Guide for teachers to use the Our Perceptions of Music PowerPoint Presentation with TEKS

Elementary School Science

§112.2. Science, Kindergarten.

(b) Knowledge and skills.

(7) Science concepts. The student knows that many types of change occur. The student is expected to:

(A) observe, describe, and record changes in size, mass, color, position, quantity, time, temperature, sound, and movement;

(B) identify that heat causes change, such as ice melting or the Sun warming the air and compare objects according to temperature;

(C) observe and record weather changes from day to day and over seasons; and

(D) observe and record stages in the life cycle of organisms in their natural environment.

SLIDE 6: Play different animal sounds, musical sounds, etc and have the students write their observations and ask them to observe what happens if you lengthen or shorten the amount of string vibrated on an instrument. Shortening a string on an instrument creates a higher pitch while lengthening it creates a lower pitch.

§112.3. Science, Grade 1.

(b) Knowledge and skills.

(7) Science concepts. The student knows that many types of change occur. The student is expected to:

(A) observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement;

(B) identify and test ways that heat may cause change such as when ice melts;

(C) observe and record changes in weather from day to day and over seasons; and

(D) observe and record changes in the life cycle of organisms.

SLIDE 6: Play different animal sounds, musical sounds, etc and have the students write their observations and ask them to observe what happens if you lengthen or shorten the amount of string vibrated on an instrument. Shortening a string on an instrument creates a higher pitch while lengthening it creates a lower pitch.

(7) Science concepts. The student knows that many types of change occur. The student is expected to:

(A) observe, measure, record, analyze, predict, and illustrate changes in size, mass, temperature, color, position, quantity, sound, and movement;

(B) identify, predict, and test uses of heat to cause change such as melting and evaporation;

(C) demonstrate a change in the motion of an object by giving the object a push or a pull; and

(D) observe, measure, and record changes in weather, the night sky, and seasons.

SLIDE 6: Play different animal sounds, musical sounds, etc and have the students write their observations and ask them to observe what happens if you lengthen or shorten the amount of string vibrated on an instrument. Shortening a string on an instrument creates a higher pitch while lengthening it creates a lower pitch.

§112.7. Science, Grade 5.

(b) Knowledge and skills.

(8) Science concepts. The student knows that energy occurs in many forms. The student is expected to:

(A) differentiate among forms of energy including light, heat, electrical, and solar energy;

(B) identify and demonstrate everyday examples of how light is reflected, such as from tinted windows, and refracted, such as in cameras, telescopes, and eyeglasses;

(C) demonstrate that electricity can flow in a circuit and can produce heat, light, sound, and magnetic effects; and

(D) verify that vibrating an object can produce sound.

SLIDE 16,17: Bring in a string instrument (violin, ukulele, etc) or take a field trip to the music room and ask them to observe what happens if you lengthen or shorten the amount of string vibrated. Shortening a string on an instrument creates a higher pitch while lengthening it creates a lower pitch. Students may be able to see the difference in vibration speed if a large difference in length is used. The shorter string will

vibrate faster while the longer string will vibrate slower. Students should make the correlation between vibration speed and pitch (high speed = high pitch, low speed = low pitch).

Middle School Science

§112.23. Science, Grade 7.

(b) Knowledge and skills.

(9) Science concepts. The student knows the relationship between structure and function in living systems. The student is expected to:

(A) identify the systems of the human organism and describe their functions; and

(B) describe how organisms maintain stable internal conditions while living in changing external environments.

SLIDE 10-16: Ask the students to identify major parts of the ear and the series of events that begin from the time a sound wave reaches the ear to when our brain recognizes a sound. See http://www.iurc.montp.inserm.fr/cric/audition/english/ear/fear.htm, http://www.ccent.com/PHS/anat.html, http://biology.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fctl.augie.edu%2Fperry%2Fear%2Fhearmech.htm for extensive information about each part of the ear and how the parts work together to help us perceive sound.

(11) Science concepts. The student knows that the responses of organisms are caused by internal or external stimuli. The student is expected to:

(A) analyze changes in organisms such as a fever or vomiting that may result from internal stimuli; and

(B) identify responses in organisms to external stimuli found in the environment such as the presence or absence of light.

SLIDE 10-16: Ask the students to identify major parts of the ear and the series of events that begin from the time a sound wave reaches the ear to when our brain recognizes a sound. See http://www.iurc.montp.inserm.fr/cric/audition/english/ear/fear.htm, http://www.ccent.com/PHS/anat.html, http://biology.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fctl.augie.edu%2Fperry%2Fear%2Fhearmech.htm for extensive information about each part of the ear and how the parts work together to help us perceive sound.

