few made guesses as to the follow-up, ranged from 1-3. A single child responded “5-10”.
	Apex post-test	Response quick, universal, accurate.
Name three Inuk foods that are good for you.	Arviat am pre-test	Two children easily named 3 Inuk foods.
	Arviat am post-test	All children called out the names of Inuk foods, 5 different foods in total.
	Arviat pm pre-test	Four children were quick to name three Inuk foods.
	Arviat pm post-test	All children named three Inuk foods.
	Apex pre-test	Many children quickly named three Inuk foods.
	Apex post-test	All responded quickly, accurately.
Which drink is more healthy, milk or pop?	Arviat am pre-test	Responses were correct (water) but quiet.
	Arviat am post-test	Responses were brisk and correct.
	Arviat pm pre-test	All identified water as the healthier drink choice.
	Arviat pm post-test	All selected water.
	Apex pre-test	All children quickly named water. Each was holding a full personal water pouch provided by the school.
	Apex post-test	Response quick, correct.
Do you know the Inuktitut word for (insert three locally available foods, for example caribou meat, dried caribou, fish)?	Arviat am pre-test	Five children easily provided the Inuktitut words for locally-available foods.
	Arviat am post-test	All children called out the words.
	Arviat pm pre-test	Half of children could provide the Inuktitut words.
	Arviat pm post-test	All children contributed Inuktitut words.
	Apex pre-test	Three children provide Inuktitut words.
	Apex post-test	Half of children provided Inuktitut words.
Name three things that children can do to stay healthy (make healthy food and beverage choices, eat country/Inuk foods, be physically active, get adequate sleep).	Arviat am pre-test	Three children contributed the responses: exercise, keep moving, stay busy.
	Arviat am post-test	Children responded: be physically active and eat healthy foods.
	Arviat pm pre-test	Three children contributed the following: run, jog, exercise.
	Arviat pm post-test	The majority of children identified both physical activity and healthy eating as contributors.
	Apex pre-test	While majority of respondents identified “exercise, run”, one child mentioned “eat healthy”.
	Apex post-test	All responded but with both physical activity and healthy eating.

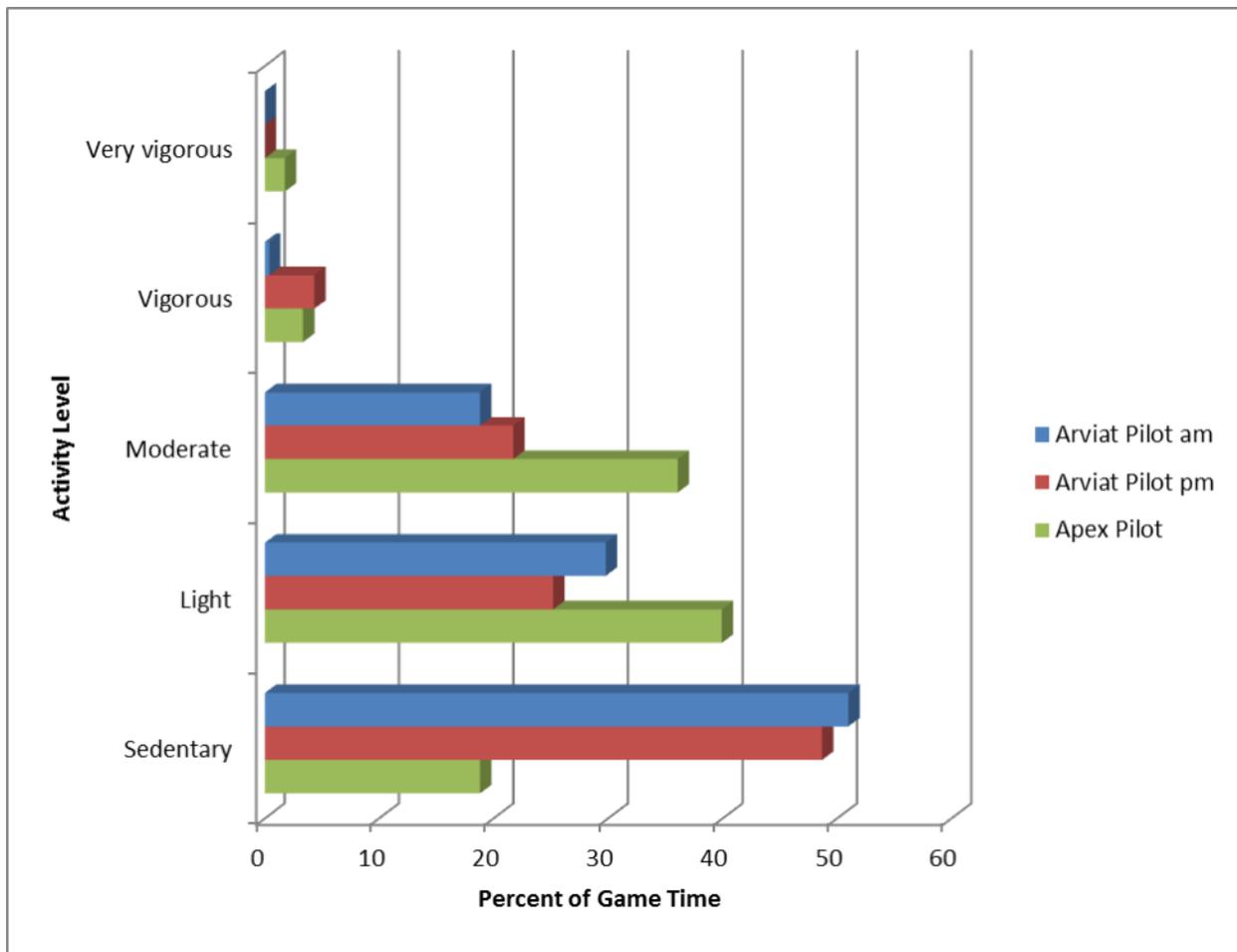
Comparison of the results of pre- and post-testing yields the following key findings:

- Many more children provided responses to survey questions after the game, compared to before the game.
- Responses to post-test surveys were provided in a more brisk fashion than in pre-test surveys.
- Accuracy of response improved after game play.
- We believe this demonstrates that Atii! game play increases children's level of enthusiasm on the subjects of nutrition, physical activity, Inuit cultural knowledge and health.

ii. Quantitative assessment of children's physical energy expenditure during the game

In recent studies, accelerometry has proven an effective tool for measuring sedentary and physically active behaviours in children (Yildirim et al. 2011). During the pre-test focus group, children were fitted with Actigraph accelerometers programmed at 1-second epochs (Troost et al. 2005) which were worn throughout the game session and removed at the post-game focus group. With the assistance of the classroom teacher, the age and sex of children were recorded by the observer (Galloway) and results (Figure 1) were compared to age- and sex-appropriate cutoffs to determine thresholds of PA (Freedson et al. 2005; Mattocks et al. 2007).

Figure 1. Physical activity results from accelerometry



- Overall, despite differences in the duration of the game, the Atili intervention resulted in a substantial amount of light and moderate physical activity for participants. This is difficult to achieve in a large group setting and attests to the creativity and energy of the game’s facilitator (Kilabuk).
- The three pilots provided the opportunity to test the effects of various approaches to the game on physical activity. We varied several key components of the game’s organization in the different pilots and tested the outcome on accelerometry results. For example, we played music throughout the afternoon pilot in Arviat, which may have resulted in a higher energy level among participants. We observed a lower amount of sedentary activity and a higher amount of moderate and vigorous physical activity among participants of the Arviat pm pilot compared to the am pilot.
- Two substantial changes were implemented between the Arviat and Apex pilots: at Apex, we located the game in the school’s gymnasium and we did not use chairs or benches, meaning children had to rise from a seated position on the floor to take part

in the various activities. We believe the larger space and lack of conventional seating resulted in significantly lower level of sedentary activity as even seated participants made adjustments in posture and positioning that constituted physical activity. At Apex we also observed significantly higher levels of light, moderate and vigorous physical activity and even measurable activity classified as very vigorous.

- As a result, we believe that space and seating are key components of promoting children's physical activity during the Atii! intervention.

iii. Qualitative assessment of children's game experience

A trained observer (Galloway) made comprehensive notes on the implementation of each pilot. Field notes were transcribed and analyzed for observations and concepts that offer explanatory insight into the experience of participating in the game.

- Children enjoyed participating in the Atii! intervention. Children smiled, laughed and cheered through the various components of the game.
- Considerable interest had been generated prior to the pilots by announcements and classroom discussions. Children anticipated participating in a "health game" (their words). The game set-up is colourful and vibrant and incorporates many cultural symbols and motifs. The presence of game equipment (hula hoops, balloons, pylons, etc.) engaged children's attention from the outset.
- Teachers and community workers also enjoyed participating in the game. Local assistance was especially helpful in negotiating issues of accent, dialect and regional food availability that arose during activities requiring Inuktitut vocabulary.
- The game reinforced cultural ideas about community participation. Where possible (Apex pilot) the facilitator selected teams with as broad an age range as possible. Children cheered each other on. Older children assisted younger children or gave each other hints where helpful.
- The "competitive" nature of the game made team play fun but was largely negated by a generous scorekeeping system that rewarded all participants. In this way, all participants enjoyed game play and no undue pressure was exerted on children to perform.
- There were numerous opportunities for group activity, which increased both the physical activity and knowledge components of the game.

In terms of children's overall health knowledge, the following information was obtained:

- Children's general knowledge of the relationship between diet, physical activity and health is very good.
- There are gaps in knowledge about particular areas of Canada's Food Guide. These could be addressed by adding to the game information on serving size and recommended numbers of servings.
- Children's health knowledge is strongest in the area of physical activity. Children are aware that healthy bodies are produced through regular physical activity.
- The link between diet and health is less well established. Very rarely did children identify any aspect of "diet" or "food" as a means for producing health.
- Adequate sleep or rest was not identified as a means for producing health.
- There is an opportunity to improve children's knowledge of the role of traditional Inuit foods in producing health. Despite excellent knowledge and vocabulary on this subject, children did not identify country food as a source of health.
- Knowledge of Inuktitut vocabulary varies among Nunavut communities.
- There was good general knowledge of the need to drink water and stay well hydrated.

REFERENCES

Freedson P, Pober D, Janz KF. 2005. Calibration of accelerometer output for children. *Med Sci Sports Exerc* 37(11 Suppl):S523-30.

Mattocks C, Leary S, Ness A, Deere K, Saunders J, Tilling K, Kirkby J, Blair SN, Riddoch C. 2007. Calibration of an accelerometer during free-living activities in children. *Int J Pediatr Obes* 2(4):218-26.

Trost SG, McIver KL, Pate RR. 2005. Conducting accelerometer-based activity assessments in field-based research. *Med Sci Sports Exerc* 37(11 Suppl):S531-43.

Yıldırım M, Verloigne M, de Bourdeaudhuij I, Androutsos O, Manios Y, Felso R, Kovács É, Doesseger A, Bringolf-Isler B, te Velde SJ, Brug J, Chinapaw MJ. 2011. Study protocol of physical activity and sedentary behaviour measurement among schoolchildren by accelerometry: Cross-sectional survey as part of the ENERGY-project. *BMC Public Health* 11:182-8.