Rule #4
We don’t pay attention to boring things.
It was about 3 o'clock in the morning when I suddenly was startled into consciousness by the presence of a small spotlight sweeping across the walls of our living room. In the moonlight, I could see the 6-foot frame of a young man in a trenchcoat, clutching a flashlight and examining the contents of our house. His other hand held something metallic, glinting in the silvery light. As my sleepy brain was immediately and violently aroused, it struck me that my home was about to be robbed by someone younger than me, bigger than me, and in possession of a firearm. Heart pounding, knees shaking, I crept to the phone, quickly called the police, turned on the lights, went to stand guard outside my children's room, and prayed. Miraculously, a police car was already in the vicinity and activated its sirens within a minute of my phone call. This all happened so quickly that my would-be assailant left his get-away car in our driveway, engine still running. He was quickly apprehended.

That experience lasted only 45 seconds, but aspects of it are
indelibly impressed in my memory, from the outline of the young man's coat to the shape of his firearm.

Does it matter to learning if we pay attention? The short answer is: You bet it does. My brain fully aroused, I will never forget that experience as long as I live. The more attention the brain pays to a given stimulus, the more elaborately the information will be encoded—and retained. That has implications for your employees, your students, and your kids. A strong link between attention and learning has been shown in classroom research both a hundred years ago and as recently as last week. The story is consistent: Whether you are an eager preschooler or a bored-out-of-your-mind undergrad, better attention always equals better learning. It improves retention of reading material, accuracy, and clarity in writing, math, science—every academic category that has ever been tested.

So I ask this question in every college course I teach: “Given a class of medium interest, not too boring and not too exciting, when do you start glancing at the clock, wondering when the class will be over?” There is always some nervous shuffling, a few smiles, then a lot of silence. Eventually someone blurts out:

“Ten minutes, Dr. Medina.”

“Why 10 minutes?” I inquire.

“That’s when I start to lose attention. That’s when I begin to wonder when this torment will be over.” The comments are always said in frustration. A college lecture is still about 50 minutes long.

Peer-reviewed studies confirm my informal inquiry: Before the first quarter-hour is over in a typical presentation, people usually have checked out. If keeping someone’s interest in a lecture were a business, it would have an 80 percent failure rate. What happens at the 10-minute mark to cause such trouble? Nobody knows. The brain seems to be making choices according to some stubborn timing pattern, undoubtedly influenced by both culture and gene. This fact suggests a teaching and business imperative: Find a way to arouse and then hold somebody’s attention for a specific period of time. But
how? To answer that question, we will need to explore some complex pieces of neurological real estate. We are about to investigate the remarkable world of human attention—including what's going on in our brains when we turn our attention to something, the importance of emotions, and the myth of multitasking.

**can I have your attention, please?**

While you are reading this paragraph, millions of sensory neurons in your brain are firing simultaneously, all carrying messages, each attempting to grab your attention. Only a few will succeed in breaking through to your awareness, and the rest will be ignored either in part or in full. Incredibly, it is easy for you to alter this balance, effortlessly granting airplay to one of the many messages you were previously ignoring. (While still reading this sentence, can you feel where your elbows are right now?) The messages that do grab your attention are connected to memory, interest, and awareness.

**memory**

What we pay attention to is often profoundly influenced by memory. In everyday life, we use previous experience to predict where we should pay attention. Different environments create different expectations. This was profoundly illustrated by the scientist Jared Diamond in his book *Guns, Germs, and Steel*. He describes an adventure traipsing through the New Guinea jungle with native New Guineans. He relates that these natives tend to perform poorly at tasks Westerners have been trained to do since childhood. But they are hardly stupid. They can detect the most subtle changes in the jungle, good for following the trail of a predator or for finding the way back home. They know which insects to leave alone, know where food exists, can erect and tear down shelters with ease. Diamond, who had never spent time in such places, has no ability to pay attention to these things. Were he to be tested on such tasks, he also would perform poorly.
Culture matters, too, even when the physical ecologies are similar. For example, urban Asians pay a great deal of attention to the context of a visual scene and to the relationships between foreground objects and backgrounds. Urban Americans don’t. They pay attention to the focal items before the backgrounds, leaving perceptions of context much weaker. Such differences can affect how an audience perceives a given business presentation or class lecture.

