



SCOPE & SEQUENCE

GR. 9 - SCIENCE



Student Task

GRADE 9: Science

TASK: Grade 9 Year-End Review, ICT Capping Project

PRODUCTIVITY TOOL: Internet Research, Word Processor, Spreadsheet, Multimedia Presentation, Web Page, Bulletin Board

TIMELINE: 6-8 Weeks

LEVEL OF DIFFICULTY: ☹☹☹ Project


Students will be assigned a chapter of the Gr. 9 Science text to summarize and present as part of the year-end review in Science. This project will be completed as the capping project in Information-Processing, where it will be marked for format and layout and in Science, where it will be marked for content. Students will be given two months to complete the project; as such, project management will play a large part of this endeavor.

In the capping project, students are encouraged to use skills they learned in all application programs in their three-years of Information Processing in Junior High. The capping project will include:

- ☞ a poster to “advertise” their coming presentation, done in a desktop publishing program
- ☞ a chapter summary in the form of a website uploaded to the intranet for use by peers; must include at least five links to related science sites
- ☞ a component discussing the aspect of safety in Science completed in a form that the student finds appropriate: handout, slide presentation, page on the website, etc.
- ☞ a word search created from the words found in the glossary from the pertinent chapter created from hardware compatible freeware downloaded from www.tukids.tucows.com
- ☞ a “matching” question giving the chapter’s glossary words and their definition using tab features of the word processor
- ☞ a “study notes” handout to give to peers during the student’s presentation with title, wordart, page numbering, headers and footers as appropriate

- ☞ a chapter quiz of 15 pertinent study questions made up by the student, or taken from the *Knox Computerized Tutorial System Inc. Exam Cram* questions
- ☞ a concept map using mind mapping/webbing to present connections among ideas and information
- ☞ a strand posted to the Science bulletin board regarding their topic
- ☞ response(s) to the strands begun by student(s) in other classes working on the same topic

At the completion of this project, students are asked to check the file management of the course work completed in their five years at the school. Those who are interested are given the opportunity to burn a CD of their portfolio before their files are removed from the system.



ICT Outcomes


The learner will:

- C1** 3.1 plan and conduct a search, using a wide variety of electronic sources
- 3.2 refine searches to limit sources to a manageable number
- 3.3 access and operate multimedia applications and technologies from stand-alone and online sources
- 3.4 access and retrieve information through the electronic network
- 3.5 analyze and synthesize information to create a product
- 3.6 communicate in a persuasive and engaging manner, through appropriate forms, such as speeches, letters, reports and multimedia presentations, applying information technologies for content, audience and purpose
- C2** 3.1 access diverse viewpoints on particular topics by using appropriate technologies
- C3** 3.1 evaluate the authority and reliability of electronic sources
- 3.2 evaluate the relevance of electronically accessed information to a particular topic
- C4** 3.1 create a plan for an inquiry that includes consideration of time management
- 3.2 develop a process to manage volumes of information that can be available through electronic sources



