Adolescence is the period between childhood and adulthood. It is a normal developmental period filled with major changes in physical maturity and sexuality, mental processes, ways of thinking and thought content, emotional feelings and relationships with others which for some adolescents can be quite stressful.

Possible Topics to discuss:

- Using the Cook and Cook Text and Other Supplemental Articles
- Piaget - Formal Operation Thought
  - After roughly 11 years old, students have the ability to consider many possibilities for a given condition.
  - They are able to deal with propositions that explain concrete facts.
  - They have the ability to use planning to think ahead.
  - Students at Piaget's final stage of cognitive development increase their ability to think abstractly.
    - They can solve complex and hypothetical problems involving abstract operations.
    - Formal operational thinkers can recognize and identify a problem.
- Cognitive Development and Self Regulation
  - Factors of goal setting, self-monitoring, activation and use of goals, discrepancy detection and implementation, self-evaluation, self-consequation, self-efficacy, boundary conditions, and self-regulation failure that revealed self-monitoring as fundamental to self-regulation.
  - Impulse control issues, aggression, friends and peer pressure, sex, drugs, drinking, and smoking.

Bilingualism - Learning two languages

Peer Relationships and Friendships

Relationships with parents and caregivers

Cultural Influences

Adolescent Parenting
Objective: Students will explore an issue or conflict with a parent or caregiver and provide a rationale for the opposite point of view.

Brainstorm a list of topics that may be conflicts between adolescent children and their parents or caregivers.

Create a focus group of 4-5 students to discuss the conflict from the parent or caregivers point of view. Use information from the text and selected readings to support that point of view.

Create a newsletter or pamphlet that will serve as a resource for parents to help them work through a conflict with their adolescent child.

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Author: Friedrich, Su.
Series: The films of Su Friedrich; vol. IV
Published: 2005
Format: Videos/Films all
Videos - DVD, videodiscs
Subject: Lesbian teenagers -- Drama.
Lesbians.
More -- see

Location:

Author: Zebrowski, Patricia M.
Series: Stuttering therapy: practical ideas for the school clinician
Published: 2005
Format: Videos/Films all
Videos - DVD, videodiscs
Subject: Stuttering in children,
Educational videos.
Instructional videos.

Location:

Author: May, Barbara.
Published: 2004
Format: Videos/Films all
Videos - DVD, videodiscs
Subject: Camps for overweight children -- New York State
Obesity in adolescence.
Obesity -- Psychological aspects.

Location:

Understanding Developmental Domains

Developmental tasks are typically divided into four primary categories, referred to as "domains." The four primary domains are physical, cognitive, social, and emotional.

- **Physical development** consists of the development of the body structure, including muscles, bones, and organ systems. Physical development is generally comprised of sensory development, dealing with the organ systems underlying the senses and perception; motor development, dealing with the actions of the muscles; and the nervous system's coordination of both perception and movement.

  Motor activity depends upon muscle strength and coordination. Gross motor activities such as standing, sitting, walking, and running involve the large muscles of the body. Fine motor activities, including speech, vision, and the use of hands and fingers, involve the small muscles of the body. Both large and small muscle activities are controlled and coordinated by the central nervous system.

- **Sensory development** includes the development of vision, hearing, taste, touch, and smell, and the coordination and integration of perceptual input from these systems by the central nervous system.

  Note that vision has both motor and sensory components. Muscles regulate the physical structures of the eye to permit focusing; neurological pathways transmit visual input to the brain.

- **Cognitive development** is sometimes referred to as "intellectual" or "mental" development. Cognitive is the proper term. Cognitive activities include thinking, perception, memory, reasoning, concept development, problem-solving ability, and abstract thinking. Language, with its requirements of symbolization and memory, is one of the most important and complicated cognitive activities.

  Differentiating language and speech is important. Understanding and formulating language is a complex cognitive activity. Speaking, however, is a motor activity. Language and speech are controlled by different parts of the brain.

- **Social development** includes the child's interactions with other people, and the child's involvement in social groups. The earliest social task is attachment. The development of relationships with adults and peers, the...
assumption of a moral system, and eventually assuming a productive role in society are all social tasks.

* Emotional development includes the development of personal traits and characteristics, including a personal identity, self-esteem, the ability to enter into reciprocal emotional relationships, and mood and affect feelings and emotions that are appropriate for one's age and for the situation.

While each of these four developmental domains can be examined individually, it is misleading to suggest that development occurs separately in each of the four domains. Development in any domain affects, and is affected by, development in all of the other domains.

Summary of Normal Developmental Milestones

Infancy and Toddler Birth to 3 Years

Physical Development

Birth - 1 year - The development of control and mastery over one's own body in both gross and fine motor skills is the infant's primary physical task, culminating toward the end of the first year in walking.

Age 1-2 years - The infant perfects the gross and fine motor skills that emerged during the first year by developing balance, coordination, stability, and an improved ability to manipulate objects.

Age 2-3 years - The child develops increased strength and uses motor skills to master challenges in the environment, such as bicycles, stairs, balls, playground equipment, eating utensils, crayons, and other objects. The child is developmentally ready to master toilet training.

Cognitive Development

Birth - 1 year - Cognition begins with alertness, awareness, recognition, and interest in visual, auditory, and tactile touch stimuli. As motor development improves, the infant begins to explore and manipulate objects and develops a rudimentary understanding of their properties. Infants develop object permanence toward the end of the first year.

Age 1-2 years - The emergence of symbolic thought is central to cognitive development. This results in the ability to understand and produce language.

Age 2-3 years - Perfection of language skills and the use of language to communicate with others is the principle cognitive task.
Social Development

Birth - 1 year - The most important social task is the development of attachment to the primary caretaker, most often the child's mother.

