PROPOSED REGULATION OF THE

STATE BOARD OF EDUCATION

LCB File No. R038-00

April 3, 2000

EXPLANATION – Matter in ***italics*** is new; matter in brackets ~~[omitted material]~~ is material to be omitted.

AUTHORITY: §§1-7, NRS 385.080 and 389.520.

Section 1. Chapter 389 of NAC is hereby amended by adding thereto the provisions set forth as sections 2 to 7, inclusive, of this regulation.

Sec. 2. ***By the end of the third grade, pupils must know and be able to do everything required in the previous grades for courses in technology and computers offered in public schools. Instruction in the third grade in technology and computers must be designed so that pupils meet the following performance standards by the completion of the third grade:***

1. To develop the ability to use productivity tools, pupils must be able to use appropriate productivity tools, including, without limitation, word processing, spreadsheets, databases, multimedia and telecommunications, as demonstrated by the ability of the pupil to:

(a) Locate and use letters, numbers and special keys on a keyboard using the left and right hands, as appropriate;

(b) Type and edit an existing document;

(c) Search a database to locate specific information;

(d) Use a predesigned spreadsheet to enter simple labels, values and formulas, including, without limitation, three-cell formulas such as "2+2=4";

(e) Use multimedia software;

(f) Explain the purpose of a multimedia presentation;

(g) Create and save files on various storage media;

(h) Identify the differences between network and stand-alone computer systems; and

(i) Identify a variety of electronic communication devices.

2. In the area of tools used for research, pupils must be able to use various tools of technology to research information and evaluate the accuracy and appropriateness of the information to solve problems and make decisions, as demonstrated by the ability of the pupil to:

(a) Contribute an idea for a topic or definition of a problem;

(b) Contribute one appropriate keyword to a group of keywords for a topic or problem, and use the keyword to conduct an electronic search;

(c) Work within a group to select research materials successfully;

(d) Identify an organizational tool and place information within a format;

(e) Participate in sharing his portion of the research with other members of his group; and

(f) Summarize the research process of the class and discuss the results of the research process.

3. In the area of tools and processes, pupils must be able to identify, apply and manage various concepts, tools and resources to evaluate their accuracy and appropriateness in solving problems and making decisions, as demonstrated by the ability of the pupil to:

(a) Identify tools and resources used in technology and computers;

(b) Regularly select and manipulate tools to use for tasks in the areas of computer and technology;

(c) Demonstrate the importance of safety while working with technology and computers; and

(d) Regularly resolve difficulties using tools or devices, with practice guided by a teacher.

4. In the area of systems, pupils must be able to recognize that systems are made up of individual components and that each component affects the operation of the entire system and its relationship with other systems, as demonstrated by the ability of the pupil to:

(a) List the parts of an open and a closed loop system;

(b) Given a system, explain how the parts of that system work together to achieve a desired outcome; and

(c) List and group technological systems, including, without limitation, construction, energy, power, transportation, biotechnology and manufacturing.

5. In the area of implications of technology and computers on society, pupils must be able to evaluate the impact and ethical implications of technology and computers on persons, society and the environment, as demonstrated by the ability of the pupil to:

(a) Discuss common uses of technology in daily life and the advantages and disadvantages provided by those uses of technology;

(b) Explain computer piracy and its implications;

(c) Use proper etiquette when using electronic communications;

(d) Identify changes in the school environment and in the community that are a result of technology;

(e) With the assistance of a teacher, list several careers which currently exist that were not in existence when the pupil was born; and

(f) Explain how physical environments are changed by human activity through technology.