- 3.3 demonstrate the advanced search skills necessary to limit the number of hits desired for online and offline databases; for example, the use of “and” and “or” between search topics and the choice of appropriate search engines for the topic
- C5** 3.1 access, retrieve and share information from electronic sources, such as common files
- 3.2 use networks to brainstorm, plan and share ideas with group members
- C6** 3.1 articulate clearly a plan of action to use technology to solve a problem
- 3.2 identify the appropriate materials and tools to use in order to accomplish a plan of action
- 3.3 evaluate choices and the progress in problem-solving then redefine the plan of action as appropriate
- C7** 3.2 make connections among related, organized data, and assemble various pieces into a unified message
- F1** 3.1 demonstrate an understanding that information can be transmitted through a variety of media
- 3.2 explain the concept of software and hardware compatibility
- 3.3 apply terminology appropriate to the technology being used at this division level
- 3.5 explain the difference between digital and analog data on communication systems
- 3.6 explain how the need for global communication will affect technology around the world
- 3.7 demonstrate the ability to troubleshoot technical problems
- 3.8 demonstrate an understanding that technology is a process, technique or tool used to alter human activity
- F2** 3.6 explain ways in which technology can assist in the monitoring of local and global environmental conditions
- F3** 3.1 use time and resources on the network wisely
- 3.3 understand the need for copyright legislation
- 3.4 cite sources when using copyright and/or public domain material
- F4** 3.1 identify aspects of style in a presentation
- F5** 3.1 identify risks to health and safety that result from improper use of technology
- 3.2 identify and apply safety procedures required for the technology being used
- F6** 3.1 connect and use audio, video and digital equipment
- 3.2 perform routine data maintenance and management of personal files
- 3.3 demonstrate proficiency in uploading and downloading text, image, audio and video files
- 3.4 demonstrate the ability to control devices electronically
- 3.5 describe the steps involved in loading software
- 3.6 identify and apply safety procedures, including antivirus scans and virus checks, to maintain data integrity
- P1** 3.1 design a document, using style sheets and with attention to page layout, that incorporates advanced word processing techniques, including headers, footers, margins, columns, table of contents, bibliography and index
- 3.2 use advanced word processing menu features to accomplish a task; for example, insert a table, graph or text from another document
- 3.3 revise text documents based on feedback from others
- 3.4 use appropriate communication technology to elicit feedback from others
- P2** 3.2 design, create and modify a spreadsheet for a specific purpose, using functions such as SUM, PRODUCT, QUOTIENT, and AVERAGE
- 3.3 use a variety of technological graphic tools to draw graphs for data involving one or two variables
- P3** 3.2 create multimedia presentations that incorporate meaningful graphics, audio, video, and text gathered from remote sources
- P5** 3.1 create a multiple-link webpage
- P6** 3.1 communicate with a targeted audience, within a controlled environment, by using such communication technologies as email and web browsers
- 3.2 demonstrate proficiency in accessing local area network, wide area network and Internet services, including uploading and downloading text, image, audio and video files





Curriculum Outcomes

GRADE 9: Science

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Topic 1: Diversity Of Living Things

This unit surveys the diversity of living things, using scientific observation and classification as the basis for interpretation. It examines variability in structures and functions of organisms with particular attention to the adaptive value of those features. Natural and artificial selection are identified as processes that can alter the diversity of living things through the development or extinctions of species.

Topic 2: Fluids And Pressure

This unit provides an introduction to the properties of fluids and examines the applications of fluids within the natural world and in technological devices. Fluid technologies to be studied include those that involve transfer of mechanical force. Opportunities are provided in the unit for students to construct devices that will perform specified functions and to make improvements to those devices. Students examine approaches used in existing technologies and consider alternatives in their design.

Topic 3: Heat Energy: Transfer And Conservation

This unit examines heat energy transfer and related applications. A study of conduction, convection and radiation provides the basis for examination of technologies for the containment of heat energy and for the transfer of heat energy. Particular focus is given to the need to conserve energy resources through efficient use.

Topic 4: Electromagnetic Systems

This unit examines principles of current electricity that provide the basis for production, control and use of electrical energy. Principles of basic circuit are introduced and these principles are applied in association with technological concepts of systems, subsystems and control. Extensive opportunities are provided for students to apply these concepts and principles to the solution of practical problems.

Topic 5: Chemical Properties And Changes

This unit introduces the chemical properties of common substances. Students learn to distinguish between chemical and physical change and to recognize examples of chemical changes that occur in their environment. Factors that affect reaction rates are studied.

Topic 6: Environmental Quality

In this unit, students are introduced to the idea of environmental quality and to the role of science in monitoring that quality. The central idea of the unit is that personal and public decision making regarding environmental quality is needed, and that the decision-making process should be informed by knowledge of environments and objective assessments of environmental impacts. Extensive attention is given in this unit to human interventions within environments and the effects of those interventions both in the short term and in the long term. A variety of environmental quality indicators are considered. These include indicators of air, water and soil quality.

