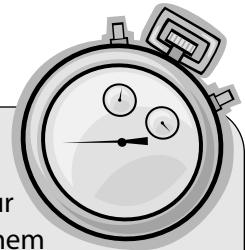


Attention Maker, Attention Breaker

The Reticular Activating System and Learning



Quick Start

Think and Write: Name six things you already do to keep your participants awake, alert, and interested while they learn. Jot them down in the space below.

Now name four things you could change in your training so that your learners become even more motivated to learn. Jot these down in the space below.

After you finish reading this chapter, add two new ideas to the ones you've listed.

Picture This

You're sitting in a half-day workshop dealing with a new financial software package for your company. You listen for awhile and then your mind begins to drift as you think about all the errands you need to run after the workshop ends. Suddenly you realize you haven't even heard a word of the lecture for the past thirty minutes—you couldn't repeat one thing the instructor, Marie, said if your life depended on it.

What just happened? A part of your brain—about the size of your little finger—took over. This small but mighty brain part said to your conscious mind, “Been here, done this. I can handle it. You can take a hike.” And that's exactly what your conscious mind did. It busied itself with other thoughts as you sat listening to the lecture. All the while, this tiny piece of gray matter was screening out sensory data—sights, sounds, textures, smells, movement—that it considered unimportant, including the sound of the instructor's voice.

Without warning, Marie says something that catches the attention of your drifting mind: “When I throw this ball at you, please tell the group one important fact they need to remember about this software package, then toss the ball to someone else.” You are instantly alert again, as you watch her toss a soft toy ball out to the group. Fortunately for you, someone else catches it and states a fact about the software program. As the group tosses the ball around the room, you remain alert, just in case the ball gets tossed your way.

What happened now? The tiny part of your brain that was busy screening out sensory data panicked because something in the environment had changed. It mentally shouted to your conscious mind, “Wake up and pay attention! Something is different and you need to be here.” Your conscious mind instantly came back to the present, assessed the situation, and decided how to handle it.

What Is the RAS and What Does It Do?

This pinky-sized area of the brain has a scientific name: the reticular activating system (RAS). A more common name for it is the Attention Maker. It is located near the brainstem (survival brain)—the part of your brain that controls the fight-or-flight response. It sends electronic signals from your brainstem through the limbic or emotional brain to your cerebrum (thinking brain).



The Attention Maker has two specific jobs: it “makes” or “breaks” attention. The first job is to make your thinking brain pay attention to what is going on in the environment. The second job is to break or stop your thinking brain’s attention to the environment, causing the cerebrum to go on “automatic pilot,” that is, to do certain actions automatically while thinking of other things.

The Attention Maker does both jobs by screening the sensory data coming into your brain from the brainstem. Then it decides what data is important enough to send along electronic circuits to the cerebrum. When the important sensory information reaches your thinking brain, you suddenly become conscious of specific sights, sounds, movements, smells, textures, and the like that are around you.

If the Attention Maker decides that the sensory information is not that important, it will stop the electronic messages to your thinking brain, effectively screening out the sensory data so that you don’t see, hear, or otherwise notice unimportant things.

Picture a security officer (the RAS) standing at the entrance to an important bank (the cerebrum) with a long line of prospective clients (sensory data) waiting to get in. The security officer screens each client’s request and says, “Yes, you may go on in. No, you have to wait out here. Yes, you’re important enough to step inside. No, you’re not important enough to enter right now.”

Time and Energy

You have experienced the attention-breaker activity of the RAS thousands of times. For example, you no longer consciously hear repetitive sounds you’re used to: the traffic noise outside the window, the hum of the refrigerator, the clock chiming the hours, the radio station in the background. You don’t consciously notice the hallway photos, the tree in your front yard, your office furniture, the elevator music, or the billboards by the highway.

You have also experienced the attention-maker activity of the RAS. Because it subconsciously monitors all sensory information in the environment around you, it notices any changes in that stimuli. Doing something about the changes is not its job. So it simply alerts the thinking brain that full consciousness is now required and that being on automatic pilot will no longer work. Suddenly you become aware of a fire engine wail, a radio announcement about a traffic accident, an unfamiliar car parked outside your home, or a suspicious person lurking next to your office building.

The cerebrum needs the RAS to screen sensory data in order to save you both time and energy. Let's explore these two ideas a little further.

It takes a great deal of mental energy to be consciously aware of all the sensory stimulation around you. It also takes energy to decide what, if anything, to do about all the sensory data. The thinking brain can save itself a great deal of energy by not consciously paying attention to every sight, sound, touch, taste, smell, movement, and so forth.

It also takes time to consciously process all that sensory data. If the cerebrum had to notice and then had to decide how to respond to everything in the environment in any given moment, simple tasks could take hours to complete.

For example, just think about how many physical actions are involved in something as simple as brushing your teeth. It would be extraordinarily time-consuming to have to think through and make a decision about each of those actions. So once the cerebrum learns how to do the task, it assigns the sequence of actions to the Attention Maker, much like an airplane pilot who decides to turn on the automatic pilot switch so that the plane flies itself. Anytime you do anything familiar and repetitive—washing dishes, taking a shower, getting dressed, exercising, gardening, sleeping—the RAS takes over the physical actions, thus freeing the cerebrum to think of other things.