Sec. 3. ***By the end of the fifth grade, pupils must know and be able to do everything required in the previous grades for courses in technology and computers offered in public schools. Instruction in the fifth grade in technology and computers must be designed so that pupils meet the following performance standards by the completion of the fifth grade:***

1. To develop the ability to use productivity tools, pupils must be able to use appropriate productivity tools, including, without limitation, word processing, spreadsheets, databases, multimedia and telecommunications, as demonstrated by the ability of the pupil to:

(a) Demonstrate and use correct finger placement for basic keyboarding skills;

(b) Use basic formatting techniques on a computer, including, without limitation, selection of the font type, size and color;

(c) Use the tools of a computer to edit a composed document, including, without limitation, spell check;

(d) Include a graphic in a document;

(e) Print a document;

(f) Create a database using predefined fields, such as listing fields and formulas for an entry in a database or spreadsheet;

(g) Enter data for multiple records;

(h) Print reports based on sort and query, such as searching for certain criteria in a specified field;

(i) Under the guidance of a teacher or media specialist, construct a spreadsheet;

(j) Create a multimedia document or presentation to organize and present an idea using text, graphics or sounds, or any combination thereof;

(k) Describe and use the file management system of a computer;

(l) Explain the differences between data files, program files and operating system files;

(m) Describe access privileges and demonstrate the process of obtaining access where possible;

(n) Identify a local area network, or LAN;

(o) Explain the uses of electronic communication devices; and

(p) Define distance learning, telecommuting and teleconferencing.

3. In the area of tools used for research, pupils must be able to use various tools of technology to research information and evaluate the accuracy and appropriateness of the information to solve problems and make decisions, as demonstrated by the ability of the pupil to:

(a) With the direction of a teacher or a media specialist:

(1) Individually select a research topic or define a problem, give a possible outcome of the research of the topic or problem, and list available tools of technology that can be used;

(2) Generate a list of keywords to conduct an electronic search; and

(3) Explore hyperlinks to select and evaluate information useful to the research of a topic or problem;

(b) While working in a group, identify a tool for organizing the research of a topic or problem, and place information within a format;

(c) Demonstrate an understanding of intellectual property, and identify the source and content of information collected;

(d) Collaboratively list sources used to research a topic or problem; and

(e) With the direction of a teacher or a media specialist, summarize the research process and evaluate its outcome.

4. In the area of tools and processes, pupils must be able to identify, apply and manage various concepts, tools and resources to evaluate their accuracy and appropriateness in solving problems and making decisions, as demonstrated by the ability of the pupil to:

(a) List technological resources, including, without limitation, people, information, materials, machines, energy, effort, capital resources and time;

(b) Demonstrate the use of tools and materials to design or develop products or projects;

(c) Select and demonstrate the safe use of tools; and

(d) Identify situations where incorrect, inoperable or inappropriate tools are being used and cooperatively take appropriate actions to correct such situations.

5. In the area of systems, pupils must be able to recognize that systems are made up of individual components and that each component affects the operation of the system and its relationship with other systems, as demonstrated by the ability of the pupil to:

(a) List the parts of open, closed, simple, complex, micro and macro systems;

(b) Cooperatively identify resources necessary to achieve a desired outcome; and

(c) Given a multitude of systems, including, without limitation, open, closed, macro, micro, simple and complex systems, sort the systems according to the type and level of the system.

6. In the area of implications of technology and computers on society, pupils must be able to evaluate the impact and ethical implications of technology and computers on persons, society and the environment, as demonstrated by the ability of the pupil to:

(a) Explain how a given object was developed to meet a human need or desire;

(b) Communicate the positive or negative outcomes of technology;

(c) Compare and contrast the technological developments within a given career; and

(d) Discuss changes in information technologies and the effect that these changes have on the workplace and society.

Sec. 4. *By the end of the eighth grade, pupils must know and be able to do everything required in the previous grades for courses in technology and computers offered in public schools. Instruction in the eighth grade in technology and computers must be designed so that pupils meet the following performance standards by the completion of the eighth grade:*

1. To develop the ability to solve problems, pupils must be able to use problem-solving processes and resources to reach a desired outcome, as demonstrated by the ability of the pupil to:

(a) Describe more than one design or problem-solving method;

(b) Select an appropriate design or problem-solving method; and

(c) Generate a desired outcome using a design or problem-solving method.

