

# **School Libraries: Promoting Health Instruction throughout the Curriculum**

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*Health education is a major social, educational and political issue in today's world and it is fundamentally tied to teacher-librarians and their important roles in promoting information literacy. Although this may be considered a new responsibility for schools, history shows that since the 19<sup>th</sup> century, schools have played vital roles in the prevention of diseases and in encouraging better health behaviors. This presentation presents some of the major current developments in health information literacy including guidelines suggested by the U.S. Centers for Disease Control through its CHSP program (Coordinated Health School Program). This program emphasizes the importance of schools serving all grades as important agents in promotion health information. UNESCO's suggestions on how health information can be integrated in all curriculum areas are likewise highlighted in this discussion. Overall, the emphasis is practical and presents concrete suggestions about how teacher-librarians can and are assuming a leadership role in promoting health information literacy. Included are overviews of instructional strategies that have proven successful in promotion better health information in various communities. A major portion of the presentation highlights how health instruction can be integrated into curriculum areas that have not often been considered as venues for health information. These areas include literature, biography, art, music, and dance. For example, musicians, dancers, and artists, like athletes, have health issues that must be carefully considered in fulfilling their artistic goals. Likewise, biography offers examples of personalized models showing how a variety of persons have faced health crises. The presentation concludes with a review of how globalization is influencing health issues and how the teacher-librarian can better respond to those important developments now and in the future.*

*Literacy, Health, Curriculum and Instruction*

## **Introduction: Schools as Health Agents**

Health care is one of the driving social forces in the world today. Since the beginning of the modern public health movement in the nineteenth century, schools in their position as social agencies have played major roles in the control and prevention of diseases. This role has always included a strong emphasis on educating the school-age public and their caregivers in disease prevention and health management.

School libraries exist in most communities in both developed and developing countries. The large number and wide distribution of school libraries make them a potentially important point of dissemination to youth and their caregivers for improving health care and health information delivery.

The relationship of school libraries and health information becomes even more important in relation to “Healthy Youth: Coordinated School Health Program” (CSHP) guidelines issued in the United States by the Division of Adolescent and School Health of the Centers for Disease Control (CDC). These guidelines provide us with these foci:

- family community involvement
- health promotion for staff
- healthy school environment
- counseling, psychological, & social services
- nutrition services
- health services
- physical education.

The guidelines acknowledge that schools must be helped by other community agents to meet these directives. Teachers of subject areas and school administrators are mentioned as important elements in most of these components, but teacher-librarians are never mentioned. This serious omission offers teacher-librarians the opportunity to assert themselves into this dialogue, and in so doing help improve the health of the youth throughout the world.

Health issues are not limited to only a few nations; they are world-wide problems facing all nations. UNESCO for years has recognized the importance of health care for children and youth and the necessary role that schools play in improving health for youth (UNESCO. Focusing resources, n.d).

UNESCO has identified these youth-related global issues that must be seriously addressed in the twentieth-first century:

- Hunger
- Micronutrient deficiencies and malnutrition
- Intestinal infections
- HIV infections and other sexually transmitted diseases
- Malaria
- Violence
- Drug and alcohol abuse.

UNESCO’s believe is that these health problems must be solved and reduced if children and youth are to have the sound psychological support enabling them to learn and develop. UNESCO asserts that health improvement can be promoted based on “skills-based health

education, good health policies developed for individual schools, and on-site school health care.”<sup>1</sup>

### **Information and Health Literacy**

Closely related to both CDC and UNESCO guidelines are information literacy and its related skill sets. Information literacy and health information literacy have much in common in that they both stress the importance of information and how to evaluate it and to apply it when critically needed.

The newly issued *Standards for the 21<sup>st</sup>-Century Learner by the Action* (American Association of School Librarians (2009) outlines four major elements of information literacy. Learners use information skills, resources, and tools to:

- Inquire, think critically, and gain knowledge
- Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge
- Share knowledge and participate ethically and productively as members of our democratic society
- Pursue personal and aesthetic growth.

The standards state that a definition of information literacy has become more complex as resources and technologies have changed. Multiple literacies are now required including digital, visual, textual, and technology skills (American Library Association, 2009). We can add that information literacy crosses disciplines and is closely tied to the context in which the need arises and how is to be used. The ALA 2009 guidelines along with Joint Committee on National Health Education Standards’ *National Health Education Standards: Achieving Excellence* (2007) present action points and learning outcomes to ensure that learning takes place.

Health writers, Gloria Mayer and Michael Villaire define health literacy as the using a broad array of literacy skills in the context of health care. For example, health care literacy requires understanding basic medical terms used in conversation with health providers; understanding abbreviations on charts and prescriptions; and reading and understanding technical medical texts. (Mayer and Villaire, 2-3). These writers provide research evidence that health information literacy skills are low among many populations. This lack of health information literacy often leads to poor health, lack of good medical care management and care, more hospitalization, poor understanding of treatments and treatment options. Likewise, persons with poor health information skills are less likely to following medical directions (Mayer and Villaire, 4-13).

The need for adequate health information for youth is implicit in these remarks. Training and education programs must ensure that knowledge and skills are provided that will sustain health. Criteria for overall health information literacy programs include (WHO. European Commission and Council of Europe, n.d.):

- Well-defined staff roles in the school
- Access to nutrition, water and sanitation on the premises
- Health education curriculum content
- Stress management
- Gender mainstreaming
- Nonviolent conflict resolution
- Accessibility to counseling.

### **What is Skills-Based Health Education?**

UNESCO promotes skill-based health education programs as a part of health literacy. Basically this is a “how to do it” approach that encourages behavior changes. It is based on promoting and developing knowledge, attitudes, values, and skills that are necessary to make good, positive, and life-long decisions about health.

In skill-based health programs health is seen in a variety of social contexts and goes well beyond health instruction and information. Skills-based instruction includes the usual health issues, but the added value of it is that it extends across the curriculum. Skills-based health education embraces such social problems such as gender equality, peer relationships and pressures, and the psychology and sociology of disease and health. It likewise finds a place in social sciences through understanding social policy and implementation. Health issues can be discussed in history and literature and how disease and health have influenced historical development. Of course, it finds a natural place in science and mathematics through the study of disease recognition and measurement (UNESCO. Education for All by 2015, n.d.).

### **Health Information and Education across the Curriculum**

Table 1 below presents UNESCO’s suggestions on how health and health-skills can be integrated throughout the curriculum (UNESCO. Health across the curriculum, 2004).

Chart 1. THE UNESCO GUIDELINES

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#### HEALTH AND SCIENCE

Encourages students to:

- Observe and record
- Measure and make comparisons
- Ask questions, hypothesize and predict
- Make experiments and interpret the results.

#### MATHEMATICS

Promotes in students:

- Use of numbers
- Weights and measurements
- Estimating and recording data
- General applications to healthy living (e.g., medication measurements and timeframes for medicine use, body and weight monitoring; water and sanitation, nutrition and food intake calculations).

## SOCIAL STUDIES

Develops in student analytical skills related to:

- Ideas about social living and cooperating
- Living together and social and group dependency
- Health and environment and responsibility to preserve a healthy environment
- Rights and duties of citizens to encourage healthy living
- Responsibility to respect differences in health conditions
- Developing skills to understand the geography and history of health
- Studying the health of a community through

demographic surveys and other basic research methods

- Sharing information and promoting understanding of various views about lifestyles
- Sharing information and customs regarding food and food practices
- Developing empathy for others who suffer health problems
- Considering one's immediate environments (e.g., home safety driving and driving responsibilities).

## LANGUAGE AND INFORMATION LITERACY:

Develop in students skills that Promote:

- Health and health information through communication and understanding the language correctly, through grammar and correct usage
- Listening, speaking, reading and writing effectively.
- Using language as a tool for thinking and doing; finding interpreting and working with information and ideas

- Writing used in observing, describing and recording
  - Information literacy skills in finding understanding and using information.
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## **Good Health through Curriculum Empowerment**

Among UNESCO's substantive suggestions for health and instruction include curriculum empowerment. Some of the hallmarks of empowerment in instructing youth about health include:

- Accepting the rights of young people to make informed decisions about their health
- Helping youth understand and discovery factors that might harm their health,
- Helping youth understand how to identify factors that they need to face regarding their own health
- Helping youth understand how they can best address those factors.
- Encouraging youth to debate and examine their own health as well as others and to form an informed opinions that can lead to good decision making
- Encouraging youth to see health issues in a holistic way, and not isolated to single circumstances or issues
- Helping youth discover ways that they can participate and interaction with health promotion
- Encouraging youth to take leaderships roles in health promotion.