Driving is the most understood example of what it feels like to be on automatic pilot. When you first learned how to drive, you had to be completely conscious of everything around you. Now, most likely, after having driven for years, you pull into the parking lot at work in the morning not even consciously aware of how you got there. Driving has become such a repetitive task that when you back out of your driveway, the RAS immediately begins screening out all the sensory details related to driving that you're familiar with.

By the way, besides alerting the cerebrum to any changes in the environment, the RAS also sends signals that have to do with physical need (example: waking up from a deep sleep in order to go to the bathroom), self-made choice (example: deciding to buy a red car and suddenly seeing red cars everywhere), and hearing or seeing your own name. It is also responsible for heightening sensory acuteness in the case of survival situations (example: the sudden sharpening of your sense of hearing when you become aware of an unfamiliar sound in the middle of the night).



Learning, Teaching, and the RAS

The reticular activating system is crucial to directing and maintaining a learner's attention, regardless of whether the learning takes place in formal places such as classrooms or in real-life situations such as on-the-job training.

Whenever a learning environment or procedure becomes routine, that is, familiar and repetitive, the RAS takes on the role of Attention Breaker. It breaks the learner's conscious concentration and gives his thinking brain permission to muse about things unrelated to the task at hand, which in this case is sitting in a classroom listening to someone teach.



When anything changes from what is familiar in a learning environment, the RAS becomes the Attention Maker. It directs the learner's thinking brain to consciously pay attention to what is going on around him, including listening to the teacher.

The importance of this for us as trainers is clear: *When we want our learners to pay close, conscious attention to important information, we have to catch the attention of the RAS by changing something in the environment.*

Changes That Engage the RAS

First, we can change things that have to do with our own instructional methods. For example, we can

- *Vary* the tone, speed, loudness, or softness of our own voice.
- *Move* around the room as we talk.
- *Gesture* while we speak, using hand and arm movements and facial expressions.
- *Act out* a story to illustrate important concepts.
- *Ask* a question and then pause for five full seconds (most trainers only wait for two seconds or less before answering their own question).
- *Add* humor with a topic-related joke or anecdote.
- *Use* topic-related, visual images while we talk—photos, cartoons, drawings, and so forth.

We can also change the activities we use to involve learners. Learners can

- *Participate* in short, quick, review activities (any of the 150 activities in Part One will increase learner participation).
- *Stand* and stretch if they have been sitting awhile.
- *Walk* outside or around the room with a friend while discussing what they've learned.
- *Take* notes a number of different ways while listening to the lecture.
- *Draw* images to represent what they've learned.
- *Write* topic-related comments on wall charts.
- *Discuss* a question about the lecture material.
- *Make* a quick review game with index cards.
- *Quiz* each other about what they've learned.

Last, we can change the physical room environment. We can

- *Move* chairs into clustered groups instead of straight rows.
- *Use* round tables for small group work.
- *Have* a break-out space for large group activities.
- *Set aside* a reading and study area with cushions, pillows, or comfortable chairs.
- *Rearrange* desks into small cluster groups.
- *Add* aromas that please most people (apples, cinnamon, citrus).
- *Play* music that either energizes or relaxes learners.
- *Provide* snacks and beverages on occasion (learners can bring them too).
- *Get rid* of anything that is aesthetically unpleasing (exposed wires, broken furniture, discarded paper).
- *Decorate* the walls with colorful wall charts, hangings, mobiles, streamers, and learner-made projects.
- *Create* colorful centerpieces for each table with colored paper, confetti, hard candy, toys, and the like.
- *Make* sure the room looks and feels warm, inviting, and interesting.

Wrapping It Up

The learning strategies and training methods to keep learners' reticular activating systems engaged are limited only by our own beliefs about teaching and learning.

If we have the perception that learning takes place when we talk and learners listen, we will probably deliver most of our information in lecture-type formats. If that's the case, we run the risk of creating for our learners what we have too often experienced (and what the beginning of this chapter described)—a learning environment in which the learners' conscious minds slip away even if they seem to be listening.

If we understand the importance of the RAS in training, we will change our instructional methods and learning activities regularly to accommodate the Attention Maker's need for stimulation. We will accept that, in order to really learn something (as opposed to just hearing it), the conscious mind must be fully and completely present. Later, the cerebrum may hand a physical or mental skill over to the RAS once the skill has been mastered (for example, performing a reoccurring safety procedure, running a daily computer program, repeating the same verbal customer service information). But in the learning stage, the Attention Maker must engage the thinking brain. And the best way to make sure that happens is to include regular changes in both our instructional methods and the activities we use to involve learners.

*The number one reason we forget is because
we aren't paying attention in the first place.*

—Lynn Stern



Early to Finish

Action Plan. Review the lists under “Changes That Engage the RAS” and circle four changes you can make that you haven’t yet tried. Make a commitment to experiment with these changes in your next training.