2. To develop the ability to use productivity tools, pupils must be able to use appropriate productivity tools, including, without limitation, word processing, spreadsheets, databases, multimedia and telecommunications, as demonstrated by the ability of the pupil to:

(a) Demonstrate proficiency and accuracy in keyboarding skills;

(b) Type, edit and print a document;

(c) Use advanced formatting techniques, including, without limitation, margins, line spacing and tabs;

(d) Import graphics with appropriate placement into a document;

(e) Search for and replace text within a document;

(f) Create a database, define fields and enter data for multiple records;

(g) Develop a spreadsheet that includes, without limitation, labels, values, formulas and functions;

(h) Create a chart that visually represents data;

(i) Print a spreadsheet showing the formulas used in the spreadsheet;

(j) Create a multipage, multimedia presentation using text, graphics and sound to communicate a concept effectively;

(k) Organize files on a computer disk, hard drive, server or other storage device;

(l) Explain how:

(1) A local area network, or LAN;

(2) An Intranet; and

(3) The Internet,

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operates when compared to a stand-alone system;

(m) Use an available electronic communication device, including, without limitation, e-mail, a facsimile machine, a telephone and a two-way radio; and

(n) Explain the advantages of connectivity for sharing information and resources.

3. In the area of tools used for research, pupils must be able to use various tools of technology to research information and evaluate the accuracy and appropriateness of the information to solve problems and make decisions, as demonstrated by the ability of the pupil to:

(a) With the assistance of a teacher or media specialist, select a research topic or develop a statement of a problem, and identify the elements, scope and expected outcome of the research on the topic or problem;

(b) Independently generate a list of keywords to conduct a search using electronic-based sources;

(c) Use hyperlinks to explore additional possible sources of information when collecting information;

(d) Place information within an organizational format;

(e) Demonstrate an understanding of intellectual property by citing sources of copyrighted materials in papers, projects and multimedia;

(f) Analyze selected information for reliability, authenticity and timeliness;

(g) Contribute to generating a standard bibliography while working within a group; and

(h) Independently list the steps of the process of the research and judge the outcome of the research.

4. In the area of tools and processes, pupils must be able to identify, apply and manage various concepts, tools and resources to evaluate their accuracy and appropriateness in solving problems and making decisions, as demonstrated by the ability of the pupil to:

(a) List the tools and resources needed to solve a problem in a technology or computer area;

(b) Demonstrate the proper use of tools, instrumentation, equipment, materials and processes while fabricating models, designs, simulations and prototypes;

(c) Given a situation, describe or define the correct use of tools, processes and materials in diverse technology and computer applications; and

(d) Correctly operate and perform appropriate maintenance on technology tools.

5. In the area of systems, pupils must be able to recognize that systems are made up of individual components and that each component affects the operation of the system and its relationship with other systems, as demonstrated by the ability of the pupil to:

(a) List resources necessary to achieve a desired outcome;

(b) Describe how the output of one system could be the input for another system;

(c) Given the systems in the area of technology, determine how those systems are controlled to achieve a desired outcome; and

(d) Select and use an appropriate system to achieve a given outcome.

6. In the area of implications of technology and computers on society, pupils must be able to evaluate the impact and ethical implications of technology and computers on persons, society and the environment, as demonstrated by the ability of the pupil to:

(a) Practice legal and ethical behaviors when using information and technology, and discuss the consequences of misusing such information and technology;

(b) Describe how technology is affecting society and the environment;

(c) Discuss the impact of technology on career options; and

(d) Demonstrate that people control technology and are responsible for the effects of technology.

Sec. 5. *By the end of the 12th grade, pupils must know and be able to do everything required in the previous grades for courses in technology and computers offered in public schools. Instruction in the 12th grade in technology and computers must be designed so that pupils meet the following performance standards by the completion of the 12th grade:*

1. To develop the ability to solve problems, pupils must be able to use problem-solving processes and resources to reach a desired outcome, as demonstrated by the ability of the pupil to:

(a) Compare and contrast a variety of approaches to problem solving;

(b) When given a problem, effectively design a method for solving the problem; and

(c) Create, with technical accuracy, designs or models for solving problems in one of the following areas of technology:

(1) Energy, power and transportation;

(2) Communications;

(3) Construction; and

(4) Manufacturing.