Age 1-2 years - The child develops affectionate and trusting relationships with other family members and with adults outside the family. The child can also be engaged in simple games and play.

Age 2-3 years - The child develops rudimentary relationships with other children, which are usually characterized by "parallel play," that is play in the presence of, rather than in interaction with, other children. Children also begin to imitate social roles at this time. Toilet training represents a significant internalization of social rules and expectations.

Emotional Development

Birth - 1 year - The development of basic trust, a derivative of the positive attachment between the infant and the primary caretaker, occurs during the first year. This is a cornerstone of emotional development.

Age 1-3 years - The primary developmental task involves the development of autonomy, which includes mastery and control over oneself and one's environment. Children develop a rudimentary self-concept, experiencing pride and pleasure at being "good" and embarrassment, shame, and distress at being...

Physical Development

Most basic gross motor abilities have emerged. Existing skills are practiced and perfected, and the child develops mastery in applying motor skills to increasingly challenging and complex situations.

Cognitive Development

Language develops rapidly. Grammar and syntax are refined, and vocabulary increases geometrically. The child uses language as a communication tool.

Thinking is concrete and egocentric in nature. Problem solving is illogical, and magical thinking and fantasies are prevalent.
and cooperative play skills with peers. The child begins to understand, explore, imitate, and practice social roles. The child learns concepts of "right" and "wrong" and begins to understand the nature of rules. He experiences guilt when he has done something wrong.

Emotional Development

The preschool child has been described as "on the make." Erikson refers to the child's primary mode of operation during this stage as initiative. The child is intrusive, takes charge, is very curious and continually tries new things, actively manipulates the environment, and is self-directed in many activities. The child's ability to understand "right" and "wrong" leads to self-assessments and affects the development of self-esteem.

School Age 6-11 Years

Physical Development

The child practices, refines, and masters complex gross and fine motor and perceptual-motor skills.

Cognitive Development

Concrete operational thinking replaces egocentric cognition. The child's thinking becomes more logical and rational. The child develops the ability to understand others' perspectives.

Social Development

Relationships outside the family increase in importance, including the development of friendships and participation in a peer group. The child imitates, learns, and adopts age appropriate social roles, including those that are gender-specific. The child develops an understanding of rules. Rules are relied upon to dictate proper social behavior and to govern social relationships and activities.

Emotional Development

The child is industrious, purposeful, and goal directed in her activities. She is confident and self-directed.
The child is developing a better sense of herself as an individual, with likes and dislikes and special areas of skill. She is capable of introspection. The child evaluates her worth by her ability to perform. Self-esteem is largely derived from on’s perceived abilities.

Adolescence 12-17 Years

Physical Development
Physiological changes at puberty promote rapid growth, the maturity of sexual organs, and development of secondary sex characteristics. The youth must become accustomed

Cognitive Development
During early adolescence, precursors to formal operational thinking appear, including a limited ability to think hypothetically and to take multiple perspectives.
During middle and late adolescence formal operational thinking becomes well developed and integrated in a significant percentage of adolescents.

Social Development
Social relationships in early adolescence are centered in the peer group. Group values guide individual behavior. Acceptance by peers is critical to self-esteem. Most peer relationships are still same-sex.
Young adolescents become interested in sexual relationships, but most contact is through groups. Some youth may begin to experiment with sexual behavior, but many early adolescents are not sexually active with other youth.
Social roles are still largely defined by external sources.
During middle and late adolescence, values become individualized and internalized after careful consideration and independent thought.
Friends are more often selected on personal characteristics and mutual interests. The peer group declines in importance, individual friendships are strengthened, and more youth “date” in one-on-one relationships.
The youth experiments with social roles and explores options for career choice.

Emotional Development
Multiple Intelligences

Key Points of MI

- Each person possesses all eight intelligences.
- Most people can develop each intelligence to an adequate level of competency.
- Intelligences usually work together in complex ways.
- There are many ways to be intelligent within each category.

Teaching Students about MI

- Explain the concept of Multiple Intelligence to students in simple terms. Use a kid-friendly chart.
- Field Trips/Career Day: Take students to places in the community where each Intelligence is practically valued and practiced. Bring in members of the community to speak about their jobs.
- Lesson Plans: Teach an eight-way lesson on a subject and explain to the students beforehand that you are going to teach the material using the eight different intelligences.
- Quick Experiential Activities: Have the students complete eight activities, each of which draws from primarily one Intelligence. Ask the students which one they liked best.
- Wall Displays/Self Displays: Create wall and self displays that show the different ways that the students learn in the classroom. Display students' work from all different intelligences. Create posters that explain how the students learn. Ex. "We Learn Eight Different Ways" and have pictures of the students learning in the different ways.
- MI Tables/Centers: Create centers for each Intelligence.
- Human Intelligence Hunt: For example:
  - Find someone who can:
    - Hum a song (music smart)
    - Do a simple dance step (body smart)
    - Recite the lines from a poem (word smart)
    - Explain why the sky is blue (logic smart)
    - Briefly share a recent dream (self smart)
    - Can draw a picture of a horse (art smart)
    - Is comfortable relating to other people during this exercise (people smart)
    - Name five types of birds or trees found in this area (nature smart)
- MI Board Game: Create a game that teaches using different Intelligences, or you can use a store-bought game.
Create songs, plays, or stories that help the children understand MT better.

The Goal is to have children understand that it not, ARE YOU SMART BUT 110W

Creating an ML Classroom


2. Take Risk: Try new things out.

3. Collaborate with Others: Work with members of the community and other teachers.

4. Set Goals: For yourself and for you students.

Games for Multiple Intelligence

Mathematical/Logical Games
- Dominoes
- Cribbage
- Triominoes
- Backgammon
- Yatze

Verbal/Linguistic
- Password
- Scrabble
- Up-Words
- Boggle

Visual/Spatial

Bodily/Kinesthetic
- Gestures
- Jacks
- Pick Up Sticks
- Jenja
- Twister

Interpersonal
- Twenty Questions
- Masterminds
- Family Feud.