interest

Happily, there are some commonalities regardless of culture. For example, we have known for a long time that “interest” or “importance” is inextricably linked to attention. Researchers sometimes call this arousal. Exactly how it relates to attention is still a mystery. Does interest create attention? We know that: the brain continuously scans the sensory horizon, with events constantly assessed for their potential interest or importance. The more important events are then given extra attention. Can the reverse occur, with attention creating interest?

Marketing professionals think so. They have known for years that novel stimuli—the unusual, unpredictable, or distinctive—are powerful ways to harness attention in the service of interest. One well-known example is a print ad for Sauza Conmemorativo tequila. It shows a single picture of an old, dirty, bearded man, donning a brimmed hat and smiling broadly, revealing a single tooth. Printed above the mouth is: “This man only has one cavity.” A larger sentence below says: “Life is harsh. Your tequila shouldn’t be.” Flying in the face of most tequila marketing strategies, which consist of scantily clad 20-somethings dancing at a party, the ad is effective at using attention to create interest.

awareness

Of course, we must be aware of something for it to grab our attention. You can imagine how tough it is to research such
an ephemeral concept. We don't know the neural location of consciousness, loosely defined as that part of the mind where awareness resides. (The best data suggest that several systems are scattered throughout the brain.) We have a long way to go before we fully understand the biology behind attention.

One famous physician who has examined awareness at the clinical level is Dr. Oliver Sacks, a delightful British neurologist and one terrific storyteller. One of his most intriguing clinical cases was first described in his bestselling book *The Man Who Mistook His Wife for a Hat*. Sacks describes a wonderful older woman in his care, intelligent, articulate, and gifted with a sense of humor. She suffered a massive stroke in the back region of her brain that left her with a most unusual deficit: She lost the ability to pay attention to anything that was to her left. She could pick up objects only in the right half of her visual field. She could put lipstick only on the right half of her face. She ate only from the right half of her plate. This caused her to complain to the hospital nursing staff that her portions were too small! Only when the plate was turned and the food entered her right visual field could she pay any attention to it and have her fill.

Data like these are very useful to both clinicians and scientists. When damage occurs to a specific brain region, we know that any observed behavioral abnormality must in some way be linked to that region's function. Examining a broad swath of patients like Sacks's gave scientists a cumulative view of how the brain pays attention to things. The brain can be divided roughly into two hemispheres of unequal function, and patients can get strokes in either. Marcel Mesulam of Northwestern University found that the hemispheres contain separate "spotlights" for visual attention. The left hemisphere's spotlight is small, capable of paying attention only to items on the right side of the visual field. The right hemisphere, however, has a global spotlight. According to Mesulam, getting a stroke on the left side is much less catastrophic because the right side can pitch in under duress to aid vision.
Of course, sight is only one stimulus to which the brain is capable of paying attention. Just let a bad smell into the room for a moment or make a loud noise and people easily will shift attention. We also pay close attention to our psychological interiors, mulling over internal events and feelings again and again with complete focus, with no obvious external sensory stimulation. What’s going on in our heads when we turn our attention to something?

red alert

Thirty years ago, a scientist by the name of Michael Posner derived a theory about attention that remains popular today. Posner started his research career in physics, joining the Boeing Aircraft Company soon out of college. His first major research contribution was to figure out how to make jet-engine noise less annoying to passengers riding in commercial airplanes. You can thank your relatively quiet airborne ride, even if the screaming turbine is only a few feet from your eardrums, in part on Posner’s first research efforts. His work on planes eventually led him to wonder how the brain processes information of any kind. This led him to a doctorate in research and to a powerful idea. Sometimes jokingly referred to as the Trinity Model, Posner hypothesized that we pay attention to things because of the existence of three separable but fully integrated systems in the brain.

