AUDIOVISUAL TECHNOLOGIES AND ADULT LEARNING IN MEETINGS

A Report Produced by

BrainStrength Systems™
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INTRODUCTION

I approach the meeting room and suddenly enter an environment rich with sensory inputs: soft upbeat music is playing, tables are set neatly with an interesting array of materials and lush green plants are in every corner. I notice an orange uplight on the far wall and a large screen in front with an intriguing image of smiling people. I see that others in the room are talking excitedly, clearly in anticipation of what's to come. Unbeknownst to me, dopamine starts surging through my brain, creating positive expectations and motivation to discover and learn. My curiosity is aroused. This is going to be an interesting presentation.

Audiovisual technology has a long history of use in meetings. From the early days of overhead projectors to the current usage of PowerPoint or Keynote slides, video, lighting, and music, AV plays a large part in what we experience and learn in meetings. Neuroscience is new to this scene, and it shows promise of contributing scientific ways of optimizing the usage of AV to enhance learning and the entire meeting experience. The promise is so great that we can now talk about using audiovisual technology to achieve specific, targeted meeting objectives.

This area of research is, of course, quite new. As such, science has demonstrated some principles, while others can only be theorized as the experimentation remains to be done. We can, however, provide a start in looking at how we can use AV to achieve the results desired in meetings.

This paper leads you through the relevant neuroscience to specific applications of the technology and how they work with the brain to produce physiological states relevant to a wide variety of meeting experiences and objectives. We start by examining the role of sensation and perception in learning and memory. Working memory and "cognitive load" are then discussed, as these are major factors in how people process incoming information to learn and remember the material presented in meetings. The paper then presents research on how visual and auditory stimuli are processed, with suggestions for targeting audiovisual technology to meeting experiences and outcomes desired.

There is a focus on linking the neuroscience with current AV technology practices - on making the information actionable in simple and concrete ways, so you can immediately apply it to your meetings and events. Specifically, visual stimuli parameters are linked with practical tips for using visuals in presentations, for targeted use of color, screen size and placement, and animation. Audio stimuli are discussed in terms of how our brains process sound, with specific tips given for the effective use of sound and music in meetings.

There are two Appendices: Appendix A provides information on generational factors, with suggestions for how to accommodate the different needs of your widely varied audience. Appendix B provides a checklist with questions meeting planners can use in interviewing and working with technology providers.

Our purpose in compiling and reporting on this research is to provide you with an understanding of the vital role audiovisual technology plays in the meeting experiences your attendees have. Often, AV is just an item on a checklist – simply a logistic that must be handled. If, instead, it is used intentionally to work with the brain's capacities, audiovisual technologies can produce specific and targeted effects that maximize learning and memory, convey your message in memorable ways, and produce the meeting outcomes you desire. We encourage you to incorporate the principles presented here into your meeting practices.

THE LEARNING BRAIN IN MEETINGS

> **A mature science of learning will involve understanding not only that learning occurs but also understanding how and why it occurs.[1]**
>
> The Cambridge Handbook of the Learning Sciences

Sensory Learning

Everything we experience, we experience through our senses: sight, sound, smell, taste, and touch. Our brain registers and responds to everything in our environment and, with modern brain imaging technologies, neuroscientists are now able to pinpoint what's happening in our brains as we undergo experiences. This allows us to identify how our brains interpret and respond to our world, and to use this information to design meeting environments and contexts that maximize learning and produce attendee experiences that aid us in achieving meeting objectives.

Inputs and interactions among sensory modalities affect what individuals experience, imagine, and remember. They determine how incoming information is processed and remembered. The human brain interprets the world by receiving, selecting, and integrating sensory input with past experience and memory. This is not a passive process of simply registering what is "out there" in the world, but a constructive process involving active interpretation as well as integration across brain systems. Our sensory experiences combine with our past experience in two directions: sensory inputs bring up memories, and memories influence which sensory inputs we attend to via expectation and pattern formation.

HOW THE BRAIN LEARNS

In search engines like Google or Bing, the popularity of a specific website is determined mostly by the number of visits it receives and the number of other websites that link to it. The more visits and powerful links a particular website has, the higher it will place in search results.

Your brain works in a similar way.

The more neurons that have learned to fire together, the more powerful and longer lasting the learning is, and the more likely that memory will be retrieved in future.

Learning occurs in the brain through the strengthening or weakening of synaptic connections; synapses are the gaps between neurons through which communication between neurons occurs.) When a neuron is active, it is said to fire. Neurons which are activated together tend to be active together again in future. This is the key aspect of learning, and is expressed in the principle: "Neurons that fire together, wire together."

Consider, for example, the well-known Pavlovian demonstration of associative learning in animals – an animal presented with a bell ringing followed by food. The sound of the bell becomes associated with the food, and eventually the bell alone elicits the response of the animal salivating in expectation of food. What occurred in the brain of the animal is that the neurons representing the experiences of food and bell sound became wired together.

Knowing this process, we can see that the more of the brain that's activated, the more associations there are to be made and the stronger and more widespread the learning will be. You can look at this as somewhat similar to how an internet search engine works. The more links and visits a website has, the higher up on the search engine it will appear. The human brain is like this; the more neurons that are active, the more opportunity

there is for them to wire together. The more neurons that have learned to fire together, the more powerful and longer-lasting the learning is and the more likely that memory will be retrieved in future.

The goal in meetings, then, is to activate the brain in a targeted fashion. Attendees will experience more deeply, and learn more thoroughly, when as many senses as possible are stimulated in ways that work with their neurocognitive architecture.

Multisensory Integration

> **The brain developed in an overwhelmingly multisensory environment. Knowing this, we might hypothesize that its learning abilities are increasingly optimized the more multisensory the environment is.[2]**
>
> John Medina, Brain Rules

Human experience is multisensory: our senses are continually bombarded by information from the many events occurring in the everyday environment. Events occur at various positions in space and time, and individuals are called upon to create perceptual order out of this array to produce a comprehensive assessment of the external world.