From an educational perceptive we need to recognize that empowerment has to be carefully considered. There are social, political, legal, and ethical issues that need to be faced. Does government, law and policy permit youth to make certain decisions (e.g., sexual information); how well does peer involvement work; what kinds of training must be done to ensure that peers can be good leaders; ethically do educators have the right to promote health issues that might conflict with values in the community or home? All these questions simply mean that all teachers, teacher-librarians, and policy makers, must "judge from themselves how empowering their practice[s] can be" (Graham, 2000). In the case of teacher-librarians they can often frame these issues with information literacy standards endorsed by professional organizations and societies which see information as an important empowering agent in the lives of youth. Beyond that national, state, regional, provincial, and local curriculum guides will offer direction.

## **How Can Skill-based and Concept Approaches Be Introduced Across the Curriculum?**

There are many ways that skill-based skills as well other associated health concepts can be introduced into instructional settings. Below are only a few examples. Of course, many of these must be introduced according to age and developmental appropriateness (Kerr, 2000).

### **Examples of Teachable Concepts and Themes for Youth**

The following are skills and concepts that UNESCO suggests. The concepts are provided along with teachable questions.

- **Concept: Developing Healthy Children and Youth in Society—**How healthy are you? What conditions and behaviors promote good healthy? What rights do you have in managing your help? What makes you vulnerable to poor health? How can you protect yourself from poor health conditions? How can parents help in making you healthy? How can teachers help in making your healthy? What do you need to be taught to be healthy? Who should be your teachers in promoting good health? What do you want to know today?
- **Concept: Health and Social Services—**What kinds of health services are available in your community, your neighborhood? Do you know how to reach them? Do you know how to report a health emergency? What does “social services” mean? What kinds of help do social services provide? How do you make contact with social services? Do you know what a person of your age can expect from social services? How would you ask your parents to contact social services? How might clubs and other memberships help in improving the health of children and youth in your community, neighborhood?
- **Concept: Responsibility for Others--Homeless Children and Youth.** How can you help children and teens that have no home? How can schools and clubs help homeless children and youth; how can your city help homeless children and youth? What are the conditions that homeless children and teens face that might make them less healthy than you and your friends?

- Concept: Understanding Mental Health. What is good mental health? How can you recognize a mental health problem in you, your friends, your family? How can you seek help for you, your friends, or your family?
- Concept: Gender Relationships. What does it mean to be male or female? What are stereotypes? How are males and female often stereotyped? What are gender roles? Who determines gender roles? What health issues are associated with gender and gender roles?
- Concept: Understanding Others--Health and Minority Groups. What are minority groups? Who determines who is a minority (e.g., government policy, community, religion)? What health issues are associated with minority communities? What is the role of society in providing health care for minority groups?

Specific instructional themes are necessary to meet concept expectations. Following are some suggested themes and related information literacy skills:

Theme: Understanding and personalizing the vocabulary of health (Information literacy skills: inquiry, thinking critically, gaining knowledge, drawing conclusions, sharing knowledge)

Language and communication skills

- For younger children: Have children look up these words in a dictionary and then discuss how they have experienced these words in their own lives: health, illness, feeling, care, injury, hurt
- For older youth: Using these same words, and using a college level dictionary (or high school level school dictionary) explain how they can discover how words come into a language and how these words might have changed over time. Ask how they as young people can relate these changes to their own lives.

Theme: Understanding how health and diseases affect social life (Information literacy skills: Critical thinking, drawing conclusions, applying new knowledge, sharing knowledge, creating new knowledge)

## History and social life

For younger children: Have children identify the health providers in their community. Help students think how they can help the health providers

For older youth: Have students select a disease that has had an effect on human culture throughout history, and after some basic research, have them identify and explain how these diseases affected history and society.

Theme: Understanding the vocabulary of health in science and math (Information literacy skills: critical thinking, decision making, applying new knowledge, pursuing personal growth)

## Using the language of medicine

For younger children: Introduce the concept of careful use of drugs. Ask them to identify how they can use drugs safely. Make sure that they understand to take drugs only under the supervision of adults and that all medicines have instructions as how they are to be used

For older youth: Have student research the concepts of prescription and non-prescription drugs. In their research have them consider how the public is protected by governments from bad drugs. Have students examine a medicine container having use instruction, and have them read and explain the vocabulary printed on the labels, including measurements?

## **Health Instruction across the Curriculum**

### Health Instruction as Literature and Drama

Instructional units in literature, music, drama, and biography can be used to introduce students to various health situations. Disease is one of the fundamental forces in society and its influence is consequently reflected in literature and the fine arts. An understanding of how artists consider and are influenced by disease will help youth better deal with and understand its vast influence on personal lives. The use of literature and drama helps students place the effects of health and disease in a personal context through character study and plot development. Introduce the concept that literature and drama reflect life and that illnesses and disease have been used by writers throughout history.

## Biography

Biography, like literature and drama, adds to our personal understanding of the effects of health on human experiences. Explain that biography can be written by the person who lived the life such as autobiography or personal narrative, or that it can be written by someone else who provides context and interpretation to a person's life.

## Music

Music also reflects health issues through thematic interpretations in music or in the lives of musicians themselves. Introduce the concept that music is a part of human experience and as such all music provides us with a broad understanding of human experiences. Encourage students to consider music of all kinds in terms of what they might learn about health.

Classical Music. Classical music has used illness and health as major themes. Biography is a good way to introduce youth to the world of classical music as well as to highlight health issues. Provide some biographical information about classical musicians and outline some of the health problems that they faced and/or now facing (Blackwood, 1988).

Popular Music. Popular music is the medium of communication, recreation, and personal enjoyment of youth today. With this in mind, we can use it well to promote health information and health literacy through biography and themes often found in music. Ask students to read a biography of a popular musician who suffered or is suffering from disease or is or was differently-able (handicapped) in some way and write a description of how their health conditions influenced or is still influences their art. Popular music entertainers who have struggled with health issues include: Elizabeth Newton Jones (Cancer), Martha Davis (Cancer), Johnny Ray (deafness), Peter Townshed (Deafness due to music), and Stevie Wonder (blindness). All of these personalities provide opportunities for research.

### **Musicians, Athletes: Common Injuries, and Health Issues**

Musicians and people involved in sports often suffer similar health conditions based on their musical artistry and sport activities. These conditions affect the muscles, bone joints, voice and vocal control, and influence movement and hearing. Discuss with students medical fact that players of musical instruments such as violins, guitars, banjos, and pianos have injuries that result from incorrect posture, non-ergonomic technique, excessive force, overuse, stress, and insufficient rest. Explain that these often lead to chronic injuries (ongoing) that can cause great pain, disability, and the end of careers.

## **Instrumentalists, Voice, Hearing Dance, and Sports Injuries**

Voice maintenance is a problem for both classical and popular singers. Vocal health problems include how to control tone, projection, breathing, vocal strength, and how to maintain the quality of the voice over time. A particular problem for singers is the development of nodules on the vocal cords. Introduce students to nodules of the vocal cords as a health problem and describe it in general terms.

Musicians, especially rock musicians often suffer from a loss or reduction in hearing due to the expected loudness of the music in performances. Help students understand the physiology of the ear and how loud music can damage the ear's ability to hear and judge sounds.

### **Dance and Sports**

Dance is both an art and athletic experience. Among others, athletic requirements in dance call for the proper use of muscles, balance and coordination, strength and endurance, stress and anxiety management, weight control, diet and nutrition, and ways to avoid such conditions as inflammation of the fascia (a lining tissue under the skin that covers a surface of underlying tissues), stress fracture, knee injuries, ankles and joint problems, hamstring injuries, hip injuries, and back problems. Make sure that students understand that these problems affect all types of dancers and athletes. This topic offers many layers of health instruction. The emphasis should be on relating dance, conditioning, and athletics.