One pleasant Saturday morning, my wife and I were sitting on our outdoor deck, watching a robin drink from our birdbath, when all of a sudden we heard a giant “swoosh” above our heads. Looking up, we caught the shadow of a red-tailed hawk, dropping like a thunderbolt from its perch in a nearby tree, grabbing the helpless robin by the throat. As the raptor swooped by us, not 3 feet away, blood from the robin splattered on our table. What started as a leisurely repast ended as a violent reminder of the savagery of the real world. We were stunned into silence.

In Posner’s model, the brain’s first system functions much like
the two-part job of a museum security officer: surveillance and alert. He called it the Alerting or Arousal Network. It monitors the sensory environment for any unusual activities. This is the general level of attention our brains are paying to our world, a condition termed Intrinsic Alertness. My wife and I were using this network as we sipped our coffee, watching the robin. If the system detects something unusual, such as the hawk's swoosh, it can sound an alarm heard brain-wide. That's when Intrinsic Alertness transforms into specific attention, called Phasic Alertness.

After the alarm, we orient ourselves to the attending stimulus, activating the second network. We may turn our heads toward the stimulus, perk up our ears, perhaps move toward (or away) from something. It's why both my wife and I immediately lifted our heads away from the robin, attending to the growing shadow of the hawk. The purpose is to gain more information about the stimulus, allowing the brain to decide what to do. Posner termed this the Orienting Network.

The third system, the Executive Network, controls the "oh my gosh what should I do now" behaviors. These may include setting priorities, planning on the fly, controlling impulses, weighing the consequences of our actions, or shifting attention. For my wife and me, it was stunned silence.

So we have the ability to detect a new stimulus, the ability to turn toward it, and the ability to decide what to do based on its nature. Posner's model offered testable predictions about brain function and attention, leading to neurological discoveries that would fill volumes. Hundreds of behavioral characteristics have since been discovered as well. Four have considerable practical potential: emotions, meaning, multitasking, and timing.

1) **Emotions get our attention**

Emotionally arousing events tend to be better remembered than neutral events.
While this idea may seem intuitively obvious, it’s frustrating to demonstrate scientifically because the research community is still debating exactly what an emotion is. One important area of research is the effect of emotion on learning. An emotionally charged event (usually called an ECS, short for emotionally competent stimulus) is the best-processed kind of external stimulus ever measured. Emotionally charged events persist much longer in our memories and are recalled with greater accuracy than neutral memories.

This characteristic has been used to great effect, and sometimes with great controversy, in television advertising. Consider a television advertisement for the Volkswagen Passat. The commercial opens with two men talking in a car. They are having a mildly heated discussion about one of them overusing the word “like” in conversation. As the argument continues, the viewer notices out the passenger window another car barreling toward the men. It smashes into them. There are screams, sounds of shattering glass, quick-cut shots showing the men bouncing in the car, twisted metal. The exit shot shows the men standing, in disbelief, outside their wrecked Volkswagen. In a twist on a well-known expletive, these words flash on the screen: “Safe Happens.” The spot ends with a picture of another Passat, this one intact and complete with its five-star side-crash safety rating. It is a memorable, even disturbing, 30-second spot. And it has these characteristics because its centerpiece is an ECS.

How does this work in our brains? It involves the prefrontal cortex, that uniquely human part of the brain that governs “executive functions” such as problem-solving, maintaining attention, and inhibiting emotional impulses. If the prefrontal cortex is the board chairman, the cingulate gyrus is its personal assistant. The assistant provides the chairman with certain filtering functions and assists in teleconferencing with other parts of the brain—especially the amygdala, which helps create and maintain emotions. The amygdala is chock-full of the neurotransmitter dopamine, and it uses dopamine the way an office assistant uses Post-It notes. When the brain detects
an emotionally charged event, the amygdala releases dopamine into the system. Because dopamine greatly aids memory and information processing, you could say the Post-It note reads “Remember this!” Getting the brain to put a chemical Post-It note on a given piece of information means that information is going to be more robustly processed. It is what every teacher, parent, and ad executive wants.