Multisensory integration is the process that binds the constant and varied input of information from the different sensory modalities.[3] It's accomplished by the brain's attending to some stimuli, ignoring others, and determining which stimuli are related to one another and which are not. Thus, the coordination and integration of information from different sensory systems is essential for providing a unified perception of the environment and for directing attention and controlling action within it.[4]

SENSORY STIMULATION IS MOST EFFECTIVE WHEN TARGETED & ALIGNED

The more of the brain that's activated, the stronger and more widespread the learning. Sensory inputs, however, must be targeted and aligned with both desired results and neurocognitive architecture. Simply adding sensory stimulation is like throwing money at a problem — it may look good on the surface, but results are not always as desired.

If, for example, you want your event to give attendees a sense of competence and empowerment, you don't want to present massive amounts of color and sound that produce a sense of overload and an inability to process information in a meaningful way. Instead, utilize visual and auditory principles that allow you to produce the specific experiences you desire. This paper contains many suggestions and guidelines to follow.

Consider two everyday examples. You are walking across the street and hear the sound of a car to your left. Immediately you orient to the sound, see the car, and step out of the way. Or, you are reading a book on the train and hear a loud conversation behind you. You have trouble concentrating on the words you are trying to read, as the words you are hearing compete for your attention.

In meetings, multisensory stimulation can help individuals to perceive and retain information better; it can draw attention to specific stimuli and help to reduce noise within the perceptual system by combining information from different sensory modalities.[5] Audiovisual interactions can allow attendees to focus on relevant information and filter out irrelevant information, or they can cause distraction when attention is captured by audiovisual information irrelevant to the task.

Stimulus detection can be enhanced by artfully combining audio and visual stimuli in space and time. Research has produced evidence suggestive of the existence of an integrated acoustic-visual system in humans.[6] For example, in one study, increased perceptual sensitivity was found by presenting temporally overlapping visual and acoustic stimuli in the same spatial position. When spatially disparate, this did not occur; there was no improvement at 16 degrees or 32 degrees disparate. Also, when the acoustic stimulus preceded the visual by 500 msec, no improvement of visual detectability was found. In other words, simultaneous means simultaneous![7]

Timing and location matter. A sound at the back of the room will bring attention there. A bright light in a corner will bring attention there. A sound at the back coincident with light up front will create confusion. Artfully combining audio with visual stimuli in time and space increases stimulus detection and can enhance learning. Include an element of surprise and you'll also produce neurotransmitters that enhance memory formation!

In meetings, multisensory cues can help individuals perceive and retain information. The artful combination of audio and visual stimuli can draw attention to specific stimuli, help reduce noise within the perceptual system, and provide a broad context for meaning that aids in learning.

How the brain handles information is only one part of the process through which we interpret and integrate new information and eventually act on it. Meetings invariably aim toward a change in behavior resulting from our events. For this, learning must occur and be coupled with the desire to apply the learning in the world. Too often, we learn things in a transient way – we forget as soon as we return to our office. While there are many variables involved in the application power of learning, memory is invariably involved. To ensure that memories are long lasting, we must understand how memory formation occurs in the brain.

Learning & Memory

> **Failures of memory – forgetting – result from two principle causes. The first is distraction. The second relates to failures to register what is going on during the original experience. A fundamental way to enhance your memory, therefore, is to pay more attention to your sensory experiences.**
>
> Richard Restak, M.D.[8]
> Professor of Neurology, George Washington Hospital University School of Medicine

Most meetings involve learning - whether it is learning information, new behaviors, skills, attitudes, emotional perspectives, or even new social connections. All of these outcomes require learning of one sort or another. Learning invariably involves memory: without memory, there has been no learning. Learning occurs when sensory impressions become noticed, are successfully processed in working memory, and are stabilized in long-term memory.

There are three stages to human memory. The first is sensory memory. Sensory memories typically occur at a preconscious or unconscious level. They are held for very short periods of time. Visual memories last for a fraction of a second. Auditory memories last a bit longer – about 2 to 3 seconds. We can hold in our awareness only a tiny percentage of the information our senses take in. The ratio of incoming sensations to what we become aware of is actually one million to one. That's right, we are consciously aware of only one

millionth of the impressions our bodies take in! Sensory memories produce very brief physiological changes in the brain which disappear unless they are attended to.

Clearly it is of major interest which sensations are paid attention to and how they are managed. With attention, sensory memories can be transferred to working memory.

> ***Learning occurs when sensory impressions become noticed, are successfully processed in working memory, and are stabilized in long-term memory.***

Working memory is the second stage and is defined as the information held online in our minds at any one time. Working memory is extremely limited in both capacity and duration. Individuals are able to hold only about four elements in working memory at any one time without rehearsal. What's even more astonishing is that, if not rehearsed, the information will be lost within 30 seconds.[9]

You can think of working memory as being like a sieve. Items that are not rehearsed or elaborated upon in some way quickly fall through and are not remembered. People require repetition, rehearsal, and usage of the items in a variety of ways in order for them to remain in working memory long enough to be transferred to long-term memory.

Unlike working memory, long-term memory is vast and effectively unlimited in humans. Long-term memories are stored in what cognitive scientists call "cognitive schema" – the chunking of multiple elements into a single element that holds meaning and allows us to make sense of our world.

Long-term memory contributes also to how we interpret incoming information. We tend to notice and remember items that retrieve, and fit into, cognitive schema from the past. Memory processing can thus be graphically represented as follows:

Learning occurs if information is successfully processed in working memory and, because of this, new schema are created, new elements of information are incorporated into existing schema, elements consisting of lower-level schemas are combined into higher-level schemas, or existing schemas are adapted when new information is inconsistent with the existing schema.

Cognitive Load

> **If learners are to learn effectively in any given learning environment, the architecture of their cognitive system, the learning environment, and interactions between both must be understood, accommodated, and aligned.**[10]

In meetings, individuals are exposed to a massive amount of information going into minds already overloaded from the everyday demands of work and home life. How does this affect their ability to learn and remember?

Let's play it out. I arrive at a conference after a few busy days preparing to leave my

SUPPORT WORKING MEMORY FOR LEARNING THAT STICKS

Think of working memory as a sieve: items that are not rehearsed or elaborated upon in some way fall through to be quickly forgotten within around 30 seconds!