2. To develop the ability to use productivity tools, pupils must be able to use appropriate productivity tools, including, without limitation, word processing, spreadsheets, databases, multimedia and telecommunications, as demonstrated by the ability of the pupil to:

(a) Type a multipage word processing document that is correctly formatted, including, without limitation, using headers, footers, pagination, line spacing and margin settings;

(b) Use appropriate tools such as spell check and a thesaurus;

(c) Create a database, define fields and enter data for multiple records;

(d) Interpret reports based on data;

(e) Create and print a chart that visually represents data from a spreadsheet;

(f) Analyze the significance of the data that is included in a spreadsheet;

(g) Create and present a multipage, multimedia presentation using:

(1) Animation;

(2) Digital video; or

(3) Linking,

FLUSH *with text, graphics and sound;*

(h) Identify the intended message of a multimedia presentation;

(i) Organize files on a computer disk, hard drive, server or other storage device;

(j) Compare and contrast:

(1) A local area network, or LAN;

(2) A wide area network, or WAN;

(3) An Intranet; and

(4) The Internet;

(k) Compare and analyze the appropriate uses of a variety of electronic communications; and

(l) Locate and evaluate sources of distance learning, telecommuting and teleconferencing.

3. In the area of tools used for research, pupils must be able to use various tools of technology to research information and evaluate the accuracy and appropriateness of the information to solve problems and make decisions, as demonstrated by the ability of the pupil to:

(a) State a research topic or problem and list the elements, limits and expected outcomes of the research on the topic or problem;

(b) Independently generate a list of keywords for a research topic or problem, with qualifying modifiers to narrow a search of electronic-based resources;

(c) Using a variety of search strategies, use hyperlinks to select information;

(d) Select an organizational tool and accurately place collected information within a format to aid in making a decision;

(e) Create a standard bibliography or work-cited page; and

(f) Complete a rubric for the evaluation of the results of the research of a topic or problem.

4. In the area of tools and processes, pupils must be able to identify, apply and manage various concepts, tools and resources to evaluate their accuracy and appropriateness in solving problems and making decisions, as demonstrated by the ability of the pupil to:

(a) Conduct research in an area related to computers or technology, and explain how new tools, materials and processes are necessary to maintain and improve high productivity and quality;

(b) Use tools, with minimal direction, to produce solutions in an area related to computers or technology;

(c) Select the correct tool and process to complete a task; and

(d) Under the supervision of a teacher or media specialist, correct nonfunctioning technology systems.

5. In the area of systems, pupils must be able to recognize that systems are made up of individual components and that each component affects the operation of the entire system and its relationship with other systems, as demonstrated by the ability of the pupil to:

(a) Explain the evolution of a given system or process;

(b) Design a model of a system to produce a desired outcome; and

(c) Given a system, identify possible ways to improve the product, productivity or management, or any combination thereof, generated by the system.

6. In the area of implications of technology and computers on society, pupils must be able to evaluate the impact and ethical implications of technology and computers on persons, society and the environment, as demonstrated by the ability of the pupil to:

(a) Compare and contrast the impacts of new products and services on the quality of life;

(b) Given a specific technology, determine possible outcomes from the use of the technology and the acceptability of those outcomes;

(c) Develop a career plan; and;

(d) Discuss the advantages and disadvantages of widespread use of and reliance on technology in the workplace and in society as a whole.

Sec. 6. NAC 389.368 is hereby amended to read as follows:

389.368 1. NAC 389.370 to ~~[389.390,]~~ ***389.385,*** inclusive, apply to courses of study required whether or not the majority of subjects offered by the school for a particular grade are taught to a pupil by a single teacher.

2. On and after September 1, 1992, NAC 389.392 and 389.393 apply to courses of study required or elected whether or not the majority of subjects offered by the school for a particular grade are taught to a pupil by a single teacher.

3. On and after September 1, 1993, NAC 389.391 applies to courses of study required whether or not the majority of subjects offered by the school for a particular grade are taught to a pupil by a single teacher.

