"Photographic Memory" Capability And Its Educational Application

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School Curriculum in the Past and Today, and the Dull Students

The dual nature of human thinking--verbal, analytic thinking mainly located in the left hemisphere, and visual, perceptual thinking mainly located in the right hemisphere--was discovered by a psychobiologist, Roger W. Sperry, who received the Nobel prize in 1981 for his innovative studies.

The most widely cited characteristics of the right and the left hemispheres of the brain are divided into groups as below:

Left Hemisphere	Right Hemisphere
Verbal	Nonverbal, visuospatial
Sequential, temporal, digital	Simultaneous, spatial, analogical
Logical, analytical	Gestalt, synthetic
Rational	Intuitive

Our school curriculum in the past has been left-brained, and today's curriculum still pursues abstract type of teaching in the traditional manner.

Dr. Betty Edwards (1989) writes (1)

> ...most of our educational system has been designed to cultivate the verbal, rational, on-time left hemisphere, while half of the brain of every student is virtually neglected.
>
> Even today, though educators are increasingly concerned with the importance of intuitive and creative thought, school systems in general are still structured in the left-hemisphere mode.

Under our left-brained school curriculum, there are "dull" students who

- may be very good in athletics but poor in academic subjects,
- may become very frustrated with their lack of academic success,
- honestly do not know why they can't explain why something is so,
- want to be like their classmates,
- may receive poor grades,
- may rebel against teachers,
- may be bored with lessons,
- may be active in P. E. class but not in the classroom.

These "dull" students are the victims of school systems which are in general structured in the left-hemisphere mode.

English Taught in the Left-Hemisphere Mode and Its Result in Japan

In Japan, specifically, English has been taught and is being taught, with an emphasis on grammatical explanation--in left-brain methods.

- Learning is sequential: students progress through grades one, two, three, etc., linearly.
- The main subjects learners study are verbal and numerical: reading, writing, arithmetic.
- Time schedules are followed.
- Seats are arranged in rows.
- Learners concentrate on finding the answers to questions or problems.
- Teachers give out grades.(2)

As a result of these left-brain teaching methods, even after studying English in junior and senior high school for six years, most Japanese are unable to effectively communicate in English. On the basis of scores on the Test of English as a Foreign Language (TOEFL), the Netherlands topped a list of 160 countries with an average of 605 points. Japan was 149th with 484 points. This amply demonstrates how the Japanese are weak not only in speaking and aural comprehension but also in reading and writing--the very methods left-brain teaching methods focus on.

"Photographic Memory" Capability

Activities that draw on the special intuitive, nonverbal abilities of the right brain have been often overlooked in schools. Efforts can and should be made to include these methods

in the current grammatically-based way English is taught.

In an attempt to examine this process, I introduced an activity that tries to utilize the brain's "photographic memory" capability. Concerning this Makoto Shichida (1993) says:

> Combined with the right brain's appositional process function is a photographic memorization function with which one can memorize the whole of that which one sees at a glance. This function is called "Photographic Memory."(3)

Activity of Presenting Colors and Shapes

John R. Anderson (1995) writes

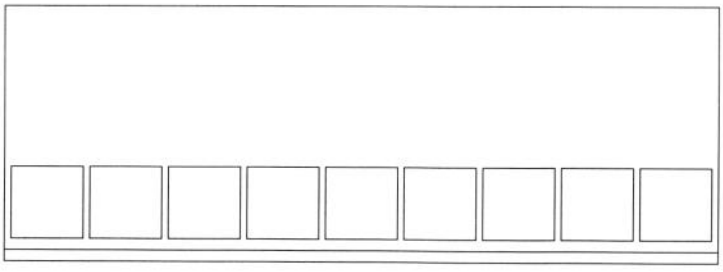
> On many occasions, our memory capacity seems much greater for visual information than for verbal information.(4)