Constructive learning design is one way to ensure that learning sticks. With this method, the learner constructs or reconstructs learning by thinking critically about new ideas and integrating them with prior knowledge.

Pair this up with visual or auditory stimuli that provide memorable contexts, and you'll create a powerful memory that's much more likely to be remembered and lead to action.

office. There are a great many details I need to keep track of. Emails continue and require timely response. My boss keeps calling with questions, co-workers text me for information, I need to keep up with my social media, and I must remember to check in with my husband about the children's schoolwork.

My working memory is full, and my mind is automatically rehashing those items that are important to remember. Okay, so I put it all aside for a few moments and go to the opening reception. Here I am seeing colleagues I know – but wait, where do I know them from and what on earth are their names? How can I have forgotten? I meet new people, whose names I also need to remember. Even before any content-heavy presentations, my working memory is overloaded.

We are all familiar with the brain drain we experience at multi-day conferences. The limitation of working memory is one cause, and audiovisual input can help!

Cognitive Load Theory[11] is an important area of research for learning professionals. It works toward the development of techniques for managing working memory load and facilitating the transfer of working memory contents to long-term memory so that learning can occur.

There are three types of cognitive load:

1. **Intrinsic Load:** The more interactive information elements there are, and the more interaction between them, the higher the experienced intrinsic cognitive load will be.

2. **Germane Load:** caused by information and activities that foster the learning process.

3. **Extraneous Load:** caused by information and activities that don't directly contribute to learning.

These three loads are additive and must be managed in such a way that processing leaves some spare capacity for learners to invest mental resources in constructing and automating cognitive schema in long-term memory. There are a variety of strategies for producing instructional designs to accomplish this task, but for our purposes here, it suffices to note that effective instructional designs will decrease extraneous load, while increasing the germane cognitive load associated with the acquisition and automation of cognitive schemas.

It's interesting to note that combining audio and visual inputs can maximize working memory capacity. The predominant theory at this time was developed by Alan Baddely.[12] The theory states that working memory consists of a central executive that regulates and controls incoming information and coordinates three slave systems: the phononological

loop, which processes auditory information, the visuospatial sketchpad, which processes visual information, and the episodic buffer, which organizes information in time.

According to Baddely, the aim of well-designed multimedia learning environments is to make optimal use of the three slave systems by presenting a mix of static and dynamic verbal and pictorial information through a variety of modalities. This is an area in which quite a bit of research has been done, culminating in what's known as the Cognitive Theory of Multimedia Learning (CTML).[13]

Cognitive load can be reduced by targeted use of the auditory and visual channels for information processing.

Cognitive theory suggests that interactions between sensory, working and long-term memory are connected by cooperative, additive channels used to process information arriving from the different sensory modalities. CTML posits dual and separate channels for processing visual and auditory input in sensory and working memory. Each channel has a limited capacity. The auditory channel handles information that is heard, while the visual channel processes information that's seen. Written text seems to have unique processing requirements, with the information initially captured by the visual channel and then converted to sounds (words) in the auditory channel.

The limited capacity of working memory can thus be enhanced by utilizing the independent operation and additive effects of the channels operating in working memory. Research suggests that the visual channel can handle less information than the auditory; however, when information is presented using both visual and auditory channels, working memory is able to handle more information overall.[14]

This is how it works: In order for learners to transfer information elements from working memory to long-term memory, they must construct coherent mental representations of their experiences into cognitive schemas. This requires active cognitive processing such as paying attention, organizing incoming information, and integrating incoming information with other knowledge. CTML thus holds that instruction can best facilitate the acquisition of knowledge by utilizing both channels. The combination of visual and auditory information combines to reduce cognitive load while allowing participants to generate two different mental representations – verbal and visual – and to build connections between them.

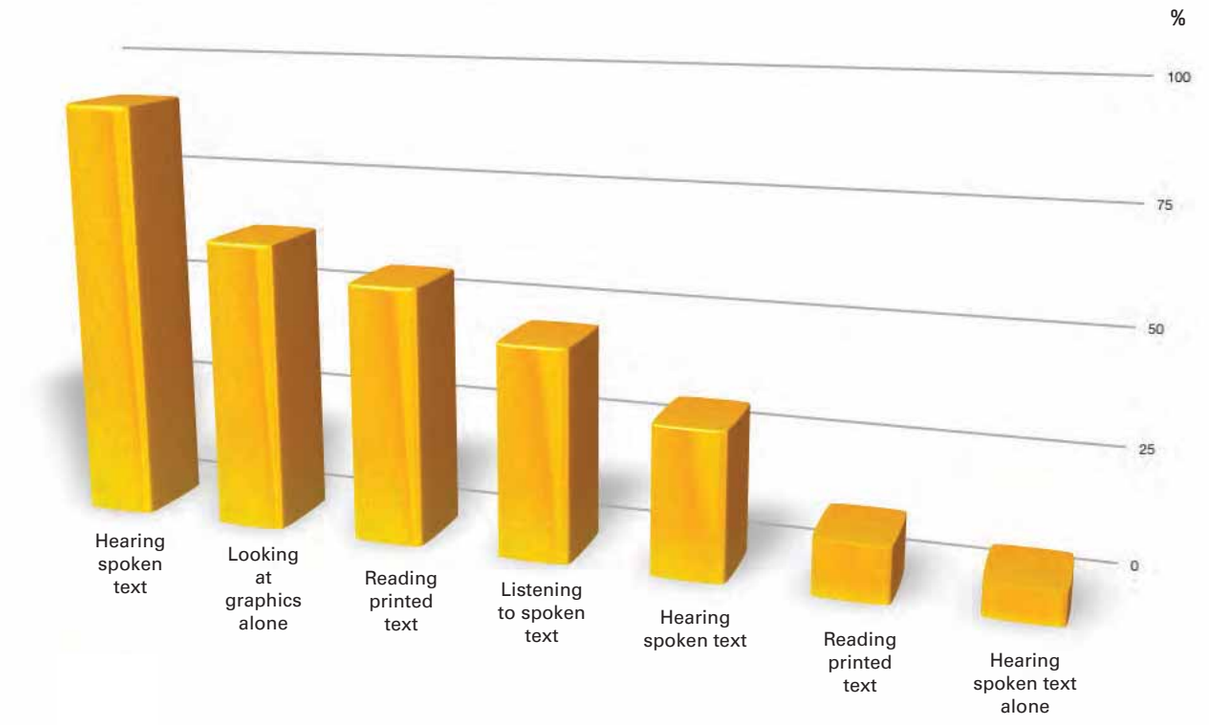
The research bears this out. Lee and Bowers (1997)[15] studied a group of university students to determine under which set of conditions people learned best. The participants were given a pre-test, then learned the material, and then were given a post-test. Their learning was compared with the learning of a control group that took the same pre- and post-tests, but studied a different topic in-between.