Emotionally charged events can be divided into two categories: those that no two people experience identically, and those that everybody experiences identically.

When my mother got angry (which was rare), she went to the kitchen, washing LOUDLY any dishes she discovered in the sink. And if there were pots and pans, she deliberately would crash them together as she put them away. This noise served to announce to the entire household (if not the city block) her displeasure at something. To this day, whenever I hear loudly clanging pots and pans, I experience an emotionally competent stimulus—a fleeting sense of “You’re in trouble now!” My wife, whose mother never displayed anger in this fashion, does not associate anything emotional with the noise of pots and pans. It’s a uniquely stimulated, John-specific ECS.

Universally experienced stimuli come directly from our evolutionary heritage, so they hold the greatest potential for use in teaching and business. Not surprisingly, they follow strict Darwinian lines of threats and energy resources. Regardless of who you are, the brain pays a great deal of attention to these questions:

“Can I eat it? Will it eat me?”

“Can I mate with it? Will it mate with me?”

“Have I seen it before?”

Any of our ancestors who didn’t remember threatening experiences thoroughly or acquire food adequately would not live long enough to pass on his genes. The human brain has many dedicated systems exquisitely tuned to reproductive opportunity and to the perception of threat. (That’s why the robbery story grabbed your attention—and why I put it at the
beginning of this chapter.) We also are terrific pattern matchers, constantly assessing our environment for similarities, and we tend to remember things if we think we have seen them before.

One of the best TV spots ever made used all three principles in an ever-increasing spiral. Stephen Hayden produced the commercial, introducing the Apple computer in 1984. It won every major advertising award that year and set a standard for Super Bowl ads. The commercial opens onto a bluish auditorium filled with robot-like men all dressed alike. In a reference to the 1956 movie 1984, the men are staring at a screen where a giant male face is spouting off platitudes such as “information purification!” and “unification of thought!” The men in the audience are absorbing these messages like zombies. Then the camera shifts to a young woman in gym clothes, sledgehammer in hand, running full tilt toward the auditorium. She is wearing red shorts, the only primary color in the entire commercial. Sprinting down the center aisle, she throws her sledgehammer at the screen containing Big Brother. The screen explodes in a hail of sparks and blinding light. Plain letters flash on the screen: “On January 24th, Apple Computer will introduce Macintosh. And you’ll see why 1984 won’t be like 1984.”

All of the elements are at work here. Nothing could be more threatening to a country marinated in free speech than George Orwell’s 1984 totalitarian society. There is sex appeal, with the revealing gym shorts, but there is a twist. Mac is a female, so-o-o ... IBM must be a male. In the female-empowering 1980s, a whopping statement on the battle of the sexes suddenly takes center stage. Pattern matching abounds as well. Many people have read 1984 or seen the movie. Moreover, people who were really into computers at the time made the connection to IBM, a company often called Big Blue for its suit-clad sales force.

2) **Meaning before details**

What most people remember about that commercial is its
emotional appeal rather than every detail. There is a reason for that. The brain remembers the emotional components of an experience better than any other aspect. We might forget minute details of an interstate fender bender, for example, yet vividly recall the fear of trying to get to the shoulder without further mishap.

Studies show that emotional arousal focuses attention on the "gist" of an experience at the expense of peripheral details. Many researchers think that's how memory normally works—by recording the gist of what we encounter, not by retaining a literal record of the experience. With the passage of time, our retrieval of gist always trumps our recall of details. This means our heads tend to be filled with generalized pictures of concepts or events, not with slowly fading minutiae. I am convinced that America's love of retrieval game shows such as Jeopardy! exists because we are dazzled by the unusual people who can invert this tendency.