### **Art and Health**

One of the overriding issues found in art curricula is the importance that art is a human experience. The Brownsburg Community School Corporation in Canada (n.d.) expresses the concept in this way:

Students understand the significance of visual art in relation to  
historical, social, political, spiritual, environmental, technological, and  
economic issues.

This concept is found through art curricula and is helpful in using art to advance health literacy and information. We must help students learn how to view art found in their environments as a conveyor of health information, and help students appreciate their roles in making the environment a healthy place to live, play, and work through art. Students must be helped to understand the health risk in using the technologies of art including oil-based paints, and cleaning fluids, and always ensuring that proper air control and ventilation is available when using potentially dangerous art supplies.

## **The Social and Behavioral Sciences**

Collectively the social and behavioral sciences offer a wealth of ideas and resources for teaching health care and providing health care information and literacy. Broadly speaking the social sciences include history, government and civics, economics, social and government policy, public health, geography, anthropology, and sociology. Although they share some similarities with the social science, the behavioral sciences are different in that they investigate processes and communication strategies used by people in social systems. On the other hand, the social sciences investigate the structure of social systems and how those systems interact and influence how we organize our social life (Klemke, Hollinger, and Kline, 1980). I shall limit my discussion of behavior sciences in psychology to mental health and its relationship to good health and health information.

### **Instructional Themes and Skills in the Social Sciences**

The important guidelines by UNESCO for instruction in the social sciences are given in the following chart.

#### **UNESCO Suggestion for Health Instruction in the Social Sciences**

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##### Theme 1. Living together and social dependency

Food and food culture

Child growth and development

Community health and hygiene

Disease and infection prevention

Prevention and control of epidemics

Importance of immunization

##### Theme 2. Living in, preserving and protecting the environment

Pollution and its effects on community life and health

Soil conservation and its relationship to food and community life

Water management and distribution and its effects on health and community well-being.

Theme 3. Rights and duties of citizenship

Knowledge and actions concerning good health behaviors  
Knowledge of major health providers and emergency assistance in communities.

Theme 4. Responsibility to respect diversity and those in adversity

Consideration of the social and economic connection of poverty and health

Building of constructive attitudes about persons with disability

Children in society, and concern for those in challenging situation such as those facing wars and displacements

AIDS and the social effects of AIDS such as AIDS orphans.

Theme 5. Health in a social and cultural context

Evaluate the effects of disease on history and community life

Consider medical advancements and cures and their wide-spread influence on modern life.

Study of medical biography, medical sociology, social geography and demographics, social anthropology, medical folklore and folk culture.

Apply basic research skills such as interviewing, observation, and surveys to health.

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## Skill Sets for the Social Sciences

### Selected Instructional Units Based on Themes

Disease in culture (Medical discovers). Medical discovers for diseases and the prevention of disease offer a wealth of ideas for introducing health information to students such as: Scurvy and its cure; discover of what caused the 1918 flu pandemic; Rickets and its cure; Pellagra and its treatment; Smoking and lung cancer; discover of the structure of DNA; heart disease and the use of aspirin; Childbed fever; first effective cure for Syphilis; discover of the HIV virus that causes of AIDS. Biographies of researcher who discovered cures and causes of diseases likewise offer avenues into a better understanding of health issues. These can include: James Lind (Scurvy); Paul Ehrlich (Syphilis); Edward Mellanby (Rickets); Joseph Goldberger and Conrad Elvehjem (Poliagra); Rich Doll and Austin Bradford (Lung cancer and smoking); James D. Watson, Francis Crick, Rosalind Franklin and Maurice Wilkins (DNA structure); Ignaz Semmelweis (Childbed fever); Joseph Lister (Antisepsis theory); Louis Pasteur

(microorganism and disease); Charles Darwin (genetics and evolutionary theory); George Mendal (genetics); Claude Bernard (scientific methods applied to medical research).

Medical sociology and anthropology. U. S. The National Library of Medicine defines medical sociology as:

...[C]oncerned with the relationship between social factors and health and with the application of sociological theory and research techniques to questions related to health and the health care system. (U. S. National Library of Medicine, n.d).

Instructional topics within this definition can include:

- What are the influences of ethnicity, gender, age, or socioeconomic status on health?
- Do minorities people generally have convenient access to health providers? How are people provided or denied access to quality of health care (lack of insurance, living in isolated areas)?
- What are some well-known health and risk taking behaviors (e.g., smoking, drug use)?
- What are some social constructs (e.g., environments) of illness (e.g., poverty, lack of education)?
- What are some of the health beliefs and perceptions among specific groups of people?
- How is health affected by social and cultural changes?
- What are some of the expected roles of health institutions and health professionals in society?
- What are some of the social implications of biomedical innovations (e.g., genetic engineering)?
- What is the role of institutionalized education in health care and information?
- What role does mass communication play in health care and health information?

According to the U.S. Library of Medicine medical anthropology studies “ways in which cultures define, experience, and manage health and illness.” Using this definition, students can consider these questions:

- What are some medical belief systems of people of various groups of people (e.g., medical astrology)?
- What are some healing practices followed by various groups of people (e.g., herbalism)?
- What are some prevailing belief systems and customs surrounding birth, death, and diet?
- How are health and illnesses expressed in speech and, language, including dialects and regionalisms (e.g., what might “I am stove up” mean)?
- How different is maternal and child health in selected populations, regions and countries?
- How is dieting and nutrition affected by culture and society?
- How do we in this country promote human development in relation to health and disease?
- What is government health policy? Give some examples of government health country in our city, state, province, or country.

Geography and health (medical geography). Medical geography combines geography and medicine in relation to health care. It considers the effects of environments and climates have on health both currently and in the historical past. Diseases that are generally associated with geography include malaria, cholera, and dental diseases. (Medical geography [definition], n.d.). Relevant instructional questions include:

- What is cholera? How was the cause of cholera discovered?
- How was fluoride discovered to help prevent tooth decay?
- What was the “little ice age”? Discuss how it affected health and culture of Europe and the Northern Hemisphere for 500 years?
- What is the story behind the cold summer of 1815? Consider how this cold summer affected health?
- What is the geography of malaria? Why does it occur most frequently in those regions?
- What is lead poisoning? Why does it seem to be affecting children today? How is it related to location and the time periods of home construction?
- Define health demographics. How can they be used to illustrate the geography of health?
- How is childhood diabetes associated with location and geography? How can medical geography be used to locate and inform high-risk populations

such as those with high percent of childhood diabetes to become better informed about prevent and health management?

Mental health (psychological health). Students should be encouraged to consider psychological health as a fundamental part of good health management as mental health involves many aspect of good healthy living and lifestyles. Instructional questions include: What makes for good psychological health. Encourage students to consider these factors:

- Being productive
- Having good interpersonal relationships
- Behaving compassionately toward others.

Other questions to consider are these:

- What role does environment and social and cultural factors play in mental health
- How can everyone promote better mental health in themselves and others (by changing bad beliefs, attitudes, and behaviors regarding disease and health)
- What do students know about the following conditions? Encourage students to research and discuss how these conditions affect psychological health.

Alcoholism and drug abuse

Depression

Diabetes

Environmental conditions

Gambling

Generalized anxiety disorder

Anxiety about health

Insomnia

Obsessive-Compulsive disorder

Relationship with parents

Perfectionism

Phobias

Physical Activity

Behavior and conduct disorder.

- What is intelligence testing or IQ? Who is generally credited with its creation?
- What are some of the factors that cause teenagers to have mental health issues?
- How do governments help people who face psychological health issues?
- How do these contribute to disease or its prevention?
- How can everyone promote better mental health in themselves and others by changing bad beliefs, attitudes, and behaviors regarding disease and health?

Social responsibilities. Good health is a responsibility of everyone, including governments and organizations. Instructional questions and activities related to the context of health as a civic obligation include:

- Being educated and knowing and using information about health and healthy lifestyles
- Showing concern for other people's welfare
- Observing constructive rules of conduct and behavior
- Addressing social conditions that impact community and personal health
- Maintaining positive living and working relationships
- Following a pattern of personal hygiene.

Governmental roles in promoting health. In considering the wide range of government involvement in health, encourage students to consider these roles that governments might perform:

- Managing scarcity of resources
- Distribution of health resources
- Rationing health care
- Protecting the public
- Physician-assisted death
- Care of the elderly
- Care of the disabled and handicapped
- Domestic violence
- Abortion
- Medical competency and certification
- Human cloning
- Assisted reproduction

- Protecting of human research subjects.

