



Library Connections to the NJCCS – Science

5.1 Scientific Processes

Libraries have information on the scientific process, problem solving skills, and many of the books they deal with experiments and laboratory sciences will discuss the issue of safety. For example, look for books in the beginning of the 500's (500, 501) for information on science methodology, thinking like a scientist, and scientific inquiry.

- Primary and Secondary sources on famous scientists and scientists as detectives.
- Current Magazine or Newspaper articles on scientific discoveries and methods of research

5.2 Science and Society

Libraries have information on many scientists from different cultures and nationalities. There are also specialized reference sources that list scientists by nationality. Materials are also available on ancient cultures and on science in other places in times, such as astronomy in Native American cultures and science in Islamic cultures. Look on the shelves in 509 for general science and society, 520.9 for astronomy and culture and in 540 for alchemy.

- Primary and Secondary sources include interviews and autobiographies of scientists from other cultures and material on the impact of science on society in the past
- Videos are available on the history of science and the impact some scientific discovery have made and are currently making today.
- Articles from periodicals and news sources, print and on-line about current scientific trends and controversies, including cloning, drug therapy and medical research.

5.3 Mathematical Applications

Just a short time ago it would have been difficult to find many trade books that deal with mathematics. Within the past few years, a number of resources have been printed that deal with basic math skills (510, 511, 512), measurement (530 and 389), pattern perceptions (152.14) and probability (519).

- Primary and Secondary Sources include materials on using math in specific careers, in games like chess and poker, and music.
- Videos are available that explain math theory and show the practical applications of some higher level math
- Test and Practice Books and On-line Tutorials that help students with test preparation
- Brain Teaser and Math Puzzles which help with problem solving skills.

5.4 Nature and Process of Technology



Libraries have a number of resources that deal with technology. Materials can cover technology in the past (look for material on prehistoric peoples, 573; history of inventions, 609; or histories of special fields like computers and space flight.)

- Primary and Secondary sources will include biographies, autobiographies and interviews of scientists, inventors, and innovative business people
- Materials both print and electronic that will discuss the impact of technology on society, both past and future predictions.
- Graphs, Charts and Timelines that trace the history and impact of technology in numerous specialized fields from transportation to medicine, space exploration to communications, warfare to entertainment.
- Diagrams that show in detail how many technological devices work and materials that discuss the design elements in many of the devices we use.

5.5 Life Science

Libraries have materials that cover many aspects of life science, from atoms to ecosystems. Look for such topics as biology (574), biomes (577; 574.5), plants (580's) and animals (590's), reproduction (in humans, 612.6 and animals, 591) and heredity (570's).

Materials that libraries offer for unique assignments of these topics include:

- Reference Books listing endangered environments as well as endangered species of plants and animals.
- Materials including periodicals, government reports and newspapers that discuss current trends in food and wildlife management and conservation of resources.
- Videos from sources like National Geographic, Animal Planet, and many others that explain subjects as diverse as DNA and heredity to saving the giant panda.
- Print and Non-print resources that discuss pro's and con's of controversial life science topics including euthanasia, stem cell research and evolution vs. creationism.
- Hands-On Activities that involve passive observation and active experimentation can be found for many life science topics from growing plants to heredity factors.

5.6 Physical Science – Chemistry

Materials dealing with chemistry, the structure and properties of matter and chemical reactions can be found by checking chemistry (540), chemical elements (546), bonds and reactions (541) and rocks and minerals (549).

Libraries will also have materials that deal with many specific topics, including:



- Reference Materials that cover the structure and uses of individual elements and compounds
- Visual materials including videos that discuss many chemical topics
- Experiments and Projects that cover topics from rock collecting to building a chemical volcano

5.7 Physical Science – Physics

Motion and gravity (531), electricity (537), magnetism (538) and heat (536) are just some of the topics you can find in libraries. Libraries will also have materials on physics topics that students may find especially intriguing, including:

- Sports Science: covering the physics behind the motion and trajectory of objects that are thrown or hit, actions and reactions in terms of body movements as well as objects like bats, sticks and skates. Friction, speed and gravity will all figure into these materials.
- Color and Light: explaining how humans view color and light as well as hands-on experiments and projects including how colors and light affect mood.
- Science Fiction Topics: Cryogenics is one physics area that leads students into future speculation, but topics such as “warp” speed space travel, matter transporters and time travel are all possible physics areas of exploration.
- Energy: including alternate energy sources from garbage, the earth’s heat or solar power.

5.8 Earth Science

Libraries have information on weather, the structure of the earth and the processes that shape the earth. Check the shelves for Storms (551.5), Earthquakes (551.2), Plate Tectonics (551.1) and Geology (550).

Libraries will also have information for unique assignments like:

- Careers in Earth Science including meteorology, geology and vulcanology.
- Experiments and projects including wave machines, weather forecasting equipment and erosion, just to name a few.
- Research materials on individual land and water formations from deserts to oceans, swamps to caves.
- Videos on topics like the formation of the earth, weather and disturbances including volcanoes, earthquakes and tsunamis.

5.9 Astronomy and Space Science

Libraries have a wealth of print and non-print materials that cover topics of astronomy and space science. Check the library shelves for stars (523.8), planets (523.4), astronomy (520) Apollo Space Project, (629.4) and Galaxies (523.1). Topics like the Big Bang Theory (523.1), Doomsday collisions (523.5) and Black Holes (523.8) are all found in the same general area as other astronomy books. Many libraries have books on space exploration from



the original Mercury project to space stations the area of applied sciences (629.4). Libraries will also have:

- Reference Books on space objects and on space exploration
- Primary and Secondary Resources including biographies, interviews, photographs and articles of the men and women who have studied and explored space and space objects, from Galileo to Edwin Hubble.
- Videos many produced by with the help of NASA and many done for television by NOVA and other public television programs
- Newspapers and Magazines that document actual space discoveries and historic events from the first landing on the moon to the Challenger disaster to the controversy over the number of planets in the solar system.

5.10 Environmental Studies

Materials on how humans have impacted the environment as well as materials on the natural interdependence of the planet can be found at the library. Look for topics like biomes (570's), recycling (363), ecology (574) and natural resources (333). This area in particular has relevant materials in many sections of the library from books on famine to air pollution, population control to agricultural diversity.

For specific assignments, libraries will have information in many areas and in many formats, including:

- Government publications. Many government agencies, like the departments of Energy and Transportation, the Fish and Wildlife Agency, and the Department of Agriculture have all produced reports on various environmental studies from smog over cities to the crab population in Chesapeake Bay.
- Primary and Secondary sources that include reports and interviews both on-line and in print.
- Local Information on projects and initiatives in the community in terms of wildlife management, tree planting and recycling.
- Agencies and Organization Contacts so that students can contact groups who are involved in environmental studies and initiatives.