STATE OF VERMONT

Specific curriculum area standards can be found at the Vermont State Board of Education website, located at the above address. Links to the specific standards are found under the current curriculum frameworks with the PDFs specific goals within each educational category located on the page. The benchmark interpretations are those of the Dangerous Decibels® program and do not represent official state board of education interpretation or review.

THE DANGEROUS DECIBELS PROGRAM is designed to reduce the incidence of noise induced hearing loss and tinnitus by changing knowledge, attitudes, and behaviors about sound exposures. Common underlying educational messages:

1. What are the sources of dangerous sounds
2. What are the consequences of dangerous sounds
3. How do I protect myself from dangerous sounds.

RATIONALE:
The Centers for Disease Control Division of Adolescent and School Health (DASH) recognizes noise induced hearing loss as a health risk for young people. http://www.cdc.gov/healthyyouth/noise/

The U.S. national health initiative; Healthy People 2020 has indicated three related health goals for the prevention of noise induced hearing loss in youth; http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=20

(Ear-Nose-Throat (ENT) and Educational and Community-Based Program (ECBP) Objectives

1. **ENT-VSL-6**: Increase the use of hearing protection devices
   a. **ENT-VSL-6.2**: Adolescents aged 12 to 19 years who have ever used hearing protection devices (earplugs, earmuffs) when exposed to loud sounds or noise.

2. **ENT-VSL-7** Reduce the proportion of adolescents who have elevated hearing thresholds or audiometric notches, in high frequencies (3, 4, or 6 kHz) in both ears, signifying noise-induced hearing loss.

3. **ECBP-3**: Increase the proportion of elementary, middle, and senior high schools that have health education goals or objects that address the knowledge and skills articulated in the National Health Education Standards (high school, middle, elementary).
   a. **ECBP-3.1**: Comprehending Concepts related to health promotion and disease prevention (knowledge)
   b. **ECBP-3.2**: Accessing valid information and health promoting products and services (skills)
   c. **ECBP-3.3**: Advocating for personal, family, and community health (skills)
   d. **ECBP-3.5**: Practicing health-enhancing behaviors and reducing health risks (skills)
   e. **ECBP-3.6**: Using goal-setting and decision-making skills to enhance health (skills)
   f. **ECBP-3.7**: Using interpersonal communication skills to enhance health (skills)
4. **ECBP-4:** *Increase the proportion of elementary, middle, and senior high schools that provide school health education to promote personal health and wellness in the following areas: hand washing or hand hygiene; oral health; growth and development; sun safety and skin cancer prevention; benefits of rest and sleep; ways to prevent vision and hearing loss; and the importance of health screenings and checkups.*
   a. **ECBP-4.6:** Ways to prevent vision and hearing loss

**DANGEROUS DECIBELS (DD) PROGRAM CONTENT:**

What is Sound?

**DD Educational Objectives:** Students will know that:

1. Sound is a result of vibrations
2. Sound vibrations are called sound waves
3. You cannot have sound without vibrations
4. The energy in sound is what can cause damage to our ears

**Vermont Educational Benchmarks:**

A. Physical Sciences (Chemistry and Physics Grades 3-5)
   Forms of Energy
   - 4) Identify the basic forms of energy (light, sound, heat, electrical, and magnetic). Recognize that energy is the ability to cause motion or create change.
   - 5) Give examples of how energy can be transferred from one form to another.
   Electrical Energy
   - 6) Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat, and sound.
   Sound Energy
   - 11) Recognize that sound is produced by vibrating objects and requires a medium through which to travel. Relate the rate of vibration to the pitch of the sound.

B. Introductory Physics (High School)
   Waves
   - 4.1 Describe the measureable properties of waves (velocity, frequency, wavelength, amplitude, period) and explain the relationships among them. Recognize examples of simple harmonic motion.
   - 4.2 Distinguish between mechanical and electromagnetic waves.
   - 4.3 Distinguish between the two types of mechanical waves, transverse and longitudinal.
   - 4.5 Recognize that mechanical waves generally move faster through a solid than through a liquid and faster through a liquid than through a gas.
   - 4.6 Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler Effect).
How Do We Hear?