Why have a ME Classroom?

Within At-risk groups, the strongest intelligences tends to be musical, visual, and spatial intelligences.

The College Entrance Examination Board announced that in 1993 students who studied arts and music scored significantly higher than the national average on the Scholastic Aptitude Test.

Students who had participated in acting/play production, music performance and appreciation, drama appreciation, and art history, scored an average of 31 to 50 points higher for the math and verbal sections.
MULTIPLE INTELLIGENCES IN ACTION

**INTELLIGENCE CORE COMPONENTS SYMBOL SYSTEMS HIGH END-STATES**

**Linguistic**
Sensitivity to the sounds, structure, meanings, and functions of words and language
- Phonetic languages: e.g., English
  - Writer, orator: e.g., Virginia Woolf, Martin Luther King, Jr.

**Logical-Mathematical**
Sensitivity to, and capacity to discern, logical or numerical patterns; ability to handle long chains of reasoning
- Computer languages: e.g., Basic
  - Scientist, mathematician: e.g., Madame Curie, Blaise Pascal

**Spatial**
Capacity to perceive the visual-spatial world accurately, and to perform transformations on one's initial perceptions
- Geographic languages: e.g., Chinese
  - Artist, architect: e.g., Frida Kahlo, I. M. Pei

**Bodily-Kinesthetic**
Ability to control one's body movements and to handle objects skillfully
- Sign languages, braille
  - Athlete-dancer, sculptor: e.g., Martha Graham, Auguste Rodin

**Musical**
Ability to produce and appreciate rhythm, pitch, and timbre; appreciation of the forms of musical expressiveness
- Musical notational systems, Morse Code
  - Composer, performer: e.g., Stevie Wonder, Midori

**Interpersonal**
Capacity to discern and respond appropriately to the moods, temperaments, motivations, and desires of other people
- Social cues: e.g., gestures and facial expressions
  - Counselor, political leader: e.g., Carl Rogers, Nelson Mandela

**Intrapersonal**
Access to one's own inner life and the ability to discriminate among one's emotions; knowledge of one's own strengths and weaknesses
- Symbols of the self: e.g., in dreams and artwork
  - Psychotherapist, religious leader: e.g., Sigmund Freud, the Buddha

**Naturalist**
Expertise in distinguishing among members of a species; recognizing the existence of other neighboring species; and charting out the relations, formally or informally, among several species
- Species classification systems: e.g., Linnaeus, habitat maps
  - Naturalist, biologist, animal activist: e.g., Charles Darwin, E. O. Wilson, Jane Goodall

Recent research suggests that many sign languages, such as American Sign Language, have a strongly linguistic basis as well, for example, Sacks, 1990.
EIGHT WAYS OF LEARNING

Children who are highly linguistic in words reading, writing, telling stories, playing word games, books, tapes, writing tools, paper, diaries, dialogue discussion, do debate, stories

Logical-Mathematical by reasoning experimenting, questioning, figuring out logical puzzles, calculating materials to experiment with, science materials, manipulatives, trips to the planetarium and science museum

Spatial in images and pictures designing, drawing, visualizing, doodling art, LEGOs, video, movies, slides, imagination games, mazes, puzzles, illustrated books, trips to art museums

Bodily-Kinesthetic through somatic sensations dancing, running, jumping, building, touching, gesturing role play, drama, movement, things to build, sports and physical games, tactile experiences, hands-on learning

Musical via rhythms and melodies singing, whistling, humming, tapping feet and hands, listening singing along time, trips to concerts, music playing at home and school, musical instruments

Interpersonal by bouncing ideas off other people leading, organizing, relating, manipulating, mediating, partying friends, group games, social gatherings, community events, mentors/apprenticeships

Intrapersonal in relation to their needs, thinking and goals setting goals, meditating, dreaming, planning, reflecting secret places, time alone, self-paced projects, choices

Natural 1st through nature and natural forms playing with pets, gardening, investigating nature, raising animals, caring for planet earth access to nature, opportunities for interacting with animals, tools for investigating nature e.g., magnifying glass, binoculars
How can I use numbers, lists, classifications, logic, scientific inquiry?

How can I use visualization, art, colors, or metaphors?

How can I provide choices or involve personal memories or feelings?

How can I use language, stories, poems, theater?

How can I use music, rhythm, songs, raps, musical chants, or instruments?

How can I use partners or cooperative group activities, or hands-on activities?
SUMMARY OF THE EIGHT WAYS OF TEACHING

- linking subject matter to natural phenomena
- logical-sequential presentation of subject matter
- Piagetian cognitive stretching exercises
- HEURISTICS
- Spatial Intelligence: charts, graphs, diagrams, and maps
- VISUALIZATION: photography, videos, slides, and movies
- visual puzzles and mazes: 3-D construction kits, art appreciation, imaginative storytelling
- PICTURE METAPHORS: creative daydreaming, painting, collage, and other visual arts
- IDEA SKETCHING: visual thinking exercises
- GRAPHiC SYMBOLS: mind-maps and other visual organizers, computer graphics software
- visual pattern seeking: optical illusions
- COLOR CUES: visual awareness activities, draw-and-paint/computer-assisted design software, picture literacy experiences

Bodily-Kinesthetic intelligence

- Bodily-Kinesthetic: creative movement
- HANDS-ON THINKING: field trips, mime, THE CLASSROOM THEATER

Linguistic intelligence

- Whole Language teaching through storytelling
- long word on the blackboard

Logical-Mathematical intelligence

- Critical Thinking: Socratic questioning, posing a logical paradox
- Spatial: Integrated Arts: drawing/mind-mapping concepts
- unusual picture on the overhead

Musical intelligence

- "Suggestopedia" using voice rhythmically: piece of music played as students come into class

Interpersonal intelligence

- Cooperative Learning: dynamically interacting with students, `ibm to a neighbor and share,

Intrapersonal intelligence

- Individualized Instruction: bringing feeling into presentation, "Close your eyes and think of a time in your life when...

