

LqPV Technology Curriculum Mapping
Completed 2006-2007 School Year
Presented for School Board Approval , June 2007



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Technology Standards			
Level I (Grade K-2)			
Skill	K	1	2
1. Knows the characteristics and uses of computer hardware and operating systems			
1. Knows basic computer hardware (e.g., keyboard and mouse, printer, monitor, output, hard and floppy disk, case for the CPU [central processing unit])	X	X	X
2. Powers-up computer, monitor, and starts a computer program (e.g., checks that printer is switched on and on-line; reboots the computer when necessary, mouse skills, highlighting)	X	X	X
3. Knows the alphanumeric keys and special keys (e.g., function keys, escape key, space bar, delete/backspace, return/enter)	X	X	X
4. Knows proper finger placement on the home row keys			X
5. Handles diskettes and other computer equipment with care (mouse, keyboard, etc.)		X	X
2. Knows the characteristics and uses of computer software programs			
1. Types on a computer keyboard, using correct hand and body positions (uses enhancements, fonts/size, spell check)			X
2. Knows basic distinctions among computer software programs, such as word processors, special purpose programs, and games	X		X
3. Uses menu options and commands (desktop icons, scrollbar, etc.) Learn how to save and retrieve information.	X Picture	X	X
3. Understands the relationships among science, technology, society, and the individual			
1. Knows ways that technology is used at home and at school (e.g., paging systems, telephones, VCRs)	X	X	X
2. Knows that new tools and ways of doing things affect all aspects of life, and may have positive or negative effects on other people		X	X
3. Understands that when an individual creates something on a computer, the created work is that person's property, and only that person has the right to change it		X	X

Technology Standards			
Level I (Grade K-2)			
Skill	K	1	2
4. Knows that man-made materials, products, and systems can affect the environment adversely, yet there are things that can be done to circumvent this process (e.g., disposing of waste properly, reusing old objects in new designs)		X	X
5. Create and print an original document using various programs (Paint, Kid Pix, etc.)		X	X
4. Understands the nature of technological design			
1. Knows that both objects and systems occur in nature (e.g., stars and the solar system), but people can also design and make objects and systems (e.g., telephones and communication systems) to solve a problem and to improve the quality of life		X	
2. Knows that tools have specific functions, such as to observe, measure, make things, and do things better or more easily; selecting the right tool makes the task easier		X	X
3. Knows that people are always inventing new ways to solve problems and accomplish work (e.g., a computer is a machine that helps people work and play)		X	X
4. Knows that planning is an important part of the design process		X	
5. Knows that new objects can be created out of physical materials (e.g., paper, cloth)	X	X	X
6. Knows that because there may be multiple solutions to a design problem, each appropriate to different situations, many creative ideas can be useful			
5. Understands the nature and operation of systems			
1. Knows that most things are made of parts and they may not work if some parts are missing	X	X	
2. Knows that when parts are put together, they can do things that they couldn't do by themselves		X	

Technology Standards			
Level I (Grade K-2)			
Skill	K	1	2
3. Understands how some elements of simple systems work together (e.g., people in a restaurant, parts of a bicycle)		X	
4. Creates and tests a simple linear system (e.g., a production line process for making sandwiches)		X A/M	
6. Understands the nature and uses of different forms of technology			
1. Knows that technology is used in medicine to prevent and cure disease (e.g., through vaccinations and medications)	X	X	
2. Knows that technology is used to improve what humans get from crops by reducing the amount of work needed, keeping food fresh, and moving it long distances to where people need it			X
3. Knows that energy comes from different sources (e.g., electricity, gas, water) and is used in many common objects (e.g., a stove, some toys)			X
4. Knows that communication technology allows people to exchange and find information quickly, cheaply, and reliably over a distance			X
5. Knows that a transportation system is tailored to a society's needs and consists of rules (e.g., which side of the road to drive on) and components (e.g., vehicles and the surface upon which they move)			X
6. Knows that manufacturing technology first creates a complete and detailed design of a product and then produces this product in quantity		X	
7. Knows that there are different types of structures (e.g., house, airport, highway) and each one requires different materials and parts		X	X
8. Acceptable Use Policy (e-mail, internet use)	X	X	X

