

Stick it to the Competition through Innovation – Alberta Curriculum Connections

Recommended Grades: 6-9

Main Subjects: Science, Mathematics, English Language Arts, Social Studies, Physical Education

Hall of Famers: Herb Carnegie and Stan Mikita

Description: Students will develop skills of scientific inquiry and mathematical data analysis through guided questioning and examining ice hockey artefacts that explore innovation in hockey equipment and advancement through technological and probability-based design choices. The program will share the stories of Hall of Famers connected to these artefacts, including Carnegie’s experiences with racism in Canada during the 1940’s and Mikita’s experience playing for Team Canada at the infamous Summit Series against the Soviet Union in 1972. Post-visit activities will allow students to work collaboratively to carry out their own scientific investigations into how structural alterations in sports equipment can affect collecting, displaying, and analyzing data.



Hall of Famer Biographies	Subjects	General Outcomes	Curricular Rationale
<p>Herb Carnegie: was a Canadian ice hockey player and one of the best players to never play in a pro-league. He broke down many racial barriers as one of the first professional Black Canadian athletes in the sport and played on the first all-Black line in ice hockey history. The line was nicknamed the “Black Aces”, a play on the team name the Quebec Aces. While playing in the Quebec Senior Hockey League, Carnegie was voted his team’s Most Valuable Player three times and was often one of the top scorers in the league. After retiring from ice hockey Carnegie went beyond his wins when he founded the <i>Future Aces Hockey School</i>, one of the first ice hockey schools in Canada. The goal of the school was to foster respect, tolerance, diversity, and sportsmanship among young ice hockey players. Carnegie also continued his sports career as a senior golfer, winning numerous local and national championships.</p> <p>Stan Mikita: Mikita was a Slovak-Canadian professional ice hockey player who is well-known for accidentally inventing the “banana blade” after breaking his stick in practice and experimenting with curves on hockey stick blades to see how it can affect shooting. More notably, he played for Team Canada during the infamous Summit Series against the Soviet Union in 1972. It began as a series which Canada was supposed to win all eight games and ended in the most dramatic goal in hockey history. The 1972 Summit Series was organized as a result of Canada’s frustration at not being allowed to ice a team of professional players at the World Championships and Olympics, where the Soviets showed up with only their very best. And so, September 1972 was arranged to settle all bragging rights, best on best regardless of amateur status. Four games in Canada - Montreal, Toronto, Winnipeg, Vancouver - followed by four in Moscow. It was a series that pitted democratic Canada against Communist CCCP, professional NHL versus "amateur" Soviet hockey. It was East against West, known versus unknown. Canada ultimately gained victory, 4-3-1 in the eight games, and changed hockey forever. The world saw international hockey as it never had before, and out of this series came the Canada Cup and the start of professional hockey played between nations.</p>	<p>Science</p>	<p>Science Inquiry (grade 6): asking questions, proposing ideas, observing, experimenting, and interpreting the evidence that is gathered.</p> <p>Scientific Inquiry (grades 7-9): Students will be encouraged to develop attitudes that support active inquiry, problem solving and decision making</p> <p>Initiating and Planning (grades 7-9): These are the skills of questioning, identifying problems, and developing preliminary ideas and plans.</p> <p>Performing and Recording (grades 7-9): carrying out a plan of action that involves gathering evidence by observation and, in most cases, manipulating materials and equipment.</p> <p>Analyzing and Interpreting (grades 7-9): examining information and evidence; processing and presenting data so that it can be interpreted; and interpreting, evaluating and applying the results.</p> <p>Communication and Teamwork (grades 7-9): communication skills are essential at every stage where ideas are being developed, tested, interpreted, debated and agreed upon. The development and application of science ideas is a collaborative process.</p>	<p>Students will be presented with multiple pieces of hockey equipment (including artefacts belonging to Carnegie and Mikita) where they will question, observe, and interpret processes that led to various innovations in the equipment’s physical and material design.</p> <p>Post-visit activities will allow students to collaborate in small teams and use simple craft materials to model sports equipment and manipulate variables in the design to identify resulting changes in performance. Qualitative and quantitative data will be collected, recorded, analyzed, evaluated, and communicated by students to their peers to develop scientific inquiry and data literacy.</p>
	<p>Mathematics</p>	<p>Data Analysis: Collect, display and analyze data to solve problems.</p> <p>Chance and Uncertainty: Use experimental or theoretical probabilities to represent and solve problems involving uncertainty</p>	<p>Post-visit activities will ask students to collect quantitative data from their experimental design and display data visually using appropriate graphs as well as make reasonable conclusions. Extension opportunities can permit students to calculate experimental and theoretical probabilities using their data or to study uncertainties in sport analytics.</p>
	<p>English Language Arts</p>	<p>General Outcome 1: Students will listen, speak, read, write, view and represent to explore thoughts, ideas, feelings and experiences.</p> <p>General Outcome 2: Students will listen, speak, read, write, view and represent to comprehend and respond personally and critically to oral, print and other media texts.</p>	<p>Students will explore the stories of Carnegie and Mikita through alternative media texts (i.e., artefacts) to explore their feelings and experiences. Students will be provided with historical context to explore Canada’s involvement in the 1972 Summit Series and to examine the racial barriers Carnegie had to overcome while playing ice hockey.</p>
	<p>Social Studies</p>	<p>3.S.2, 4.S.2, 5.S.2, 6.S.2, 7.S.2, 8.S.2, 9.S.2: Develop skills of historical thinking</p>	
<p>Physical Education</p>	<p>General Outcome C – Communication: Students will interact positively with others</p> <p>C7-2, C8-2, C9-2 identify and discuss the positive behaviours that are demonstrated by active living role models</p>		