Naturalist intelligence

- Ecological Studies: bring in an interesting plant or animal to spark discussion about topic
Intrapersonal Intelligence

- independent study
- FEELING-TONED MOMENTS
- self-paced instruction
- individualized projects and games
- private spaces for study
- ONE-MINUTE REFLECTION PERIODS
- interest centers
- PERSONAL CONNECTIONS
- options for homework
- CHOICE TIME
- self-teaching programmed instruction
- exposure to inspirational/motivational curricula
- self-esteem activities
- journal keeping
- GOAL-smING SESSIONS
- cross-age tutoring
- group brainstorming sessions
- PEER SHARING
- community involvement
- apprenticeships
- SIMULATIONS
- academic clubs
- interactive software
- parties or social gatherings as context for learning

PEOPLE SCULPTING

- competitive and cooperative games
- physical awareness exercises
- hands-on activities of all kinds
- crafts
- BODYMAPS
- use of kinesthetic imagery
- cooking, gardening, and other "messy" activities
- manipulation
- virtual reality software
- KINESTHETIC CONCEPTS
- physical education activities
- using body language/hand signals to communicate
- tactile materials and experiences
- physical relaxation exercises
- BODY ANSWERS

Musical Intelligence

- MUSICAL CONCEPTS
- singing, humming, or whistling
- playing recorded music
- playing live music on piano, guitar, or other instruments
- group singing
- MOOD MUSIC
- music appreciation
- playing percussion instruments
- RHYTHMS SONGS, RAPS, AND CHANTS
- using background music
- linking old tunes with concepts
- DISCOGRAPHIES
- creating new melodies for concepts
- listening to inner musical imagery
- music software
- SUPERMEMORIZATION

Interpersonal Intelligence

- COOPERATIVE GROUPS
- interpersonal interaction
- conflict mediation
- peer teaching
- BOARD GAMES

Naturalist Intelligence

- NATURE WALKS
- aquanums terranums and other portable ecosystems
- gardening
- PET-IN-THE-CLASSROOM
- nature videos, films, and movies
- nature study tools: binoculars, telescope, microscope
- ECOSTUDY
- class weather station
- PLANTS AS PROPS
- WINDOWS ONTO LEARNING
Most of the Ideas that follow can be assigned for homework, but should be initially introduced in class. After students understand how to do several activities, a list could be sent home with instructions to choose the ways in which to study. The notation in parentheses after each number gives you the particular intelligence addressed according to this code:

L = linguistic; ML = mathematical; Mu = musical; S = spatial; BK = bodily-kinesthetic; Intra = intrapersonal; Inter = interpersonal.

1. L Look/Say/Spell/Cover/Write/Check each word or fact five times.
2. L Create a crossword puzzle using your words or a cross number puzzle using your math facts.
3. L Create an acrostic using one of your words or math facts.
4. L, Mu Create a rhyming poem using your words or math facts.
5. L, Intra Write down a list of personal thoughts associated with your word number.
6. ML Choose a rule, and write all the words in the list or all the math facts in your list which follow your rule.
7. ML Type each word/fact into the computer five times.
8. ML Arrange in ABC order, numeric order from largest to smallest, or vice versa.
9. ML Find and practice all words with double consonants or long vowel sounds. silent "e", etc.; find and practice all math facts with odd numbers for answers, or all with 6 in the answer, for example.
10. Mu Make up a rap or song about the spelling or meaning of a word/set of facts.
11. Mu Listen to and rap/sing along with a commercial tape of math facts, or related science or social studies facts.
12. Mu/BK Use maracas, a tambourine, or a drum to beat out the rhythm while spelling or saying a math fact.
13. Mu/BK Make up a cheer with motions and words to advertise your word/fact.
14. Mu/BK Make up a hand-clapping rhyme or jump rope rhyme about your word/fact.
15. Mu/BK Use maracas, tambourine or other music-maker to "shake-write" the word/fact in the air.
16. Mu/BK Dance to music and write the word/fact in the air with a scarf, light stick, or wand.
17. S Draw a "word picture" or "math fact picture": First write the word or math fact in the middle of the paper; then draw a picture around it which will help you remember the word. Make sure that the picture surrounds the information you are trying to learn.
18. S Do or create a word search/fact search using the words/facts you are trying to learn.
19. S Write your word/fact in the middle of the paper; use crayons or markers to draw around the shape of the word/fact. Keep tracing around the shape using different colors. Finally, use black marker or fluorescent, or whatever will stand out to trace over the word/fact while you spell/say it.
20. Look/Say/Spezf the word or look/say the fact; close your eyes, and see it in neon lights. Write it down, and check.

21. Write your word/fact in “fat” letters on stiff paper. Color. Or use your drawing from #19 above. Cut into jigsaw pieces; mix up pieces; put the puzzle together.

22. Print your word/fact in large type. Decorate any way you choose, with scallops around the edges, polka dots inside each letter, or any other design you can imagine.

23. Listen to music with your eyes closed and see the letters in your word or numbers in your fact dancing to the music in the correct sequence.

24. Buddy-spell: You and your buddy sit facing each other. The “teacher” gives a word, which the “student” spells; if incorrect, the teacher gives the correct spelling, which the student repeats; the teacher goes back to the missed word later. After all words have been spelled correctly, you and your buddy reverse roles, and try again. The teacher can have the words/facts on a piece of paper, or read them from a board behind the student.