Barbara M. Vitale (1982) states

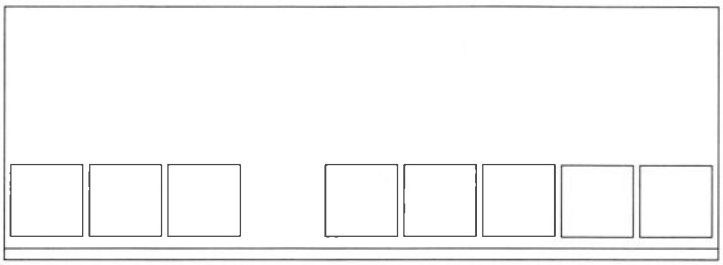
> By using shapes as the base of a teaching strategy, you not only utilize the right hemisphere's natural tendency for spatial relationships but you also connect a new concept to a stabilized understanding.(5)

As an example of visual information I presented colors and shapes. The way I presented them was as below:

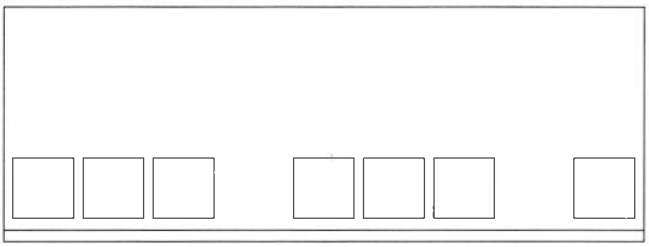
1. Place pieces of colored paper in a row on the chalkboard. Each piece of paper is a different color. Alternatively, the teacher can use sheets of paper with a different shape drawn on each one. Then when everything is arranged and visible to the students, tell them the name of the colors and shapes.



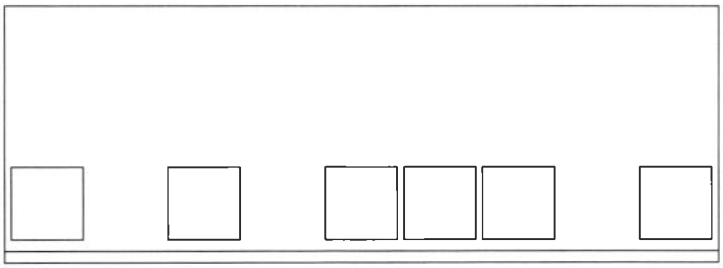
2. First, remove a single sheet and have the students try to guess which one it was.



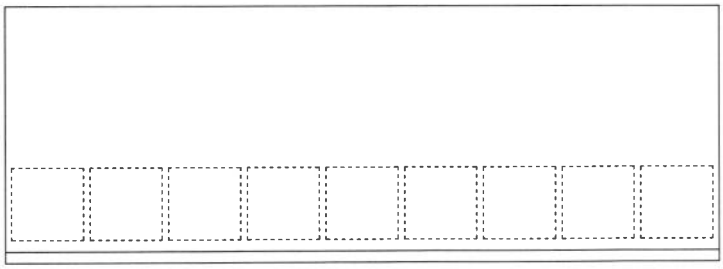
3. Next, remove a second sheet and have the students try to guess which one it was.



4. Next, remove a third sheet and have the students guess which one it was.



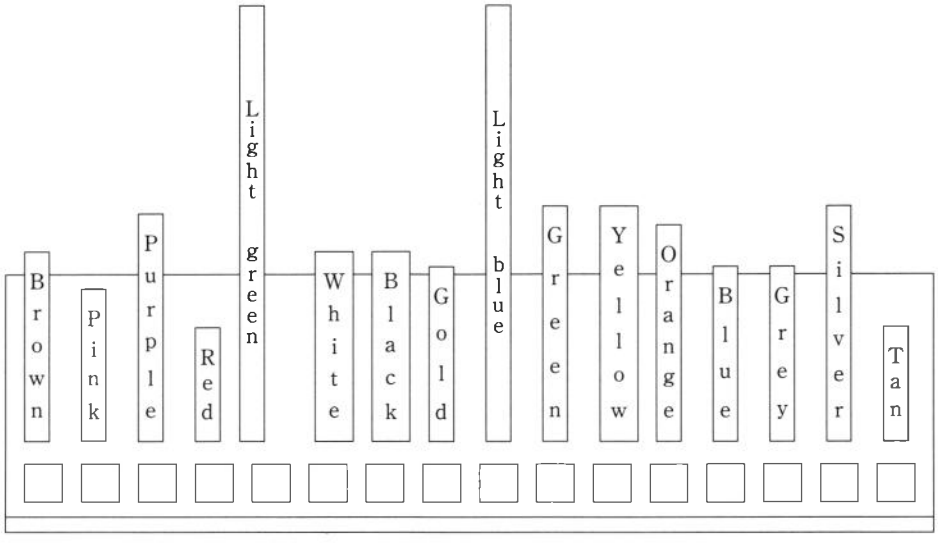
5. Finally, remove all of the sheets of paper and ask the students to name them in their correct locations.



