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THE NEW RECESS MODEL
By Jean Blaydes Madigan

Senate Bill 19 2001 recommends 30 minutes of physical activity daily for Texas students grades K-6. "In accordance with Texas Education Code, 28.002, all students enrolled in full-day kindergarten or Grades 1-6 in an elementary school setting are required to participate in physical activity for a minimum of either 30 minutes daily or 135 minutes weekly under the following conditions: (1) Participation must be in a Texas Essential Knowledge and Skills (TEKS)-based physical education class or a TEKS-based structured activity; and (2) Each school district shall establish procedures for providing the required physical activity that must consider the health-related education needs of the student and the recommendations of the local health advisory council."(1)

Physical activity for 30 minutes daily! How can we justify that? Don't teachers and students need more academic time to cover core content and to review and practice for the "TEST"? The students have PE twice a week. Isn't that enough exercise and physical activity? Is having recess a valuable use of time during the school day? One trend is to cut recess and activity time to have more time for teaching academic content, but does eliminating recess improve student performance and increase test scores? Research findings say, "No!" A 2002 study in California showed a distinct relationship between academic achievement and physical fitness levels of California's school children. (2) A 2002 study in Virginia concluded that "schools that allocated little or no time each week to the teaching of art, music, and physical education did not have significantly higher SOL (Virginia's standardized test) scores than schools who spent part of their time each week focused on art, music, and physical education. In other words, time allocated to art, music and physical education does not seem to be related to success or failure on the Virginia SOL tests. (3) Brain research strongly supports the link of movement, physical activity, and exercise to increased student performance.

Recess can be defined as a mental and physical break from current tasks to renew and refresh the brain and body. A recess break that takes place outside or inside can be any time of day that fits into the class schedule. It can be 5 minutes long or 30 minutes long, all at one time or several times during the day. The brain needs recess. Students are going to move anyway, so why not move them with intention? Neuroscience tells us that the brain shifts its attention and focus about every 90 minutes. Even a short break from focused concentration allows the brain to consolidate information for better retention and retrieval of memory. When a human sits for longer than about 20 minutes, the physiology of the brain and body changes because gravity has pooled blood into the hamstrings and has robbed the brain of needed oxygen and glucose, i.e. brain fuel. The student loses focus and attention and begins to get sleepy or restless. Everyone, students AND teachers, can benefit from a recess break.

So should students have recess, or not? How does a recess break help to prepare the brain for learning and to increase student performance?

Recent brain research strongly supports the link of physical activity to learning. A study by Dr. Michael Wendt from New York found that vigorous exercise helps students with ADHD to focus attention longer and self monitor behavior. The exercise put the brain into optimal function and its positive effects lasted 30-60 minutes depending on the student. (4) In a London study, a series of balance exercises similar to those found on a typical playground helped dyslexic students to improve reading skills at a greater rate. The results were said to be the closest thing to a cure yet. (5) The Physical Education curriculum stresses factors to prepare the brain and set the framework for learning. Quality recess can include Physical Education TEKS to provide the tools that the brain and body needs for optimum performance. Here are just a few research summaries that support the need for daily quality recess and physical education:

Recess/Play can increase attention

"Free play at recess augments social and cognitive development that ultimately translates into classroom performance. Children who learn to operate among their peers participate in such interactive games as tag and chase and function in their own mini-societies on the playground will do better academically." (Mike Daniel, Dallas Morning News, 11/24/2000)

Exposure to daylight helps regulate sleep

Dr. Daniel Kripke of California tells us that the human brain was designed to set the timing of circadian rhythms from extensive exposure to daylight. When there is too little outdoor daylight exposure or inadequate indoor lighting, circadian rhythms times are off like a clock that runs too slow. This condition is called "delayed sleep phase syndrome". When this happens, a child or adult has trouble falling asleep at normal bedtime and trouble waking up when the alarm goes off in the morning. More importantly, attention may be inadequate for several hours after awakening. Recess is being sacrificed for time that is more academic in the classroom, limiting needed bright daylight exposure that affects the children's optimum learning because of lack of rest. Physical education class is limited to once or twice a week reducing time for natural daylight and needed instruction on health and fitness habits for lifetime learning. The result is students who are lacking attention for learning because of deprived rest from delayed sleep phase. (6) Recess provides enriched environments