High School Science

§112.42. Integrated Physics and Chemistry.

(c) Knowledge and skills.

(3) Scientific processes. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:

(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;

(B) draw inferences based on data related to promotional materials for products and services;

(C) evaluate the impact of research on scientific thought, society, and the environment;

(D) describe connections between physics and chemistry, and future careers; and

(E) research and describe the history of physics, chemistry, and contributions of scientists.

SLIDE 29-31: Ask the students to evaluate the impact of sound research with other disciplines such as music and psychology. (Why do certain sounds scare us more than others? Bring in experiences from daily life such as a child laughing, a dog growling, and how lower frequency noises are harder for us to locate and then are perceived as "scarier" by our brain)

(5) Science concepts. The student knows the effects of waves on everyday life. The student is expected to:

(A) demonstrate wave types and their characteristics through a variety of activities such as modeling with ropes and coils, activating tuning forks, and interpreting data on seismic waves;

(B) demonstrate wave interactions including interference, polarization, reflection, refraction, and resonance within various materials;

(C) identify uses of electromagnetic waves in various technological applications such as fiber optics, optical scanners, and microwaves; and

(D) demonstrate the application of acoustic principles such as in echolocation, musical instruments, noise pollution, and sonograms.

SLIDE 5: have students describe each of the wave characteristics and how they affect musical instruments (Frequency pertains to the speed of vibration; the rate at which the pulses of pressure changes reach the ear. Waveform describes the actual shape of the changes in air pressure through time. The defining feature of Periodic waves is that the pressure changes are regularized; that is, they occur at regular intervals or periods

(e.g., 60 cycles of pressure change per second, with each cycle lasting for approximately 1/60 second). Amplitude refers to the magnitude of changes in the waveform, and Duration is a straightforward measure of timing.)
SLIDE 6,8,16,18: ask students to identify frequency, waveform, amplitude, and duration on a graph. On Slide 18, ask students the relationship between frequency and wavelength (Higher frequency = shorter wavelength while amplitude remains constant).
SLIDE 7,18,31-32: ask students how properties of waves affect how we interpret different aspects of music such as pitch and loudness (We perceive frequency as pitch, waveform as tone quality/timbre, amplitude as loudness and duration as rhythm/tempo). A higher frequency is a higher pitch, a bigger amplitude is louder than a smaller amplitude. Intensity encompasses both the perceived loudness and dissonance of music, with very loud and very dissonant sounds perceived as less intense than softer and more consonant sounds. Density refers to the number of sound events per unit time. In other words, the more sounds that occur in a given interval of music, the more dense the piece. Continuity is the measure of the rate of change in music, including changes in pitch, tone quality, loudness, and timing. Redundancy expresses the amount of repetition in a musical work, including repetitions that are not exact (e.g., identical interval relationships performed at different pitch levels, rhythms that are stretched or compressed in time).
SLIDE 8: Do the tuning fork presentation using 2 forks placed next to each other to explain resonance (by striking one fork the other will pick up the sound waves and start vibrating because the forks are at the same natural frequency).
SLIDE 31: ask students to explain the connection between sound and wavelength and how wavelength affects the way we perceive a sound (low vs. high pitches). Higher frequency = shorter wavelength

§112.47. Physics.

(c) Knowledge and skills.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement experimental procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology;

(B) make quantitative observations and measurements with precision;

(C) organize, analyze, evaluate, make inferences, and predict trends from data;

(D) communicate valid conclusions;

(E) graph data to observe and identify relationships between variables; and

(F) read the scale on scientific instruments with precision.

SLIDE 6,8,11: ask students to interpret the data on the graphs by explaining what each axis represents and how the variables are related (the sound is getting louder as time is increasing). Ask what could be inferred if the graph looked different (longer or higher peaks as lower/louder sounds) using proper scientific terminology (wavelength, frequency, etc). An example: "A wave that takes a longer amount of time to travel a distance is said to have a longer wavelength."

(8) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to:

(A) examine and describe a variety of waves propagated in various types of media and describe wave characteristics such as velocity, frequency, amplitude, and behaviors such as reflection, refraction, and interference;

(B) identify the characteristics and behaviors of sound and electromagnetic waves; and

(C) interpret the role of wave characteristics and behaviors found in medicinal and industrial applications.