25. March and repeat the word/fact.

26. Use your finger to “write” the word/fact on your arm.

27. Make your word/fact out of playdoh.

28. Write your word/fact in large letters with glue. Immediately add popcorn kernels, dried beans, sand, or yarn; when dry, trace over word/fact while you repeat it.

29. Make your word/fact out of legos or unitix cubes.

30. Use one-inch cubes or wooden building blocks to form your word/fact.

31. Use pipe cleaners or yarn to write your word or fact. Save for re-use.

32. Several students together can use their bodies to form the word/fact. Other students can “trace” without touching the shape of the giant word/fact.

33. Set a word or fact card on a marker rail, window sill - or tape it to the wall. Jump on a rebounder, or hop, or jump rope while looking at and repeating the word/fact.

34. As you repeat the spelling/fact, create the shape of each letter/number with your fingers.

35. “Sew” the word/fact in large letters/numbers with strips of brightly colored yarn on scraps of cardboard, felt or backing, with a large plastic needle. Use your finger to trace over the word/fact while you repeat it.

36. Print your word/fact in large letters/numbers; use a toy car to ride over each letter/number as you repeat it.

37. Write your word/fact in sand or salt, as you say it.

38. Write your word/fact in flngerpaint or shaving cream.

39. Cut letters out of old magazines to spell your word/fact.

40. “Paint” your word/fact on the sidewalk with water.
When you ask students to write or tell a story about each poster, you may want them to make up their own story titles or use the following examples:

- "How Did the Dinosaur Get Twenty Spikes?"
- "How To Build a Building From Triangles"
- "Who Won the Big 4 Race?"
- "The Day of the Five-Armed Bandits"
- "Six-Sided Snowflakes Sang to a Snowman"
- "Sam the Caterpillar Ate Seven Times a Day for Seven Days"
- "How Did the Octopus Get Eight Arms?"
- "The Day the Spaceship Went to the Ninth Planet"

Mental imagery increases the retention of information. Have students look carefully at the poster and then close their eyes and relax while they "see" the poster in their mind. Calmly describe the poster aloud—objects, color, size, and number patterns. The more details you provide, the dearer the image will become in the students' minds. For instance, you might say something like this:

"Close your eyes and relax. I'm going to describe the 2's sequence counting poster to you. I want you to see it in your mind as I describe it. Are you relaxed? Okay, let's begin."

"This poster has a large, pink baby stegosaurus. He has darker pink spikes going down his back from his neck to his tail. Each spike has a small number on the tip. The numbers read 1-2, 3-4, 5-6, 7-8, all the way to twenty. Each front spike has a large number 2, 4, 6, 8, 10, 12, 14, 16, 18, 20."

"The dinosaur baby is counting the large numbers. Let's count aloud with him. Keep your eyes closed and see the numbers in your mind while we count. Ready 2, 4, 6, 8, 10, 12, 14, 16, 18, 20."

"Okay. Let's open our eyes and look at the dinosaur poster." Follow with a group discussion about the poster. This is also a good time to have students complete their own desk-top posters, if they haven't already.
Body movements will also quickly reinforce counting sequences. The following CLASSROOM exercises may be learned or practiced during any short break in the day. EXERCISES

Encourage students to make up their own exercises.

1. Sequence Count by Twos standing

- 2 - Both arms straight out front
- 4 - Both arms pull back to shoulder level
- 6 - Both arms straight above head
- 8 - Both arms pull down to shoulder level
- 10 - Both arms straight put to sides, shoulder level
- 12 - Both arms pull in to shoulder level
- 14 - Both arms straight down to sides
- 16 - Both arms up to shoulder level
- 18 - Both arms straight'out front
- 20 - Both arms back to shoulder level

2. Sequence Count by Threes kneeling

- 3 - Right hand touch head
- 6 - Right hand touch shoulder
- 9 - Right hand on waist
- 12 - Left hand touch head
- 15 - Left hand touch shoulder
- 18 - Left hand on waist
- 21 - Both hands touch head
- 24 - Both hands touch shoulder
- 27 - Both hands on waist
- 30 - Both hands at sides

3. Sequence Count by Fours sitting in chair

- 4 - Both hands tap feet
- 8 - Both hands tap feet*
- 12 - Both hands tap knees
- 16 - Both hands tap knees
- 20 - Both hands tap waist
- 24 - Both hands tap waist
- 28 - Both hands tap waist
- 32 - Both hands tap shoulders
- 36 - Both hands tap shoulders
- 40 - Both hands tap head

5
4. Sequence Count by Fives standing

- Exercise 5 - Both hands to right of head, snap fingers
- Exercise 10 - Both hands to left of head, snap fingers
- Exercise 15 - Both hands to right of chest, snap fingers
- Exercise 20 - Both hands to left of chest, snap fingers
- Exercise 25 - Both hands to right of hips, snap fingers
- Exercise 30 - Both hands to left of hips, snap fingers
- Exercise 35 - Both hands to right of knees, snap fingers
- Exercise 40 - Both hands to left of knees, snap fingers
- Exercise 45 - Both hands to right side of waist, snap fingers
- Exercise 50 - Both hands to left side of waist, snap fingers

5. Sequence Count by Sixes standing

- Exercise 6 - Hop on both feet
- Exercise 12 - Hop on left foot
- Exercise 18 - Hop on right foot
- Exercise 24 - Hop on both feet
- Exercise 30 - Touch toes on right foot with both hands
- Exercise 36 - Touch toes on right foot with both hands
- Exercise 42 - Touch toes on left foot with both hands
- Exercise 48 - Touch toes on left foot with both hands
- Exercise 54 - Hop on, both feet
- Exercise 60 - Hop on both feet