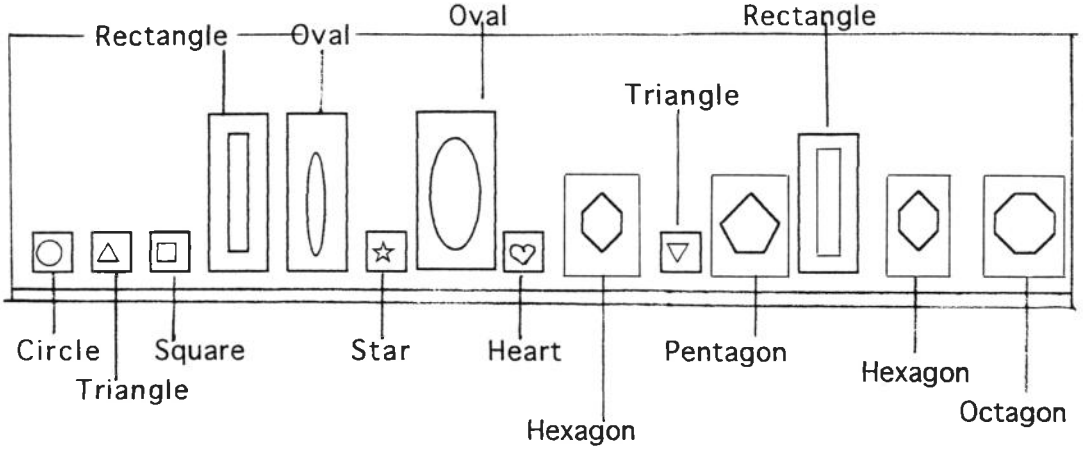
A Feature of "Photographic Memory" Capability in adults

The colors and the shapes I presented to college students, whose ages ranged from 18 to 20, are shown below.