In studies in 1991, William Greenough discovered that rats who exercised in enriched environments had a greater number of synaptic connections than sedentary counterparts. Exercise strengthens key areas of the brain like the basal ganglia, cerebellum, and corpus collosum. Being active grows new brain cells Van Praag and associates (1999) have conducted animal studies that suggest running and other aerobic activity promotes brain cell regeneration and growth. In addition, aerobic activity releases endorphins-the class of neurotransmitters that relax us into a state of cortical alertness and reduce the symptoms of depression. Exercise also tends to raise levels of glucose, serotonin, epinephrine, and dopamine-chemicals that at elevated levels inhibit hunger. (7) A Japanese study suggested that daily exercise can increase memory retention because exercise strengthens secondary dendritic branching, the brain's mechanism to remember details. Information learned in the

last 48 hours will be remembered better if we exercise today, a strong argument for daily recess. (8)

Aerobic fitness aids cognition

Researchers found that subjects who were the most aerobically fit had the fastest cognitive responses, measured by reaction time, the speed that subjects processed information, memory span, and problem solving. Additional studies are needed to determine the precise relationship between aerobic fitness, age, and cognition. Earlier research supported by a new study suggests that aerobic exercise-nonstop and lasting a minimum of 12 minutes-may serve to slow or minimize normal age related declines in cognitive functioning. Aerobic activity not only increases blood flow to the brain, but also speeds recall and reasoning skills. (Etnier, et al. 1999) (Van Boxtel, et al. 1996)

Exercise triggers BDNF

Exercise triggers the release of BDNF a brain-derived neurotropic factor that enables one neuron to communicate with another. (Kinoshita 1997) Dr. John Ratey calls BDNF "Miracle Grow" for the brain. Students who sit for longer than twenty minutes experience a decrease in the flow of BDNF. (9) Recess and physical education is one way students can trigger sharper learning skills.

Cross lateral movement organizes brain functions

Crossing the midline integrates brain hemispheres to organize itself. When students perform cross lateral activities, blood flow is increased in all parts of the brain making it more alert and energized for learning (Dennison, Hannaford)

Eye tracking exercises and peripheral vision development helps reading

One of the reasons students have trouble with reading is because of lack of eye fitness. Eyes lock into constant distant vision and the muscles that control eye movement atrophy when students watch TV and computer screens. Physical education curriculum and recess activities provide this avenue for strengthening eye muscles. Tracking exercises, manipulatives, navigation activities, and target games exercise the eye muscles making the eyes fit to read.

Balance improves reading capacity

The vestibular and cerebellum systems (inner ear and motor activity) are the first systems to mature. These two systems work closely with the RAS system (reticular activation system) that is located at the top of the brain stem and is critical to our attention system. These systems interact to keep our balance, turn thinking into action, and coordinate moves. Physical Education curriculum games and activities that stimulate inner ear motion like rolling, jumping and spinning set the framework for reading. Recess playground equipment with slides and swings provides the vestibular stimulation that some students may have missed during development.

Exercise reduces stress

Research suggests that mental stress and anxiety can rob the brain and body of adequate oxygen by interrupting normal breathing patterns (Bernardi et al. 2000, Sloan et al. 1991). However, studies also indicate that proper breathing exercises can enhance oxygen flow, thereby reducing heart rate and anxiety (Bernardi ET al.

2000, van Dixhoorn 1998). Students who exercise in active physical education classes and recess can reduce stress and anxiety naturally.

Physical activity and proper diet improves behavior

There may be link between early motor development and violent behavior. Infants deprived of stimulation from touch and physical activities may not develop the movement-pleasure link in the brain. Fewer connections are made from the cerebellum and the brain's pleasure centers. An inactive child may grow up unable to experience pleasure in a normal way and the intense state of behavior such as violence may develop. (Kotulak, 1996) That's the bad news. The good news is that when this child becomes physically active, the pleasure center develops making a strong case for recess and physical education daily in our schools.

