FUTURE DIRECTIONS

for fast, stress-free learning on the right side of the brain*

By James J. Asher, Ph.D.

© Copyright 2001

A paper prepared for European educators at the invitation of Alexei A. Leontiev, Secretary General of the International Association for Collaborative Contributions to Language Learning in Moscow, Russia.

Traditional left-brain approaches which we all have experienced in thousands of foreign language classes (including English as a Second Language) simply do not work. Perhaps a more charitable way to express it is to say that production-driven approaches which attempt directly to teach talking in a target language do not work well enough to continue the effort. The evidence: 96% of students who voluntarily enroll in foreign language classes "give up" after three years. Only 4% continue to achieve at least minimal levels of fluency. More damaging: Not only do our students "give up" but they are now convinced that they "cannot learn another language." After all, they tried but the results were high-voltage stress and the humiliating experience of failure.

What happened? The approaches seemed to be sound and rooted in common sense. For example, we know from our high school geometry that the shortest distance between two points is a straight line. So, let's proceed from A to B directly in a straight line. If you want to acquire another language, then "listen and repeat after me!" "Memorize this dialogue" and "Let me explain the grammar rule for the day." What could be more transparent as an instructional strategy?

But it did not work. The laboratory research and practical experience in thousands of foreign language classrooms indicated that one human being cannot directly teach another human being to talk. Apparently we are not biologically wired up to acquire a language in that fashion. Leslie A. Hart would say that the traditional approach of "teaching" children and adults to speak another language is simply brain antagonistic. The approach does not fit our knowledge of how the brain functions.

It sounds like pedagogical heresy. Of course one person can directly teach another person to talk. It seems obvious, but this belief turns out to be an illusion, a myth that has persisted generation after generation with the fallout being a massive experience of failure not only for students but also for instructors. If teaching students to talk was successful then we would not have this situation in the USA: Of the 500,000 young Americans stationed in the military throughout the world, only 418 were judged to be linguistically competent to communicate in the language of the host country. Japan and other Asian countries, where learning English is a national craze, schools carry children through six years of English as a foreign language. Still, only a few students break the fluency barrier to achieve communication skills in English.

Recently, on a trip to Europe we met a colleague, Dr. Francisco Cabello, who has lived most of his life in Seville, Spain and is a Professor of Spanish at famous Concordia College's Language Villages in Minnesota. He authored the successful series of books The Total Physical Response in First Year English, Span-

---

*This article also appears in Brainswitching: Learning on the Right Side of the Brain by James J. Asher. 2001. Sky Oaks Productions, Inc. PO Box 1102, Los Gatos, CA 95031

ish and French. I asked him, "How successful do you think second language learning is in Spain?"

Dr. Cabello: "Not very. Parents are frenetic to find a way for their children to acquire English. They spend a fortune on private lessons after school. You see full page ads in the paper and expensive television commercials for private language courses, especially for learning English. This is probably true in the surrounding countries, as well."

Asher: "And the result?"

Dr. Cabello: "Well, you don't hear people speaking English anywhere do you?"

Asher: "How do you explain this?'

Dr. Cabello: "They use traditional instructional strategies such as grammar-translation and listen and repeat after me.

Asher: "All brain antagonistic approaches, especially in the initial and even intermediate stages of language learning."

Dr. Cabello: "Yes. These programs try to ram the skill into the student through the left brain. It doesn't work but they don't know what else to do. A few students can tolerate the stress and eventually acquire enough skill to function in the target language but most do not."

Asher: "Why do you think that grammar-translation has held on so long ?

Dr. Cabello: "I think it is more comfortable for instructors who are not native speakers of the target language. They are off the hook. When they speak in the target language, they are anxious that their pronunciation may not be perfect. So, to escape any criticism, the safe approach is to ask the students to take out pencil and paper and start translating. I don't think it is more complicated than that."

A Brain Compatible Instructional Strategy

…that works for most students who are acquiring second languages, mathematics, and science.

