Science Court (Work and Simple Machines)
Grade 4 & 5
(Ministry Licensed Software)

Suggested Subject: Science

Suggested Topic/Strand: Structures and Mechanisms

Format: 1 CD ROM

Language: English **Documentation:** manual (65 pages) with CD ROM **Hardware:** Macintosh & Windows

Legalities of use: all computers in all schools, teacher take home for lesson preparation, networking permitted

Description:
This unique software has many scenarios in cartoon video that leads to a court case. The case can be solved by students listening to the video, meeting as a group of approximately 5 students, completing a worksheet, entering the information into the computer and waiting for the final verdict. The software must be accompanied by student group work, time to complete the worksheets and the students doing an experiment.

The Ontario Curriculum Expectations
Grade 4 Structures and Mechanisms – Pulleys and Gears Overall Expectations:
- demonstrate an understanding of the characteristics of pulleys and gears
- design and make pulley systems and gear systems, and investigate how motion is transferred from one system to another
- identify ways in which different systems function, and identify appropriate criteria to be considered when designing and making such systems

Grade 4 Structures and Mechanisms – Pulleys and Gears Specific Expectations:
- describe using their observations the functions of pulley systems and gear systems
- demonstrate an awareness of the concept of mechanical advantage by using a variety of pulleys and gears

Grade 5 Structures and Mechanisms – Forces Acting on Structures and Mechanisms Overall Expectations
- demonstrate an understanding of the effect of forces acting on different structures and mechanisms

Grade 5 Structures and Mechanisms – Forces Acting on Structures and Mechanisms Specific Expectations
- compare the force needed to lift a load manually with the force required to lift the load with a simple machine (e.g., lever, pulley system, gear system)
- describe, using their observations, the advantages and disadvantages of using different types of mechanical systems (e.g., a single-pulley system has no mechanical advantage; a pulley system with two or more pulleys has a mechanical advantage)
- make a mechanical system that performs a specific function (e.g., lifting a heavy load; retrieving an object from a position that cannot be reached by hand);
- recognize the advantages and disadvantages of using various mechanisms (e.g., levers, wheels and axles, pulleys, gears) with respect to the amount of energy they require to move or lift a given load

Student Activities
The activity sheets associated with the software and contained on it are the main purpose of the program.