## **Science and Health**

Good health is directly associated with good science conducted over the years. Small discoveries such as hand washing have saved millions of lives. All students must be encouraged to consider their health in terms of what science has to offer them about healthy living. All students, no matter the age or grade, must be taught the values of the science and the scientific reasoning. The scientific method is used in daily live.

## **Useful Skill Sets for Scientific Reasoning**

Scientific reasoning is a fundamental skill that all students must acquire. Good health behaviors and attitudes of students can be increased by understanding how to apply scientific reasoning in everyday life. The following are some suggestions that are designed to show the close relationship between health, science and scientific reasoning. Following are some basic scientific reasoning principles that all students should acquire (Biology for 4kids, n.d.):

- Understand that the basis of the scientific method is asking questions, observing and then trying to answers questions
- Pose questions and seek answers using scientific principles
- Scientific principles helps ensures the developing questions by observing the world that surrounds us.
- Find answers to questions through experimental evidence
- Experimental evidence is what makes all of the observations and answers in science valid (truthful or confirmed).

In addition to these, students should be encouraged to know how to understand and construct a research design using these concepts: Formulate a research topic; develop hypotheses; conceptualize definitions; understand the role of scientific theory and conceptual models; place in operation research procedures (how to go about doing research); gather and analyze data; test, revise hypotheses or models; draw conclusions and suggest more study and research (Biology for 4kids, n.d.).

## **Mathematics and Statistics**

A basic understanding of mathematics and statistics are necessary for good health and the understanding behaviors necessary for healthy livings. National standards in most English speaking countries are consistently uniform in what they consider necessary for mastery of basic mathematical concepts. These standards show a progression of mathematical skills beginning with the earliest grades. All of these play important roles in health care and disease control. The following mathematical skills are needed for all of us who want better health. These include (Davis and Peart, 1977; Hayden and David, 1996):

- Addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals
- Ratios and proportions
- Percents
- Measurement
- Roman numerals
- Narrative word problems that reflect mathematical concept encountered in health situations.
- Using computers to gather and report statistics as well as other types of health information.

### **Useful Skill Sets for Mathematics and Statistics**

UNESCO (Focusing Resources on Effective School health, n.d.) provides the following list of skills for mathematics s related to health across the curriculum. Some of these concepts have been modified to make them appropriate to

broader social and cultural settings than expressed by UNESCO.

Concept: Body measurements

Measuring the body (height, arms, weight)

Charting the body through graphs and models (age, weight, height)

Concept: Water and liquids measurements

Measuring liquids (water containers, distances from supply sources)

Using statistics and graphs showing water consumption

Determining the cost of water

Concept: Nutrition

Reading nutrition labels, charts, and directions

Concept: Medicine, diseases and immunization

Reading and understanding charts showing health and mortality demographics

Understanding medical dosages (metric notations).

Conduct surveys and display data concerning health issues

Comparison of local health data with national data

Using mathematics to chart the spread of specific diseases (e.g., AIDS)

Concept: Population, resources, health

Comparison of family data with national data

Compare population growth and local land use and expansion

Understanding how to find read national population statistical growth

Making mathematically-based prediction on population growth and resources

Understanding how to use percentages to illustrate growth rates.

## **Globalization and Health Information and Instruction**

Globalization is hard to fine as it involves many elements in world society, including health. Some authorities see it as a continuing process rather than a finished product. Overall it involves and engages the world through (Hicks, 2004):

- Economic links and processes
- Technological changes including communications and computerizations
- Global infrastructure developments such as international organizations and justice systems

- Cultural developments including the sharing of cultural as well as conflicts in cultural values
- Development of a global citizenship where the care of the world is viewed as everyone's and every country's responsibility
- Awareness of inequality and inclusion in income and resources and how include more people and countries in the world's resources
- Leadership and globalization both at local, national, and international levels, including business, consumers of goods, competitions, investments, labor, and ethics.

Globalization in health involves:

- Nutrition causing both hunger and obesity
- Climate changes affecting health
- Transportation policies
- Poverty and inequality
- Working conditions, labor relations and health
- Population movements and health
- Women's health
- Children's health.

### **Teaching Globalization and Health Concepts**

Globalization in terms of health is a cultural process. Often this involves conflicting values and expectations about health information, health management and care, and social and political responsibilities. Systematic health instruction and information provided within a school environment is one important means of helping youth of all ages better understand these cultural dynamics and how they as individuals and as citizens can better live their lives within the context of change.

### **Examples of Globalization Instructional Themes**

The following twelve themes suggest the wide impact of globalization on health instruction and information (Kawachi and Warmala (2007). From this list, we have prepared a number of instructional units to help teach the impact of globalization on health. These themes and units cross all curriculum areas and can be used in a variety of instructional settings:

Theme 1. Food and water

Food Trade

Food systems

Consumption of animal fats

Sweets and sugars

Animals as food sources

Water purity and supply

Food security

Role of women in food security.

Theme 2. Climate, weather changes.

Theme 3. Ecological changes

Land clearance and deforestation.

Theme 4. Populations and migrations

Population Displacements

Refuges and Displacements

Urbanization and health

Rural-to Urban Immigration

Migration and Developed Countries

Women, health, and migration.

Theme 5. Diseases

Infectious diseases and new emergent infection.

Theme 6. Medical care and interventions

Pharmacological interventions

Tobacco regulations and advertisements

Transnational tobacco industry and its global impact

WHO and Tobacco

Tobacco and politics

Caregivers

Measurements and assessment for health care and improvements

Intellectual property rights, medical care, and globalization.

Theme 7. Information and communication technology

Communication and the Internet

Delivery of medical services and information

Geographic technology and linking information about individuals and infections.

Theme 8. Travel and transportation

Automobile culture and health (pollution, climate change, accidents, rural-urban displacements)

Transporting of goods and diseases.

Theme 9. Justice and litigation systems

Health and Human rights.

Theme 10. Labor and work

Labor, work, and the influences of globalization (migrant workers,)

Occupational diseases

Health and unemployment

Labor standards and laws.

Theme 11. Governments and health policies

Local, state, national governments and health policies

The role of international organizations in promoting health.

Theme 12. Market demands

Costs, profits, and investments in markets.

Learning Outcomes for Theme 1. Food and Water

- Students will be able to:
- Demonstrate knowledge of basic terms, concepts, and data related to food and water and global health issues
- Demonstrate knowledge of world food trade
- Identify major food systems that serve people around the world
- Identify problem with impure water systems around the world and to make suggestions as
- how water can be made safe for cooking and drinking
- Identify problems associated with the consumption of too much animal fat, sweets and sugars

- Consider animals as food sources around the world
- Define food security
- Explain the role of men and women in food security.

### Instructional Unit for Theme 1. Food and Water

For younger students:

- Help students define and understand the concept of food trade and food systems. Encourage students to discover people who are involved in the food trade in the communities. Make a chart of food providers in their community and have them consider how these food provider help bring food to their families. Introduce the idea of a farmer's market (or flea market) and explain the role of that farmers play in a local farmer's market. Introduce the concept of small shopkeepers in such various countries. Have students discuss how similar these providers are to those in their own communities and how they all are a part of the world food trade and food systems.
- Introduce the role that both men and women play in helping provide food in countries around the world. Be sure and help students consider how women in poorer countries help provide food for their families.
- Introduce the concept of clean water and how clean water is necessary for good health. Explain how boiling water makes water safe for drinking and cooking. Introduce the concept that in some areas of some countries water is not always safe to use for cooking or drinking. Introduce some programs that are helping to bring clean water to these countries. These programs can include: Cooperative Housing Foundation (CHF) (<http://www.chfinternational.org/water>), Deep Springs International (<http://deepspringsinternational.org>), and the International Medical Corps (<http://www.imcworldwide.org>).
- Help students consider how their local communities keep water safe for use. Some discussion points that cause bad water in their local communities can include:
  1. Leaves and grass clippings
  2. Swimming pool chemicals
  3. Hazardous chemicals
  4. Soaps and detergents

5. Trash and titter
6. Animal and human waste
7. Dirt
8. Oil and other chemicals from cars
9. Air pollution from cars
10. Pesticides and fertilizers.