Historically, school has played to the left side of the brain almost exclusively from the third grade through the university. In classrooms, the arrangement of chairs is in a pattern that is comfortable for left brain instruction. Students sitting in rows and columns face one direction to receive information that will be delivered in serial order through verbal media either in speech or in print. Input is to half of the brain—the left side. Students who are "academically gifted" can, on their own, switch the information coming into the left brain over to the right brain for complete processing to achieve meaning.

A classic example is a study by Jacques Hadamard of how eminent mathematicians think. The stereotype is that these professionals think in sharp symbols and equations—in other words, they are processing information exclusively on the left side of the brain. But Hadamard discovered that outstanding mathematicians think in visual and kinetic images. One of the people in the study was Einstein who confided that he

visualized events in motion and he added that he felt that imagination was more important in mathematics and physics than intelligence. Of course, visualization and motion is processing information through the right brain. But school is organized, unintentionally to be sure, to shut down the right brain.

For example, notice that as instructors we give ourselves the advantage of using the right brain when we move about the classroom in our delivery of information. Movement of our body makes information flow from left to right and back again at lightning velocity. But we do not accord our students the same privilege. They must sit and "pay attention" to us as we move about the scene. We allow only limited movement from students as when they move their arms to scribble a note or raise their hands occasionally to ask a question. If you think back on all the classes you have attended, can you recall any instructor in any grade from the first through the university who sat with hands folded for 75 minutes and talked?

With the realization that the student's body and the student's body movements are my best allies in helping students internalize information, I always encourage my students in statistics courses to move about the room frequently. "If it helps" I tell them, "please feel free to get up anytime and walk out for a drink of water or to go to the restroom or simply walk around the back of the room or move from one side of the room to the other for a different perspective of the scene." Also, I reverse roles continually to permit students the movement privilege bestowed upon teachers. For instance, at the start of each class meeting, I will invite students to present their work on the board so that everyone is continually moving to the chalkboard to reverse roles with me. Incidentally, I usually invite students to present their work in pairs rather than alone. This strategy neutralizes the fear generated by the critical left brain that, "Oh, no. You have to go up to the front of the room and speak in public!" Remember that the worst fear people have is speaking in public.

The Power of Movement in Acquiring Another Language

By now most language teachers in the United States and Canada have heard about my Total Physical Response (TPR) approach. In 25 years of laboratory research and thousands of classrooms, we have demonstrated that TPR can be applied as the major focus of language instruction or as an effective supplement. However, few language instructors outside North America are aware of the dramatic differences that can be achieved in their instructional program with TPR.

The benefits of TPR are (a) rapid understanding of the target language, (b) long-term retention lasting weeks, months, even years, and (c) zero stress for both students and the instructor. The principle of TPR is deceptively simple—it is simple to understand, but does require skillful application to be effective.

The principle of TPR may be seen in the interaction of adults and infants in intimate caretaking transactions. If you observe carefully, you will witness in the caretaking experience a continual conversation between adults and the infant. It is, of course, not the usual conversation in which talk is uttered back and forth between two or more people. It is a unique conversation in which the adult talks to the infant and the infant answers with a physical response that is meaningful to the adult. For example, the baby can be only days old and an adult will say, "Look at me. Look at me." The baby turns its head in the direction of the voice and the adult exclaims with delight, "She is looking at me!" Another person says, "Now look at Daddy! Look at Daddy!" The infant turns in the direction of the voice and smiles. I call these unique conversations in caretaking, "language-body conversations." The adult speaks and the infant answers with a physical response such as turning the head, smiling, crying, reaching, grasping, walking, etc. Caretaking is a rich networking of language-body conversations that continues 16 hours a day for years.

During the period of birth to about two years of age, there will be continual language-body conversations between caretakers and the neonate, but the infant's talk will be limited to a few single utterances that are distortions of such words as mother, father, water, go, swing, drink, bottle, etc. However, the stunning feature of a language-body conversation is that before even "mommy" or "daddy" becomes clearly articulated, the infant demonstrates perfect understanding by physically responding to complex directions from the adult such as, "Pick up your toys from the sofa, and put them on the bed in your room." The infant demonstrates perfect understanding of complex sentences even though the baby is barely able to utter a single word.