Sec. 7. NAC 389.290, 389.340, 389.390, 389.500, 389.502 and 389.504 are hereby repealed.

TEXT OF REPEALED SECTIONS

389.290 Computers and other related technology.

1. The courses in computers offered in public elementary schools must include instruction designed to teach the pupil by completion of the third grade to:

(a) Use a computer and other related technology in areas in which they are appropriate.

(b) Use computer terminology correctly.

(c) Locate numbers, letters and commonly used special keys on a keyboard.

(d) Load and run a program.

(e) Recognize that the computer and other related technology are tools for work and play.

(f) Describe how computers and other related technology are used in the community.

2. Each pupil must create at least two computer-generated products before the completion of the third grade.

389.340 Computers and other related technology.

1. The courses in computers offered in public elementary schools must include instruction designed to teach the pupil by completion of the sixth grade to:

(a) Use a computer and other related technology in areas in which they are appropriate.

(b) Use computer terminology correctly.

(c) Develop skills concerning the use of a keyboard.

(d) Operate computer hardware.

(e) Use a computer program and other related technology to solve problems.

(f) Develop word-processing skills.

(g) Identify the ways in which a computer and other related technology may be used.

2. The courses in computers offered in public elementary schools must also examine:

(a) The computer skills and other related technology required in various occupations.

(b) The ethical responsibilities of a person who uses a computer or other related technology.

3. Each pupil must create at least two computer-generated products before the completion of the sixth grade which demonstrate his ability to communicate through the use of a computer.

389.390 Computers and other related technology. The courses in computers offered in public elementary schools must include instruction designed to teach the pupil by completion of the eighth grade to:

1. Use a computer and other related technology in areas in which they are appropriate.

2. Operate computer hardware, peripherals and other related devices.

3. Develop his skills concerning the use of a keyboard.

4. Use computers and other related technology to collect and analyze information and solve problems.

5. Compose, edit and print text using a word-processing program.

6. Describe the major historical developments in computing.

7. Identify how a computer and other related technology are used in a variety of occupations.

8. Use data-base, spreadsheet and word-processing programs for various tasks.

9. Understand the misuses of computers and other related technology and the consequences of such misuses, including, without limitation, computer viruses, copyright laws and criminal laws related to the unauthorized access to a computer system.

389.500 Computer literacy. A course of study in computer literacy must:

1. Identify potential career opportunities using computer skills and describe the skills required for such careers.

2. Demonstrate the ways in which computer software, hardware and peripherals may be used to meet personal needs.

3. Explain the ways in which the use of a computer may lead to the invasion of the privacy of a person.

4. Explain the relevant issues related to copyright laws, security of data and ethics in the use of information.

5. Explore recent historical developments of the computer and understand their implications for the future.

6. Require pupils to:

(a) Demonstrate an understanding of concepts related to word processing, data bases, speadsheets, telecommunications, multimedia presentations, graphics and desktop publishing.

(b) Create, edit, store and print text using a word-processing program.

389.502 Application of computers. A course of study in the application of computers must include instruction designed to teach the pupil to do the following:

1. Create, store and retrieve personal files by using a data-base program.

2. Create, manipulate and make projections by using a spreadsheet program.

3. Create, edit, develop a format, store, retrieve and print text using a word-processing program.

4. Access a commercial data base or a simulated data base using telecommunications.

5. Demonstrate an understanding of applications of desktop publishing and multimedia presentations and the operation of a simple computer system.

389.504 Science of computers. A course of study in the science of computers must include instruction designed to teach the pupil to do the following:

1. Demonstrate knowledge of methods of problem solving through algorithm development.

2. Recognize the proper techniques of designing, documenting and correcting errors, deficiencies or other problems with a program.

3. Use the proper syntax and semantics of high-level programming language.

4. Use basic aspects of string processing, recursion, internal search and sort methods, and simple data procedures.

5. Demonstrate an understanding of the architecture of a simple computer system.

6. Operate a simple computer system.