Today's students need activity more than ever

Today's recess needs to match today's students. The US Surgeon General declared an obesity epidemic in America. One in three of Texas students are overweight or obese. Type 2 Diabetes has increased significantly with the Hispanic and African American population at the most risk. Childhood depression, bipolar, schizophrenia, learned helplessness, and ADD/ADHD are just some of the learning differences that are more prevalent today than ten years ago. Yet, experts say that exercise, proper diet, rest and hydration have proven to improve each of these conditions. Decision makers are eliminating recess time. Physical Education classes are being cut or reduced in favor of more academic time or because of budget cuts. Our kids' health is at risk. Today's student needs to be active to improve their health and learning. Providing thirty minutes of daily physical activity helps give Texas students the advantage they need to learn.

Recess: What it is and what it isn't

Our vision of the perfect recess is students playing outside on a beautiful sunny day with perfect temperatures on a soft, grassy playground lined with plentiful shade trees. The newly painted playground equipment is top notch, safe, and roomy with enough swings, monkey bars and climbing space to accommodate everyone. There is a ball, jump rope, Frisbee, or hopscotch for every child. All of the kids are engaged, curious, and are cooperatively creating make-believe games and characters. They organize their favorite sport games, choose their own teams fairly, and solve all conflicts independently. Teachers are active, too, swinging long jump ropes, walking the track with students, and pitching the ball to the batter. Sounds of laughter, giggling, and lots of language fill the air. Fifteen minutes later recess has produced sweaty, happy students, renewed and ready to learn.

However, "reality recess" is a hot Texas day on a grassless playground with no trees for relief from the scorching sun. The playground equipment is old, needs paint, and is too hot to touch. Kids are pushing and shoving in line waiting for the too few swings. There is one ball, 3 jump ropes and one Frisbee in the class recess bag. Oh, no! The last ball just got kicked over the fence! Kids are standing around arguing over which sport to play and who will be the captain. The bullies have ganged up on the others and the taunting has begun. Teachers have congregated on the only bench present and are talking about everything from recipes to behavior challenges, occasionally scoping the landscape for kids. The playground fence is lined with students who haven't done their homework or who "haven't made good choices" and

are being punished. Much of the recess "fence population" suffers from ADHD and may spend their 15 minutes of recess inactivity plotting against their teacher for the return to the classroom. This recess has produced sweaty, unhappy, grumpy, thirsty students in need of recovery and air conditioning. Most recess experiences are somewhere in between the above examples. The object is to create an active, purposeful, valuable, refreshing, and enjoyable recess: The New Recess Model*. The New Recess Model is very beneficial and can actually prepare the brain for learning while it develops social skills, practices language skills, promotes creativity, and increases physical activity and fitness.

What does the New Recess Model look like?

The New Recess Model's goal is to provide a playing environment with enough equipment and room to insure that every child is safely physically active all of the time. Every child is actively engaged and cooperatively interacting with classmates. A variety of group and individual activities are available to ensure that every child's playing style is satisfied. The layout of the play area is conducive to proper supervision and is frequently screened for safety issues such as large holes or protruding rocks. The physical activity expert on your campus, the physical educator, helps incorporate PE TEKS based activities and helps with playground games and issues.

The New Recess Model: Structured vs. Unstructured Recess

There is a difference between structured and unstructured recess, both are very beneficial. Unstructured recess play is when students are free to choose their own activities. In the structured recess model, the students and teachers are involved in the same activity at the same time with the same goals and purpose. In the New Recess unstructured model, the teacher guides the students in the creation of guidelines for unstructured play as students may need guidance to insure safe and active recess play. Depending on the age of the class, the teacher and students can practice and role play recess situations like choosing teams, sharing equipment, waiting in line, and conflict resolutions. The students can generate rules for the class to follow and create a classroom council for peer discussions when rules are broken. Students can practice writing "How To" paragraphs when creating recess games or activities that include rules. The teacher and students can agree on procedures for recess including how to ask permission to leave for the bathroom or water fountain, how to pass out equipment, which signal to use for lining up, and what consequences are attached for non-compliance. The older students can role play the recess rules on how to play safely to the younger students. The rules and guidelines can be shown on the morning announcements using technology to display the ideas for the students to review and discuss.

The structured New Recess Model allows the teachers and students to work together towards a common goal, generally with a TEKS based activity attached. For example, the fourth grade class studying Texas history may choose to form a walking club called "Walk Across Texas". The teachers and students create and measure a walking path around the school. Then they establish guidelines such as, one lap around the track equals 5 miles. Each student can work at his or her own pace as they walk, jog, or run around the track, but the daily tally is the sum of all laps around the track that day completed by all of the students. Using a map of Texas, the students plot the path of this exciting journey across our state. As the journey unfolds, the

students can research each area of Texas as they arrive there, finding facts about the land formations, native plants and animals, large cities, and natural resources.