The first achievement in language acquisition is exquisite skill in understanding the target language. I call this understanding *comprehension literacy*. Observations of infants show that most babies internalize, through body movements, an intricate linguistic map of how the language works *before the infant is ready to talk.* And when talk appears, it will be fragmented, distorted, and primitive compared with a fluent understanding of the target language. Furthermore, throughout the child's development, production will lag far behind comprehension. Language acquisition is clearly a linear progression with comprehension first, then production. Never do we observe infants in any culture or in any historical period showing language acquisition starting with production followed by comprehension.

The phenomenon of comprehension followed by production is so striking that it suggests a design in the brain and nervous system with "biological wiring" programmed like this: Talk will not be triggered until the infant has internalized enough details in the linguistic map. Clearly, the triggering mechanism for production is *comprehension literacy*. Biological wiring is not a metaphor, but has definite reference points in the brain as suggested by Broca's Area (located in the frontal region of the left hemisphere) which, if damaged, disturbs speech and Wernicke's Area (located in the posterior region of the first temporal gyrus) which, if injured, produces impaired comprehension of speech.

It is significant that the location in the brain for speech and comprehension is distinctly different. For example, the clinical literature has many case histories of brain injured patients who can speak but cannot comprehend sentences uttered by others, and other patients who can comprehend what is said to them but cannot speak. Future research with high-technology brain scanning equipment will probably show that the infant's brain first lights the circuitry in Wernicke's Area with intense neuro-electrical activity that continues for many months before the circuitry in Broca's Area becomes busy.

Incidentally, there is no evidence that the "biological wiring" for language acquisition changes as the infant develops into childhood and then adulthood. And, indeed, our experiments (Asher, 2000) together with classroom observations of children and adults (Garcia, 2001) suggest that a linear progression from comprehension to production is imperative for most students (perhaps 95%) if they are to achieve multi-skill fluency in a second language. The evidence is clear, however, that a "progression" starting with production (teaching children and adults to talk, read or write) is an illusion since it results in a success rate of only 4% (Asher, 2000).

By James J. Asher, Ph.D. © Copyright 2001

Comprehension Literacy
How to help second language learners achieve it

If comprehension is a critical first step in the language acquisition process to give students a "head start," then how to proceed? Fortunately, several dozen books together with video demonstrations are now available to guide language instructors step-by-step. I have listed many of them in the references at the end of this article. If you choose to apply the Total Physical Response to help your students achieve comprehension literacy, then I recommend that you start with my book, Learning Another Language Through Actions which explains the theory, summarizes the research, answers the most often-asked-questions about TPR, and then presents practical day-to-day lessons for 150 hours of classroom instruction.

For additional practical lessons and hundreds of valuable tips for a successful TPR experience with your students, I recommend Ramiro Garcia's book, Instructor's Notebook: How To Apply TPR For Best Results. In the second edition of my book, Brainswitching: Learning on the Right Side of the Brain, you will find hundreds of practical examples that demonstrate how to use movement (and other high-powered techniques to transfer information from the left to the right brain. This switching from one side of the brain to the other helps students achieve stress-free internalization of "complex" concepts in mathematics and science. For more suggestions on how to implement successful right brain teaching, see my book: The Super School of the 21st Century.

Classroom Applications

Infants acquire language during *language-body conversations* with their parents. When students in the classroom have *language-body conversations* with their instructor, they achieve comprehension significantly faster than infants. Here is the reason: infants are limited in their range of physical responses. School children and adults, by comparison, enjoy a vast network of physical movements such as writing, cooking, drawing pictures, driving vehicles, playing games, operating computers, riding bicycles, and so on. Fluent understanding that takes years for infants to acquire can be achieved by students in a fraction of the time using TPR.

Here is a sample of a language-body conversation in the classroom: We begin with what Dr. David Wolfe, a master TPR instructor of French and Spanish working in the Philadelphia schools, calls the "big eight"—that is single commands of stand, sit, walk, turn, run, stop, squat, and jump.

Typically, the instructor will invite a student to sit on either side and listen carefully to what the instructor will utter in the target language (with no translation) and do exactly what they see the instructor doing. (To further relax students, they are briefed that they are to be silent and not attempt to pronounce any of the utterances they will be hearing.) The instructions are, "Relax, be comfortable, listen, watch what I do and do exactly the same thing. I will not ask you to pronounce any of the utterances you will be hearing."