When compared with the learning performance of the control group, the people in the experimental groups always demonstrated more learning, as follows:

- Hearing spoken text and looking at graphics – 91% more learning
- Looking at graphics alone – 63% more
- Reading printed text plus looking at graphics – 56% more
- Listening to spoken text, reading text, and looking at graphics – 46% more
- Hearing spoken text plus reading printed text – 32% more
- Reading printed text alone – 12% more
- Hearing spoken text alone – 7% more

Figure 1 provides a visual representation of these findings.

Figure 1: Learning & AV Input



Another intriguing study looked at what occurred in the brain when participants were exposed to different media. Researchers used an EEG to measure the brain activity of students exposed to different media. Thirty-eight students learned material presented with text (TEXT); text, sound, and picture (PICTURE); and text, sound and video (VIDEO). For the TEXT presentation, results showed less mental activity over the occipital and temporal lobes, and higher mental activity over the frontal lobes. The researchers suggested that the VIDEO and PICTURE presentations induced visualization strategies, whereas the TEXT presentation generated processes mainly related to verbal processing. Conclusions included that students find it difficult to form mental models from text alone. Multimedia presentations (defined as combining text with images) thus trigger visualization strategies such as mental imagery, which are crucial to many kinds of problem solving.[16]

Richard Mayer, at the forefront of this research, combines what has been learned in the multimedia principles found below.[17] Please note that this research was performed utilizing computer-based learning, so experimentation must be performed to assist with generalization to multimedia presentation technologies.

MULTIMEDIA PRINCIPLES

Multiple Representation Principle
It is better to present an explanation in words and pictures than solely in words.

Contiguity Principle
When giving a multimedia explanation, present corresponding words and pictures contiguously rather than separately.

Split-Attention Principle
When giving a multimedia explanation, present words as auditory narration rather than as visual on-screen text.

Individual Differences Principle
The foregoing principles are more important for low-knowledge than high-knowledge learners, and for high-spatial rather than low-spatial learners.

Coherence Principle
When giving a multimedia explanation, use few rather than many extraneous words and principles.

Now that we've got a basic understanding of the physiological processes involved with adult learning in meetings, it's time to turn to some practical specifics on how audio and visual meeting technologies can work with the brain to maximize learning in meetings.

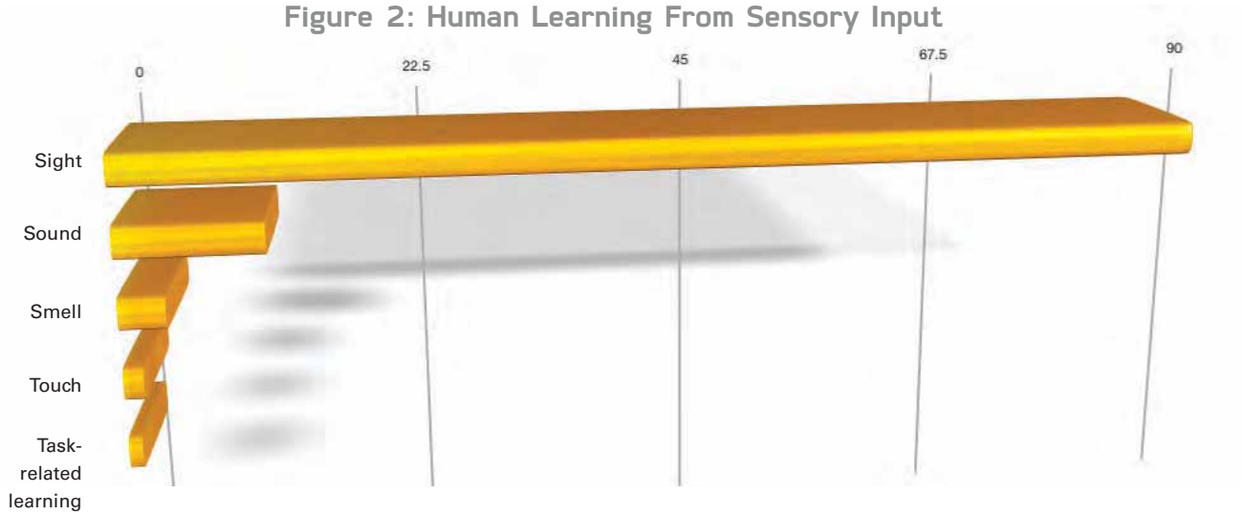
Vision

> **Visual processing doesn't just assist in the perception of our world. It dominates the perception of our world.**
>
> John Medina
> Brain Rules[18]

Pictures grab attention in a great many ways: people pay attention to color, orientation, size, and especially motion. Many images also evoke an emotional response, adding to saliency and activating the powerful memory system of the amygdala. Vision is by far the most dominant human sense, taking up about 50% of the brain's resources.

Educational research suggests that approximately 83% of human learning occurs visually, 11% auditorily, 3.5% through our sense of smell, 1.5% through touch, and 1% through task.

Figure 2: Human Learning From Sensory Input



Consider this: when information is presented orally through a speaker talking – studies reveal that individuals remember about 10% of it when tested three days later. This figure goes up to 65% when visual imagery is added.[19] It is important to note that reference to such stimuli refers to an image, and not text on a screen, which can interfere with auditory input through what's known as the redundancy effect.

