**Teaching and Learning Program for the Elements**

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| **T:\Office\Graham Moore\jpeg sentral logo.jpg** | **Teaching and Learning Program** | | | | | | | | | | | | | | | | | |
| **Title/Type of Unit: Motion**  **Program Risk Level:** | | | | | | | | | | | | **Duration:**  **By:** | | | | | |
| **Syllabus Outcomes**  **Stage** | *A student:*  SC5-10PW: applies models, theories and laws to explain situations involving energy, force and motion | | | | | | | | | | | | | | | | | |
| **Connectedness**  **Why does this learning matter?** | **Students learn to:**   * relate between force, mass and acceleration * relate between distance, speed and time * relate acceleration qualitatively to a change in speed and/or direction as a result of a net force * analyses qualitatively everyday situations involving motion in terms of Newton's laws | | | | | | | | **Students learn about:**   * The relationship between force, mass and acceleration. * The relationship between speed, distance and time. * The difference between speed and acceleration. * Newton’s Laws of Motion. * The difference between mass and weight. * Recognise the equation F = ma. * Recognise the equation speed = distance/time. * Explain acceleration as a change in speed and/or direction. * Identify that a force is required to cause acceleration. * Describe common situations involving Newton’s Laws. * The relationship between mass, weight and gravity | | | | | | | | | |
| **Background and Key Ideas** |  | | | | | | | | | | | | | | | | | |
| **Literacy Continuum** | Reading Texts | Comprehension | | | Vocabulary Knowledge | | Aspects of Writing | | | Aspects of Speaking | | | | Phonics | Phonemic Awareness | | | Concepts About Print |
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| **Numeracy Continuum** | Counting Sequences | | Counting as Problem Solving | | | Pattern and Number Structure | | Place Value | | | | Multiplication and Division | | | | Fraction Units | | Length, Area and Volume |
| Elements: (individual or range)  Activities linked to program to increase learning: | | | | | | | | | | | | | | | | | |
| **Quality Teaching** | | | | | | | | | | | | | | | | | | |
| **Intellectual Quality** | | | | **Quality Learning Environment** | | | | | | | **Significance** | | | | | | | |
| * IQ1 Deep Knowledge * IQ2 Deep Understanding * IQ3 Problematic Knowledge * IQ4 Higher-order Thinking * IQ5 Metalanguage * IQ6 Substantive Communication | | | | * QLE1 Explicit Quality Criteria * QE2 Engagement * QE3 High Expectations * QE4 Social Support * QE5 Students’ Self-regulation * QE6 Student Direction | | | | | | | * S1 Background Knowledge * S2 Cultural Knowledge * S3 Knowledge Integration * S4 Inclusively * S5 Connectedness * S6 Narrative | | | | | | | |
| **Teaching and Learning Lesson Overview** | | | | | | | | | | | | | | | | | | |
| **The Elements of Learning & Achievement** | 8_community[1]F:\Mock ups\Square elements\Numeracy.jpgE:\Final V1\Final sq NO border\Sq Technology no bdr.jpg7_deconstruct.jpg4_symbol.jpg   1. Brainstorm what is Motion   [Newton’s Laws of motion song](https://www.youtube.com/watch?v=PkAO8F-Tm-w) – students to roll play the song or create new one using Newton’s Laws in the Lyrics.  Discus forces [Science Focus 4 p153](file:///C:\Users\gallouche\Desktop\Newtons%20First%20Law%20p153.pdf), [154](file:///C:\Users\gallouche\Desktop\Newtons%20First%20Law%20p154.pdf) &[155](file:///C:\Users\gallouche\Desktop\Newtons%20First%20Law%20p155.pdf)   1. Explain Newton’s First Law- and relate to everyday life.   [YouTube video](https://www.youtube.com/watch?v=08BFCZJDn9w).  Discuss inertia and the effect it can have in car collisions.  YouTube video- egg activity - [YouTube video](https://www.youtube.com/watch?v=7Ix-eywqUOg)   1. Describing motion- the difference between the distance, speed and time [SC4 p136 & 137](file:///C:\Users\gallouche\Desktop\Describing%20motion.pdf).   Practical experiment [“driving reaction time” SC4 p145](file:///C:\Users\gallouche\Desktop\Reaction%20time%20Prac.pdf).   1. Explain [Newton’s Second Law- p159](file:///C:\Users\gallouche\Desktop\Newtons%20Second%20Law.pdf)   Explain the [concept of acceleration p147](file:///C:\Users\gallouche\Desktop\Acceleration%20p147.pdf)-[148](file:///C:\Users\gallouche\Desktop\Acceleration%20p148.pdf).   1. Use F = ma to explain why a force is needed to accelerate a mass. 2. [Newton’s Third Law- p164](file:///C:\Users\gallouche\Desktop\Newtons%20Thrid%20Law.pdf)-[165](file:///C:\Users\gallouche\Desktop\Newtons%20Third%20Law%20p2.pdf) and answer questions 1-4 on.   Use balloon or water rockets to demonstrate Newton’s Third Law [p168](file:///C:\Users\gallouche\Desktop\Rocket%20experiment.pdf).   1. Video: [The Physics of Car Crashes.](https://www.youtube.com/watch?v=yUpiV2I_IRI) 2. Explain the role of gravity in determining weight [p169](file:///C:\Users\gallouche\Desktop\Gravity.pdf) 3. Extra activity- Use a pendulum to determine acceleration due to gravity. | | | | | | | | | | | | | | | | **Aboriginal 8 Ways of Learning**  *The following ways of learning are incorporated throughout the program through pedagogical practices* | |

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| **Special Needs Adjustments** | | | | **School to Work** | | |
| * More practical tasks * Group discussions | | | | Understanding of basic science facts and concepts | | |
| **Assessments** | | | | | | |
| Ongoing throughout program | | | | | | |
| Roles and Responsibilities | | | | | | |
| Teacher | | SLSO | | | Student | |
| Prepare tasks  Work with student/s  Differentiate tasks based on individuals | | Work with designated student/s  Ensure equipment & worksheets are prepared  Work with designated student/s | | | Engage in activities  Complete all tasks | |
| **Risk Assessment – Dorchester ETU only** | | | | | | |
| **Resources** | **Safety Strategies** | | **Identified Hazards** | | | **Control Strategies** |
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| **Teacher Evaluation**  **Comments / Variations** | |
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| **Date Commenced**: | **Date Finished**: |
| **Teachers Signature**: | **Assistant Principals Signature**: |