The instructor then says in the target language, "Stand," and stands up motioning for the students sitting on either side to rise. Then, "Sit" and the instructor with the students sits down. Next, "Stand, Walk, Stop, Turn,..." etc. After hearing the commands several times and acting along with the students, the instructor sits down and invites individual students (including those observing in the audience) to perform alone in response to the commands. The intent is to demonstrate to each of the students that they have indeed internalized the strange utterances and understand them perfectly.

From the "big eight," unending combinations are possible to help students rapidly and gracefully internalize an intricate linguistic map of how the target language works. Examples of combinations that number in thousands of sentences starting with the "big eight" would be: "Stand, walk to the chalkboard and touch the eraser."

"Walk to the door, open it, and ask, "Who is there?"

"Run to the chalkboard, write your name, and under your name, write my name."

"If I walk to the table, and pick up a piece of paper, you run to the closet and get the broom."

Once understanding is achieved and students begin to talk, then what?

Internalizing *understanding* of the phonology, morphology, and semantics of a target language is not a trivial achievement. It cannot be rushed. It will take time and patience. However, I can promise that if you use the language-body conversations of TPR, students will internalize the target language rapidly in huge chunks rather than word-by-word. The success of this procedure is a heady experience for both the instructor and the students. The instructor will feel enormous power and the students will feel that something magical is happening to them.

I can also promise that as the process of understanding through the body continues, at some point, each student will be *ready to talk*. This readiness to talk varies from student to student. A few will be ready almost immediately, others will not be ready for many weeks, but most seem to be eager to talk after 10 to 20 hours of TPR instruction. It is important to respect each student's decision as to when that person is ready to talk.

Again, this readiness cannot be forced by the instructor; it will appear spontaneously and when students begin to talk, it will not be perfect. There will be many distortions, but gradually, production will shape itself in the direction of the native speaker. Whether production will be accent-free is a function of age. Before puberty, the probability is extremely high that the student will be accent-free, but after puberty, the probability is almost certain that the individual will have some accent no matter how many years the person lives in the foreign country. (For more on this important issue, see Asher, 2000, and Garcia, 2001).

What can be done to accelerate the development of production

As language-body conversations continue, the student internalizes more and more details about the phonology, morphology and semantic structure of the target language. This internalization process proceeds in a kind of linguistic zero-gravity because the student seems to float in a weightlessness state. Each move seems effortless. The language code imprints at a rapid rate with an ease that gives the illusion that nothing has happened. When the internal linguistic map is imprinted with enough detail, talk is released analogous to the spontaneous appearance of speech in infants. As with the infant, speech is distorted, fragmented, and develops in slow-motion compared with the flashing speed the student has been internalizing comprehension.

Speech appears in "role reversal" after about 10 to 20 hours of TPR instruction. At this point, the instructor invites students who are ready, to assume the role of the instructor and utter commands to direct the behavior of fellow students and the instructor. In a search to accelerate the develop of production— that is, talking, reading, and writing, an experienced TPR instructor of Spanish, Blaine Ray, has successfully tested with his level 1 high school and college students a storytelling technique which he calls, Look, I Can Talk. This is a student textbook, now available in English, Spanish, French, and German, in which students listen and watch as the instructor tells an illustrated story in the target language using familiar vocabulary. Gestures are used to cue different words in the story such as a whistle and a slap on the thigh for dog and rubbing of the thumb and forefinger to represent money. Then, using gestures, each student is invited to retell the story in their own words to another student.

After that, each student writes the story using their own words. Rapidly, story by story, students are amazed to discover that they can express themselves in speech, reading and writing. You can order for your level 2 students, Look, I Can Talk More! in English, Spanish, French, and German and for level 3 students, Look, I'm Still Talking. Todd McKay has written and pretested for eight years a series of student books entitled, TPR Storytelling: especially for students in elementary and middle school. (For more details on these books, see the pages in the back of this book.)