Pictures are a more efficient delivery mechanism than text. Individuals have better recall for visual information, and several studies have shown that recognition doubles for a picture as compared to text.

There are several principles useful in applying how the brain works in relation to the use of visual stimuli during presentations.[20] Here are some that are helpful:

PLACEMENT OF VISUALS

Subconscious peripheral messages are often more powerful than standard front-of-room displays. Studies have shown differential effects in relation to the placement of visuals. Consider placing posters or screens at the sides of the room as follows:

Above eye level: Stimulates the visual mode of recall, optimal for maximum retention of your main message.

At eye level: Stimulates learners to talk about the content. Great for generating discussion.

Below eye level: Evokes an emotional response to the content.

TIPS FOR USING VISUALS IN PRESENTATIONS

Salience
Attention is drawn to large perceptible differences. Salient stimuli are those that are clearly different from surrounding stimuli. Salient stimuli, such as bold text, hijack the audience's attention. Be sure to make the most important content elements the most salient.

Discriminability
Two properties must differ by a large enough proportion or they will not be distinguished. Ensure that foreground and background are discriminable. (For example, to increase discriminability, colors in your display should be separated by at least one other noticeably distinct color in the spectrum, as depicted in the color wheel.)

Perceptual Organization
People automatically group elements into units, which they then attend to and remember. Provide scaffolding for new information by visually grouping elements into chunks, as these are more easily integrated into cognitive schema.

Compatibility
A message is easiest to understand if its form is compatible with its meaning. Human minds tend to make a direct connection between the properties of what is seen and heard, and the content of the message being conveyed. In other words, content is inferred from form. Make sure that the visual format presented matches the message conveyed.

Informative Changes
People expect changes in properties to carry information. Every visible (or auditory) change should convey information, and every change in meaning should be conveyed by a change in appearance.

TIPS FOR EFFECTIVE USE OF VISUAL EQUIPMENT

Presenter lighting

- Add spot lighting for a lectern to highlight the presenter, typically a minimum of two separate lights and stands (three-point lighting is best).
- Add uplights for the drape area behind the presenter, which will create depth and can showcase company colors.

Presenter Preparation

- Make sure all presenters are using the same PPT aspect ration (i.e., 16x9 or 4x3, so the presentation materials fill the screen.
- Collect and test all PPTs prior to the event for compatibility, videos, hyperlinks, and audio.
- Set up a rehearsal time to work with the onsite AV team ahead of time to discuss slide transitions and changes in presenters, so execution is flawless and lighting/music can be used to enhance important content changes.

Movement

- Moving lights can create an exciting atmosphere when they are all moving at once, for opening doors to kick-off an event.

Tech Savvy

- A lighting technician can provide changes and for videos, breaks, and decorative lighting.

Highlights

- For social events, add pinspots to highlight table arrangements, food tables or honored guests.
- A custom gobo can showcase company logos. Gobos can be steel or glass and highly detailed, if needed.

Outdoors

- Events outside can include uplights on trees, buildings, or staging elements. LED uplights can change colors and create an overall mood.
- Consider power availability for both indoor and outdoor lighting.

Color

Can a simple color have a noticeable affect? Consider the bubble-gum shade of pink known as "drunk tank pink" (aka Baker-Miller Pink). The name originated from its common use in jails to calm violent prisoners.[21] Dr. Alexander Schauss, director of the American Institute for Biosocial Research in Tacoma, Washington explains that even if a person tries to be angry or aggressive in the presence of this color, he or she can't. The color has a tranquilizing effect, and the heart muscles can't race fast enough.

The effect is temporary, but very real – so real that Iowa and Colorado State painted the locker rooms of visiting football teams this color in the belief that it would make the opposing team's players passive. The results were so noticeable that the Western Athletic Conference was moved to create a rule that a visiting team's locker room may not be painted a different color than the home team's.[22]

Colors influence our mental state by creating unconscious reactions. There are immediate and temporary responses to color stimuli. When the brain developed, humans were hunter-gatherers who spent most of their time outside surrounded by the wide variety and complexity of colors in the natural world. Red is the color of fire. Blue is the color of the sky and sea. Green is the color of growth and life. Simple cues that, over time, become associated not just in our minds, but in the wiring of our brains.

Now, consider the average work environment, which contains very few of these elements. Meeting rooms and offices are often starkly neutral, consisting of white walls, gray tables, artificial materials, and artificial lighting. This type of environment leads to what might be termed "sensory poverty," a state where the brain is not stimulated enough – which leads to far less engagement and constructive learning.[23]

DRUNK TANK PINK

Consider the bubble-gum shade of pink known as "drunk tank pink" (aka Baker-Miller Pink). The name originated from its common use in jails to calm violent prisoners.

The effect is temporary, but very real. So real that Iowa and Colorado State painted the locker rooms of visiting football teams this color in the belief that it would make the opposing team's players passive. The Western Athletic Conference created a rule that a visiting team's locker room may not be painted a different color than the home team's.

The research bears this out. Öztürk and Yilmazer[24] investigated the affect on color schemes on task performance, studying chromatic (color) versus achromatic (black-and-white) color schemes in an office room. Results demonstrated that participant performance in problem solving and proofreading tasks was significantly better in the chromatic scheme than in the achromatic scheme. These results replicated those found in an earlier study, in which participants in a white office made significantly more errors on a proofreading task than those in a red office.[25]

Dr. Morton Walker explains the physiological response: In just a fraction of a second after exposure to red, the pituitary gland sends a signal to the adrenal gland and adrenalin is released. The heart beats faster, blood pressure increases, rate of breathing becomes more rapid, taste buds become more sensitive, appetite improves, and the sense of smell heightens. When exposed to blue, the brain secretes hormonal neurotransmitters that tranquilize. Pulse rate slows, body temperature lowers, breathing is deepened, and appetite is reduced.[26]

Not only does the presence of color affect our cognition and mood, but also specific colors have specific effects. Research has shown that when individuals are subjected to

large quantities of a particular color for as little as five minutes, mental, cardiovascular, and muscular activity will change.[27] Generally speaking, bright and warm colors (red, orange, yellow) stimulate the autonomic nervous system of humans, while soft cool colors (blues, greens) have a retarding affect.