The colors

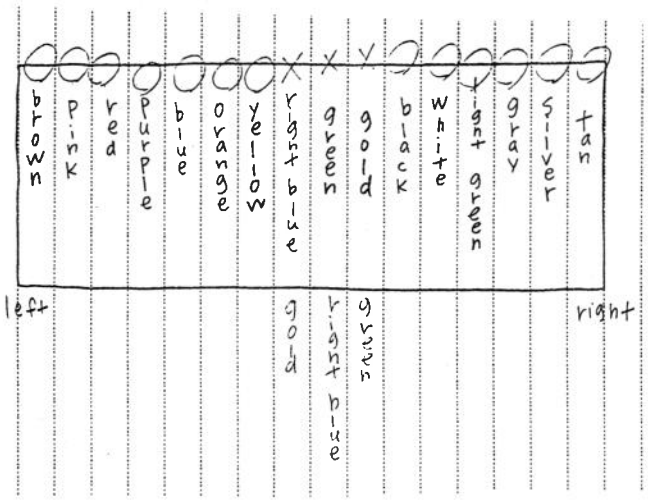


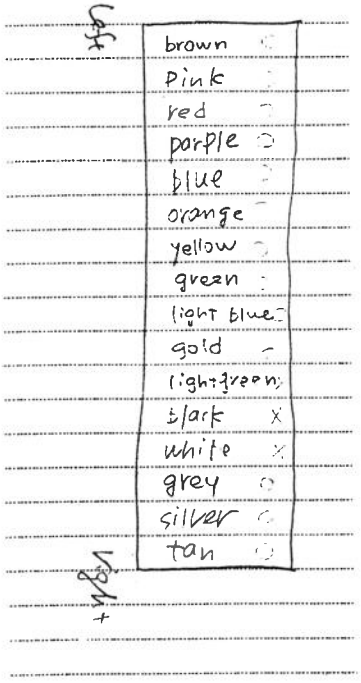
Shapes

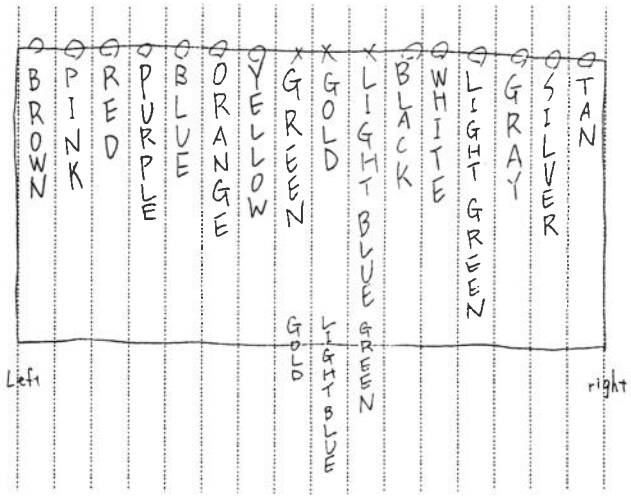


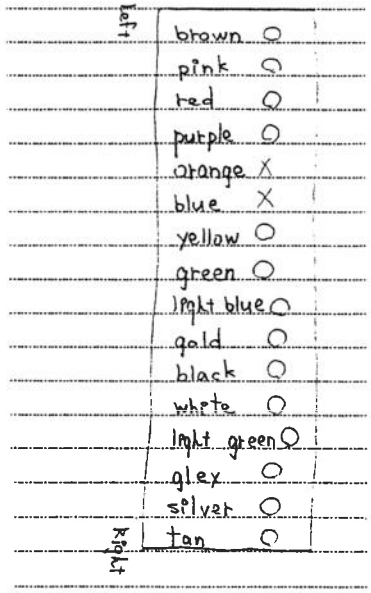
From the following examples we can note a few features of the "photographic memory" capability of adults. Basically, it can be said that they remembered what was placed near the edges of the board better than what was in the middle.

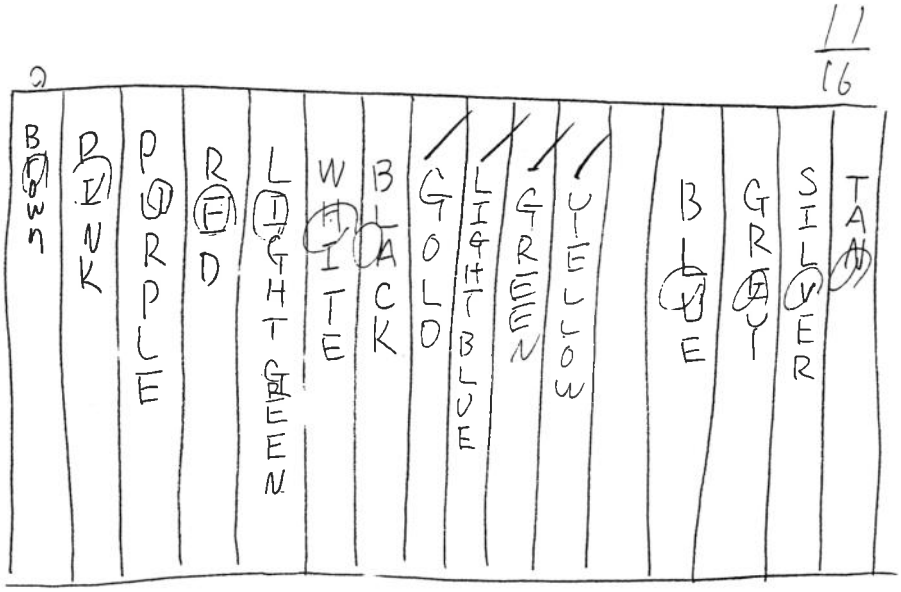
Examples from the color activity:



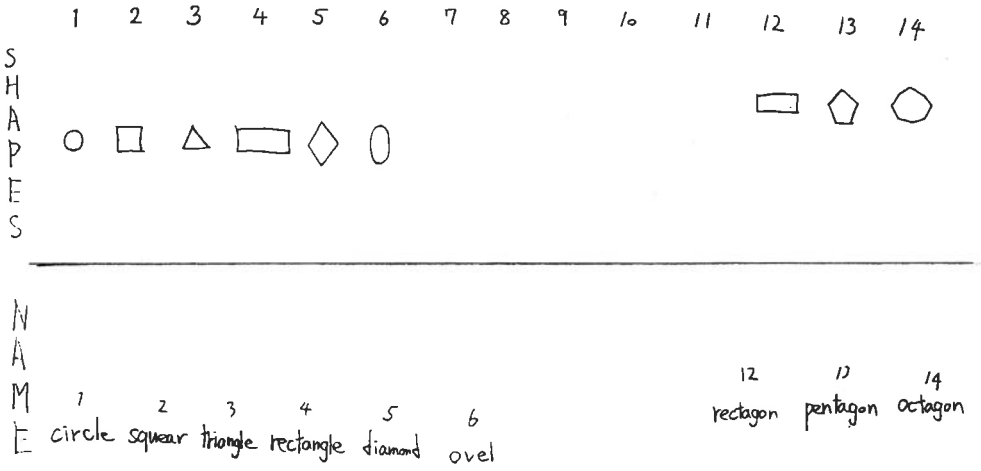

Left
brown
Pink
red
purple
blue
orange
yellow
green
light blue
gold
light green
black
white
grey
silver
tan
right

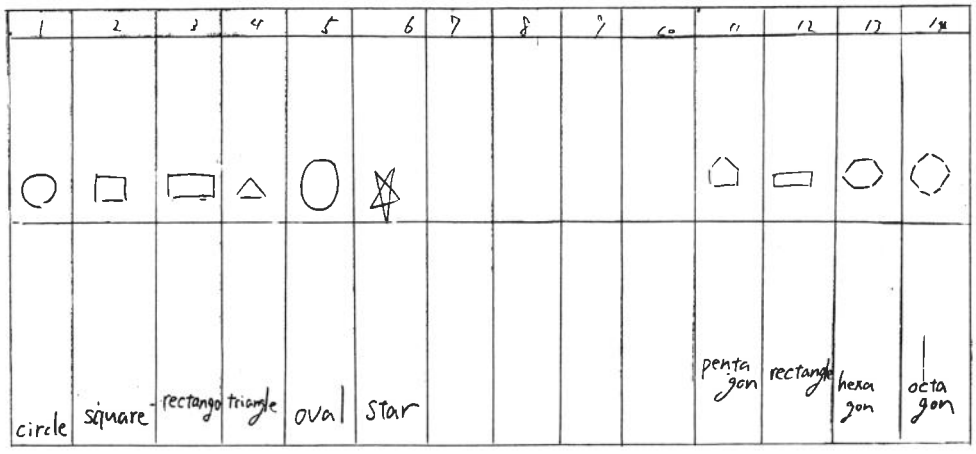

BROWN
PINK
RED
PURPLE
BLUE
ORANGE
YELLOW
GREEN
GOLD
LIGHT BLUE GREEN
BLACK
WHITE
LIGHT GREEN
GRAY
SILVER
TAN
Left
right

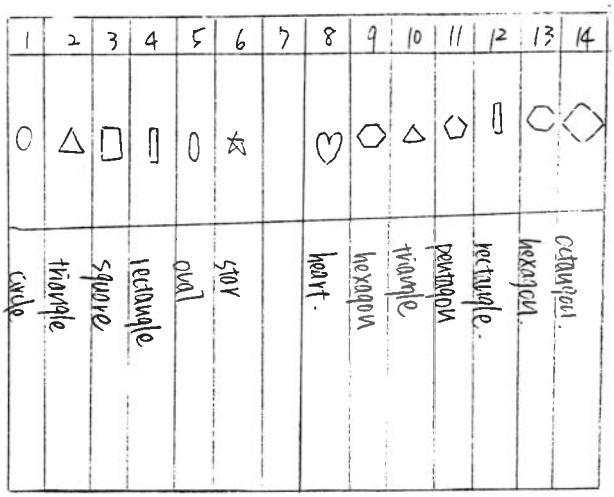

left
brown ○
pink ○
red ○
purple ○
orange X
blue X
yellow ○
green ○
light blue ○
gold ○
black ○
white ○
light green ○
glay ○
silver ○
tan ○
right