Why most students experience success with TPR

As a hypothesis, it may be that most students are more right-brained in processing information. If so, then "school" as it is usually conducted, would not foster successful learning experiences. Hence, any instructional strategy that has built-in brainswitching should be successful with most students for first trial learning, long-term retention, and zero stress. Of course, that is exactly what TPR offers.

We have observed in the typical school population that students with a painful history of difficulties coping with academic content presented through the left brain, excel in language classes that apply TPR. For the first time in their school experience, these students achieve at the same level as the "A" students— the "smart kids." Ironically, these students who have "difficulty" learning are often "written off" by school administrators as "unteachable with low academic aptitude," and hence unprepared for the demands of foreign language classes. After all, they can't cope with classes in their native language, so how can we expect them to manage classes in a foreign language?

There is another powerful advantage to brainswitching instructional strategies especially in school where confinement restricts movement both physically and psychologically. Space is diminished to the territory around one's desk and left brain instruction draws the circle of space even tighter around the individual with the constraint of sitting in a chair, focusing attention and minimal body motion.

With TPR, space expands rather than contracts. Students are in motion using their bodies to respond to directions in the target language. There is instant success followed by nonstop assimilation of the target language. The interaction among students can continue for hours after the TPR class is over. Students can play with the target language using utterances to direct each other:

"Pass the ball to me."

"Come here!"

"Throw the ball to her!"

Stand over here!"

Walk forward three steps!"

Another exciting application of TPR is using the target language in coaching sport's activities. For example, all coaching for soccer could be in Arabic, Chinese, Spanish, or any other target language—because there is instant understanding with directions such as, "Pass the ball to Luke." "Stretch your arms like this to block the pass." "Jump higher!" Students not only improve their skill in a sport but as an additional bonus, acquire another language in the process.

Of course, this strategy of coaching in another language applies to instruction in any vocational skill. A cooking class, for instance, can be done in French as easily as English or Japanese, because directions are transparent to the trainees.

Application to teaching mathematics and science

Skillful brainswitching from left to right and right to left is brain compatible instruction that reaches most students. For example, it is not enough to tell students (which is left brain input). *Telling* is the favorite mode of input from instructors. Code words for *telling* include "cover the chapter," or "explain" the concepts.

For example, ask a few people to give you the first thoughts that come into their minds when you say, "algebra." Typical responses are: pain, confusion, equations, unknowns, headache, tension, Xs and Ys. It is apparent from national test scores that "requiring" a course in algebra is <u>not</u> the equivalent of "acquiring" skill in algebra. *Requiring* is not the same as *acquiring*.

Algebra is a fundamental skill one needs to operate in higher mathematics, yet few high school graduates feel comfortable or proficient in using this powerful language. Not only do most graduates have zero competency, but they can see no value in this activity. It is perceived as an academic obstacle one must somehow hurdle to graduate. It is beyond the scope of this paper to explore the value of algebra except to hint that algebra is closer to theology than to engineering, an insight known for hundreds of years by spiritual teachers and the great philosophers. The reason, of course, is that the exquisite patterning of mathematics contradicts the randomness hypothesis of human existence. For example, the concept of evolution cannot explain the patterns within mathematics that fit together with a perfection that defies all "laws" of probability.

Consider this simple metaphor suggested by the prolific science writer, Isaac Asimov: If you shuffle a new deck of cards only once, how many times must you shuffle to return the cards to their original arrange-

ment? The answer is that it will require billions of shuffles to get the cards back into the original sequence. If you disturb the arrangement of 52 items, it takes billions of trials to retrieve the initial pattern. In algebra, there are hundreds of items which fit together with astonishing perfection; hence to achieve that fit by randomness would require not billions of shuffles, not trillions of shuffles, but so *many* shuffles that we do not have an appropriate word in any language.

We attempt to explain the intricate biological patterns of human, animals, plants, and even galaxies as the end-product of billions of years of imperceptible changes. But what about mathematics? There was no evolution. The labyrinth of patterns was discovered rather than invented. The patterns are there without an explanation of how they came to be.