Of course, at work and at school, detailed knowledge often is critical for success. Interestingly, our reliance on gist may actually be fundamental to finding a strategy for remembering details. We know this from a fortuitous series of meetings that occurred in the 1980s between a brain scientist and waiter.

Watching J.C. take an order is like watching Ken Jennings play Jeopardy! J.C. never writes anything down, yet he never gets the order wrong. As the menu offers more than 500 possible combinations of food (entrees, side dishes, salad dressing, etc.) per customer, this is an extraordinary achievement. J.C. has been recorded taking the orders of 20 people consecutively with a zero percent error rate. J.C. worked in a restaurant frequented by University of Colorado brain scientist K. Anders Ericsson. Noticing how unusual J.C.'s skills were, he asked J.C. if he would submit to being studied. The secret of J.C.'s success lay in the deployment of a powerful organization strategy. He always divided the customer’s order into discrete categories, such as entree, temperature, side dish, and so on. He then coded the details of a particular order using a lettering system. For salad dressing, Blue
Cheese was always "B," Thousand Island always "T" and so on. Using this code with the other parts of the menu, he assigned the letters to an individual face and remembered the assignment. By creating a hierarchy of gist, he easily could apprehend the details.

J.C.'s strategy employs a principle well-known in the brain-science community: Memory is enhanced by creating associations between concepts. This experiment has been done hundreds of times, always achieving the same result: Words presented in a logically organized, hierarchical structure are much better remembered than words placed randomly—typically 40 percent better. This result baffles scientists to this day. Embedding associations between data points necessarily increases the number of items to be memorized. More pieces of intellectual baggage to inventory should make learning more difficult. But that is exactly not what was found. If we can derive the meaning of the words to one another, we can much more easily recall the details. Meaning before details.

John Bransford, a gifted education researcher who edited the well-received How People Learn, one day asked a simple question: In a given academic discipline, what separates novices from experts? Bransford eventually discovered six characteristics, one of which is relevant to our discussion: "[Experts'] knowledge is not simply a list of facts and formulas that are relevant to their domain; instead, their knowledge is organized around core concepts or 'big ideas' that guide their thinking about their domains."

Whether you are a waiter or a brain scientist, if you want to get the particulars correct, don't start with details. Start with the key ideas and, in a hierarchical fashion, form the details around these larger notions.

3) The brain cannot multitask

Multitasking, when it comes to paying attention, is a myth. The brain naturally focuses on concepts sequentially, one at a time. At first that might sound confusing; at one level the brain does multitask.
You can walk and talk at the same time. Your brain controls your heartbeat while you read a book. Pianists can play a piece with left hand and right hand simultaneously. Surely this is multitasking. But I am talking about the brain's ability to pay attention. It is the resource you forcibly deploy while trying to listen to a boring lecture at school. It is the activity that collapses as your brain wanders during a tedious presentation at work. This attentional ability is not capable of multitasking.

Recently, I agreed to help the high-school son of a friend of mine with some homework, and I don't think I will ever forget the experience. Eric had been working for about a half-hour on his laptop when I was ushered to his room. An iPod was dangling from his neck, the earbuds cranking out Tom Petty, Bob Dylan, and Green Day as his left hand reflexively tapped the backbeat. The laptop had at least 11 windows open, including two IM screens carrying simultaneous conversations with MySpace friends. Another window was busy downloading an image from Google. The window behind it had the results of some graphic he was altering for MySpace friend No. 2, and the one behind that held an old Pong game paused mid-pong.

Buried in the middle of this activity was a word-processing program holding the contents of the paper for which I was to provide assistance. “The music helps me concentrate,” Eric declared, taking a call on his cell phone. “I normally do everything at school, but I'm stuck. Thanks for coming.” Stuck indeed. Eric would make progress on a sentence or two, then tap out a MySpace message, then see if the download was finished, then return to his paper. Clearly, Eric wasn't concentrating on his paper. Sound like someone you know?