Another example of a structured New Recess Model is a pen pal program to practice writing and language skills. The class adopts another class from another school in the same city, for example. The teachers from the two classes will communicate back and forth through letters or email. The teacher and students from each school establish a walking path around their schools and decide what value to give each lap (one lap =one mile). The classes measure the distance between the two schools, 21 miles, for example. Each child will keep a tally of his/her miles walked. When each child reaches the 21 mile goal, he/she chooses a pen pal from the other class who has also reached the 21 mile goal. The two students become pen pals and begin writing to each other. The teacher and students can generate a list of appropriate interesting questions and comments for a pen pal letter. If the letters are mailed, the students learn to write personal letters, address envelopes, and communicate with a new friend. The project could last all year with a culminating activity being a field trip to meet their pen pals!

For the older more skilled students, how about Recess Challenges! The teacher and students set up several stations with different challenges and activities. During recess time, the student chooses a challenge. He/she may set a goal or estimate what score he/she will attain. He/she will be responsible for tallying his/her own score for each challenge using the life skills of responsibility and honesty. Students work with a partner. At the end of each recess period, the students and teachers tally the scores from each station and find the average for each station for the day. The students get extra credit for surpassing their goal for that day. They set a new goal for the next day. At the end of the month see which class has met its goals, and /or tallied the most points. Declare everyone a champion and celebrate with special event or field trip. Encourage recess challenge participation of community members, parents, teachers, principals, superintendent, mayor, etc. Declare YOUR school a place that is FIT to learn!

Examples of recess stations:

- * Jump Rope: How many jumps in one minute?
- * Basketball: How many baskets made in one minute?
- * Walk/Jog/Run: How many laps around the track?
- * Hula Hoop: How many minutes without a miss?
- * Push ups: How many push ups in one minute?
- * Pull ups: How many pull ups in one minute?
- * Jump across: How many times can you jump across the line in one minute?
- * Step ups: How many times can you step up and down on the box or curb in one minute?
- * Number ball: Partners throw a ball with numbers 1-9 marked all over it. When the partner catches the ball, he/she adds the number under his/her right thumb to the running sum. What is your final sum in one minute? Some of the TEKS based concepts practiced during these challenges are measurement, number operations, averaging, estimating, predication. The fitness component in the challenges meets the health education needs of the students. Involving members of the community satisfies the recommendation outlined in Senate Bill 19 2001.

The New Recess Model in the Classroom

It's all about raising the level of health and learning of each student. We need daily recess, but what if the weather is too cold or too wet? What if the teacher doesn't want to break the flow of content in the lesson? What if there just is no time to carve out 30 minutes today? Is there a way to be active and reinforce learning at the same time?

A recess break full of activity and movement can happen in the classroom. For example, information can be reviewed with a large beach ball with numbers marked all over it. Divide the class into 2 teams. Divide the room space in half with a line to designate the "net". Play a game of Newcomb throw and catch starting with Team 1 throwing the ball across the "net". A student on Team 2 catches the ball, throws to person 2 on the same team and person 2 throws to person 3. Person 3 throws the ball across the net to Team 1. The process continues until someone drops the ball. The person who drops the ball throws the ball in the air, catches it and looks at the number under his/her right thumb. The teacher reads the term, vocabulary word, story character, etc that is the corresponding number on the list. The student gives the definition, uses the word in a sentence or spells the word. If successful, their team gets a point. Students take turns so that all may be involved. Math can be practiced in the same way, by adding or multiplying numbers that are "caught". If the student's thumb lands on 8 and the magic multiplication number of the game is 6 then the student says, " $8 \times 6 = 48$ ".

If time constraints are an issue, short breaks scattered through out the day can fit into any schedule. The teacher says, "Stand up. Take a deep breath. Jump and down 3 times. Turn around three times. Walk seven steps in any direction and shake hands with the person closet to you. Tell you partner 2-3 things that you just learned from our lesson." The students walk to find a partner and share information. The teacher says, "Say good-bye to that partner and walk back to your seat. Write down 203 main ideas about our lesson so far." By standing, moving, and communicating with others, the brain has redistributed its blood, organized its processes, refreshed itself and is ready to focus once again. Having information from another classmate allows the brain to strengthen the information.