Learning Outcomes for Unit 6. Diseases (Globalization 101.org., n.d.)

Students will be able to:

- Demonstrate knowledge of the history of the spread of infectious diseases.
- Demonstrate knowledge of terms related to the study of global health.
- Identify political, social, and economic, and environments effects of the rising incidences of infectious diseases.
- Define and explain the most important ways that global health has been affected by globalization (e.g., increased travel, increased trade, food-borne illnesses; urbanization, climate changes and assorted environmental issues; microbial drug resistance; break downs in public health systems).

Instructional Unit for Theme 6. Diseases

For older students.

- Have students research and explain these terms as related to globalization and health: economic consequences; political consequences societal impacts; governmental responsibilities.
- Ask students to discuss this question: If infectious diseases have been around for centuries why it does appear like this is a relatively new phenomenon?
- Ask students to consider how climate changes around the world can and will affect health?

### **Health across the Curriculum: Examples of Units**

Instructional Units

As we have discussed, health can be integrated in almost all subjects taught in the modern school. The examples below are selected to provide illustrations for this idea.

Dance, sports, and injuries. A study of health concerns and injuries and how to prevent them can be used to show the close relationship between one branch of the arts and

athletics.. Select some of the following medical terms (based on age and grade appropriateness) and describe these conditions to students:

Bursitis

Carpal Tunnel Syndrome

Hearing loss

Performance stress

Tendinitis, Bursitis

Tenosynovitis

For older students (Grades. 6-12):

Questions and/or activities:

- Have students select some of injuries and health issues listed above that musicians of all types face and write and discuss how these compare with sports injuries.
- Have students read and research about the proper health management techniques that a musician should follow.
- Ask students to select a sport or music instrument and research, write and discuss selected injuries that are or can be associated with this type of sport or instrument.

For younger students (Grades K-5):

- Select some of the common health/medical problems listed above that affect both musicians and athletes, describe them to the students.
- Have students discuss how they are common to both athletes and musicians.
- Ask students if they know anyone who has suffered an injury as either a musician or athlete.
- Have them describe the injury and ask them describe it and tell how it was cured or medicated.

Biographies of sports personalities who have been challenged with injuries are useful here. A selected list of biographical accounts of sport figures can be found in the note section of this paper. They are primarily American, but the listing can serve as examples of what generally appeals to youth.

Music. Classical Musicians and their health challenges. A study of classical musicians can illustrate the humanity that affects all persons as they face health challenges. Some well known musicians and their health problems are listed below:

Johann Sebastian Bach (lose of hearing); Bartok, Bela (leukemia [polycythemia]); Beethoven, Ludwig van (total loss of hearing); Bernstein, Leonard (phenomena, probably complicated by emphysema, Johannes Brahms (cancer); Debussy, Claude (colorectal cancer); Dvorak, Antonin (heart failure); Gershwin, George (brain tumor); Frideric Handel (failing eyesight); Melba, Nellie (septicaemia) Mozart, Wolfgang Amadeus (rheumatic fever complications); Paganini, Niccolò (mercury poisoning due to treatment for a sexually transmitted disease); Sibelius, Jean (brain hemorrhage) Tchaikovsky, Peter (cholera); Verdi, Giuseppe (stroke) (Blackwood, 1988).

Questions and activities:

- What is rheumatic fever? (Mozart)
- What is mercury poisoning? (Paganini)
- Why was mercury ever used to treat some forms of sexually transmitted diseases?
- Why are musicians susceptible to hearing losses? (Beethoven, Bach)
- What is septicaemia? (Melba)
- What is leukemia. What are some of its major forms? (Bartok)
- What does stroke mean in medical terminology? (Verdi)
- What does heart failure mean in medical terminology? (Dvorak)
- How might diet have an effect on colorectal cancer? (Debussy)
- What is a brain hemorrhage? Does age play a role in this brain hemorrhage? (Sibelius)
- What is a glioblastoma multiforme brain tumor? Can it be caused by head injury? (Gershwin)
- What is cholera? (Tchaikovsky)
- What are some modern day treatments for cholera? (Tchaikovsky).

For younger students (adjust for grade and ability):

Based on reading biographies of well-known musicians, introduce musicians with health problems and have students discuss and describe how illness and health influenced their art.

Bach, Johann Sebastian:

Bach led a long and productive life, but he lost his hearing, probably due to diabetes.

Beethoven, Ludwig van

Beethoven also lost his hearing, but he continued to compose and conduct well after the lost all of his hearing. Below are suggestion biographies

Bernstein, Leonard

Bernstein was a popular, modern-day American composer who wrote for both the concert hall, and well as the musical theater. His death was due to pneumonia and pleural tumor. He was also a smoker and suffered from emphysema.

Berlioz, Louis Hector

Berlioz was a well-known French musician and composer of operas. But he suffered from chronic illnesses, depression, fostered by a feeling of loneliness.

Mozart, Wolfgang Amadeus

A very popular composer during his life, but he died at an early age. His early death was probably due to acute rheumatic fever that he experienced from childhood. Some biographies of his life are given below:

Wagner, Richard

Wagner was an extremely popular German opera composer of the latter nineteenth century. His operas today form the core of the operatic repertoire. He died of heart failure and suffered periods of depression due to the critical reception of some of his operas.

Stains and Clark (2005) offer a great deal of information on classical musicians. More biographical resources for musicians are suggested in the “Resources for Collaboration and Instruction” section further on in this paper.

Literature. The study of prose is an excellent means of helping students understanding the affects of illness and health on people.

For all students (adjust for age and abilities):

Questions and/or Activities:

- For young students, introduce the concept of fiction and nonfiction.
- Ask younger students what kinds of illness might an author write about in fiction
- For older student, have them consider the ways that illnesses are used in fiction to develop a theme (e.g., personality of the main characters, psychological and sociological environments of the main characters, family circumstances)
- Have all students read an appropriate novel or read a selection to them and asked students to observe how diseases affected the lives of the major characters. Have students record their own feelings about how selected characters dealt with disease. Some suggested novels:

Brooks, Jerome. *The Big Dipper Marathon*. Pocket Books, 1982. Juv.

A fifteen-year-old's visit to relatives in Chicago gives him new insight into his struggle to decide the kind of life he will live as a victim of polio. [LC record].

Camus, Albert. *The Plague*. Vintage, 1991. Gr 9-12.

"Set in Algeria, in northern Africa, *The Plague* is a powerful study of human life and its meaning in the face of a deadly virus that sweeps dispassionately through the city, taking a vast percentage of the population with it."

Coerr, Eleanor. *Sadako and the Thousand Paper Cranes*. Puffin Books, 1999. Juv.

Hospitalized with the dreaded atom bomb disease, leukemia, a child in Hiroshima races against time to fold one thousand paper cranes to verify the legend that by doing so a sick person will become healthy. [LC record].

Koertge, Ron. *Shakespeare Bats Cleanup*. Candlewick Press, 2003. Gr. 4-8.

When a fourteen-year-old baseball player catches mononucleosis, he discovers that keeping a journal and experimenting with poetry not only helps fill the time, it also helps him deal with life, love, and loss [LC record].

Weaver, Lydia . *Close to Home: A Story of the Polio Epidemic*. Sagebrush Education, 1999. Juv.

In the summer of 1952, Betsy sees her vacation fun overshadowed by the spreading polio epidemic, while her mother and other scientists work frantically to develop a vaccine for the crippling disease. [LC record].

## Teacher and Teacher-Librarian as Collaborators

The suggestions made throughout this discussion rely on professional and social collaboration. A general dictionary definition of collaboration is: to work jointly with others or together especially in an intellectual endeavor” (Collaboration [definition], n,d). Collaboration between teachers and teacher-librarians must be equal. That is, the teacher-librarian has as equal role to play in designing instruction, teaching, and assessment of students’ performances. Through collaboration, teacher-librarians have the skills and knowledge of researches to greatly advance the role of health instruction throughout all curriculum areas.

## Resources for Collaboration and Instruction.

Resources for health instruction are varied and available from many sources. These includes governments, commercial firms, non-profit foundations and service organizations. Both print and online sources are abundantly available. A sampling of print materials for teaching health concepts including biography are given below.

### Selected Resources for Teaching Health throughout the Curriculum

#### Biography:

*Great Achievers: Lives of the Physically Challenged Series.* Chelsea House, Various dates.