DD Educational Objective:
Students will have a general understanding of how sound waves and vibrations travel through the parts of the ear to enable hearing

Vermont Educational Benchmarks:
A. Comprehensive Health Curriculum Framework (PreK-12)
     • By the end of grade 5
       o 1.2 Identify behaviors and environmental factors that influence functioning of body systems
       o 1.3 Identify appropriate accommodations and aids for people with physical disabilities
     • By the end of grade 8
       o 1.7 Explain the function of human body systems and how body systems work together.
       o 1.8 Describe the influence of health habits on growth and development.
     • By the end of grade 12
       o 1.11 Describe the impact of behavior and environment on failure of body systems (nervous, muscular, skeletal, circulatory, respiratory, endocrine, and excretory systems).

B. Physical Sciences (Chemistry and Physics Grades 3-5)
   Forms of Energy
     • 4) Identify the basic forms of energy (light, sound, heat, electrical, and magnetic). Recognize that energy is the ability to cause motion or create change.
     • 5) Give examples of how energy can be transferred from one form to another.
   Electrical Energy
     • 6) Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat, and sound.
   Sound Energy
     • 11) Recognize that sound is produced by vibrating objects and requires a medium through which to travel. Relate the rate of vibration to the pitch of the sound.

C. Introductory Physics (High School)
   Waves
     • 4.1 Describe the measurable properties of waves (velocity, frequency, wavelength, amplitude, period) and explain the relationships among them. Recognize examples of simple harmonic motion.
     • 4.2 Distinguish between mechanical and electromagnetic waves.
     • 4.3 Distinguish between the two types of mechanical waves, transverse and longitudinal.
     • 4.5 Recognize that mechanical waves generally move faster through a solid than through a liquid and faster through a liquid than through a gas.
     • 4.6 Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler Effect).
How Do We Damage Our Hearing?

**DD Educational Objective:**
Students will know how loud sounds create strong vibrations that can permanently damage hair cells in the cochlea.

**Vermont Educational Benchmarks:**

A. Comprehensive Health Curriculum Framework (PreK-12)
   - By the end of grade 5
     o 1.2 Identify behaviors and environmental factors that influence functioning of body systems
     o 1.3 Identify appropriate accommodations and aids for people with physical disabilities
   - By the end of grade 8
     o 1.7 Explain the function of human body systems and how body systems work together.
     o 1.8 Describe the influence of health habits on growth and development.
   - By the end of grade 12
     o 1.11 Describe the impact of behavior and environment on failure of body systems (nervous, muscular, skeletal, circulatory, respiratory, endocrine, and excretory systems).

B. Comprehensive Health Curriculum Framework (PreK-12)
   Standard 8. Disease Prevention and Control
   - By the end of grade 8
     o 8.5 Identify ways individuals can reduce risk factors related to communicable and chronic diseases
     o 8.6 Describe the importance of early detection in preventing the progression of disease
     o 8.17 Describe the leading causes of death for different age groups, symptoms of common diseases among youth, the importance of early diagnosis, and the need for active involvement in the treatment and management of disease and chronic health problems.

C. Science and Technology/Engineering Curriculum Framework (PreK-12)
   Life Science (Biology)
   - Grades 6-8
     o 6. Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.

   Technology/Engineering
   - Grades 6-8
     o 1.3 Identify and explain the safe and proper use of measuring tools, hand tools, and machines (e.g. band saw, drill press, sander, hammer, screwdriver, pliers, tape measure, screws, nails, and other mechanical fasteners) needed to construct a prototype of an engineering design.
What’s that Sound?

DD Educational Objectives:
1. Students will understand one of the consequences of being exposed to dangerous sound levels.
2. Students will understand what it is like to try to identify sounds with a high frequency hearing loss.

Vermont Educational Benchmarks:
A. Comprehensive Health Curriculum Framework (PreK-12)
   Standard 8. Disease Prevention and Control
   - By the end of grade 8
     o 8.5 Identify ways individuals can reduce risk factors related to communicable and chronic diseases
     o 8.6 Describe the importance of early detection in preventing the progression of disease
     o 8.17 Describe the leading causes of death for different age groups, symptoms of common diseases among youth, the importance of early diagnosis, and the need for active involvement in the treatment and management of disease and chronic health problems.

How Loud is Too Loud?

DD Educational Objectives:
1. Students begin to associate different sounds with decibel levels.
2. Students identify which method of hearing protection is the best to practice when exposed to dangerous decibels from different sources.
3. Students identify and discuss the social norms and challenges associated with practicing hearing protection.