But, let's return to the task of "learning" algebra. I can share a brainswitching strategy that helps all students internalize a simple model of algebra that is rich in meaning and enables them to perform successfully. It involves asking the students to stand up. I ask them to relax, move so that they have room between themselves and the person on either side. Then, I tell them that I know the picture they have as to what algebra is (because they just told me). "Now, let's compare that picture with the picture in my head. Algebra to me is *like flying an airplane*. Everybody extend your arms out from your body like this" and I demonstrate. "Notice that the plane is flying level. The object of algebra is to fly the plane level. You will know that the plane is level because the equal sign will light up on display panel in the cockpit."

"Now notice how your airplane maneuvers when I turn the wheel like this" (and I turn the imaginary wheel to one direction). As I turn the wheel, students will automatically lower one arm and raise the other to represent that their planes are making a turn. Next, I say, "What will happen if the plane continues in this direction?"

A student will volunteer, "We will crash and burn!"

"That's right!" I respond. "Quickly, tell me what to do."

Another student will exclaim, "Turn the wheel in the opposite direction."

I do so, and the "wings" of the planes in the room move to a level position. "Ah, now we are safe again. The plane is flying level. You can put it on automatic pilot, take out your lunch, and relax."

"Let's make another turn," and we go through the maneuver in the opposite direction. "Notice that anytime you make a turn, the plane is in danger until you turn the wheel back to level the wings. *The object in algebra is always to fly the plane level*."

Now the students have internalized a model in motion that I can refer to in any algebraic maneuver. For example, in $y - \hat{y} = x$, I will comment that the plane is flying level because the equal sign lit up on the display panel of the cockpit. But I want to turn the wheel by eliminating a minus $\hat{y}$. "Tell me how to do this."

Someone will advise me to, "Add $\hat{y}$ to the left side."

"Fine," I respond, "but show me with your body how the plane is flying" and the student will move one arm straight up in the air and the other sloping down. "Are we in danger of crashing?" I ask.

"Yes," a student responds.

"Quickly," I urge, "turn the wheel the other way to level the wings. What must I do?"

A student will help me with, "Add $\hat{y}$ to the right side."

The cockpit display now reads: $y = x + \hat{y}$. The plane is flying level. We are safe until we make another algebraic maneuver.

The Future of TPR

The most exciting application of TPR may be in Europe rather than America. The concept of a "United States of Europe" suggests that it may not be necessary for people in different European countries to "speak each other's language." It may be more realistic for each person trained with TPR instruction to only understand six or more other languages. Speaking those other languages is not necessary because, for instance, a person from England speaks English to someone from Italy and that individual responds in Italian. Everyone speaks in their native language which is most comfortable.

Comments or questions about this article?

Contact the writer at: tprworld@aol.com

REFERENCES

Asher, James J. Learning Another Language Through Actions, Triple-Expanded Sixth Edition, Year 200**0. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.**

**Asher, James J. The Super School of the 21st Century.
Demonstrates how students of all ages enjoy fast, stress-free learning on the right side of the brain for *any subject* or *skill*. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.**

Asher, James J. "Year 2000 Update for the Total Physical Response, known worldwide as TPR." You can read this article on the web at: www.tpr-world.com

Asher, James J. "Year 2001 Update for the Total Physical Response, known worldwide as TPR." You can read this article on the web at: www.tpr-world.com

Cabello, Francisco. Total Physical Response in the First Year. (Can be ordered in English, Spanish, or French.) 2001, Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Garcia, Ramiro. Instructor's Notebook: How to Apply TPR for Best Results. Fifth Edition, 2001, Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California 95031.

Krashen, Stephen D. "TPR: Still a Very Good Idea." Novelty, Volume 5, Number 4. December 1998.

Márquez, Nancy. Learning with Movements: Total Physical Response English for Children, 1999. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Márquez, Nancy. Apprendiendo con Movimientos: Método TPR Español, 1999. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Márquez, Nancy. L'Enseignement Par Le Mouvement, 1999. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

REFERENCES (Cont.)

McKay, Todd. TPR Storytelling Especially for Students in Elementary and Middle School, 2001. Available in English, Spanish, or French. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Ray, Blaine and Contee Seely. Fluency Through TPR Storytelling. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.)