Among others, this series includes biographies of Ludwig van Beethoven, by Dynise Balcavage; Stephen Hawking by Melissa McDaniel; Mary Tyler Moore, by Margaret L Finn; Ron Kovic by Nathaniel Moss, Flannery O'Connor by Susan Balée; Chris Burke by Helen Monsoon Geraghty.

Gunter, Jon. *Death Be Not Proud: A Memor.* HarperCollins, 2007. Reprint.

How a father and a family death with the approaching death of their teen-age son from cancer.

Keller, Helen. *The Story of My Life.* Penguin, 2002. Reprint.

The well-known story of Keller’s struggle with blindness and deafness to become a great humanitarian.

Kisor, Henry and Percy, Walker. *What’s That Pig Outdoors?  
A Memoir of Deaftness.* Farrar, Straus and Giroux, 1990. Gr. 9\_12.

A personal narrative of a deaf reporter at a large metropolitan newspaper.

Krementz, Jill. *How It Feels to Fight for Your Life.* Little, Brown, 1989.

Personal accounts of children who face life-threatening illnesses.

Krementz, Jill. *How It Feels When a Parent Dies*. Knopf, 1988.

Records the feelings of children and youth who deal with the death of a parent.

Lance Armstrong Foundation. *Live Strong: Inspirational Stories from Cancer Survivors--from Diagnosis to Treatment and Beyond*. Broadway Books, 2005.

"A compilation of candid stories, anecdotes, and essays by cancer survivors who discuss the impact of the disease on their lives covers relationships, employment discrimination, coping with medical bills, infertility, grief, and fear of recurrence." [LC card record].

Lavender, Kee. *Lesson in Taxidermy*. Akaskie Books, 2005.

Story of a young women who faces a life of chronic illnesses.

Reeve, Christopher. *Still Me*. Arrow, 1999.

"Through his leading role in four "Superman" films, Christopher Reeve became very closely identified with the superhero. But his riding accident which left him paralyzed from the neck down showed he wasn't superhuman. However, [he refused] to resign himself to the life of a quadriplegic." [LC card record]. Note: Reeve died of complications of his injuries in 2004.

Ritz, David. *Ray Charles: Voice of Soul*. Facts on File, 1994. Gr. 7-12.

Biography of the musical genius who was left sightless by glaucoma as a child.

Winick, Judd. *Pedro and Me: Friendship, Loss, and What I Learned*. Henry Holt 2002. Gr. 9-12.

The author learns about life's values from a friend, a young, popular television personality who faced death from AIDS.

For younger students:

Gonzales, Doreen. *AIDS: Ten Stories of Courage*. Enslow Publishers, 1996. Juv.

"Present the stories of ten people who have been infected with AIDS, including Ryan White, Elizabeth Glaser, and Arthur Ashe." [LC record].

Heelan, James Riggio. *Can You Hear a Rainbow?: The Story of a Deaf Boy Named Chris*. 1st. ed. Peachtree Publishers, 2002. Juv.

“ A deaf child tells how he uses sign language, hearing aids, and his other senses to communicate, how his friends help him, and how he goes to public school with an interpreter.” LC card record].

Kallen, Stuart A. *Great Composers*. Lucent Books, 2000.

Includes information on: Johann Sebastian Bach -- Wolfgang Amadeus Mozart -- Ludwig van Beethoven -- Pyotr Ilich Tchaikovsky -- Giacomo Puccini -- George and Ira Gershwin -- Andrew Lloyd Webber,. Most of these great classical musicians faced health challenges sometimes during their lives.

Kent, Deborah, and Quinlan. *Extraordinary People with Disabilities*. Children's Press, 1996. Juv

Discusses these lives and issues: John Milton -- Ludwig van Beethoven -- Thaddeus Stevens -- Louis Braille -- Harriet Tubman -- John Wesley Powell -- Thomas Edison -- Juliette Gordon Low -- Helen Keller -- Franklin Delano Roosevelt -- Horace Pippin -- Dorothea Lange -- Frida Kahlo -- Sir Douglas Bader -- Jacobus tenBroek -- Harold Russell -- The fight for disability rights legislation -- Bill Veeck -- Alicia Alonso -- Roy Campanella -- Robert Dole -- Daniel Inouye -- John Langston Gwaltney -- Christy Brown -- Beverly Butler -- Audre Lorde -- Ed Roberts -- Henry Kisor -- Wilma Rudolph -- The challenge of sports -- Stephen Hawking -- I. King Jordan -- Judi Chamberlin -- Wilma Mankiller -- Itzhak Perlman -- Patty Duke -- Harilyn Rousso -- For the disabled, of the disabled -- Temple Grandin -- Judy Heumann -- Stevie Wonder -- John Callahan -- The right to live, the right to die -- Susan Nussbaum -- John Hockenberry -- Tom Cruise -- Jackie Joyner-Kersey -- Chris Burke -- Disabled students in the mainstream -- Marlee Matlin -- Jean Driscoll -- Jim Abbott -- Heather Whitestone. Also include information on technological aids for the disabled and provides historical background on the disability rights movement.

Health Conditions (for younger students):

Bohland, Mark A., [edited by Dianne Drazee and Sonsie Conroy]. *Problem Based Learning: Mystery Disease*. Dandy Lion Publications, 2003. Grades 4-5.

With this problem-based learning unit, students become public health workers as they track down the source of a mysterious illness. The activities combine science, social studies, math, research, group collaboration, and communication as students work in teams to solve the problem and present their findings. [LC record record].

Human, Jane. *Deafness*. F. Watts, 1980. Juv.

"Discusses types of hearing losses and their causes, the effects of deafness on the individual, methods of learning speech and language, and alternative forms of communications." [LC record].

Pringle, Laurence P. *Hearing*. Benchmark Books, 2000. Juv.

"Describes the parts of the ear and how they function and discusses the way animals hear, maintaining balance, taking care of your hearing and more." [LC record].

Rius, Maria, Parramón, José Maria, and Puig, J. J. *Hearing*. Barron's, 1985. Juv.

"Text and illustrations presents sounds to be heard. Included is a short scientific explanation of our sense of hearing, with a diagram of the ear." [LC record].

Showers, Paul and Keller, Holly. *Ears are for Hearing*. Crowell, 1990. Juv.

"Describes the process of hearing, during which sound waves travel through the ear and become signals the brain interprets as individual sounds." [LC record].

Silverstein, Alvin and Silverstein, Virginia B. *The Story of Your Ear*. Coward, McCann & Geoghegan, 1981. Juv.

"Describes the structure of the ear, what sound is and how the ear receives it, the ear's role in maintaining balance, and how the ear can be damaged." [LC record].

#### Health resources for teachers:

Chasin, Marshall. *Hearing Loss in Musicians: Prevention & Management*. Plural Pub., 2008.

Considers a variety of issues involving the loss of hearing suffered by all types of musicians including anatomy and physiology of the hearing systems, room and stage acoustics, environment medications, and hearing implants.

#### Resources for dance and athletic health (for all students).

Andrea Watkins and Priscilla M Clarkson. *Dancing Longer Dancing Stronger: A Dancer's Guide to Improving Technique and Preventing Injury*. Princeton Book Co., 1990.

Considers ballet, jazz, modern, and aerobic exercises that complement all dance.

Arnheim, Daniel D. *Dance Injuries: Their Prevention and Care*. Princeton Book Co., 3rd ed. 1991.

Explains dance injuries, wounds and their prevention, and related therapies.

Barringer, Janice and Schlesinger, Sarah. *The Pointe Book: Shoes, Training & Technique*. 2nd ed. Princeton Book Co., 2004. Juv.

Begins with a brief history of pointe dancing then looks carefully at issues such as at training and injuries and their treatments.

Kent, Allegra and others. *Dancers' Body Book*. 1st. Quill ed. Quill, 1984.  
Considers physical fitness, attitudes that a healthy dancer needs, and nutrition.

Clippinger, Karen S. *Dance Anatomy and Kinesiology*. Human Kinetics Publishers, 2007.

Contents include: The skeletal system and its movements -- The muscular system -- The spine -- The pelvic girdle and hip joint -- The knee and patella of femoral?? joints -- The ankle and foot -- The upper extremity -- Analysis of human movement." [Book description].