Colors influence cognition and mood, and specific colors have specific effects. Warm colors tend to stimulate; cool colors tend to calm.

In a well-done study, Dr. Alexander Styne[28] documented the effects of specific warm and cool colors under controlled lighting conditions. Results showed that cool colors under cool fluorescent lighting produced a quiet, neutral, and inward-focused mood. Warm colors under warm incandescent lighting produced an animated, active, and outward-focused mood.

A recent study of 600 subjects further refines these results. Psychologists at the University of British Columbia explored the affect of interior wall color on cognitive tasks. Their striking results showed that when people took tests in the red condition, they performed much better at skills that required accuracy and attention to detail. Subjects in the blue group performed worse on these tasks; however, they outperformed the red group on creative tasks requiring imagination by twice as much! The researchers explained the results in terms of psychological associations and motivation. Red is associated with danger (fire), tending to elicit a more vigilant and risk-averse mindset, while blue is associated with openness (sky and sea), creating an approach motivation, generating an explorative, creative and even risky manner.

An additional effect was found by Chellappa, et al[29] in a study of the affect of blue-enriched light on melatonin production, which is associated with waking and sleeping cycles. When it is dark, your body produces more melatonin; when it is light, the production of melatonin drops. Chellappa's study demonstrated that blue-enriched lighting suppressed melatonin production, leading to a state of higher alertness. The study demonstrated that exposure to this lighting also improved subjective well being (mood).

As with other sensory effects, this research is new and sometimes even contradictory. Human responses to color are complex, including gender differences, age differences, plus differences caused by the strength, purity, brilliance, and interactions of different colors. Nonetheless, meeting and AV professionals can begin experimenting with what is known. Every site visit should include an evaluation of color schemes in meeting rooms. You can add or modify color by using uplighting to induce mood or the desired state of meeting objectives. You can ask for paintings or large plants in the room. Use caution, though: it's not a matter of more is better, as too much color can be distracting or produce unwanted states. Bring in a few people on any choices to have a diversity of opinions.

EQUIPMENT TIPS FOR COLOR APPLICATIONS

LED lights are a great choice because they allow for endless color mixing, including saturation and intensity.

- By using LEDs in place of a traditional incandescent fixture, you can change the color of the event space at any time.
- Color mixing is done seamlessly with these fixtures and, when used with a moving yoke (i.e. Moving Light Fixture), the colors can be instantaneously projected to any location in the room.

Give the colors greater impact through the use of scenic elements such as spandex soft sets or other back drops as pallets for your lighting fixtures.

Screen Size and Placement

Although research is just beginning on this topic, results show that screen size makes a difference. Size serves as an important cue in visual information processing. In several studies, researchers have found that viewers pay more attention, are more aroused, have a more intense viewing experience, and are more likely to experience a sense of presence when consuming television on a large screen.[30]

In a recent study, Heo and Sundar[31] examined the role of screen size in making inferences about the effect of television content on viewers' attention, arousal, memory and content evaluation. The results showed that, with few exceptions, content on the large screen resulted in better memory and was more attention getting and rousing.

SCREEN SIZE MATTERS

Recent studies have demonstrated that television content shown on large screens resulted in better memory, was more attention-getting, and was more arousing.

One theory suggests that viewing resulting in heightened arousal activity actually increases the likelihood of action because arousal is an adaptive response that readies humans to action with increased energy and intention.

Large displays may affect viewing experience more specifically by intensifying the prevailing effects the picture is generating. For example, viewers reported that large images showing action and movement were more intense, physical, and exciting.[32]

The effects, however, seem to be content-specific. For example, effects were more pronounced with entertainment content than with factual news content. Another explanation for this difference may have to do with the higher emotional element in entertainment content. Support for this comes from a 1990 study by Lang,[33] who observed an increase in arousal as a function of the emotional tone of the content: Large screens accentuated the effect of arousing content in moving pictures, while their effect on calming pictures were marginal. The researchers concluded that combining certain content (emotional, action) with presentation characteristics (e.g., large screens) might facilitate message understanding and overall enjoyment of the content.

It is as yet unclear exactly how large screens generate facilitation or intensification effects, but it may be possible that large screens enhance the sensory quality of the picture by highlighting salient features contained in the picture. For example, an image of a person wearing a red shirt on a big screen can make the color look more salient and perhaps even brighter. These features are ones we recognize: color, shape, motion. When displayed on a large screen, more features of a face can be seen; a moving object may seem to be coming straight at us, provoking a stronger physiological response. According to Zillmann[34], it can be theorized that a larger screen will produce more action as a result of viewing. The theory is that heightened arousal will increase the likelihood of action because arousal is an adaptive response that readies humans to action with increased energy and intensity. Also, attitudes and social judgments are influenced by physiological arousal. One study[35] found that viewers, in general, rated large images as more likeable and enjoyable than smaller images.

SCREEN SIZE CONSIDERATIONS

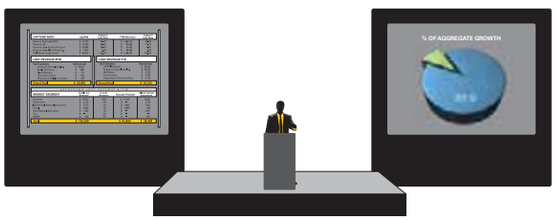
When selecting a screen size for a room, you start by subtracting four feet from the ceiling height and that is the largest screen size for that room. Four feet is the height from the top of the average person's head when they are sitting down. Example: a room with a 14-foot ceiling minus four feet means the maximum screen height that will fit in that room will be ten feet. If you go with a larger screen, peoples' heads will be in the image when front projection is used and if rear projection is used, audience members will have to look around persons' heads in front of them.

If you want to increase the size of your projection screen, a 4:3 screen requires greater height than a 16:9 screen. So, in a lower ceiling environment, you can actually maximize screen size by offering the client 16:9 or wide-format screens.

No audience member should be seated further back than eight times the screen width to insure proper sight lines.