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<p>Stan Mikita: Mikita was a Slovak-Canadian professional ice hockey player who is well-known for accidentally inventing the “banana blade” after breaking his stick in practice and experimenting with curves on hockey stick blades to see how it can affect shooting. More notably, he played for Team Canada during the infamous Summit Series against the Soviet Union in 1972. It began as a series which Canada was supposed to win all eight games and ended in the most dramatic goal in hockey history. The 1972 Summit Series was organized as a result of Canada's frustration at not being allowed to ice a team of professional players at the World Championships and Olympics, where the Soviets showed up with only their very best. And so, September 1972 was arranged to settle all bragging rights, best on best regardless of amateur status. Four games in Canada - Montreal, Toronto, Winnipeg, Vancouver - followed by four in Moscow. It was a series that pitted democratic Canada against Communist CCCP, professional NHL versus "amateur" Soviet hockey. It was East against West, known versus unknown. Canada ultimately gained victory, 4-3-1 in the eight games, and changed hockey forever. The world saw international hockey as it never had before, and out of this series came the Canada Cup and the start of professional hockey played between nations.</p>	<p>Mathematics</p>	<p>D1. Data Literacy (grades 6-8): manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life</p> <p>Grade 6 Specific Outcomes: D1.2, D1.3, D1.6</p> <p>Grade 7 Specific Outcomes: D1.2, D1.4, D1.6</p> <p>Grade 8 Specific Outcomes: D1.2, D1.3, D1.5, D1.6</p> <p>Linear Relations (grade 9): apply data-management techniques to investigate relationships between two variables</p>	<p>Post-visit activities will ask students to collect quantitative data from their experimental design and display data visually using appropriate graphs as well as make reasonable conclusions. Extension opportunities can permit students to calculate experimental and theoretical probabilities using their data or to study uncertainties in sport analytics.</p>
<p>Stan Mikita: Mikita was a Slovak-Canadian professional ice hockey player who is well-known for accidentally inventing the “banana blade” after breaking his stick in practice and experimenting with curves on hockey stick blades to see how it can affect shooting. More notably, he played for Team Canada during the infamous Summit Series against the Soviet Union in 1972. It began as a series which Canada was supposed to win all eight games and ended in the most dramatic goal in hockey history. The 1972 Summit Series was organized as a result of Canada's frustration at not being allowed to ice a team of professional players at the World Championships and Olympics, where the Soviets showed up with only their very best. And so, September 1972 was arranged to settle all bragging rights, best on best regardless of amateur status. Four games in Canada - Montreal, Toronto, Winnipeg, Vancouver - followed by four in Moscow. It was a series that pitted democratic Canada against Communist CCCP, professional NHL versus "amateur" Soviet hockey. It was East against West, known versus unknown. Canada ultimately gained victory, 4-3-1 in the eight games, and changed hockey forever. The world saw international hockey as it never had before, and out of this series came the Canada Cup and the start of professional hockey played between nations.</p>	<p>Science</p>	<p>Scientific Inquiry Skills (grades 6-8):</p> <ul style="list-style-type: none"> initiating and planning (e.g., asking questions, clarifying problems, planning procedures) analysing and interpreting (e.g., organizing data, reflecting on the effectiveness of actions performed, drawing conclusions) communicating (e.g., using appropriate vocabulary, communicating findings in a variety of ways) <p>Scientific Investigation Skills (grade 9): demonstrate scientific investigation skills (related to both inquiry and research) in the four areas of skills (initiating and planning, performing and recording, analysing and interpreting, and communicating)</p> <p>Specific Outcomes: A1.1, A1.5, A1.6, A1.8, A1.10, A1.13</p>	<p>Students will be presented with multiple pieces of hockey equipment (including artefacts belonging to Carnegie and Mikita) where they will question, observe, and interpret processes that led to various innovations in the equipment’s physical and material design.</p> <p>Post-visit activities will allow students to collaborate in small teams and use simple craft materials to model sports equipment and manipulate variables in the design to identify resulting changes in performance. Qualitative and quantitative data will be collected, recorded, analyzed, evaluated, and communicated by students to their peers to develop scientific inquiry and data literacy.</p>