Ray, Blaine. Look, I Can Talk! (level 1). Look, I Can Talk More! (level 2). Look, I'm Still Talking! (level 3). Available in English, Spanish, French, or German. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031)

Schessler, Eric J. English Grammar Through Actions.
How to TPR 50 grammatical features in English. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Schessler, Eric J. Spanish Grammar Through Actions.
How to TPR 50 grammatical features in Spanish. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Schessler, Eric J. French Grammar Through Actions.
How to TPR 50 grammatical features in French. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Seely, Contee TPR Is More Than Commands At All Levels. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Silvers, Stephen M. Listen and Perform: TPR for Elementary and Middle School Children. (You can order this book in English, Spanish or French.) Sky Oaks Productions, Inc.,
P.O. Box 1102, Los Gatos, California, 95031.

Silvers, Stephen M. Listen and Perform: Teacher's Guidebook. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Silvers, Stephen M. The Command Book: How to TPR 2,000 Vocabulary Items in Any Language. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Wolfe, David and G. Jones. 1982. "Integrating Total Physical Response strategy in a level 1 Spanish class." Foreign Language Annals 14:273-80.

Woodruff-Wieding, Margaret S. and Laura J. Ayala. Favorite Games for FL-ESL Classes. Sky Oaks Productions, Inc., P.O. Box 1102, Los Gatos, California, 95031.

Free TPR Catalog upon request!

Sky Oaks Productions, Inc.

TPR World Headquarters Since 1973

P.O. Box 1102 • Los Gatos, CA 95031

Phone: (408) 395-7600
Fax: (408) 395-8440
e-mail: tprworld@aol.com
Web: www.tpr-world.com

1. Introduction. The brain is the central organ of stress and adaptation to. stressors because it perceives what is potentially threatening and. determines the behavioral and physiological responses (McEwenÂ This apparent reversibility hides the fact that genomic responses to. stressors are dependent on the stress-history of the individual, as. will be elaborated below. Moreover, there is clearly loss of revers A. Stressâ€”Stress is the physical and psychological response to events, called stres-sors, that challenge a personâ€™s normal functioning (homeostasis); everyone has stressâ€”it is a normal part of life. B. Stressorâ€”A stressor is any physical or psychological challenge that threatens home-ostasis; stressors can be unique to an individual.Â The stress response consists of both psychological and physiological components. A. Behavioral responseâ€”A behavioral response is any action taken on the environment, for example leaving a dangerous situation, fighting back, or using a coping skill; people react differently to stressors depending on both genetics and life experiences.Â The brain. New York: Bantam Books. Spielberger, C. D., & Sarason, I. G. (1985). Brain Plasticity The brain possesses the ability to modify neural connections to better cope with new circumstances. Sci-entists have begun to uncover the molecular basis of this process, called plasticity, revealing how learning and memory occur and how declines might be reversed. These discoveries are leading to new approaches to the treatment of chronic pain. New Drugs Researchers have gained insight into the mecha-nisms of molecular neuropharmacology, which provides a new under-standing of the mechanisms of addiction.Â Serotonin This neurotransmitter is present in the brain and other tissues, particularly blood platelets and the lining of the digestive tract. In the brain, serotonin has been implicated in sleep, mood, depression, and anxiety. The right side focuses on the visuals and the â€œbig pictureâ€ of something. Itâ€™s the side from which creative thought springs. The left brain, on the other hand, is the linear, detail-oriented, and logical part. Many people tend to have a left or right brain dominance which is a factor in what they might choose for their lifeâ€™s work.Â Some board games will engage both sides of the brain because there is a visual component to the game and also a strategic element. Chess and checkers are excellent examples of these types of game. Players must keep in their heads the visual of the entire board while developing strategies for their moves.Â There are many free apps for the creation of mind maps and they are actually great starters for project work. Find Apps That Will Force Hemispheric Cooperation. Preview â€” Brainswitching by James J. Asher. Brainswitching: Learning On The Right Side Of The Brain ; Fast, Stress Free Access To Language, Mathematics, Science, And Much, Much More! by. James J. Asher.Â This question contains spoilersâ€¦ (view spoiler)[Role of right hemisphere and left hemisphere ? (hide spoiler)]. like. 3 years ago.