Technology Standards			
Level II (Grade 3-5)			
Skill	3	4	5
1. Knows the characteristics and uses of computer hardware and operating systems			
1. Knows the basic functions of hardware (e.g., keyboard and mouse provide input; printer and monitor provide output; hard and floppy disk provide storage; the cpu processes information)	X	X	X
2. Uses proper fingering for all keys, beginning from the homerow, maintaining proper posture while using the keyboard (introduce keyboarding program)	X	X	X
3. Knows potential hazards to computer media (e.g., the damage caused to floppies by magnetic fields, dirt, and dust; caused to computers by excessive heat, smoke, and moisture)	X	X	X
4. Knows basic facts about networked computers (e.g., computers can connect to each other via modem and telephone line, or through local network systems, or internet and intranet)	X	X	X
2. Knows the characteristics and uses of computer software programs			
1. Uses a word processor to edit, copy, move, save, and print text with some formatting (e.g., centering lines, using tabs, forming paragraphs, inserting graphics, highlighting & mouse skills, introduce Thesaurus)	X	X	X
2. Makes back-up copies of stored data, such as text, programs, and databases	X	X	
3. Trouble-shoots simple problems in software (e.g., re-boots, uses help systems)	X	X	
4. Knows the common features and uses of databases (e.g., databases contain records of similar data, which is sorted or organized for ease of use; databases are used in both print form, such as telephone books, and electronic form, such as computerized card catalogs)	X	X MMN card catalogue	
5. Uses database software to add, edit, and delete records, and to find information through simple sort or search techniques			X A/M
6. Knows how formats differ among software applications (e.g., word processing files, database files) and hardware platforms (e.g., Macintosh, Windows, digital camera)	X MMN	X	X
7. Use computer for research, practice and product (Power Point, internet, library card catalogue)	X	X	X
8. Introduction of web-based bookmarks (tagging) responsible management.			

Technology Standards			
Level II (Grade 3-5)			
Skill	3	4	5
3. Understands the relationships among science, technology, society, and the individual			
1. Knows that technologies often have costs as well as benefits and can have an enormous effect on people and other living things	X	X	
2. Knows areas in which technology has improved human lives (e.g., transportation, communication, nutrition, sanitation, health care, entertainment)	X	X	X
3. Knows that new inventions often lead to other new inventions and ways of doing things	X	X	X
4. Knows that new inventions reflect people's needs and wants, and when these change, technology changes to reflect the new needs and wants	X	X	X
5. Understands the concept of software piracy (i.e., illegally copying software), and that piracy is a violation of copyright laws (introduce citation of resources – understanding copyright)		X	X
6. Understands that technology may affect the environment both negatively and positively (e.g., a mass transit system may both reduce the number of cars in an area, but also cause harm to wildlife in the area)	X	X	
7. Create, save, print and retrieve an original document.	X	X	X
8. Acceptable Use Policy (e-mail, internet use)	X	X	X
4. Understands the nature of technological design			
1. Categorizes items into groups of natural objects and designed objects	X		
2. Knows that group collaboration is useful as the combination of multiple creative minds can yield more possible design solutions	X	X	
3. Knows that the design process is a series of methodical steps for turning ideas into useful products and systems	X	X	
4. Identifies a simple problem that can be solved using technology	X	X	
5. Knows constraints that must be considered when designing a solution to a problem (e.g., cost, materials, time, space, safety, scientific laws, engineering principles, construction techniques, appearance, environmental impact, what will happen if the solution fails)			X
6. Uses appropriate tools, techniques, and quantitative measurements to implement proposed solutions	X		