6. Sequence Count by Sevens sitting cross-legged

- Exercise 7 - Slap floor in front of legs with both hands
- Exercise 14 - Clap hands in front of legs
- Exercise 21 - Slap right toe with both hands
- Exercise 28 - Slap left toe with both hands
- Exercise 35 - Clap hands in front of legs
- Exercise 42 - Slap right knee with both hands
- Exercise 49 - Slap left knee with both hands
- Exercise 56 - Clap hands in front of legs
- Exercise 63 - Slap floor in front of legs with both hands
- Exercise 70 - Clap hands in front of legs
7. Sequence Count by Eights, standing facing partner

CLASSROOM

8 - Each partner claps own hands

EXERCISES

16 - Partners cross right hands and dap right hands

Continued

24 - Partners cross left hands and clap left hands

32 - Partners clap hands with each other

40 - Partners cross right hands and clap right hands

48 - Each partner daps own hands

56 - Partners cross left hands and clap left hands

64 - Each partner daps own hands

72 - Partners clap hands with each other

80 - Each partner daps own hands

8. Sequence Count by Nines standing facing partner

9 - Each partner claps own hands

18 - Link right arms, circle right

27 - Each partner daps own hands

36 - Link left arms, circle left

45 - Both partners face each other, clap hands with each other

54 - Each partner claps own hands

63 - Link right arms, circle right

72 - Each partner daps own hands

81 - Link left arms, circle left

90 - Both partners face each other, clap hands with each other
Individual activities can be fun for recess and practice at home. Hopscotch patterns and other suggestions are included in the Touch Math Sequence Counting Kit Guide. Ask students for game suggestions. Encourage them to try their ideas.

**Tin Man**
Students walk stiff-legged while saying a number sequence aloud. One foot should hit the ground each time a number is stated. It is also helpful if students cross-pattern left foot forward - right hand forward, right foot forward - left hand forward.

**Ball Bounce**
Students bounce a ball as they say a specified sequence of numbers. Each time the ball hits the ground, the next number in that sequence is stated aloud. To vary this, have two students bounce a ball back and forth, each saying their number as the ball hits the ground.

**Jump Rope**
Ask students to jump rope while saying a sequence of numbers aloud. Say one number each time a foot hits the ground.

**Skip Count**
Skipping as they say a sequence of numbers can be fun for students. A number is said aloud as each foot skips on the ground.
On a large index card, write the appropriate mark and tape it on the character's shirt.

I've got it!

A great idea! Let's have a party!
QUESTION MARK: A punctuation party? Where? When?

EXCLAMATION MARK: Here! Now! I'll be right back. He exits. Question Mark looks puzzled.

PERIOD: Hello. I'm Period. I came for the party.

QUESTION MARK: Are you alone?

PERIOD: Yes. I brought a cake.

QUESTION MARK: Is it chocolate?

No it's ____________ side stage. Comma enters carrying a bag.

QUESTION MARK: Who are you?

COMMA: I'm Comma. I brought cups, napkins, plates, and spoons for the party. There is a knock from side stage. Two Apostrophes enter.

QUESTION MARK: And who are you?

APOSTROPHES: I am an apostrophe. I am used when showing possession. I brought some of my mother's punch.

APICOLON: _ _ _

APOSTROPHE #1: Question Mark's memory isn't the greatest.

QUESTION MARK: What makes you say a thing like that?

COMMA: Because your sentences usually begin with who, what, where, when, why, or how.

PERIOD: That's right. -

APOSTROPHE #1 peering out the window: The Quotation Marks' car just pulled up.

Quotation Marks' car just pulled up. Two Quotation Marks entering ice cream.

QUOTATION MARKS in unison: We brought ice cream for the party. As our Aunt Sadie always says, "It can't be a party without ice cream."

QUESTION MARK: Is it chocolate?

QUOTATION MARKS: It's strawberry. As our Uncle Max always says, "If it isn't strawberry, it isn't worth eating. Question Mark looks worried. He looks out the window.

QUESTION MARK: Where is Exclamation Mark?

I i ` U filling with tears.

QUESTION MARK: Where could he be? What's keeping him?

APOSTROPHE #2: Don't worry. He'll be here soon.

APOSTROPHE #1: Looking like the cat's pajamas, no doubt.

QUOTATION MARKS: As they say, "Better late than never."

PERIOD: Let's eat before the ice cream melts.

They all quad for the table and help themselves.

Pixcamaiion Mark rushes in huffing and puffing. Question Mark hurries over to him.

QUESTIoN MARK: Where have you been?

PERIOD: The party started without you.

EXCLAMATION MARK: Quick! You've got to hurry! It's a terrible mess out there! Words and sentences are can1ised and running into one another! I tell you, they need our help! Hurry everyone!

They put down their food and rush off stage. Quotation Marks come back, stand center stage.

QUOTATION MARKS: As Bugs Bun-fly says, "That's all folks."

PERIOD: I'm glad they could come. Knock from
The following activities do not relate directly to the classroom posters. They are samples of Sequence Counting Rhymes made up by children. Intersperse these kinds of activities throughout the day as you teach the applicable sequence.

Examples of rhymes have not been provided for 7, 8, and 9 sequences, since students enjoy writing their own variations and should be encouraged to do so.

1. Hip hop two, buckle my shoe.
   Hip hop four, close the door.
   Hip hop six, pick up sticks.
   Hip hop eight, close the gate.
   Hip hop ten, in a pen.
   Hip hop twelve, dig a well.
   Hip hop fourteen, going out courting.
   Hip hop sixteen, I feel mean.
   Hip hop eighteen, I am fainting.
   Hip hop twenty, I'm a bunny.

2. Three, six, nine, pick up the dime.
   Twelve, fifteen, eighteen, that's irritating.
   Twenty-one, twenty-four, twenty seven, I think I'm in heaven.
   Thirty, do the hurdy-gurdy.

