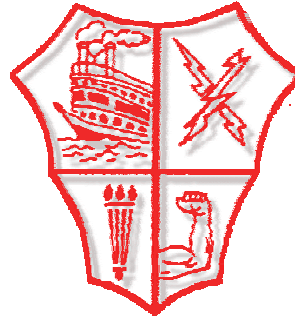


OHIO ACADEMIC CONTENT STANDARDS TECHNOLOGY STANDARDS

Adopted from the Ohio Department of Education



Grade 7

New Richmond Exempted Village School District

Grade 7

Academic Correlation

Standard 1 ~ Nature of Technology

Benchmark A: Analyze information relative to the characteristics of technology and apply in a practical setting.

1. Describe the factors involved in developing products and systems using technology (e.g., market survey, design, development, prototyping, assessing, producing, quality assurance, marketing).
2. Develop technological solutions to problems.
3. Discuss ways that technology is linked to creativity and innovation.

Benchmark B: Apply the core concepts of technology in a practical setting.

1. Differentiate between open-loop and closed-loop systems: recognize that an open-loop system has no feedback path and requires human intervention, while a closed-loop system uses feedback.
2. Describe ways that technological systems can be connected to one another.
3. Infer that malfunctions of any part of a system may affect the function and quality of the system.
4. Identify parameters that may be placed on the development of a product or system (e.g., cost, time, size).
5. Recognize that maintenance is the process of inspecting and servicing of a product, or system, on a regular basis.
6. Cite examples of controls, and predict resultant changes in a system for that control (e.g., the heating system thermostat regulates the air temperature of the room).

Benchmark C: Analyze the relationships among technologies and explore the connections between technology and other fields of study.

1. Describe the situational interdependence of technologies (e.g., space shuttle crew depends on communication technologies in order to maneuver the craft).
2. Identify products that have been applied to alternative settings.
3. Explain how knowledge from other fields of study may impact the development of technological systems and products.

Standard 2 ~ Technology and Society Interaction

Benchmark A: Analyze technologically responsible citizenship.

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| 1. Classify how new technologies have resulted from the demands, values and interests of individuals, businesses, industries and societies. | |
| 2. Relate ways that the uses of inventions and innovations have led to changes in society and the creation of new needs and wants. | |
| 3. Identify how societal expectations drive the acceptance and use of products and systems. | |

Benchmark B: Describe and explain the impact of technology on the environment.

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| 1. Explain how the development and use of technologies often put environmental and economic concerns in direct competition with one another. | |
| 2. Explain the life cycle of a typical product or structure. | |

Benchmark C: Describe how design and invention have influenced technology throughout history.

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| 1. Explain how the design and construction of structures for service or convenience have evolved from the development of techniques for measurement, controlling systems, and the understanding of spatial relationships. | |
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Benchmark D: Articulate intellectual property issues related to technology and demonstrate appropriate, ethical, and legal use of technology.

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| 1. Analyze a situation to determine the steps necessary to respect intellectual property rights including patents, copyrights, trade names and trademarks. | |
| 2. Discuss plagiarism and its ramifications. | |
| 3. Understand that installation of software requires an appropriate software license, and that the license determines how many times the software may be installed (e.g., does the license allow the software to be installed on more than one computer?). | |
| 4. Understand that Web page content may not be copied and imported into a new owner's Web page. | |
| 5. Understand that photos, images, graphics, sounds or videos displayed on the Internet are generally copyright protected and may not be copied, pasted, saved, imported, or used in new content without permission of the copyright owner. | |
| 6. Explore appropriate use of logos, icons, graphics, etc. in relation to trademark and trade name rights (e.g., understand that trademark logos may not be incorporated into new works without consent of the owner or payment of fees and/or royalties). | |
| 7. Analyze situations that arise regarding the use of intellectual property, including ethical considerations. | |
| 8. Determine steps necessary to respect intellectual property rights (e.g., obtain permission from the owner, credit the source of the items, pay a license fee to use the item). | |

Benchmark E: Assess impact of products and systems.

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| 1. Employ the use of instruments with different measuring standards to collect data (e.g., temperature, pH, voltage, heart rate, speed). | |
| 2. Identify trends and monitor potential consequences of technological development. | |

Standard 3 ~ Technology for Productivity Applications

Benchmark A: Demonstrate an understanding of concepts underlying hardware, software and connectivity.