Technology Standards			
Level II (Grade 3-5)			
Skill	3	4	5
7. Evaluates a product or design (e.g., considers how well the product or design met the challenge to solve a problem; considers the ability of the product or design to meet constraints), and makes modifications based on results	X		X
8. Knows that people have invented and used tools throughout history to solve problems and improve ways of doing things	X	X	X
9. Knows that different technologies can often be combined (e.g., an escalator uses both pulleys and an electric motor)	X <small>A/M</small>	X	X
5. Understands the nature and operation of systems			
1. Knows that when things are made up of many parts, the parts usually affect one another	X	X	X
2. Knows that things that are made of parts may not work well if a part is missing, broken, worn out, mismatched, or misconnected	X	X	X
3. Understands the relationships between elements (i.e., components, such as people or parts) in systems			X
4. Assembles, disassembles, and tests systems (e.g., in logo programming, using paper and pencil designs)			X <small>Sci</small>
6. Understands the nature and uses of different forms of technology			
1. Knows that medical technology is used to provide information about a patient's body (e.g., measuring blood glucose levels) and to repair, replace, and support parts of the body		X	X
2. Knows that elements of an agricultural system are designed to maximize the interaction and production of all the elements in the system (e.g., by composting, using plants for food, oxygen, and water and air filtration)		X	
3. Knows that different types of energy (e.g., solar, fossil fuels) have different advantages and disadvantages	X	X	X

Technology Standards			
Level II (Grade 3-5)			
Skill	3	4	5
(e.g., solar energy is a cleaner source of energy than fossil fuels, but currently is more expensive), and that regardless of the source of energy, the technological design should attempt to maximize the use of it			
4. Knows that technology facilitates better communication by providing storage and retrieval of large amounts of data, an easy means of accessing data, a means of processing and displaying data, and faster communication among individuals	X	X	
5. Knows that transportation systems affect society (e.g., where people live) and are affected by society and nature (e.g., activists may request more public transit, a severe thunderstorm may cause flights to be canceled)	X	X	X

Technology Standards			
Level III (6-8)			
Skill	6	7	8
1. Knows the characteristics and uses of computer hardware and operating systems			
1. Knows the differing capacities and trade-offs for computer storage media, such as CD-ROMs, floppy disks, hard disks, and tape drives		Computer 7, Basic Skills, 1 Other	Computer 8, Basic Skills, 2 Others
2. Types with some facility, demonstrating some memorization of keys	X	Computer 7, Science, OT, 2 Others	Computer 8, Science, OT, 3 Others
3. Connects via modem to other computer users via the internet, an on-line service, or bulletin board system		2 People	3 People
4. Knows basic characteristics and functions of an operating system including accessing help files (Atomic Learning)	X	Computer 7, Basic Skills, 2 Others	Computer 8, Basic Skills, 3 Others
2. Knows the characteristics and uses of computer software programs			
1. Uses advanced features and utilities of word processors (e.g., uses clip art, a spell-checker, grammar checker, thesaurus, outliner)	X	Computer 7, Science, Art, English, 2 Others	Computer 8, Science, Art, 3 Others
2. Knows the common features and uses of desktop publishing software (e.g., documents are created, designed, and formatted for publication; data, graphics, and scanned images can be imported into a document using desktop software)	X	Science, Art	Computer 8, Science, Art, 1 Other
3. Knows the common features and uses of spreadsheets (e.g., data is entered in cells identified by row and column; formulas can be used to update solutions automatically; spreadsheets are used in print form, such as look-up tables, and electronic form, such as to track business profit and loss)			Computer 8, 2 Others
4. Uses a spreadsheet to update, add, and delete data, and to write and execute valid formulas on data			Computer 8, 2 Others

Technology Standards			
Level III (6-8)			
Skill	6	7	8
5. Uses Boolean searches to execute complex searches on a data base (including responsible management of bookmarks)	X	Science, English	Computer 8, Science
6. Uses digital camera (teacher assistance)	X		
3. Understands the relationships among science, technology, society, and the individual			
1. Knows that scientific inquiry and technological design have similarities and differences (e.g., scientists propose explanations for questions about the natural world that are always tentative and evolving, and engineers propose solutions relating to human problems, needs, and aspirations; both science and technology depend on accurate scientific information and they cannot contravene scientific laws)	X	Science	Science, 1 Other
2. Knows that science cannot answer all questions and technology cannot solve all human problems or meet all human needs	X	Science	Science, 1 Other
3. Knows ways in which technology has influenced the course of history (e.g., revolutions in agriculture, manufacturing, sanitation, medicine, warfare, transportation, information processing, communication)	X	Science, Art 1 Other	Science, Art, 3 Others
4. Knows that technology and science have a reciprocal relationship (e.g., technology drives science, as it provides the means to access outer space and remote locations, collect and treat samples, collect, measure, store, and compute data, and communicate information; science drives technology, as it provides principles for better instrumentation and techniques, and the means to address questions that demand more sophisticated instruments)	X	Science	Science
5. Knows ways in which technology and society influence one another (e.g., new products and processes for society are developed through technology; technological changes are often	X	Science, Art, 1 Other	Computer 8, Science, Art, 2 Others