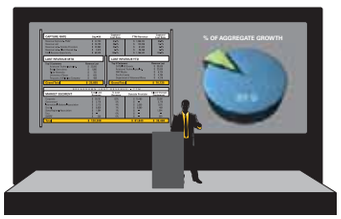
Screen placement is an equally important consideration to take into account. The use of edge-blending technology to project onto widescreens, some up to 180-feet wide, allow for single-screen sets, as noted below:

Typical Two-Screen Event; so-2002



Forces the Audience to shift focus, looking back and forth between the Screens and the Presenter located on stage.

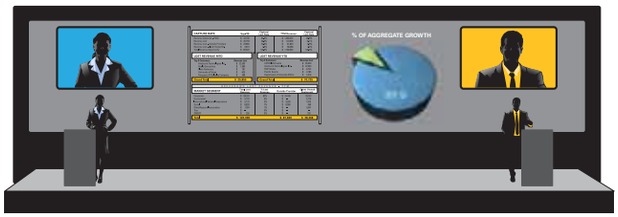
Large Single Wide Screen Converts the Above (2) projectors into converged projectors



Audience remains focused on the presenter presenting.

Allows the presenter to reference the presentation.

Best of Both Screen Methods (3:1 aspect ratio screen, stage as large as screen)



PIP's
- Power Point
- Playback
- iPad/Touch Devices
- I-Mag

> **Unlike our eyes, our ears cannot be shut.**
>
> Elisabetta Làdavas, PhD[36]
> University of Bologna, Italy

Sounds in our environment are particularly demanding of attention and are generally more effective than images for gaining such attention. Some sounds, such as a baby's cry, immediately activate existing images and ingrained cognitive schemata. Other sounds, such as waves hitting the shore or an inspirational march, can hold attention by making the environment more tangible or by arousing emotions.[37]

Sounds may gain and focus learner attention and make learning more engaging. Sounds not only gain attention, but can also help keep the distraction of competing stimuli at bay. Auditory stimuli can provide a context within which individuals can think actively about new information, helping learners to condense, elaborate on, and organize details, highlighting interconnections among new pieces of information and making connections to preexisting knowldge.[38]

The brain typically processes up to 20,000 bits of auditory stimuli every second. This means that nearly every sound in the range of 20 – 15,000 cycles per second can be processed.

Getting people to hear what we want them to hear can be quite a challenge!

In a 1996 study by Berg, et al.[39], researchers found that poorly-designed classrooms that failed to reduce ambient noise, echo effects, reverberation, and other acoustical problems, resulted in a reduction of attention and an increase in off-task behaviors. Gomes, et al.[40] found that excessive environmental noise including traffic sounds, aircraft noise, machinery, beepers, and even casual conversation could reduce comprehension, especially in the early stages of learning a new task.

The Environmental Protection Agency[41] recommends that noise levels, generally, should not exceed an average of 45 decibels in the daytime and 35 decibels at night. Unfortunately, ambient noise in many urban areas often reaches 70 decibels during the day and 60 at night. Clearly the first order of business is to make sure meeting rooms are quiet and free of extraneous noises. Rooms must be well soundproofed with even low-level noises, such as those from hallways or heating and air conditioning systems, minimized or masked. Of course, AV contributes much more than simply creating a distraction-free auditory environment. Audio input can draw attention, add to saliency of information, set mood, create mnemonic tools, evoke emotion, and much more. It's all a matter of how it is used.

Audio inputs are more effective when they align with a cognitive foundation to enhance learning and the meeting experience. The Shannon-Weaver Communication Model[42] provides one such foundation. The model proposes that all communication processes begin with a source desiring to produce an outcome and choosing a message to be communicated. The message is encoded into a set of perceptual elements, or cues, in order to produce a signal appropriate for transmission over a chosen channel. When the message is transmitted, the receiver then decodes the message from the transmitted signal.

Communication is "perfect" when the information contained affects the receiver in exactly the way intended by the source. Communication is rarely perfect, however. When more elements are transmitted than a channel can handle, information is lost. Extraneous

elements not originally intended by the source are often present or added to the signal, introducing errors that increase uncertainty and make the signal harder for the receiver to reconstruct accurately.

Imperfect audio transmission produces differential effects on the various stages and operations of learning. If there are transmission problems, the message may fail to gain the learner's attention, may not be sufficiently salient for the learner to isolate it from the many stimuli also present, and may not evoke existing cognitive schema from memory. Consequently, the learner may not be interested. Similarly, if the message fails to focus attention, does not help with organizing the information, and doesn't help build upon existing knowledge, the learner is not likely to be curious. Finally, if the message doesn't hold attention over time, help with elaboration of informational elements, or support efforts to construct knowledge structures, the learner is not likely to be engaged.[43]

Auditory cues can be used in a variety of ways not only to minimize extraneous noise, but also to increase the saliency of the message. For example, a multimodal presentation of seeing a telephone and hearing it ring should result in better memory performance than only seeing it or hearing it.[44]

Shannon and Weaver suggest that anticipating communication difficulties and front-loading messages with this sort of redundancy can strengthen a signal. As always, care must be used - it's not as straightforward as simply adding cues to messages. Some redundancies can produce counterproductive interference, such as text coupled with word-for-word narration. The principles of CTML are good guidelines for knowing what will enhance learning and what will interfere with it.

Some ideas for using audio in presentations and events are listed below[45]:

TIPS FOR EFFECTIVE USE OF SOUND IN MEETINGS

Use sound to define context.
Sound can set the stage for an event or presentation.

Use sound to grab the audience's attention.
An unexpected or distinctive sound typically has the same effect as a sudden motion: it grabs the audience's attention. Use this sparingly, as overuse can make the audience annoyed and they may start filtering out the sound.

Use sound to support memory.
Sound can add strength to visual stimuli, allowing for greater representation of concepts in the brain.

Make sure to use sounds that are appropriate for the topic or point being made.
Do not use irrelevant sound, as it can become an extraneous stimulus that interferes with learning.

Use sound to allow the audience time to digest content elements.
Sound can serve as a kind of punctuation, giving the audience time to process any information just presented.

Use sound to provide evidence.
Brief sound clips can serve the same role as photographs when presented as "evidence." Consider using recorded dialogues or an expert discussing a topic to add weight to the message being conveyed.