To put it bluntly, research shows that we can't multitask. We are biologically incapable of processing attention-rich inputs simultaneously. Eric and the rest of us must jump from one thing to the next.

To understand this remarkable conclusion, we must delve a little deeper into the third of Posner's trinity: the Executive Network. Let's
look at what Eric's Executive Network is doing as he works on his paper and then gets interrupted by a "You've got mail!" prompt from his girlfriend, Emily.

STEP 1: SHIFT ALERT

To write the paper from a cold start, blood quickly rushes to the anterior prefrontal cortex in Eric's head. This area of the brain, part of the Executive Network, works just like a switchboard, alerting the brain that it's about to shift attention.

STEP 2: RULE ACTIVATION FOR TASK #1

Embedded in the alert is a two-part message, electricity sent crackling throughout Eric's brain. The first part is a search query to find the neurons capable of executing the paper-writing task. The second part encodes a command that will rouse the neurons, once discovered. This process is called "rule activation," and it takes several tenths of a second to accomplish. Eric begins to write his paper.

STEP 3: DISENGAGEMENT

While he's typing, Eric's sensory systems picks up the email alert from his girlfriend. Because the rules for writing a paper are different from the rules for writing to Emily, Eric's brain must disengage from the paper-writing rules before he can respond. This occurs. The switchboard is consulted, alerting the brain that another shift in attention is about to happen.

STEP 4: RULE ACTIVATION FOR TASK #2

Another two-part message seeking the rule-activation protocols for emailing Emily is now deployed. As before, the first is a command to find the writing-Emily rules, and the second is the activation command. Now Eric can pour his heart out to his sweetheart. As before, it takes several tenths of a second simply to perform the switch.
4. ATTENTION

Incredibly, these four steps must occur in sequence every time Eric switches from one task to another. It is time-consuming. And it is sequential. That’s why we can’t multitask. That’s why people find themselves losing track of previous progress and needing to “start over,” perhaps muttering things like “Now where was I?” each time they switch tasks. The best you can say is that people who appear to be good at multitasking actually have good working memories, capable of paying attention to several inputs one at a time.

Here’s why this matters: Studies show that a person who is interrupted takes 50 percent longer to accomplish a task. Not only that, he or she makes up to 50 percent more errors.

Some people, particularly younger people, are more adept at task-switching. If a person is familiar with the tasks, the completion time and errors are much less than if the tasks are unfamiliar. Still, taking your sequential brain into a multitasking environment can be like trying to put your right foot into your left shoe.

A good example is driving while talking on a cell phone. Until researchers started measuring the effects of cell-phone distractions under controlled conditions, nobody had any idea how profoundly they can impair a driver. It’s like driving drunk. Recall that large fractions of a second are consumed every time the brain switches tasks. Cell-phone talkers are a half-second slower to hit the brakes in emergencies, slower to return to normal speed after an emergency, and more wild in their “following distance” behind the vehicle in front of them. In a half-second, a driver going 70 mph travels 51 feet. Given that 80 percent of crashes happen within three seconds of some kind of driver distraction, increasing your amount of task-switching increases your risk of an accident. More than 50 percent of the visual cues spotted by attentive drivers are missed by cell-phone talkers. Not surprisingly, they get in more wrecks than anyone except very drunk drivers.

It isn’t just talking on a cell phone. It’s putting on makeup, eating, rubber-nerking at an accident. One study showed that simply
reaching for an object while driving a car multiplies the risk of a crash or near-crash by nine times. Given what we know about the attention capacity of the human brain, these data are not surprising.

4) The brain needs a break

Our need for timed interruptions reminds me of a film called *Mondo Cane*, which holds the distinction of being the worst movie my parents reported ever seeing. Their sole reason for hating this movie was one disturbing scene: farmers force-feeding geese to make pâté de foie gras. Using fairly vigorous strokes with a pole, farmers literally stuffed food down the throats of these poor animals. When a goose wanted to regurgitate, a brass ring was fastened around its throat, trapping the food inside the digestive tract. Jammed over and over again, such nutrient oversupply eventually created a stuffed liver, pleasing to chefs around the world. Of course, it did nothing for the nourishment of the geese, who were sacrificed in the name of expediency.