Technology Standards			
Level III (6-8)			
Skill	6	7	8
accompanied by social, political, and economic changes; technology is influenced by social needs, attitudes, values, and limitations, and cultural backgrounds and beliefs)			
6. Knows examples of copyright violations and computer fraud (e.g., computer hacking, computer piracy, intentional virus setting, invasion of privacy) and possible penalties (e.g., large fines, jail sentences)	X	Computer 7, Science, 1 Other	Computer 8, Science, 2 Others
7. Knows ways technology is used to protect the environment and prevent damage caused by nature (e.g., new building technologies protect cities from earthquakes, bacteria are used in cleaning water)		Science	Science, 2 Others
8. Acceptable Use Policy (e-mail, internet)	X	X	X
4. Understands the nature of technological design			
1. Knows that the design process is a slow, methodical process of test and refinement		Tech 7	Computer 8, Tech 8, 2 Others
2. Knows that the design process relies on different strategies: creative brainstorming to establish many design solutions, evaluating the feasibility of various solutions in order to choose a design, and troubleshooting the selected design		Tech 7	Computer 8, Tech 8
3. Identifies appropriate problems which can be solved using technological design (e.g., identifies a specific need, considers its various aspects, considers criteria for a suitable product)		Tech 7, 1 Other	Computer 8, Tech 8, 1 Other
4. Designs a solution or product, taking into account needs and constraints (e.g., cost, time, trade-offs, properties of materials, safety, aesthetics)		Tech 7	Computer 8, Tech 8
5. Implements a proposed design (e.g., organizes materials and other resources, plans one's work, makes use of group collaboration when appropriate, chooses suitable tools and techniques, works with appropriate measurement methods to ensure accuracy)		Tech 7, 2 Others	Computer 8, Tech 8, 2.5 Others

Technology Standards			
Level III (6-8)			
Skill	6	7	8
6. Evaluates the ability of a technological design to meet criteria established in the original purpose (e.g., considers factors that might affect acceptability and suitability for intended users or beneficiaries; develop measures of quality with respect to these factors), suggests improvements, and tries proposed modifications		Tech 7	Computer 8, Tech 8
7. Understands that nonphysical objects (e.g., software) and physical objects (e.g., a telephone) are both subject to the design process	X		Computer 8, 1 Other
8. Knows that invention is the process of creating a new system or object out of an idea while innovation is the process of modifying an existing system or object to improve it (e.g., the specialization of function of a subsystem)	X	Science	Computer 8, Science
5. Understands the nature and operation of systems			
1. Knows that a system can include processes as well as components		Computer 7, Science, Tech 7	Computer 8, Science, Tech 8
2. Knows how part of a system can provide feedback when its output (in the form of material, energy, or information) becomes input for another part of the system		Computer 7, Science, Tech 7	Computer 8, Science, Tech 8, 1 Other
3. Identifies the elements, structure, sequence, operation, and control of systems	X	Science	Computer 8 , Science
4. Assembles and disassembles systems to manage, control, and improve their performance (e.g., a computer program, a simple machine based on a pulley mechanism)		Science, Tech 7	Science, Tech 8
5. Knows that systems are usually linked to other systems, both internally and externally, and can contain subsystems as well as operate as subsystems		Science, Tech 7	Science, Tech 8
6. Knows that an open-loop system (e.g., a microwave as a heating system) has no feedback and requires human intervention, where a closed-loop system (e.g., a household heating system with a		Science	Science