If it's a nice day and the students and teacher need a short break but the teacher doesn't want to break the flow of the lesson, a "Walk and Talk" works well. The teachers instruct the students to think of 2-3 main ideas about the content just covered in class. The students walk with a partner around a designated track for about 5 minutes sharing their main ideas. The teacher may give students the option to do a "Jog and Jabber" or perhaps a "Run and Rap". When the students return, they share with another classmate the main ideas given by their walk and talk partner. When students return to their seat, they write all the main ideas given. Their brains and bodies have had a physical, mental, social, purposeful break and are prepared to focus and learn.

For younger students including movement along with content tends to anchor the learning when their bodies experience the concepts. For example, when studying measurement, take the students on a "Measure Hunt" armed with several unusual measuring tools: neckties, belts, jump ropes, baby shoes, knuckles, feet, wooden spoons, human bodies. Read the book, "The Queen's Foot" (a story about how the queen couldn't decide how long a foot should be). Students journey through the school and playground measuring things like the playground bench, the flagpole, the principal's nose, and all kinds of things. When they return, the teacher processes the

measurement process and transfers the new knowledge to actual measurement concepts.

Other classroom recess ideas include walking the alphabet letters, standing on a clock face, jumping a phone number on a touch tone telephone pad drawn on a shower curtain, hopping the numbers on a number line drawn in chalk on the blacktop, and orienteering north south east west on the school grounds. Play Action Punctuation while reading a story by performing an action and saying the sound created each punctuation mark. Use a relay to practice place value. Learn the sign language to say the Pledge of Allegiance. Teachers and students can create many ways to put learning into action. Just think, "How can we do this lesson standing up?"

Your students will be thinking on their feet in no time!**

HEALTHY ACTIVE STUDENTS MAKE BETTER LEARNERS

The New Recess Model gives students the advantage they need for learning. It ensures daily activity needed for proper brain and body development, promotes positive social interaction, provides opportunity for language practice, and allows brain its needed break for consolidation of learning. This positive recess experience is well worth the time. Recess breaks may actually raise the productivity of students and teachers alike.

Bottom line: Create a recess that is active, positive, productive, supervised, interactive, fair, safe, and social. Every child deserves a playing environment with enough equipment and room to insure that every child is safely physically active all of the time. The results will be healthy, active, sweaty, happy learners!

References

* The New Recess Model is a term coined for this article by Jean Blaydes Madigan. It is a play on words from the term "The New PE" used by PE4Life (www.PE4LIFE.com) to describe the new philosophy of physical education.

** These and many other activities can be found in the book called Thinking on Your Feet: 200+ Lesson Plans by Jean Blaydes Madigan available at www.actionbasedlearning.com

Footnotes:

(1) Text of New 19 TAC, Chapter 74. Curriculum Requirements Subchapter C. Other Provisions 74.32. Physical Activity Programs for Elementary School Students, www.state.texas.gov

(2) California Department of Education, 1430 N. Street, Sacramento, CA 95814. <http://www.cde.ca.gov/ta/tg/pf/>

(3) JOPERD, October 2002, The Effects of High-Stakes Testing on Elementary School Art, Music, and Physical Education, George Graham et al, page 51

(4) Dr. Michael Wendt, mwendt@wilson.wnyric.com

(5) Curtis, Polly, Researchers Hail Dyslexia Breakthrough. The Guardian Review May 22, 2004

(6) Dr. Daniel Kripke, Learning Brain Expo presentation 1999 San Diego California

(7) The Learning Brain Newsletter, October 2002. Eric Jensen

(8) Gage, R. and Van Praag, H. "New Brain Cells", Scientific American, May, 1999

(9) Ratey, J. "A User's Guide to the Brain", Pantheon Books. 2001

Jean's information:

Jean Blaydes Madigan

Action Based Learning

232 Zachary Walk

Murphy, Texas 75094-3790

1-866-234-0475 FAX: 972-424-2280 www.actionbasedlearning.com

Email: jean@actionbasedlearning.com