Vermont Educational Benchmarks:
A. Comprehensive Health Curriculum Framework
   Standard 2. Physical Activity and Fitness
   - By the end of grade 5
     o 2.6 Identify the major behaviors that contribute to wellness (exercise, nutrition, hygiene, rest and recreation, refraining from using tobacco, alcohol, and other substances)
   - By the end of grade 8
     o 2.13 Explain the personal benefits of making positive health decisions and monitor progress towards personal wellness.
   - By the end of grade 12
2.24 Identify life-managing skills and protective factors that contribute to achieving personal wellness health goals, including researching, evaluating, and implementing strategies to manage personal wellness, health goals, and revise plans.

2.26 Apply safe practices, rules, procedures, and sportsmanship etiquette in physical activity settings, including how to anticipate potentially dangerous

B. Comprehensive Health Curriculum Framework (PreK-12)

- By the end of grade 5
  o 1.2 Identify behaviors and environmental factors that influence functioning of body systems

Standard 8. Disease Prevention and Control
- By the end of grade 8
  o 8.5 Identify ways individuals can reduce risk factors related to communicable and chronic diseases
  o 8.6 Describe the importance of early detection in preventing the progression of disease
  o 8.17 Describe the leading causes of death for different age groups, symptoms of common diseases among youth, the importance of early diagnosis, and the need for active involvement in the treatment and management of disease and chronic health problems.

Standard 9. Safety and Injury Prevention
- By the end of grade 5
  o 9.1 List rules for fire safety, weapons safety, bus safety, and seatbelt use where applicable, such as at home, school, community, and play, and explain why the rules are important
  o 9.3 Describe personal responsibility for reducing hazards and avoiding accidents
- By the end of grade 8
  o 9.8 Describe actions and behaviors to protect oneself when alone at home or in the community or caring for small children (such as first aid and rescue breathing)
  o 9.9 List safety rules for recreational activities, including the use of helmets, pads, and other proper use of equipment.

Standard 12. Personal and Community Health
- By the end of grade 8
  o 12.7 Evaluate both the physical effectiveness and cost effectiveness of health care products

Standard 14. Community and Public Health
- By the end of grade 12
  o 14.11 Identify the functions of the school, health department, and other community and public health and social service agencies in health promotion and disease prevention through community health initiatives and observances.

C. Science and Technology/Engineering Curriculum Framework (PreK-12)

Technology/Engineering
- Grades 6-8
  o 1.3 Identify and explain the safe and proper use of measuring tools, hand tools, and machines (e.g. band saw, drill press, sander, hammer,
Measuring Decibels with Sound Level Meters

DD Educational Objectives:
1. Students will measure sound intensities with a sound level meter.
2. Students learn how effective walking away from dangerous sound levels can be to reduce their exposure to dangerous sound.

Vermont Educational Benchmarks:
A. Comprehensive Health Curriculum Framework (PreK-12)
   Standard 2. Physical Activity and Fitness
   • By the end of grade 12
     o 2.24 Identify life-managing skills and protective factors that contribute to achieving personal wellness health goals, including researching, evaluating, and implementing strategies to managing personal wellness, monitor progress, and revise plans.
     o 2.26 Apply safe practices, rules, procedures, and sportsmanship etiquette in physical activity settings, including how to anticipate potentially dangerous consequences and outcomes of participation in physical activity.

   Standard 7. Intrapersonal Relationships
   • By the end of grade 8
     o 7.6 Explain how peer pressure influences choices and apply strategies for managing negative peer pressure and encouraging positive peer pressure.

   Standard 8. Disease Prevention and Control
   • By the end of grade 8
     o 8.5. Identify ways to individuals can reduce risk factors related to communicable and chronic diseases
     o 8.6. Describe the importance of early detection in preventing the progression of disease.

   Standard 9. Safety and Injury Prevention
   • By the end of grade 5
     o 9.3. Describe personal responsibility for reducing hazards and avoiding accidents
   • By the end of grade 8
     o 9.9 List safety rules for recreational activities, including the use of helmets, pads, and the proper use of equipment.
   • By the end of grade 12
     o 9.18 Describe practices related to safety conditions in the workplace (such as the use of eye protection, gloves, and hard hats)

B. Introductory Physics (High School)
4.1 Describe the measurable properties of waves (velocity, frequency, wavelength, amplitude, period) and explain the relationships among them. Recognize examples of simple harmonic motion.
4.2 Distinguish between mechanical and electromagnetic waves.
4.3 Distinguish between the two types of mechanical waves, transverse and longitudinal.
4.5 Recognize that mechanical waves generally move faster through a solid than through a liquid and faster through a liquid than through a gas.
4.6 Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler Effect).