Technology Standards			
Level III (6-8)			
Skill	6	7	8
thermostat) uses feedback			
6. Understands the nature and uses of different forms of technology			
1. Understands ways in which medical technology improves the quality of health care (e.g., advanced diagnosing equipment, increased hospital sanitation)	X	Science	1 Person
2. Knows ways in which biotechnology results in benefits for humans, including more convenience, less labor, improved health and medicine, and improved food		Science	
3. Knows that most technological systems require an input of energy, which is an important consideration both in designing an object or a system and in conserving energy (e.g., so many things require energy that alternative sources to fossil fuels should be used when possible)		Science, Tech 7	Science, Tech 8, 1 Other
4. Knows the components of a communication system (i.e., a source, encoder, transmitter, receiver, decoder, and destination)		Science	
5. Knows that individual transportation vehicles contain several subsystems (e.g., structural, propulsion, control)		Tech 7	Tech 8
6. Knows that manufacturing processes use hand tools, human-operated machines, and automated machines to separate, form, combine, and condition natural and synthetic materials; these changes may either be physical or chemical	X	Tech 7	Tech 8
7. Knows that construction design is influenced by factors such as building laws and codes, style, convenience, cost, climate, and function		Tech 7	Science, Tech 8

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
1. Knows the characteristics and uses of computer hardware and operating systems				
1. Knows of significant advances in computers and peripherals (e.g., data scanners, digital cameras)	Music, 1 Other	Music, 1 Other	Music, Microsoft Office, 1 Other	Music, Microsoft Office, Auto, 1 Other
2. Uses a variety of input devices (e.g., keyboard, scanner, voice/sound recorders, mouse, touch screen)	Music, Computer 9, 1 Other	Music, Auto, Biology, Essentials of Biology, World History, 1 Other	Music, Microsoft Office, Auto, Biology, Advanced Biology, Essentials of Biology, Multimedia, Global Geography, Trans English	Music, Microsoft Office, Auto, Biology, Advanced Biology, Essentials of Biology, Multimedia, Trans English
3. Knows limitations and trade-offs of various types of hardware (e.g., laptops, notebooks, modems)		1 Person	Microsoft Office	Microsoft Office
4. Identifies malfunctions and problems in hardware (e.g., hard drive crash, monitor burn-out)	Computer 9, 1 Other	1 Person	Microsoft Office, Multimedia, Computer	Microsoft Office, Multimedia, Computer

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
			Applications, 1 Other	Applications, 1 Other
5. Knows features and uses of current and emerging technology related to computing (e.g., optical character recognition, sound processing, cable TV, cellular phones, ABS brakes)	Music, Computer 9		Music, Microsoft Office	Music, Microsoft Office, Auto
2. Knows the characteristics and uses of computer software programs				
1. <u>Understands the uses of listservs, usenet newsreaders, and bulletin board systems</u>		American Studies II	General Law	General Law, Economics & Government
2. Knows how to import, export, and merge data stored in different formats (e.g., text, graphics)	Computer 9, 1 Other	2 People	Microsoft Office, Multimedia, Computer Applications, Trans English, 1 Other	Microsoft Office, Multimedia, Computer Applications, Trans English, 1 Other
3. Knows how to import and export text, data, and graphics between software programs	1 Person	Biology, Essentials of Biology, 2 Others	Microsoft Office, Multimedia, Computer Applications, Biology, Advanced Biology,	Microsoft Office, Multimedia, Computer Applications, Biology, Advanced Biology,

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
			Essentials of Biology, 1 Other	Essentials of Biology, 1 Other
4. Identifies some advanced features of software products (e.g., galleries, templates, macros, mail merge)			Microsoft Office, Multimedia, Computer Applications	Microsoft Office, Multimedia, Computer Applications
5. Uses desktop publishing software to create a variety of publications	Spanish I, 2 Others	Auto, Spanish I, Spanish II, 1 Other	Microsoft Office, Auto, Computer Applications, Spanish II, Trans English, 1 Other	Microsoft Office, Auto, Computer Applications, Trans English
3. Understands the relationships among science, technology, society, and the individual				
1. Knows that science and technology are pursued for different purposes (e.g., scientific inquiry is driven by the desire to understand the natural world and seeks to answer questions that may or may not directly influence humans; technology is driven by the need to meet human needs and solve human problems)	Physical Science, 1 Other	Biology, Essentials of Biology, 1 Other	Microsoft Office, Biology, Essentials of Biology, Advanced Biology, 2 Others	Microsoft Office, Biology, Essentials of Biology, Advanced Biology, Physics, 1 Other