SLIDE 5: have students describe each of the wave characteristics and how they affect musical instruments (Frequency pertains to the speed of vibration; the rate at which the pulses of pressure changes reach the ear. Waveform describes the actual shape of the changes in air pressure through time. The defining feature of Periodic waves is that the pressure changes are regularized; that is, they occur at regular intervals or periods (e.g., 60 cycles of pressure change per second, with each cycle lasting for approximately 1/60 second). Amplitude refers to the magnitude of changes in the waveform, and Duration is a straightforward measure of timing. Velocity is simply how fast a wave is moving as distance/time.)
SLIDE 7,18,31-32: ask students how properties of waves affect how we interpret different aspects of music such as pitch and loudness (We perceive frequency as pitch, waveform as tone quality/timbre, amplitude as loudness and duration as rhythm/tempo). A higher frequency is a higher pitch, a bigger amplitude is louder than a smaller amplitude. Intensity encompasses both the perceived loudness and dissonance of music, with very loud and very dissonant sounds perceived as less intense than softer and more consonant sounds. Density refers to the number of sound events per unit time. In other words, the more sounds that occur in a given interval of music, the more dense the piece. Continuity is the measure of the rate of change in music, including changes in pitch, tone quality, loudness, and timing. Redundancy expresses the amount of repetition in a musical work, including repetitions that are not exact (e.g., identical interval relationships performed at different pitch levels, rhythms that are stretched or compressed in time).

§112.43. Biology.

(c) Knowledge and skills.

(3) Scientific processes. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:

(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;

(B) evaluate promotional claims that relate to biological issues such as product labeling and advertisements;

(C) evaluate the impact of research on scientific thought, society, and the environment;

(D) describe the connection between biology and future careers;

(E) evaluate models according to their adequacy in representing biological objects or events; and

(F) research and describe the history of biology and contributions of scientists.

SLIDE 29-31: Ask the students to evaluate the impact of sound research with other disciplines such as music and psychology. (Why do certain sounds scare us more than others? Bring in experiences from daily life such as a child laughing, a dog growling, and how lower frequency noises are harder for us to locate and then are perceived as "scarier" by our brain)

(10) Science concepts. The student knows that, at all levels of nature, living systems are found within other living systems, each with its own boundary and limits. The student is expected to:

(A) interpret the functions of systems in organisms including circulatory, digestive, nervous, endocrine, reproductive, integumentary, skeletal, respiratory, muscular, excretory, and immune;

(B) compare the interrelationships of organ systems to each other and to the body as a whole; and

(C) analyze and identify characteristics of plant systems and subsystems.

SLIDE 10-16: Ask the students to identify major parts of the ear and the series of events that begin from the time a sound wave reaches the ear to when our brain recognizes a sound. See http://www.iurc.montp.inserm.fr/cric/audition/english/ear/fear.htm, http://www.ccent.com/PHS/anat.html, http://biology.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fctl.augie.edu%2Fperry%2Fear%2Fhearmech.htm for extensive information about each part of the ear and how the parts work together to help us perceive sound.

(11) Science concepts. The student knows that organisms maintain homeostasis. The student is expected to:

(A) identify and describe the relationships between internal feedback mechanisms in the maintenance of homeostasis;

(B) investigate and identify how organisms, including humans, respond to external stimuli;

(C) analyze the importance of nutrition, environmental conditions, and physical exercise on health; and

(D) summarize the role of microorganisms in maintaining and disrupting equilibrium including diseases in plants and animals and decay in an ecosystem.

SLIDE 10-16: Ask the students to identify major parts of the ear and the series of events that begin from the time a sound wave reaches the ear to when our brain recognizes a sound. See http://www.iurc.montp.inserm.fr/cric/audition/english/ear/fear.htm, http://www.ccent.com/PHS/anat.html, http://biology.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fctl.augie.edu%2Fperry%2Fear%2Fhearmech.htm for extensive information about each part of the ear and how the parts work together to help us perceive sound.

Middle School Math

§111.22. Mathematics, Grade 6., §111.23. Mathematics, Grade 7., §111.24. Mathematics, Grade 8.

(b) Knowledge and skills.

(11) Underlying processes and mathematical tools. The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to:

(A) identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics;

(B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;

(C) select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem; and

(D) select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems.

SLIDE 8,11,16,17: teach students the relationship between math and science and how math can be used to define sound waves. (speed = wavelength/period, speed = wavelength*frequency, Fourier discovered sound waves are actually composites of multiple sine waves)

High School Math

§111.35. Precalculus (One-Half to One Credit).