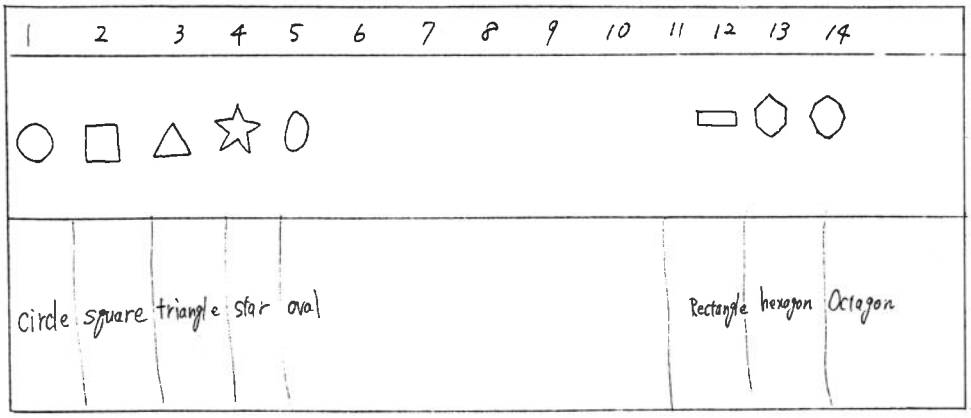

11/16
BROWN
PINK
PURPLE
RED
LIGHT GREEN
WHITE
BLACK
GOLD
LIGHT BLUE
GREEN
YELLOW
BLUE
GRAY
SILVER
TAN

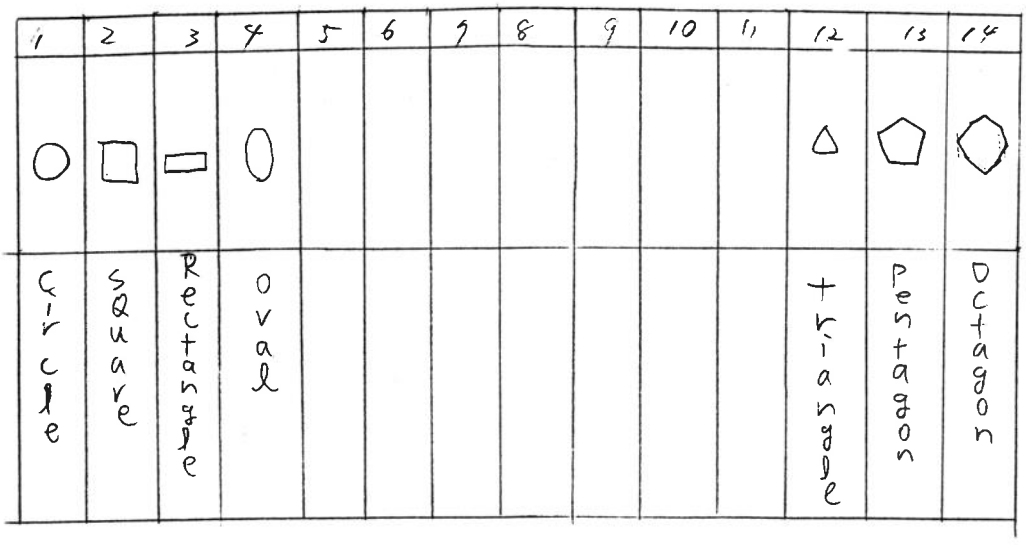
Examples from the shape activity:

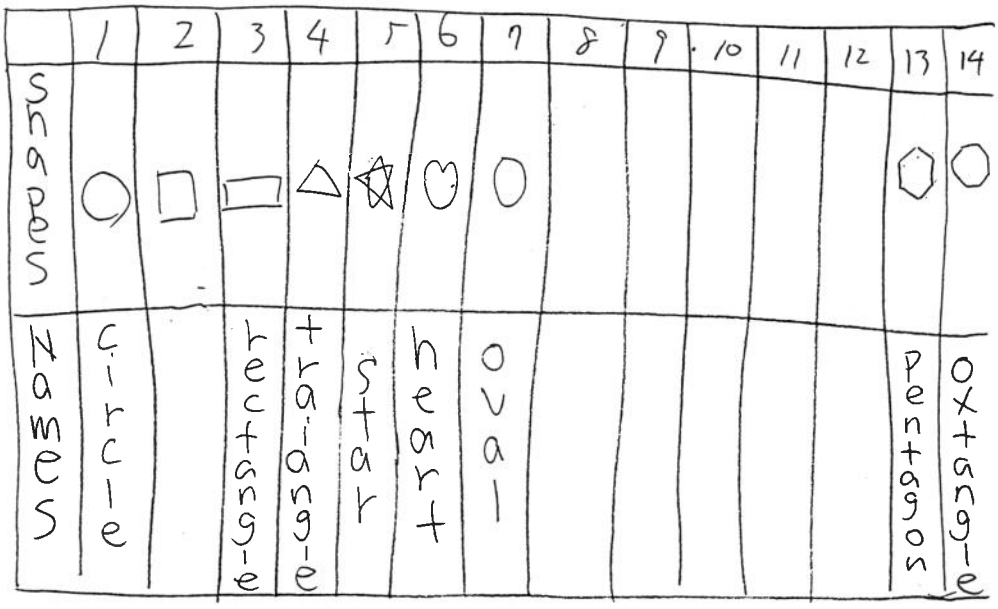


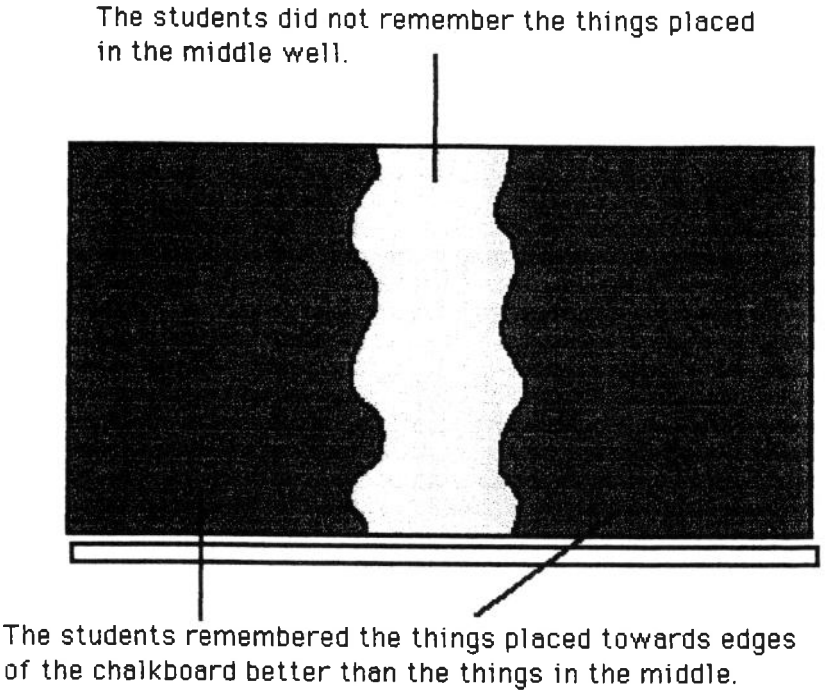



1 2 3 4 5 6 7 8 9 10 11 12 13 14
circle
triangle
square
rectangle
oval
star
heart.
hexagon
triangle
pentagon
rectangle.
hexagon.
octangon.


1 2 3 4 5 6 7 8 9 10 11 12 13 14
circle
square
triangle
star
oval
Rectangle
hexagon
Octagon


1 2 3 4 5 6 7 8 9 10 11 12 13 14
circle
square
Rectangle
oval
triangle
Pentagon
Octagon