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
2. Knows ways in which social and economic forces influence which technologies will be developed and used (e.g., cultural and personal values, consumer acceptance, patent laws, availability of risk capital, the federal budget, local and national regulations, media attention, economic competition, tax incentives)	1 Person	World History, 2 Others	Business/ Consumer Economics, Global Geography, 2 Others	Business/ Consumer Economics, 1 Other
3. Knows that alternatives, risks, costs, and benefits must be considered when deciding on proposals to introduce new technologies or to curtail existing ones (e.g., Are there alternative ways to achieve the same ends? Who benefits and who suffers? What are the financial and social costs and who bears them? How serious are the risks and who is in jeopardy? What resources will be needed and where will they come from?)	Physical Science, 1 Other	3 People	Business/ Consumer Economics, Accounting, 2	Business/ Consumer Economics, Advanced Accounting, Physics, Economics & Government, 2 Others
4. Knows that technological knowledge is often not made public because of patents and the financial potential of the idea or invention; scientific knowledge is made public through presentations at professional meetings and publications in scientific journals	Physical Science	1 Person	1 Person	Physics
5. Knows examples of advanced and emerging technologies (e.g., virtual environment, personal digital assistants, voice recognition software) and how they could impact society	1 Person	1 Person	Microsoft Office, General Law, 1 Other	Microsoft Office, General Law, 1 Other
6. Observes common courtesies and acceptable use policies while telecomputing	2 People	4 People	General Law, Multimedia,	General Law, Multimedia,

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
			Computer Applications, 2 Others	Computer Applications, 2 Others
7. Knows that mathematics, creativity, logic, and originality are all needed to improve technology	Physical Science, 3 Others	3 People	Trig/Statistics, 2 Others	Physics, Trig/Statistics, 2 Others
8. Knows the role of technology in a variety of careers	Music, Physical Science, 4 Others	Music, World History, American Studies II, 5 Others	Microsoft Office, Music, Trig/Statistics, Global Geography, 3 Others	Microsoft Office, Music, Trig/Statistics, Economics & Government, 2 Others
9. Knows that the rate of technological development and diffusion is increasing rapidly, even though individual technologies may be developed at a slow pace due to technical difficulties or consumer resistance	Physical Science, 3 Others	4 People	3 People	Auto, Physics, 2 Others
10. Knows that technology can benefit the environment by providing scientific information, providing new solutions to older problems, and reducing the negative consequences of existing technology (e.g., monitoring a habitat or measuring greenhouse gases, improving renewable energy sources, and creating scrubbers to improve coal-burning facilities)	Physical Science, 1 Other	Biology, Essentials of Biology, 1 Other	Biology, Essentials of Biology, Advanced Biology, 1 Other	Biology, Essentials of Biology, Advanced Biology, Physics, Economics & Government, 1 Other

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
4. Understands the nature of technological design				
1. Knows that an optimal solution to a design problem is more likely to be found when the process followed is systematic and repetitive	1 Person	World History, 2 Others	Microsoft Office, Global Geography, Trig/ Statistics, 2 Others	Microsoft Office, Trig/ Statistics, 2 Others
2. Proposes designs and uses models, simulations, and other tests to choose an optimal solution	1 Person	2 People	Microsoft Office, Business/ Consumer Economics, General Business, Trig/ Statistics, 2 Others	Microsoft Office, Business/ Consumer Economics, General Business, Trig/ Statistics, 2 Others
3. Implements a proposed solution (e.g., constructs artifacts for intended users or beneficiaries)	1 Person	2 People	2 People	2 People
4. Evaluates a designed solution and its consequences based on the needs or criteria the solution was designed to meet	1 Person	2 People	2 People	2 People
5. Knows that since there is no such thing as a perfect design, trade-offs of one criterion for another must occur to find an optimized solution	Computer 9, 1 Other	2 People	Microsoft Office, 2 Others	2 People