Dimon, Theodore. *Anatomy of the Moving Body: A Basic Course in Bones, Muscles, and Joints*. 2nd ed. Random House Inc., 2008.

Provides information on muscles, bones and joints useful for dancers, educators, and therapists.

Janda, David. *The Awakening of a Surgeon: A Family Guide to Preventing Sports Injuries and Death*. Michigan Orthopaedic Center, 2004.

Life of a pediatric sports physician and orthopedist and his fight to prevent sports injuries in children.

Koutedakis, Yiannis, Sharp, N. C. Craig, and others. *The Fit and Healthy Dancer*. John Wiley, 1999.

Explains that dance is dangerous and must be carefully managed in terms of health, hygiene and exercise.

McMahon, Patricia. *Dancing Wheels*. Houghton Mifflin Co., 2000.

Describes the creation, training, and performances of the dance troupe known as Dancing Wheels who incorporate the movements of dancers who dance standing up and those who are in wheelchairs.

Spilken, Terry. *Dancer's Foot Book*. Princeton Book Company Publishers, 1990.

"Complete guide to common foot injuries in ballet, modern dance, jazz and aerobic dance." [Publisher description].

Wilmoth, Susan K., *Leading Aerobic Dance-Exercise*. Human Kinetics Publishers, 1986.

Consider: The job of the aerobic dance-exercise leader --  
Aerobic fitness -- Tradition: warming up, working out, cooling down -- Dance steps and  
exercise-- Aerobic dance-exercise injuries and prevention -- Motivating your participants  
to attend class --Administrative notes for aerobic dance-exercise leaders.

#### Biographies of Dancers:

Barasch, Lynn. *Knockin' on Wood: Starring Peg Leg Bates*. Lee & Row, 2004. k-3.

"Present a picture book biography of Clayton "Peg Leg" Bates, an African American who lost his leg in a factory accident at the age of twelve and went on to become a world-famous tap dancer." [LC record].

Daneman, Meredith. *Margot Fonteyn*. Viking, 2004.

Presents the life of the Fonteyn, great British ballerina (1919-1991).

Gottlie, Robert. *George Balanchine: The Ballet Maker*. HarperCollins/Atlas Books, 2004.

"Chronicles the life and achievements of George Balanchine, ballet's foremost choreographer and one of the creative masters of the twentieth century." [LC record].

Glover, Savion and Weber, Bruce. *Savion!: My Life in Tap*. New York : W. Morrow and Co., 2000. Juv.

"Examines the life and career of the young tap dancer who speaks with his feet and who choreographed the Tony Award-winning Broadway show "Bring in da Noise, Bring in da Funk." [LC record].

Haselhurst, Maureen. *Born to Dance: The Story of Rudolf Nureyev*. Oxford University Press, 2003. Juv.

Chronicles the life and influence of Nureyev for young readers.

Kavanagh, Julie. *Nureyev: the Life*. 1st American ed. Pantheon Books, 2007.

Consider the world-wide effects of Nureyev (1938-1993) on dance, includes references to his homosexuality and his death due to AIDS. For mature readers.

Kozodoy, Ruth. *Isadora Duncan*. Facts on File, 1987. Gr. 5-12.

Records the interesting life of an innovative dancer, feminist, and free-thinker who died tragically in a car accident at the pinnacle of her career.

Pinkney, David. *Alvin Ailey*. 1st. ed. Hyperion Books for Children. Juv.

Describes the life of the great African American modern dancer and choreographer.

Plisetskaia, Maiia Mikhailovna, with others. *I, Maya Plisetskaya*. Yale University Press, 2001.

Records the life of the great Russian ballerina, Plisetskaia, who at 75 received the Medal of Service to the Russian State, Second Degree, from Russian President Putin.

Stuart, Otis, *Perpetual Motion: The Public and Private Lives of Rudolf Nureyev*. Simon & Schuster, 1995.

Provides information on the life of Nureyev, including his non-public life as a gay man. For mature readers.

Thompson, Lauren and Estrin, James. *Ballerina Dreams : A True Story*. Feiwel and Friends. 2007. Juv.

True story of five little girls with cerebral palsy or other physical disabilities who were determined to become ballerinas.

#### Biographies of Athletes

Armstrong, Lance and Jenkins, Sally. *Every Second Counts*. Broadway Books, 2003.

Provides glimpse of his personal life, his love of speed, and his fight with cancer.

\_\_\_\_\_. *It's Not about the Bike: My Journey Back to Life*. Putnam, 2000.

"The world-champion cyclist recounts his diagnosis with cancer, the grueling treatments during which he was given a less than twenty percent chance for survival, his surprising victory in the 1999 Tour de France, and the birth of his son." [Publisher's description].

Coyle, Daniel. Coyle, Daniel. *Lance Armstrong's War. One man's Battle against Fate, Fame, Love, Death, Scandal, and a Few Other Rivals on the Road to the Tour de France*. HarperCollins, 2005.

Considers Armstrong's drive for winning and the effects of his illness.

Duplacey, James. *Muhammed Ali: Athlete, Activist, Ambassador*. Warwick Publishing, 2001. Gr. 6-12.

Looks at the complete life of the great boxer who in later life suffered from brain damage..

Hall, Jonathan. *Mark McGwire : A Biography*. Pocket Books, 1998.

A great baseball player, and although never convicted, in recent years he has been associated with steroid use scandals in baseball.

Harrington, Geri, *Jackie Joyner-Kersey: Champion Athlete*. Facts on File, 1995.ed. Gr. 7-12.

"A revealing portrait of the athlete who overcame asthma to win numerous Olympic gold medals. Describes Joyner-Kersey's 4 Olympic championships, despite asthma attacks." [LC record].

Hatch, Robert and Hatch, William. *The Hero Project: 2 Teens, 1 Notebook, 13 Extraordinary Interviews*. McGraw-Hill, 2006.

A collection of interviews undertaken by brothers Robert and William Hatch, between the ages of eleven and fourteen, including Lance Armstrong.

Macht, Norman L. *Jim Abbott: Major League Pitcher* Facts on File, 1994. Gr. 7-12.

"Highlights the career of major league baseball player Jim Abbott, who was born in 1967 without a right hand." [LC record].

\_\_\_\_\_. *Roy Campanella: Baseball Star*. Chelsea House Publishers, 1996. Gr. 7-12.

"A biography of Roy Campanella, the award-winning catcher whose baseball career was cut short by an accident which left him partially paralyzed." [LC record].

O'Connor, Jim. *Comeback!: Four True Stories*. Step into Reading Series, Book 4 Random House, 1992. Juv.

Describes how four famous athletes overcame injuries.

Stewart, Mark, *Sweet Victory: Lance Armstrong's Incredible Journey, the Amazing Story of the Greatest Comeback in Sports*. Millbrook Press, 2000.

"The story of the bicyclist who, having won the battle against

cancer, went on to win the world's most grueling bicycle race, the Tour de France." [LC record].

Rappoport, Ken. *Profiles in Sports Courage*. Peachtree, 2006.

"Collection of 12 profiles of athletes who have faced significant challenges in their personal and professional lives that they have overcome through their own courage." Includes: Muhammad Ali "The Greatest" -- Lance Armstrong "Captain Courageous" -- Kerri Strug "Standing tall" -- Junko Tabei "No mountain too high" -- Junius Kellogg "Blowing the whistle" -- Jim Abbott "Beating the odds" -- Janet Guthrie "Fast Lane Lady" -- Jackie Robinson "The first" -- Gail Devers "Golden girl" -- Curt Flood "A flood tide" -- Rocky Bleier "Man on a mission" -- Ekaterina Gordeeva "Skating for Sergei." [LC record].

Rennebohm, Peter. *Be Not Afraid: Ben Peyton's Story: A Seventeen-year-old Hockey Player's Fight to Overcome a Devastating Injury*. North Star Press of St. Cloud, 2004.

"Story of an Edina, Minnesota, high school hockey player seriously injured during a game and his courage and determination to walk again." [LC record].

Robinson, Tom. *Donovan McNabb : Leader On and Off the Field: .Sports Stars with Heart Series*. Enslow Publishers, 2008. Juv.

Account of Donovan McNabb life in sports, including his injuries and his fight back.