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| 1. Use vocabulary related to computer and multimedia technology systems (e.g., universal serial bus (USB), hubs and switches). | |
| 2. Explain how computer components interact. | |
| 3. Explain the purpose and different functions of software programs. | |

Benchmark B: Select appropriate technology resources to solve problems and support learning.	
1. Investigate various formats of video content and methods of presentation (e.g., mpeg, avi).	
2. Edit video clips using video editing software.	
3. Solve problems using all available technologies for inquiry, investigation, analysis and presenting conclusions.	
4. Develop speed and accuracy when keyboarding, and transition to a word processing environment.	
Benchmark C: Use productivity tools to produce creative works, to prepare publications and to construct technology-enhanced models.	
1. Use content-specific tools, software and simulations to support learning and research to create educational projects.	
2. Apply technology resources to support group collaboration and learning throughout the curriculum.	
Standard 4 ~ Technology and Communication Applications	
Benchmark A: Communicate information technologically and incorporate principles of design into the creation of messages and communication products.	
1. Classify reasons to communicate information and explain why technology enhances communication (e.g., to explain, inform, persuade, sale, archive information in ways that reach a variety of audiences).	
2. Integrate advanced design features into communication products (e.g., background selection, framing, set design).	
3. Generate multimedia presentations that communicate information for specific purposes.	
Benchmark B: Develop, publish and present information in a format that is appropriate for content and audience.	
1. Select appropriate software tool to create and publish print information (e.g., word processor for a report, desktop publishing tool for signs/calendars/newsletters).	
2. Distinguish electronic file types and determine extensions including .txt, .rtf, .doc, .pdf and others.	
3. Insert original sound files into multimedia presentation (e.g., .avi, .wav, .mpeg).	
4. Insert copyright-free images (photos/graphics) into multimedia presentations (e.g., gif, jpg).	
5. Transform digital images by using editing software to: a. crop; b. rotate, flip, invert; c. add text, borders, decorative elements; d. adjust color (apply spot coloring, image touch-up); e. layer or merge images.	
Benchmark C: Select appropriate telecommunication tools and design collaborative interactive projects and activities to communicate with others.	
1. Compose e-mail messages and incorporate advanced techniques (e.g., include attachments, send to multiple recipients, format stationary, manage inbox, create address book).	
2. Acquire and disseminate information by participating in virtual learning activities (e.g., Web casts, video-conferencing, distance-learning offerings).	
Standard 5 ~ Technology and Information Literacy	
Benchmark A: Evaluate the accuracy, authority, objectivity, currency, coverage and relevance of information and data sources.	
1. Distinguish when current copyright dates of sources are important in answering an information need (e.g., science information on cloning, results of an election).	
2. Assess the objectivity of a source when using information. Objectivity is the ability of an author to present information without bias.	

3. Compare multiple sources (online encyclopedia, Web site, online magazine database, print source) to check accuracy of information (e.g., do facts match on each site?).	
4. Determine if a given source has all the information needed for a question or project (coverage) (e.g., general encyclopedia with a subject overview, magazine article highlighting specific issue).	
5. Chart information gathered from multiple sources to determine facts to be used in a project.	
Benchmark B: Use technology to conduct research and follow a research process model which includes the following: develop essential question; identify resources; select, use and analyze information; synthesize and generate a product; and evaluate both process and product.	
1. Develop open-ended research questions about a defined information need.	
2. Select and evaluate relevant information about a specific topic in several sources.	
3. Select information from different types of subscription resources (fee-based, pay-to-use) to meet an information need: magazine database, picture archive, online encyclopedia.	
4. Compile information learned about a topic from a variety of sources.	
5. Create information products to share information using different formats (e.g., print, audio recording, digital, video, slide show).	
6. Evaluate how information was found and assess the quality of the information product.	
Benchmark C: Develop search strategies, retrieve information in a variety of formats and evaluate the quality and appropriate use of Internet resources.	
1. Search a student-selected online directory or search engine by subject, keyword, author, title, date, or format.	
2. Perform searches for information in specific formats (e.g., images, journal articles, pre-formatted articles requiring a browser plug-in).	
3. Use Boolean operators in the search process (e.g., use Boolean logic to expand a search (AND), use Boolean logic to limit a search (AND, NOT).	
4. Compare information found in searches done on different types of Internet resources (e.g., meta engine, directory, search engine).	
5. Report elements of a Web site that make it effective (e.g., describe why the Web site is appropriate for the particular information needed).	
Benchmark D: Select, access and use appropriate electronic resources for a defined information need.	
1. Compare search results through the use of different keywords (e.g., search for conservation information using "garbage" and search again using "waste disposal").	
2. Examine information in different types of subscription (fee-based) databases to locate information for a curricular need (e.g., online encyclopedia, online subject dictionaries, magazine index, picture archive).	
Standard 6 ~ Design	
Benchmark A: Evaluate the aesthetic and functional components of a design and identify creative influences.	
1. Review existing designs and suggest ways that they can be improved (e.g., how have food containers changed over time and how they can be improved?).	
2. Describe how aesthetic and functional components both complement and conflict with each other (e.g., a brace to keep a bookcase from rocking may not be consistent with the beauty of the object).	
3. Describe how brainstorming is a group problem-solving design process in which each person in the group presents his or her ideas in an open forum.	
4. Apply a design process to solve a problem in the school (e.g., identify need, research problem, develop solutions, select best solution, build prototype, test and evaluate, communicate, and redesign).	