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
6. Knows that a design involves different design factors (e.g., ergonomics, maintenance and repair, environmental concerns) and design principles (e.g., flexibility, proportion, function)	Computer 9, 1 Other	People	Microsoft Office, 2 Others	2 People
5. Understands the nature and operation of systems				
1. Knows that a system usually has some properties that are different from those of its parts, but appear because of the interaction of those parts	Music, 2 Others	Music, 2 Others	Music, Accounting, 2 Others	Music, Advanced Accounting, Physics, 2 Others
2. Knows that understanding how things work and designing solutions to problems of almost any kind can be facilitated by systems thinking, which employs mathematical modeling and simulation	2 People	2 People	Business/ Consumer Economics, Accounting, Trig/Statistics, 2 Others	Business/ Consumer Economics, Advanced Accounting, Trig/Statistics, 2 Others
3. Knows that in defining a system, it is important to specify its boundaries and subsystems, indicate its relation to other systems, and identify what its input and its output are expected to be	2 People	2 People	Microsoft Office, 2 Others	Microsoft Office, Auto, Physics, 2 Others
4. Knows how feedback can be used to help monitor, control, and stabilize the operation of a system	2 People	2 People	2 People	Auto, 2 Others
5. Knows that even in simple systems, accurate prediction of the effect of changing some part of the system is not always possible	2 People	2 People	2 People	Auto, 2 Others
6. Constructs and operates systems (e.g., organizes and adjusts subsystems)	3 People	3 People	3 People	3 People

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
7. Knows that complex systems are subject to failure and are designed with various elements and procedures (e.g., performance testing, overdesign, redundancy, more controls) that help reduce system failure	2 People	2 People	Accounting, 2 Others	Advanced Accounting, Auto, 2 Others
8. Knows that systems are embedded within larger systems, including technological, social, and environmental systems	2 People	2 People	2 People	2 People
6. Understands the nature and uses of different forms of technology				
1. Knows that genetic engineering is the process by which controlled changes in a genetic structure can be made and that this process is used to research and diagnose disease and create pharmaceuticals		Biology, Essentials of Biology	Biology, Essentials of Biology, Advanced Biology, 1 Other	Biology, Essentials of Biology, Advanced Biology
2. Knows that biotechnology is used in a variety of areas (e.g., agriculture, pharmaceuticals, food and beverage, fuels and energy, the environment, genetic engineering) and requires specific scientific knowledge about the natural system being modified		Biology, Essentials of Biology	Biology, Essentials of Biology, Advanced Biology, 1 Other	Biology, Essentials of Biology, Advanced Biology
3. Understands scientific principles of energy, work, and power in relation to technological design (e.g., the Second Law of Thermodynamics means that a system cannot be designed which is 100% efficient)	Physical Science, 1 Other	1 Person	2 People	Physics, 1 Other
4. Knows that power systems (i.e., systems which convert energy from one form to another) have a source of energy, a process, loads, and some have a feedback system	Physical Science, 1 Other	2 People	2 People	Physics, 2 Others

Technology Standards				
Level IV (Grade 9-12)				
Skill	9	10	11	12
5. Knows that communication systems can transfer information from person to person (e.g., a telephone), person to machine (e.g., a person inputting information into a computer), or machine to machine (e.g., an automated payroll system where the record of the money goes from one computer to another)	Computer 9, Basic Skills, 1 Other	Basic Skills, American Studies II, World History, 1 Other	Accounting, General Law, Microsoft Office, Business/ Consumer Economics, Global Geography, Basic Skills, 1 Other	Advanced Accounting, General Law, Microsoft Office, Business/ Consumer Economics, Auto, Basic Skills, Economics & Government,
6. Knows that modern transportation systems are diverse (allowing humans to combine types of transportation for the most direct and convenient route), intelligent (requiring coordinated subsystems, such as a traffic light system), and are necessary in the functioning of most other technologies	Physical Science	World History	Global Geography	Auto
7. Knows that there are different types of manufacturing systems (customized, batch, and continuous production) and manufacturing results in two different types of goods, durable and non-durable		1 Person	Accounting, 1 Other	Advanced Accounting, Economics & Government,
8. Knows different requirements for structural design (e.g., strength, maintenance, appearance) and that these structures require maintenance.	2 People	2 People	2 People	2 People