SCIENCE AND TECHNOLOGY – *Understanding Structures and Mechanisms*		
Grade 1 1. assess the impact on people and the environment of objects and structures and the materials used in them. **Grade 2** 1. assess the impact on society and the environment of simple machines and mechanisms. **Grade 3** 1. assess the importance of form, function, strength, and stability in structures through time.	*[Name]* can name materials that exist in our world (such as wood, cloth, metal, etc.). [*He/She]* understands why certain materials are used in structures (e.g., houses are made with wood/concrete to be strong). Through our study of structures, *[Name]* demonstrated understanding how historical structures have strength and stability (*specific example, such as a famous building such as the Eiffel Tower).*	*[Name]* is still learning about different materials that exist in our world and how they are used for building. At home, *[Name]* could work on looking for various materials (wood, etc.) and observe what they are used for.
Grade 4 1. evaluate the impact of pulleys and gears on society and the environment. **Grade 5** 1. analyse social and environmental impacts of forces acting on structures and mechanisms.	*[Name]* can identify how pulleys and gears are used in society (such as in a crane, elevator or machine).	*[Name]* is encouraged to look for gears and pulleys in our environment, and observe how they are used by people to help do work.

Grade 6 1. assess the societal and environmental impacts of flying devices that make use of properties of air.	During our unit on Flight, *[Name]* was able to discuss the impact flight has had on our society.	
Grade 7 1. analyse personal, social, economic, and environmental factors that need to be considered in designing and building structures and devices. **Grade 8** 1. assess the personal, social, and/or environmental impacts of a system, and evaluate improvements to a system and/or alternative ways of meeting the same needs.	*[Name]* explained a variety of personal, social, economic, and environmental factors (e.g., function, cost, intended lifespan and aesthetics) that need to be considered when structures and devices are built. *[Name]* assessed the personal and social impacts of *[specific issue, such as automation, or the environmental factors of having school year round]. [He/she]* created a *[flyer, pamphlet]* to present *[his/her]* conclusions.	*[Name]* can improve responses that involve analysis *[or assessment]* of factors by considering at least three factors in each response.
Grade 1 2. investigate structures that are built for a specific purpose to see how their design and materials suit the purpose. **Grade 2** 2. investigate mechanisms that include simple machines and enable movement. **Grade 3**	*[Name]* is able to identify simple machines (such as the screw, wedge, lever, inclined plane) and discuss how they help humans do work.	

2. investigate strong and stable structures to determine how their design and materials enable them to perform their load-bearing function.		
Grade 4 2. investigate ways in which pulleys and gears modify the speed and direction of, and the force exerted on, moving objects. **Grade 5** 2. investigate forces that act on structures and mechanisms. **Grade 6** 2. investigate ways in which flying devices make use of properties of air.	Through our experiments with bicycle gears *[or other specific task], [Name]* investigated how gears can change the speed and direction of force. *[Name]* understands how aircraft use properties of air, speed and pressure to create lift.	*[Name]* is encouraged to further explore the properties of air and how aircrafts make use of them. Further discussions, reading or extra help from the teacher would benefit *[Name].*
Grade 7 2. design and construct a variety of structures, and investigate the relationship between the design and function of these structures and the forces that act on them.	*[Name]* designed a variety of structures including *[specific evidence, such as bridges and towers]* and investigated the relationship between the design (the physical features) and function (the purpose) of these structures. For example, *[he/she] [specific evidence, such as explained that in the tower he/she built, the base was symmetrical and wide at the base*	*[Name]* can improve on responses that involve investigation by considering at least three conclusions in each response.

Grade 8 2. investigate a working system and the ways in which components of the system contribute to its desired function.	*but tapered to the tip to ensure the structure was stable].* *[Name]* worked with a system involving a load arm. By investigating certain changes, including *[specific evidence, such as altering the length the load arm], [he/she]* made suggestions of improvement to the system.	
Grade 1 3. demonstrate an understanding that objects and structures have observable characteristics and are made from materials with specific properties that determine how they are used. **Grade 2** 3. demonstrate an understanding of movement and ways in which simple machines help to move objects. **Grade 3** 3. demonstrate an understanding of the concepts of *structure, strength*, and *stability* and the factors that affect them.		
Grade 4 3. demonstrate an understanding of the basic principles and functions of pulley systems and gear systems.		

Grade 5 3. identify forces that act on and within structures and mechanisms, and describe the effects of these forces on structures and mechanisms. **Grade 6** 3. explain ways in which properties of air can be applied to the principles of flight and flying devices.		
Grade 7 3. demonstrate an understanding of the relationship between structural forms and the forces that act on and within them. **Grade 8** 3. demonstrate an understanding of different types of systems and the factors that contribute to their safe and efficient operation.	*[Name]* investigated and explained what happens when certain forces are applied to structures. *[He/She] [specific task, such as placed text books on the bridge until it collapsed, or blew air from a fan toward the tower].* Forces acting on these structures were identified as internal forces (such as torsion and weight) or external forces (such as wind and gravity). *[Name]* chose two different types of systems (e.g., mechanical systems, body systems, mass transit systems, etc.) and described the factors that contribute to the safe and efficient operation of each of these systems.	