My mother would often relate this story to me when she talked about being a good or bad teacher. “Most teachers overstuff their students,” she would exclaim, “like those farmers in that awful movie!” When I went to college, I soon discovered what she meant. And now that I am a professor who has worked closely with the business community, I can see the habit close up. The most common communication mistakes? Relating too much information, with not enough time devoted to connecting the dots. Lots of force-feeding, very little digestion. This does nothing for the nourishment of the listeners, whose learning is often sacrificed in the name of expediency.

At one level, this is understandable. Most experts are so familiar with their topic that they forget what it is like to be a novice. Even if they remember, experts can become bored with having to repeat the fundamentals over and over again. In college, I found that a lot of my professors, because they had to communicate at such elementary
levels, were truly fed up with teaching. They seemed to forget that the information was brand new to us, and that we needed the time to digest it, which meant a need for consistent breaks. How true indeed that expertise doesn’t guarantee good teaching!

Such needs are not the case just in classrooms. I have observed similar mistakes in sermons, boardrooms, sales pitches, media stories—anywhere information from an expert needs to be transferred to a novice.

**ideas**

The 10-minute rule provides a way out of these problems. Here’s the model I developed for giving a lecture, for which I was named the Hoechst Marion Rousell Teacher of the Year.

**Lecture design: 10-minute segments**

I decided that every lecture I’d ever give would come in discrete modules. Since the 10-minute rule had been known for many years, I decided the modules would last only 10 minutes. Each segment would cover a single core concept—always large, always general, always filled with “gist,” and always explainable in one minute. Each class was 50 minutes, so I could easily burn through five large concepts in a single period. I would use the other 9 minutes in the segment to provide a detailed description of that single general concept. The trick was to ensure that each detail could be easily traced back to the general concept with minimal intellectual effort. I regularly took time out from content to explain the relationship between the detail and the core concept in clear and explicit terms. It was like allowing the geese to rest between stuffings.

Then came the hardest part: After 10 minutes had elapsed, I had to be finished with the core concept. Why did I construct it that way? Three reasons:

1) Given the tendency of an audience to check out 20 percent
of the way into a presentation, I knew I initially had only about 600 seconds to earn the right to be heard—or the next hour would be useless. I needed to do something after the 601st second to “buy” another 10 minutes.

2) The brain processes meaning before detail. Providing the gist, the core concept, first was like giving a thirsty person a tall glass of water. And the brain likes hierarchy. Starting with general concepts naturally leads to explaining information in a hierarchical fashion. You have to do the general idea first. And then you will see that 40 percent improvement in understanding.

3) It's key that the instructor explains the lecture plan at the beginning of the class, with liberal repetitions of “where we are” sprinkled throughout the hour. This prevents the audience from trying to multitask. If the instructor presents a concept without telling the audience where that concept fits into the rest of the presentation, the audience is forced to simultaneously listen to the instructor and attempt to divine where it fits into the rest of what the instructor is saying. This is the pedagogical equivalent of trying to drive while talking on a cell phone. Because it is impossible to pay attention to ANY two things at once, this will cause a series of millisecond delays throughout the presentation. **The linkages must be clearly and repetitively explained.**

**Bait the hook**

After 9 minutes and 59 seconds, the audience's attention is getting ready to plummet to near zero. If something isn't done quickly, the students will end up in successively losing bouts of an effort to stay with me. What do they need? Not more information of the same type. That would be like geese choking on the food with no real chance to digest. They also don't need some completely irrelevant cue that breaks them from their train of thought, making the
subject situation that also reveals a big
\[ \text{message vs. attention vs. ECS every 10 minutes} \]

information stream seem disjointed, unorganized, and patronizing.
They need something so compelling that they blast through the 10-
minute barrier and move on to new ground—something that triggers
an orienting response toward the speaker and captures executive
functions, allowing efficient learning.