(c) Knowledge and skills.

(1) The student defines functions, describes characteristics of functions, and translates among verbal, numerical, graphical, and symbolic representations of functions, including polynomial, rational, radical, exponential, logarithmic, trigonometric, and piecewise-defined functions. The student is expected to:

(A) describe parent functions symbolically and graphically, including $y = x^n$, $y = \ln x$, $y = \log_a x$, $y = \frac{1}{x}$, $y = e^x$, $y = a^x$, $y = \sin x$, etc.;

(B) determine the domain and range of functions using graphs, tables, and symbols;

(C) describe symmetry of graphs of even and odd functions;

(D) recognize and use connections among significant points of a function (roots, maximum points, and minimum points), the graph of a function, and the symbolic representation of a function; and

(E) investigate continuity, end behavior, vertical and horizontal asymptotes, and limits and connect these characteristics to the graph of a function.

SLIDE 8,11,16,17: teach students the relationship between math and science and how math can be used to define sound waves. (speed = wavelength/period, speed = wavelength*frequency, Fourier discovered sound waves are actually composites of multiple sine waves)

(2) The student interprets the meaning of the symbolic representations of functions and operations on functions within a context. The student is expected to:

(A) apply basic transformations, including $a \cdot f(x)$, $f(x) + d$, $f(x - c)$, $f(b \cdot x)$, $|f(x)|$, $f(|x|)$, to the parent functions;

(B) perform operations including composition on functions, find inverses, and describe these procedures and results verbally, numerically, symbolically, and graphically; and

(C) investigate identities graphically and verify them symbolically, including logarithmic properties, trigonometric identities, and exponential properties.

SLIDE 8,11,16,17,19: teach students the relationship between math and science and how math can be used to define sound waves. (speed = wavelength/period, speed = wavelength*frequency, Fourier discovered sound waves are actually composites of multiple sine waves) and then have an activity where students apply transformations to a sound graph and describe the new sound wave they have produced. For instance, if they multiplied each y variable by 2 then the amplitude has doubled and the sound has become louder.

(3) The student uses functions and their properties to model and solve real-life problems. The student is expected to:

(A) use functions such as logarithmic, exponential, trigonometric, polynomial, etc. to model real-life data;

(B) use regression to determine a function to model real-life data;

(C) use properties of functions to analyze and solve problems and make predictions; and

(D) solve problems from physical situations using trigonometry, including the use of Law of Sines, Law of Cosines, and area formulas.

SLIDE 8,11,16,17: teach students the relationship between math and science and how math can be used to define sound waves. (speed = wavelength/period, speed = wavelength*frequency, Fourier discovered sound waves are actually composites of multiple sine waves) and then have an activity where students take sound data (amplitude, frequency tables, sine equations) to graph data and label each part of the graph and describe what the sound is doing (getting louder, softer, staying the same).

5) The student uses conic sections, their properties, and parametric representations to model physical situations. The student is expected to:

(A) use conic sections to model motion, such as the graph of velocity vs. position of a pendulum and motions of planets;

(B) use properties of conic sections to describe physical phenomena such as the reflective properties of light and sound;

(C) convert between parametric and rectangular forms of functions and equations to graph them; and

(D) use parametric functions to simulate problems involving motion.

SLIDE 8,11,16,17: teach students the relationship between math and science and how math can be used to define sound waves. (speed = wavelength/period, speed = wavelength*frequency, Fourier discovered sound waves are actually composites of multiple sine waves) and then have an activity where students describe reflective properties of sound using conic sections

(9) The student uses algebraic and geometric models to represent patterns and structures. The student is expected to:

(A) use geometric transformations, symmetry, and perspective drawings to describe mathematical patterns and structure in art and architecture; and

(B) use geometric transformations, proportions, and periodic motion to describe mathematical patterns and structure in music.

SLIDE 8,11,16,17,19: teach students the relationship between math and science and how math can be used to define sound waves. (speed = wavelength/period, speed = wavelength*frequency, Fourier discovered sound waves are actually composites of multiple sine waves) and then have an activity where students describe mathematical patterns and structure in music such as the frequency of a piano key or string on a guitar. For instance, ask students to graph how frequency and wavelength vary by increasing or decreasing several octaves (each octave will be half or double the previous octave).

High School Music

§117.60. Music, Level I.

(c) Knowledge and skills.