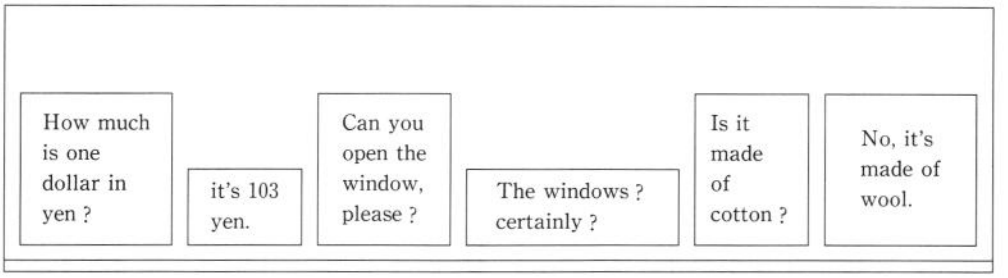

Shapes
Names
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Circle
rectangle
triangle
star
heart
oval
Pentagon
Oxtangle



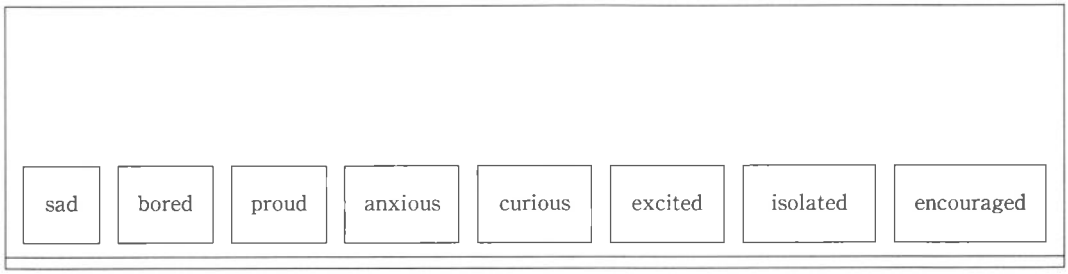
Application for Educational Benefit

Thus, for similar classroom-based activities, this discovery suggests that by placing items which the teacher wants the students to remember or learn, it is better to place them near the edges of the board rather than near the center. Instead of colors or shapes, anything can be used: letters, numbers, words, phrases, idioms, sentences, dialogues, etc.

For example:



The below is an example of teaching adjectives to express one's feelings.



A teacher can choose any item s/he wants the students to learn.

Conclusion

In the traditional methods of teaching English, there has been too much emphasis on gaining factual knowledge only. Teaching English for the purpose of communication has, on the other hand, been neglected for the simple reason that it does not help the students to pass university entrance examinations. Consequently various enjoyable, amusing, interesting and fun activities have never been thought to belong in the traditional classroom and have never been used effectively enough by teachers.

Nowadays teachers should not regard the 'quiet' class as a good class--the class where students receive the standard, ordained 'knowledge of English' from the teacher. In such a class it is only the teacher who speaks English, while the students mainly listen or repeat what s/he says. Rather, teachers should pursue a more substantial and fulfilling classroom where it is the students who speak English and enjoy it and learn it.

During the above-mentioned colors and shapes activity, the students:

- showed more enthusiasm and pride in taking part in recalling the colors and shapes than in the usual passive, listen-to-the-teacher sort of class.
- realized that they had a "photographic memory" ability in that they were astonished by the fact that could actually recall the colors and shapes in their proper locations.
- enjoyed an activity so uniquely different from their usual academic experience.
- relished the sense of speed as they followed or tried to follow the teacher's quick pace.
- were pleasantly surprised by the fact that those who were accustomed to doing poorly in the classroom could actively participate and perhaps even do well.
- demonstrated their ability to quickly and accurately remember things.

The most rewarding benefit of this 'photographic memory' capability activity is that the

teacher shows the students a whole new world, where they come to realize their hidden potential and ability. Moreover, it shows a light to those 'poor' or 'dull' students who otherwise would remain so under the traditional left-brain teaching methods.

References:

(1) Edwards, B. *Drawing on the Right Side of the Brain,* N. Y.: G. P. Putnam's Sons, (1989) p.36
(2) lbid, p.36
(3) Shichida, M. *Right Brain Education in Infancy:* Theory and Practice Shimanea: Shichida Child Education, (1993), p.37
(4) Anderson, John R.*Cognitive Psychology And lts Implications,* N. Y.: W. H. Freeman and Company, (1995) p.139
(5) Vitale, Barbara M.*Unicorns Are Real: A Right-Brained Approach to Learning,* California: Jalmar Press, (1982) p.17