3. Four, eight, whoops, I'm late.
   Twelve, sixteen, pick a green bean.
   Twenty, twenty-four, twenty-eight, flowers grow 'round the garden gate.
   Thirty-two, thirty-six, forty, my best friend's name is Jordy.

4. Five, ten, I caught the hen.
   Fifteen, twenty, I have plenty.
   Twenty-five, thirty, I'm all dirty.
   Thirty-five, forty, call me Shorty.
   Forty-five, fifty, I feel nifty.

5. Six, pick up sticks.
   Twelve, eighteen, Mary's been waiting.
   Twenty-four, thirty, don't get dirty.
   Thirty-six, forty-two, buckle my right shoe.
   Forty-eight, fifty-four, shut the back door.
   Sixty, that's just nifty.
Math Songs

2 times tables tune of Skip to My Lou

Two's two's skip to my two's
Two's two's skip to my two's
Two's two's skip to my two's
Skip to my two's my darling

2x2 is 4
3x2 is 6
4x2 is 8
5x2 is 10
6x2 is 12
7x2 is 14
8x2 is 16
9x2 is 18
10x2 is 20
11x2 is 22
12x2 is 24

Skip to my two's my darling

5 times table tune of Yankee Doodle

1x5 is 5 and 2x5 is 10
3x5 is 15 and 4x5 is 20
5x5 is 25, 6x5 is 30, 7x5 is 35 and 8x5 is 40
9x5 is 45 and 10x5 is 50
11x5 is 55 and 12x5 is 60

6 times table tune to John Jacob

We're multiplying by six
It is so much fun
And we were through
You can join in too
Cause multiply is so much fun.
Dada dada da

lx6is6
2x6 is 12
3x6 is 18
4x6 is 24
And 5x6 is 30
Da da dada dada
7x6 is 42
8 x 6 is 48
9 x 6 is 54

And 11 x 6 is 66

Now the last one of them all
6 x 12 is 72

Now our song through
What can we do
But multiply by six all day long

7 Tins tables she'll be coming around the mountain
We'll be multiplying by 1's when she comes
We'll be multiplying by 7's when she comes
We'll be multiplying by 7's when she comes
Oh 1 x 7 is 7
2 x 7 is 14
3 x 7 is 21
4 x 7 is 28
And 5 x 7 is 35
6 x 7 is 42
7 x 7 is 49
8 x 7 is 56
9 x 7 is 63
And 10 x 7 is 70
11 x 7 is 77
12 x 7 is 84

We'll be multiplying by 7's
We'll be multiplying by 7's
We'll be multiplying by 7's when she comes

Long division Steps Tune of The grand Old Duke York
Divide, up, times
Subtract, compare, bring down
Do again and again and again
Till the answer you have found.
Solar System
This activity motivates students to observe closely the many living things that are part of the school yard. This lesson can either introduce the concept of observation or assess what students have learned after you have covered the many ways observation can take place. We have enclosed the bingo cards so you have the flexibility to create observation cards based on your school grounds.

Before You Leave the Classroom
Hand out the School Yard Bingo cards and explain that the goal is to find the items listed or pictured depending on the Bingo card you use. When students have found each item, they mark the appropriate box. You might also ask students to draw each item in the appropriate square if you are using the Bingo cards with words. Students can either complete the cards individually or in groups of two or three. Remember to review safety rules for outdoors. Also note that they need to be patient—observing takes a little time.

In the Field
Give students approximately fifteen minutes to locate various items on the bingo card. You might want to lead them to a few areas in the school yard so that they may identify most of the items on their cards.

Back in the Classroom
Take a moment to review and discuss students' experiences. Discuss the items that were easy to identify and why for example, they were bigger, students were more familiar with them. Ask what items were more challenging to find and why for example, they were smaller, they were under other things, they were up in the air. Explain that good observers look up and down and under things to discover all the neat things that make up the outdoors.

Process Skills Used:
observation, classification, data collection

Purpose:
To closely observe common items found in the school yard

National Science Standard
1B: People can often learn about things around them just by observing carefully.

Literature Entry Point
Harvey, Gail. Poems of Creatures Large and Small. ISBN: 0-517-05234-1
A book of short poems that inspires us to stop and creatures of the world along with the larger more visible ones.
Observation
Curriculum Extensions

Word Bingo: Students work individually or in small groups to make a Bingo card of names of things they have observed in the school yard.

Picture Bingo: Pass out blank Bingo cards to the students. List items that are commonly found in the school yard and display the list. Ask students to draw pictures of the listed items in the squares in any order. Collect the cards, shuffle them, pass them out to various groups before going on your school yard hike. Students discover the items on their uniquely created cards.

Students write poems or letters to someone in another class about the various things one can see on a hike through the school yard.

* Students use the information on the Bingo cards to create story problems using addition, subtraction, multiplication, or division.
* Students tally the number of each item they see, then share and average their data, creating a bar, line or pie graph.

Checking for Understanding

* Create a paper and pencil test or ask students to write a poem or short paragraph that describes the qualities of a good observer.

Reflection Prompts

The neatest things I saw in the school yard were...

While playing School Yard Bingo I learned these things about being a good observer:

If I could have changed anything about School Yard Bingo, I would...
Fill in the Blank Bingo Data Sheet

Name:
Recycled Pumpkins

Process Skills Used:
- Prediction
- Data collection
- Observation
- Measurement

Purpose:
To understand decomposition and variables that affect it

National Science Standard
5E: Flow of matter and energy: Over Earth, organisms grow, produce new organisms, die, decay.

Literature Entry Point
This story is about two mice who have adventures as they grow a large pumpkin for a variety of purposes.