Do we know anything so potentially compelling? We sure do. The
ECS—emotionally competent stimuli. So, every 10 minutes in my
lecture, I decided to give my audiences a break from the firehose of
information and send them a relevant ECS, which I now call “hooks.”
As I did more teaching, I found the most successful hooks always
followed these three principles:

1) The hook had to trigger an emotion. Fear, laughter, happiness,
nostalgia, incredulity—the entire emotional palette could be
stimulated, and all worked well. I deliberately employed Darwin
here, describing some threatening event or, with appropriate
taste, some reproductive event, even something triggering pattern
matching. Narratives can be especially strong, especially if they are
crisp and to the point.

2) The hook had to be relevant. It couldn’t be just any story or
anecdote. If I simply cracked a joke or delivered some irrelevant
anecdote every 10 minutes, the presentation seemed disjointed. Or
worse: The listeners began to mistrust my motives; they seemed to
feel as if I were trying to entertain them at the expense of providing
information. Audiences are really good at detecting disorganization,
and they can become furious if they feel patronized. Happily, I
found that if I made the hook very relevant to the provided content,
the group moved from feeling entertained to feeling engaged. They
stayed in the flow of my material, even though they were really
taking a break.

3) The hook had to go between modules. I could place it at
the end of the 10 minutes, looking backward, summarizing the material, repeating some aspect of content. Or I could place it at the beginning of the module, looking forward, introducing new material, anticipating some aspect of content. I found that starting a lecture with a forward-looking hook relevant to the entire day's material was a great way to corral the attention of the class.

Exactly what did these hooks look like? This is where teaching can truly become imaginative. Because I work with psychiatric issues, case histories explaining some unusual mental pathology often rivet students to the upcoming (and drier) material. Business-related anecdotes can be fun, especially when addressing lay audiences in the corporate world. I often illustrate a talk about how brain science relates to business by addressing its central problem: vocabulary. I like the anecdote of the Electrolux Vacuum Cleaner company, a privately held corporation in Sweden trying to break into the North American market. They had plenty of English speakers on staff, but no Americans. Their lead marketing slogan? “If it sucks, it must be an Electrolux.”

When I started placing hooks in my lectures, I immediately noticed changes in the audience members' attitudes. First, they were still interested at the end of the first 10 minutes. Second, they seemed able to maintain their attention for another 10 minutes or so, as long as another hook was supplied at the end. I could win the battle for their attention in 10-minute increments.

But then, halfway through the lecture, after I'd deployed two or three hooks, I found I could skip the fourth and fifth ones and still keep their attention fully engaged. I have found this to be true for students in 1994, when I first used the model, and in my lectures to this day.

Does that mean my model has harnessed the timing and power of emotional salience in human learning? That teachers and business professionals everywhere should drop whatever they are doing and incorporate its key features? I have no idea, but it would make sense
Great statement. Use lovingly with adults before they teach enrollment.

Do one thing at a time

The brain is a sequential processor, unable to pay attention to two things at the same time. Businesses and schools praise multitasking, but research clearly shows that it reduces productivity and increases mistakes. Try creating an interruption-free zone during the day—turn off your e-mail, phone, IM program, or BlackBerry—and see whether you get more done.

Our students are as sick of boring presentations as we are.

What are your plans for meaningful learning?
Summary

Rule #4
People don’t pay attention to boring things.

- The brain’s attentional “spotlight” can focus on only one thing at a time: no multitasking.
- We are better at seeing patterns and abstracting the meaning of an event than we are at recording detail.
- Emotional arousal helps the brain learn.
- Audiences check out after 10 minutes, but you can keep grabbing them back by telling narratives or creating events rich in emotion.

Get more at www.brainrules.net