How to use Earplugs

DD Educational Objectives:

1. Students will observe the proper technique and fitting of preformed earplugs
2. Optional: Students will have the opportunity to practice fitting earplugs in their ears.

Vermont Educational Benchmarks:

A. Comprehensive Health Curriculum Framework (PreK-12)
   Standard 2. Physical Activity and Fitness
   • By the end of grade 12
     o 2.24. Identify life-management skills and protective factors that contribute to achieving personal wellness health goals, including researching, evaluating, and implementing strategies to manage personal wellness, monitor progress, and revise plans
   Standard 8. Disease Prevention and Control
   • By the end of grade 8
     o 8.5. Identify ways individuals can reduce risk factors related to communicable and chronic diseases
   Standard 9. Safety and Injury Prevention
   • By the end of grade 8
     o 9.8. Describe actions and behaviors to protect oneself at home or in the community or caring for small children (such as first aid and rescue breathing)
     o 9.9. List safety rules for recreational activities, including the use of helmets, pads, and the proper use of equipment.
   • By the end of grade 12
     o 9.18. Describe practices related to safety conditions in the workplace (such as the use of eye protection, gloves, and hardhats).
   • By the end of grade 8
     o 12.7 Evaluate both the physical effectiveness and cost effectiveness of health care products
   • By the end of grade 12
     o 12.11 Explain when and how to use self-care of professional health care services.
State of Vermont: Dangerous Decibels Educational Benchmarks: 2012.08

B. Science and Technology/Engineering Curriculum Framework (PreK-12)
   Technology/Engineering
     • Grades 6-8
       o 1.3 Identify and explain the safe and proper use of measuring tools, hand
         tools, and machines (e.g. band saw, drill press, sander, hammer,
         screwdriver, pliers, tape measure, screws, nails, and other mechanical
         fasteners) needed to construct a prototype of an engineering design.

Rock Your World: Time to Act!

DD Educational Objectives:
1. To bring awareness to peer pressure that a person can encounter when
   practicing smart hearing.
2. Students practice making personal decisions on individual behavior in
   social settings and discuss their answers with the class and educator.

Vermont Educational Benchmarks:
A. Comprehensive Health Curriculum Framework (PreK-12)
   Standard 2. Physical Activity and Fitness.
     • By the end of grade 5
       o 2.5. Explain the benefits of physical fitness to good health and increased
         active lifestyle
       o 2.6 Identify the major behaviors that contribute to wellness (exercise,
         nutrition, hygiene, rest and recreation, refraining from using tobacco,
         alcohol, and other substances)
     • By the end of grade 8
       o 2.13 Explain the personal benefits of making positive health decisions
         and monitor progress towards personal wellness
     • By the end of grade 12
       o 2.24 Identify life-management skills and protective factors that contribute
         to achieving personal wellness health goals, including researching,
         evaluating, and implementing strategies to manage personal wellness,
         monitor progress, and revise plans
       o 2.26 Apply safe practices, rules, procedures, and sportsmanship etiquette
         in physical activity settings, including how to anticipate potentially
         dangerous consequences and outcomes of participation in physical
         activity
   Standard 7. Intrapersonal Relationships
     • By the end of grade 8
       o 7.5 Apply attentive listening, feedback, and assertiveness skills to
         enhance positive interpersonal communication
       o 7.6. Explain how peer pressure influences choices and apply strategies
         for managing negative peer pressure and encouraging positive peer
         pressure
   Standard 8. Disease Prevention and Control
     • By the end of grade 8
       o 8.5 Identify ways individuals can reduce risk factors related to
         communicable and chronic diseases
State of Vermont: Dangerous Decibels Educational Benchmarks: 2012.08

- 8.6 Describe the importance of early detection in preventing the progression of disease

Standard 9. Safety and Injury Prevention
- By the end of grade 5
  - 9.1 List rules for fire safety, weapons safety, bus safety, and seatbelt use where applicable, such as at home, school, community, and play, and explain why the rules are important
  - 9.3. Describe personal responsibility for reducing hazards and avoiding accidents
- By the end of grade 8
  - 9.9. List safety rules for recreational activities, including the use of helmets, pads, and the proper use of equipment
- By the end grade 12
  - 9.18. Describe practices related to safety conditions in the workplace (such as the use of eye protection, gloves, and hard hats)

- By the end of grade 8
  - 12.7 Evaluate both the physical effectiveness and cost effectiveness of health care products
- By the end of grade 12
  - 12.11 Explain when and how to use self-care of professional health care services.

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