Background
Materials
- Tape measure
- Shovels
- Pumpkins
- Paper bag
- Plastic bag

Site
- Field, flower bed, woods
- Other area that will not be plowed or dug up for several months

Intelligences Used
- Naturalist
- Bodily-kinesthetic
- Interpersonal

Decomposition is the breaking down of once living intrapersonal materials into smaller parts. Bacteria and fungi break mathematical logic down dead organisms to use the nutrients for food. Verbal-linguistic. When decomposition takes place, certain chemicals visual-spatial are released as waste products. Some of these chemicals are raw materials that growing plants use to build new cells and tissues. Almost all decomposers need moisture, warmth, and oxygen. Imagine what Earth would be like if waste materials were not broken down in such a manner. Scientists estimate that the layer of dead organisms would be twelve miles deep.

Get one pumpkin for every two students. Local grocery stores or farms many times will donate distressed pumpkins for school projects. Students will study pumpkin decomposition using four methods: no burial, burial, burial with plastic cover, and burial with paper cover. Pair students and determine which method each pair will use. Students discuss and predict how their assigned methods will affect the rate of decomposition. What other factors will affect the rate? pumpkin size, temperature, dampness of soil, types of soil organisms, holes or dents in the skin of the pumpkins.

Students inspect their pumpkins. They draw them, note the number of ridges and other identifying marks, and measure the circumference. Students might weigh the pumpkins. They record all information on their data sheets. Students predict how their pumpkins will change based on all factors. You might videotape students with their pumpkins before and after this experiment, which makes a nice visual and auditory record.

Before You Leave the Classroom
In the Field

Find a secluded place. Set up a grid with two measuring tapes set at right angles. Students measure from the edges of the measuring tapes with metric sticks to find and record a location to bury their pumpkins. Pairs with pumpkins that will not be buried will place them in tall grasses, bushes, or leaves, or find another way to hide them. The other groups add the assigned cover, if there is one, and bury their pumpkins in holes, covering them with at least four inches of dirt.

Back in the Classroom

As a class, students create a map of the area in which they buried their pumpkins. Flip charts with graph paper work well. Each pair marks the location of their pumpkin. Students make individual maps that show the locations of all the pumpkins.

Back in the Field

At selected intervals two, four, and six months work well, students locate and unearth their pumpkins. They observe their pumpkins and record their observations, noting changes in color, texture, shape, smell, and so on. They look especially for evidence of decomposition, such as molcL Students may find it difficult to weigh pumpkins that have turned into amorphous, slimy masses. If you have a looping class, you might leave the pumpkins for a year. The longer the period of time the pumpkins are in the ground, the more decomposed they will be. In the cold north, not much decomposition will take place during the winter months. You might use a local greenhouse and buckets of dirt. In the warm, humid south or Hawaiian Islands, decomposition takes place very fast. Change the time frame according to your climate.

Curriculum Extensions

Students measure various dimensions of the pumpkin: circumference, stem scar, thickness of walls, number of seeds, and so on.

Students use the pumpkin as a globe and draw the world, complete with equator, longitude, latitude, North Pole, and South Pole.

Checking for Understanding

On note cards, write the following situations. Students respond to each individually or work in groups on individual questions.

1. Sally was eating lunch on the playground. She decided she didn't care for her bruised apple, so she threw it over the fence into the wooded area behind the school. Describe what will happen to the apple over time.

2. Jose was eating his lunch from home and didn't have time to eat his peanut butter and jelly sandwich before recess. He left it in the plastic bag and threw it in the garbage. Describe what will happen to his sandwich over time.

3. Fido is the neighbor's dog. He raided your garage and got into the ten pounds of potatoes. He pranced home and buried one potato with his favorite bone in the backyard. Describe what will happen to the potato over time.
4. Ruffy is the dog down the block. He wandered into your garage on a summer day and helped himself to a small brown bag full of onions. He buried them, bag and all, in your front yard. Describe what will happen to the bag of onions over time.
Assignment

Complete and share a research paper.

Design a visual aid to enhance your research paper.

Develop a chart or graph relating to your paper.

Participate in a school improvement project.

Participate in an environmental clean-up.

Organize/participate in walking/biking field trip.

Create a music slide show or music video relating environmental concerns.

Use a tape to compare/contrast positive and negative environmental sounds.

Perform a play/able showing environmental awareness.

Work on a group project suggestions welcome.

Act as a reader for other students' papers.

Work toward developing your own environmental ethic.

Use your journal to record your thoughts and feelings.

Intelligence

verbal/linguistic

visual/spatial

logic/math

body/kinesthetic

body/kinesthetic

body/kinesthetic

musical/rhythmic

musical/rhythmic

musical/rhythmic

interpersonal

interpersonal

intrapersonal

Points

Environmental Ethics Unit

up to 50

up to 50

up to 50

up to 75

up to 50

up to 25

In this unit, the first two assignments and the intrapersonal assignment are required. You may combine other assignments however you like. For this unit, 400 points or more equals an "A" letter grade.
FIGURE 10.3

To show that I know

- write a report
- do a photo essay
- compile a scrapbook
- build a model
- put on a live demonstration
- create a group project
- do a statistical chart
- develop an interactive computer presentation
- keep a journal
- record interviews
- design a mural
- create a discography based on the topic
- give a talk
- develop a Simulation

Brief description of what I intend to do:

- create a series of sketches/diagrams
- set up an experiment
- engage in a debate or discussion
- do a mind-map
- produce a videotape segment
- create an ecology project that incorporates the subject
- develop a musical
- create a rap or song that encompasses the topic
- teach it to someone else
- choreograph a dance
- develop a project not used above:

Signature of Student Date
Signature of Teacher Date
6. "Multiple Intelligence" Pediatrics for Parents. 212004: pg. 8
7. Glock, Jenna. Discovering the Naturalist Intelligence: Science in the School. 1UU4fl. LcyIIyI ricss, IY7Y.