5. Make two- and three-dimensional representations of the designed solution (e.g., 2-D includes sketches, drawings, and computer-assisted designs (CAD); 3-D includes graphic, mathematical and physical models).	
6. Identify inventors and designers from antiquity who contributed to the development of each of the technology systems.	
7. Research and diagram the product development life cycle of an invention.	
Benchmark B: Recognize the role of engineering design and of testing in the design process.	
1. Summarize the role of engineering design.	
2. Describe the relationship between engineering, science and mathematics.	
3. Describe and test the characteristics of various materials (e.g., strength, color, conductivity).	
Benchmark C: Understand and apply research, innovation and invention to problem solving.	
1. Describe how some technological problems are best solved through experimentation.	
2. Describe and complete an experiment to evaluate the solution to a problem.	
3. Evaluate the credibility and applicability of information obtained to address a specific problem (e.g., what measurements should be used to build a chair or a piece of clothing—are they based on the prospective customers).	
4. Explain that understanding the function of an object requires a higher level of thinking than focusing on the object itself.	
5. Identify the patterns of technological invention (e.g., identify the patterns of invention in current products and systems).	
6. Discriminate between problems that do and do not have a technological solution.	
Standard 7 ~ Designed World	
Benchmark A: Develop an understanding of, and be able to, select and use physical technologies.	
1. Understand that energy can be used to do work using many processes.	
2. Describe why it is important for personnel in energy and power technologies to constantly update their knowledge and skills.	
3. Understand that power is the rate at which energy is converted from one form to another or transferred from one place to another, or the rate at which work is done.	
4. Describe how transportation vehicles are made up of subsystems, such as structural, propulsion, suspension, guidance, control, and support that must function together for a system to work effectively.	
5. Describe how licensure and certification are an integral part of transportation careers (e.g., commercial driver's license, safety inspector's pilot's license).	
6. Identify and manipulate the factors that influence vehicle performance (e.g., lift, drag, friction, thrust, pressure, and gravity).	
7. Design, develop, fabricate, and service a product (e.g., a pop bottle rocket).	
8. Analyze how marketing impacts the selection of the manufacturing process for a product.	
9. Disassemble safely a (possibly broken) product and describe what systems are inside, hypothesize how it was manufactured, what materials were used and possibly how it works.	
10. Describe a manufacturing organization (e.g., corporate structure, research and development, production, marketing, quality control, distribution).	

11. Identify the components of various building subsystems (e.g., on pictures of classroom, or various places in the school, label the electrical, lighting, HVAC, plumbing, communication, and structural subsystems).	
12. Identify and construct a type of structure (e.g., a model bridge including arch, beam, and suspension) and their appropriate uses (e.g., site, span, resources, and load).	
Benchmark B: Develop an understanding of, and be able to, select and use informational technologies.	
1. Identify the source, encoder, transmitter, receiver, decoder and destination in communication systems.	
2. Solve a problem involving information and communication technology systems (e.g., prepare video presentation, set up a communication system between two points in the school).	
3. Identify and explain the appropriate tools, machines, and electronic devices (e.g., drawing tools, computer-aided design, and cameras) used to produce and/or reproduce design solutions (e.g., engineering drawings, prototypes, and reports).	
Benchmark C: Develop an understanding of how bio-related technologies have changed over time.	
1. Describe how the sanitation processes used in the disposal of medical products help to protect people from harmful organisms and disease, and shape the ethics of medical safety.	
2. Describe how previously discarded medical practices are sometimes reinstated.	
3. Recognize how the medicines we use affect our ongoing health and attitudes.	
4. Explain examples of adaptive or assistive devices (e.g., prosthetic devices, wheelchairs, eyeglasses, grab bars, hearing aids, lifts, braces).	
5. Describe a wide range of specialized equipment and practices that are used to improve the production of food, fiber, fuel and other useful products, and in the care of animals.	
6. Identify artificial ecosystems that are human-made complexes that replicate some aspects of the natural environment.	
7. Describe how agricultural products are used to produce fuels (e.g., converting corn to ethanol and soy beans to biodiesel).	