(1) Perception. The student describes and analyzes musical sound and demonstrates musical artistry. The student is expected to:

(A) identify melodic and harmonic parts when listening to and/or performing music;

(B) define concepts of intervals, music notation, chord structure, rhythm/meter, and musical performances using standard terminology; and

(C) compare and contrast elements of music through literature selected for performance and/or listening.

SLIDE 5,7,32: have students define musical terms such as frequency, pitch, duration, etc and to identify melodic, harmonic, and chorus parts in different music. Pitch is a musical sound with a certain frequency. Duration is how long a piece of music lasts. Melody is the organized succession of pitches into a coherent or recognizable unit. Harmony is the simultaneous sounding of two or more pitches to form intervals and chords. Rhythm refers to the way musical sounds of a definite or indefinite pitch are organized as they progress though time. The basic concepts of rhythm involve beat, tempo, the rhythmic values of notes, and meter. Beat is the regular, recurring pulsation that divides music into equal units of time. Tempo refers to the underlying speed of the beat that acts as a control for all other rhythmic elements. Intensity encompasses both the perceived loudness and dissonance of music, with very loud and very dissonant sounds perceived as less intense than softer and more consonant sounds. Density refers to the number of sound events per unit time. In other words, the more sounds that occur in a given interval of music, the more dense the piece. Continuity is the measure of the rate of change in music, including changes in pitch, tone quality, loudness, and timing. Redundancy, just as the definition implies, expresses the amount of repetition in a musical work, including repetitions that are not exact (e.g., identical interval relationships performed at different pitch levels, rhythms that are stretched or compressed in time). The values of each of these variables interact and affect perceptions.

§117.61. Music, Level II.

(c) Knowledge and skills.

(1) Perception. The student describes and analyzes musical sound and demonstrates musical artistry. The student is expected to:

(A) define melody, harmony, rhythm, and texture of music listened to or performed, using standard terminology; and

(B) compare and contrast music forms of literature selected for performances and/or listening.

SLIDE 5,7,32: have students define musical terms such as frequency, pitch, duration, etc and to identify melodic, harmonic, and chorus parts in different music. Pitch is a musical sound with a certain frequency. Duration is how long a piece of music lasts. Melody is the organized succession of pitches into a coherent or recognizable unit. Harmony is the simultaneous sounding of two or more pitches to form intervals and chords. Rhythm refers to the way musical sounds of a definite or indefinite pitch are organized as they progress though time. The basic concepts of rhythm involve beat, tempo, the rhythmic values of notes, and meter. Beat is the regular, recurring pulsation that divides music into equal units of time. Tempo refers to the underlying speed of the beat that acts as a control for all other rhythmic elements. Intensity encompasses both the perceived loudness and dissonance of music, with very loud and very dissonant sounds perceived as less intense than softer and more consonant sounds. Density refers to the number of sound events per unit time. In other words, the more sounds that occur in a given interval of music, the more dense the piece. Continuity is the measure of the rate of change in music, including changes in pitch, tone quality, loudness, and timing. Redundancy, just as the definition implies, expresses the amount of repetition in a musical work, including repetitions that are not exact (e.g., identical interval relationships performed at different pitch levels, rhythms that are stretched or compressed in time). The values of each of these variables interact and affect perceptions.

§117.62. Music, Level III.

(c) Knowledge and skills.

(1) Perception. The student describes and analyzes musical sound and demonstrates musical artistry. The student is expected to:

(A) perform appropriate literature expressively;

(B) define musical performances, intervals, music notation, chord structure, rhythm/meter, and harmonic texture, using standard terminology; and

(C) identify music forms of performance and listening repertoire.

SLIDE 5,7,32: have students define musical terms such as frequency, pitch, duration, etc and to identify melodic, harmonic, and chorus parts in different music. Pitch is a musical sound with a certain frequency. Duration is how long a piece of music lasts. Melody is the organized succession of pitches into a coherent or recognizable unit. Harmony is the simultaneous sounding of two or more pitches to form intervals and chords. Rhythm refers to the way musical sounds of a definite or indefinite pitch are organized as they progress though time. The basic concepts of rhythm involve beat, tempo, the rhythmic values of notes, and meter. Beat is the regular, recurring pulsation that divides music into equal units of time. Tempo refers to

the underlying speed of the beat that acts as a control for all other rhythmic elements. Intensity encompasses both the perceived loudness and dissonance of music, with very loud and very dissonant sounds perceived as less intense than softer and more consonant sounds. Density refers to the number of sound events per unit time. In other words, the more sounds that occur in a given interval of music, the more dense the piece. Continuity is the measure of the rate of change in music, including changes in pitch, tone quality, loudness, and timing. Redundancy, just as the definition implies, expresses the amount of repetition in a musical work, including repetitions that are not exact (e.g., identical interval relationships performed at different pitch levels, rhythms that are stretched or compressed in time). The values of each of these variables interact and affect perceptions.

