



# **Recommendations for a Brain-considerate Learning Environment**

## **I. Brief Naps During the Day:**

1. Opportunities to “Reflect and Connect” for conceptual learning
2. Avoid developing an “Episodic grasp of reality”
3. Ultradian rhythms and Circadian rhythms
4. REM interruptions during sleep have negative consequences on follow-up testing
5. For students and teachers

## **II. Block Scheduling:**

1. Use a variety of learning modalities and cultivating the Multiple Intelligences
2. Classes should be 90 minutes in length
3. Active learning, not "lecture and listen," not passive
4. Faculty members should plan joint teaching opportunities (A "resident expert" from math joins a social studies class to discuss the use of mathematics in building the Egyptian Pyramids, or the use of “place value” in elevation)
5. Collaborative teaching across the disciplines help students make connections -- they see the conceptual value beyond a single subject area.

## **III. A later “Starting time”**

1. The typical near-dawn starting times of most high schools are out of sync with teenagers' natural sleep rhythms.
2. High school students, who get more sleep, come to school more regularly and change schools less often, when they can start school later in the morning (study of Minneapolis public schools).
3. Middle school students going through puberty (growth and sex hormones combine to vastly change their “physique” and their “chemique”)
4. Need more time in the morning to physically "recover" from these chemical and physiological changes
5. They require more rest and more sleep (just as growing babies do!)

## **IV. Bottled water**

1. The brain cannot store energy -- a pint and a half of oxygenated blood must flow through the brain every minute. Water carries nutrients and oxygen to all cells in the body.
2. Fresh water should be available all day for every student. This is one of the best sources (along with movement) for getting additional oxygen to reach the brain.
3. Since the brain is 80-85% liquid, even low levels of dehydration have an impact on its ability to function at optimal levels. The entire human body is composed of approximately 60 to 70% water. A water loss of only 2% results in a 20% decrease in energy
4. Water assists electrical activity. The brain is constantly sending and receiving

messages from all of the body's parts. Water aids in the conduction of these electrical impulses.

### **V. Whole fruit, nuts, and fresh juices**

1. Available all day (at least from mid-morning to mid- afternoon)
2. Students at all levels should have access to these sources of nutrients that assist in “fueling” the brain (a visit to the “Smart Bar” will increase learning ability).

### **VI. More Opportunities for “Downtime”:**

1. Students and adults need opportunities to think about their thinking and to process what they have learned
2. Too many novel events can interfere with remembering what one has just learned
3. Every 20-22 minutes, allow for periodic three-minute “Thinking/ Processing breaks”
4. Ask students to “quietly think about what we’ve just learned”
5. Followed by a brief discussion on their thinking
6. Allow time to “reflect and connect” or the neural connections will be *minimal* and the value of the instruction will be *minimized*.

### **VII. Standardized tests:**

1. Make certain that teachers, students, and parents understand what these tests are purported to indicate before administering them.
2. Teachers and parents should be aware of the following:
3. Rest is often more important for the test results than “cramming”
4. **Percentile** results are not the same as “percent correct” scores (95% correct = 15%ile)
5. A test is merely a “snapshot of current skills and abilities” which can always improve

#### ***“Tests of Differentiation”***

For most individuals (particularly those struggling with a new language), a question such as the one below offers unique challenges.

*Which does not belong:*

- (a) Stars twinkle
- (b) Sun shines
- (c) Moon glows

Equally important, there are developmentally appropriate answers that justify each response.

### **VIII. Justifying Standardized Tests**

1. In our curriculum, pedagogy, and educational programs, we...
  - a. Try to meet our students’ individual needs
  - b. Try to address different learning styles
  - c. Adjust for different language backgrounds
  - d. Insist that we are “fair” to our students who come to us with a wide range of academic histories, who are from different cultures or ethnic groups

e. Adjust our teaching approaches to accommodate the vast continuum of student abilities in contemporary classrooms by using the most appropriate teaching methods in order to meet the learning needs of unequal backgrounds in exposure (based on SES) cognitive development, maturation, gender and previous academic successes and failures...

Acknowledging our utilization of divergent instructional methodologies to address student diversity effectively, how do we suddenly turn 180 degrees away from all of these laudable individualized efforts and justify assessing our student outcomes with a "Standardized test" for all students, given these massive variations and attempts?

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