Scranton, Pierce E. *Playing Hurt: Treating and Evaluating the Warriors of the NFL*. Brassey's, 2001.

Personal narrative a sports physician for the Seattle Seahawks.

## **Art and Health**

Resources for older students:

Currie-McGhee, L.K. *Tattoos and Body Piercing*. Lucent Books, 2006. Juv.

Offers insight into the reason for tattoos and body piercings, who gets them, health issues, legal issues, and how to have them removed. [LC record].

Hayes, Bill. *The Anatomist : A True Story of Gray's Anatomy*. Ballantine Books, 2008.

The classic medical text known as *Gray's Anatomy* is one of the most famous books ever written. Science writer Bill Hayes has written the never-before-told story of how this seminal volume came to be. With passion and wit, Hayes explores the significance of *Gray's Anatomy* and explains why it came to symbolize a turning point in medical history. But he does much more: uncovering a treasure trove of letters and diaries, he illuminates the relationship between the fiercely gifted young anatomist Henry Gray and his younger collaborator H. V. Carter, whose exquisite anatomical illustrations are masterpieces of art and close observation. Tracing the triumphs and tragedies of these two extraordinary men, Hayes brings an equally extraordinary era--the mid-1800s--unforgettably to life. The book also chronicles Hayes's year as a student of anatomy, performing with his own hands the dissections and examinations detailed by Henry Gray 150 years ago.—[Publisher's description].

Kyle, Robert A. and Shampo, M. A. *Medicine and Stamps*. R.E. Krieger Pub. Co., 1980.

Illustrates medicinal history through the art of stamp designs.

McCann, Michael. *Artist Beware*. Watson-Guptill Publications, 1979

Consider the hazards associated with art materials and how to protect artists. Includes a discussion of children and art materials and crafts.

McCann, Michael and Babin, Angela. *Health Hazards Manual for Artists*. 6<sup>th</sup> ed. Lyons Press, 2008.

Discusses the health and hygiene needs of artists and toxicology of artist materials.

McNiff, Shaun. *Art as Medicine: Creating a Therapy of the Imagination* Shambhala, Distributed in the U.S. by Random House, 1992.

“McNiff introduces his pioneering methods of using the creative arts to renew and heal the imagination, such as interpretation through performance and storytelling, collaborative creation, and dialoguing with paintings, as opposed to talking about paintings. 30 halftones.” [Publisher description].

Rossol, Monona. *The Artist's Complete Health & Safety Guide*. 2nd. Allworth Press, 1994.

Consider the health and hygiene of artists as well a information about toxicology and exposure to harmful agents and hazardous substances, and laws of compliance in the workplace.

Wilkinson, Beth. *Coping with the Dangers of Tattooing, Body Piercing, and Branding* Rosen Pub. Group, Year: 1998.

Gives information needed to make an informed decision about body modification including the laws and safety regulations surrounding this business. [Publishers description].

Resources for younger students

Bull, Peter. *Flowers & Plants*. Kingfisher, 2008. Juv.

Provides drawing techniques for children.

Court, Rob. *How to Draw People*. Child's World, 2007. Juv.

Shows how to draw people including a pilot, a chef, a small boy, an astronaut, and a soccer player. Emphasizes the human figure as art. [LC record] .

Esterer, Arnulf K. and Esterer, Louise A. *Signs and Symbols* Messner, 1980.

“Discusses various kinds of signs and symbols used to convey information quickly and clearly, such as flags, trademarks, coats of arms, medical symbols, musical notation, writing, numbers, traffic signs, holiday symbols, and many others.” [LC record ].

Ivenbaum, Elliott and Frame, Paul. *Drawing People*. F. Watts,1980. Juv.

Presents step-by-step instructions for drawing the human body as an art form.

Robins, Deri. *Drawing and Sketching*. QEB Pub., 2004. Juv.

Drawing and Sketching teaches all the basic skills and techniques needed to draw and sketch a wide range of subjects, while exciting and imaginative projects will inspire budding artists to create their own fantastic pictures. [LC record].

Temple, Kathryn. *Drawing : The Only Drawing Book You'll Ever Need to be the Artist You've Always Wanted to be*. Lark Books, 2005. Juv.

“Great instructions and suggestions for drawing people, places, and things.” [LC record].

## **Medicine and Society**

McPherson, Stephanie Sammartino *The Workers' Detective: A Story about Dr. Alice Hamilton*. A Carolrhoda Creative Minds Book series. Carolrhoda Books, 1992.

A biography of Dr. Alice Hamilton, social worker and doctor, whose work brought attention to the health risks associated with particular jobs. [LC record].

Médecins sans Frontières (Association). *Doctors without Borders: Helping Those in Need. Faces: People, Places, and Cultures*, v. .21, no. 7. Cobblestone Pub. Co., 2005.

Describes the work of sans Frontières in bring health care to underserved people throughout the world.

McClafferty, Carla Killough. *The Head Bone's Connected to the Neck Bone: the Weird, Wacky, and Wonderful X-ray*. Farrar, Straus and Giroux, 2001.

Through an engaging text and numerous photographs and illustrations, Carla Killough McClafferty tells the history of the X-ray, from its discovery to its uses today. The story begins in 1895, when Wilhelm Roentgen accidentally saw the bones of his own hand while experimenting with cathode rays in his laboratory in Germany. His gift to science led to an amazing revolution in medicine, but not without a terrible price: it was only through many scientists' injuries and deaths that the dangers of X-ray exposure were revealed....” [LC record] .

Parker, Steve. *The History of Medicine*. Garth Stevens Information Library Series. Gareth Stevens Children's Books, 1992.

Surveys the art and science of medicine from ancient times to the present, focusing on the most important modern discoveries and innovations in preserving health, fighting illness, and curing diseases. [LC record].

*Your Health*. Harcourt Brace & Company, [2000-2002].

Textbook format that “discusses how children can deal with their feelings, be polite, good touches, how to avoid conflict, how to have good posture, exercising, lunches they can make themselves, keeping clean, staying well, tobacco and the body, drugs, preventing fires, staying safe outdoors, being safe on the bus, and community workers. [LC record].

### **Community Life and Customs (Food, health, and safety)**

Berenstain, Sam, and Bernenstain, Jan. *The Berenstain Bears and Too Much Junk Food*. New York: Randm House, 1985. K-2

Mama Bear lays down the law when she notices that Papa and the cubs are getting too chubby. With the help of Dr. Grizzly's slide show on how the body works, the Bear family makes healthful adjustments in their diet and fitness habits. Full color. [Publisher's description].

Birch, Robin. *Health*. Macmillan Education, 2002. K-3.

Describes the different types of jobs done by people working in the community health field. [LC record].

Caeley, Judith. *On the Town: A Community Adventure*. New York: Greenwillow Books, 2002.

"Sparked by a school assignment, a boy and his mother keep track of the people and places in the neighbourhood .... The child's notebook entries appear throughout in lively watercolor, colored pencil and ink illustrations." Gr. K-3. (publisher's description).

Kalman, Bobbie. *Hospital Workers in the Emergency Room*. New York: Crabtree Pub. Co., 2005. K=4.

Being sick can be a scary experience, but the hospital workers in the emergency room can make children feel better. These knowledgeable community helpers include doctors, nurses, emergency medical technicians, lab technicians, and many more. Children will be fascinated by the roles hospital workers play in helping them get well. Key topics include: an overview of the emergency room; equipment used by hospital workers; x-rays; blood tests; how hospital ER personnel work as a team. [Publisher's description].

\_\_\_\_\_. *What is a Community from A to Z?* New York: Crabtree Publishing Company, 2000. Gr. K-2.

"Meet people of different nationalities who make our communities cleaner, safer and more pleasant. Such people as police officers, firefighters, sanitation workers and veterinaries. [Publisher's description].

## Conclusion

Health is integrated into all segments of all societies and cultures. In fact, health is often a strong indicator of how a nation or groups of people will survive within human history and culture. Education is one of the prime weapons we have against disease and unhealthy living conditions. This discussion has highlighted some of the major issues that must be faced by teacher- librarians as we seek to play an important role in health improvement through good teaching and information delivery.

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### **Statement of Originality**

This statement certifies that the paper above is based upon original research undertaken by the author and that the paper was conceived and written by the author(s) alone and has not been published elsewhere. All information and ideas from others is referenced.