§117.63. Music, Level IV.

(c) Knowledge and skills.

(1) Perception. The student describes and analyzes musical sound and demonstrates musical artistry. The student is expected to:

(A) demonstrate independence in interpreting music through the performance of appropriate literature;

(B) analyze musical performances, intervals, music notation, chordal structure, rhythm/meter, and harmonic texture, using standard terminology; and

(C) analyze music forms of performance and listening repertoire.

SLIDE 5,7,32: have students define musical terms such as frequency, pitch, duration, etc and to identify melodic, harmonic, and chorus parts in different music. Pitch is a musical sound with a certain frequency. Duration is how long a piece of music lasts. Melody is the organized succession of pitches into a coherent or recognizable unit. Harmony is the simultaneous sounding of two or more pitches to form intervals and chords. Rhythm refers to the way musical sounds of a definite or indefinite pitch are organized as they progress though time. The basic concepts of rhythm involve beat, tempo, the rhythmic values of notes, and meter. Beat is the regular, recurring pulsation that divides music into equal units of time. Tempo refers to the underlying speed of the beat that acts as a control for all other rhythmic elements. Intensity encompasses both the perceived loudness and dissonance of music, with very loud and very dissonant sounds perceived as less intense than softer and more consonant sounds. Density refers to the number of sound events per unit time. In other words, the more sounds that occur in a given interval of music, the more dense the piece. Continuity is the measure of the rate of change in music, including changes in pitch, tone quality, loudness, and timing. Redundancy, just as the definition implies, expresses the amount of repetition in a musical work, including repetitions that are not exact (e.g., identical interval relationships performed at different pitch levels, rhythms that are stretched or compressed in time). The values of each of these variables interact and affect perceptions.

High School Social Studies

§113.36. Psychology (One-Half Credit).

(c) Knowledge and skills.

(4) The individual in society. The student understands the influence of sensory perceptions on the shaping of individual beliefs and attitudes. The student is expected to:

(A) relate sensation and perception to various points of view; and

(B) define and give examples of bias related to various points of view.

SLIDE 29,30-31,33-34,37: ask students to describe the type of music they enjoy listening to and why and how/if this relates to their individual beliefs and attitudes

(5) The individual in society. The student understands the relationship between biology and behavior. The student is expected to:

(A) describe the anatomy and localized function of given brain areas; and

(B) explain the effects of the endocrine system on development and behavior.

SLIDE 29: ask students to explain how different types of music make them feel and if/how it affects their behavior. Ask which parts of the brain interpret our feelings, etc.

(9) Culture. The student understands the dynamic relationships between self and one's environment. The student is expected to:

(A) describe and explain learning as an adaptation to the environment;

(B) relate cultural perspectives to the traditional physical environment of the culture group; and

(C) explain types of relationships of individuals with other individuals and with groups.

SLIDE 29,30-31,33-34,37: ask students why they listen to the music they do and how long they've been listening to that type of music; also ask if this is the same music their peers/friends/family listen to

(11) Culture. The student understands the role of culture in forming the foundation and orienting framework for individuals and social behavior. The student is expected to:

(A) explain factors involved in cognitive development according to Piaget;

(B) define common psychological disorders;

(C) describe Erickson's stages of psychosocial development; and

(D) determine cultural influences such as fads or peers on one's own social behavior.

SLIDE 29,30-31,33-34,37: ask students why they listen to the music they do and how long they've been listening to that type of music; also ask if this is the same music their peers/friends/family listen to and if they think they will always listen to that type of music or if it is possible they could listen to a new type in years to come

(14) Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:

(A) use psychology-related terminology correctly;

(B) use standard grammar, spelling, sentence structure, and punctuation;

(C) transfer information from one medium to another, including written to visual and written or visual to statistical, using computer software as appropriate; and

(D) create written, oral, and visual presentations of social studies information.

SLIDE 29,30-31,33-34,37: have students do research on their favorite type of music to give in a presentation; include in the presentation how the environment (radio, friends, family) has affected their decision and how they sense/perceive music