(continued)

(continued)

Don't arbitrarily vary tonal quality or volume.
Any perceptible change will be taken to signal information, so arbitrary changes will be confusing and distracting.

Ensure that sounds can be heard clearly throughout the entire room.
Don't make the sound too loud, though, as this may cause the audience to cringe and start filtering out both sound and your message.

Ensure that sounds are high fidelity.
If sounds are muddy, they can be difficult to understand. Ensure that you have good external speakers with independent amplifiers. When possible, position speakers as high as possible in the room, secured to the walls or ceiling. Good acoustical design will make hearing and paying attention easier for participants.

TIPS FOR EFFECTIVE USE OF AUDIO EQUIPMENT

- Microphones, speakers, processing and amplifiers are the most visible components of a well-thought-out sound system.
- For microphones, the use of receivers and transmitters that have a lot of bandwidth will reduce the likelihood of interference, as will properly cabled systems.
- Add audio technicians to support presenters and monitor levels, especially for wireless microphones or multiple table-top mics. Ask presenters if they wish to be stationery or to move around so you can determine if wired or wireless microphones are needed.
- Consider adding table-top mics for large hollow-square or u-shape meeting room set-ups.
- Add audio recording (with back-up) to document important meetings.
- Add standing microphones in aisles for audience Q&A sessions.
- Switch it up. Nobody wants to see presenter after presenter stand behind a podium mic. Provide both wired and wireless solutions.

Music

Audio input can contribute powerful effects through the use of music. Music can energize, relax, and increase productivity. It can boost intelligence, engage the emotions, put tears in our eyes or smiles on our faces. A single high note can stimulate joy; a minor chord quickly elicits sadness. Music is a very powerful sensory input.

Musical activity involves nearly every region of the brain and nearly every neural subsystem. The brain is a massively parallel system: there is no single music center, but rather there are regions that perform component operations and other regions that bring this information together. Although there is individual variation, humans are predisposed to interpret many sounds in particular ways. Some sounds are soothing, while others make us alert. Consider the different effects of a dog barking or a cat purring. Abrupt, short, loud sounds tend to alert us; while slow onset, long, and quiet sounds tend to be calming or, at least, neutral.[46]

Research has generated the following guidelines for the effects of musical rhythm[47]:

- Music that contains a rhythm of 40 – 60 beats per minute (BPM) produces relaxation;
- 60 – 70 BPM produces an alert state; and
- 70 – 120 BPM will create an active state.

Music can energize, relax, and increase productivity. It can boost intelligence, engage the emotions, and support memory formation.

Music can be used in meetings in many ways. Is there a big presentation or event occurring towards the end of your conference? Announce the event along with a theme, and play that theme during breaks to increase anticipation. Or is there a long walk from guest rooms to meeting rooms? Play musical themes from the day's presentations to elicit memories of learning and good experiences with colleagues. Consider this: Who chooses the music playing in your meeting's venue? Typically, it's the venue, and it is generic music or music related to their brand. How about requesting your own? The possibilities are endless and, often, it's very intuitive.

Some Ways to Use Music in Meetings

Entrance music	Sets the stage/mood for the meeting or presentation
Background music	Creates a mood; engages the brain for learning
During brainstorming or Problem-solving	Light classical music speeds up thought
Transitions	Music helps people get moving, and knowing when to stop
Emotional arousal	Musical selections can generate emotions targeted to what you want your audience to feel at specific times during the meeting

To introduce activities or illustrate key points	Music related to topic creates immediate recognition and adds to meaning
Memory support of particular concepts	Recurring music can support memory formation
Opening / Closing Ritual	Themed music creates expectation and recognition

EQUIPMENT TIPS FOR USE OF MUSIC IN MEETINGS

- The use of iPods and iPads as music players, as well as CD/DVD players, can be managed by AV staff or left with the presenter to use at their own discretion.
- Add an audio technician to monitor music as well as microphones.
- Set-up rehearsal time prior to the event and work with audio technician on cues (intro, breaks, closing, etc.)
- Lighting console technology allows trained AV staff to program the lights to track the sounds, beats or tempo.
- Live performers can, of course, be used for any part of your event.
- If providing your own music, make sure you're well versed in all copyright laws.

Animation

The human brain is wired so that change automatically catches our attention. This makes animation, any movement of a pattern on a screen, a double-edged sword: it can be used to direct the viewers' attention to what you wish to convey - or it can distract from the message.

HOW TO USE ANIMATION EFFECTIVELY IN MEETINGS

Use animation to direct attention. The eye will be drawn to any movement, so make sure that attention is being drawn to important information elements.

Use novel transitions to catch attention. Note that novelty will catch the viewer's attention, but after a while the brain will adapt and what was novel becomes expected. Do not overuse this.

Use animation with sound to increase saliency of information messaging.

Use video clips to illustrate a relevant event. Video clips can illustrate an event that occurs over time better than a description or set of still slides. Always do a run-through to make sure the video will operate on the computer being used.

Höffler and Leutner[48] performed a meta-analysis of 26 primary studies on the efficacy of non-interactive computer animation for learning. Their results demonstrated a clear advantage of animations compared to static pictures in certain learning situations. Specifically, representational animations – those that explicitly depict the content to be learned – are far superior to static pictures, while decorational animations showed a variety of effects that can lead to superior learning, but can also create extraneous cognitive load thus interfering with learning. In addition, animations appear to afford greater benefits when the knowledge to be gained is procedural-motor (skill learning) rather than declarative (concept learning), although there is some benefit to be found with declarative knowledge. Thirdly, evidence was found suggesting that an adequate level of realism is desirable (i.e., video-based animations were superior to computer-based animations).

A recent study supported these conclusions.[49] An experiment investigating the benefits of animation and visual cueing found that participants provided with animations retained significantly more concepts than their peers who were provided with static graphics only.

It must be noted that these results are based on computerized training rather than live presentations with animations on a large screen. Research on the use of animation in face-to-face learning situations must be performed to determine if these results can be generalized to this learning context. We can, however, use our knowledge of how the brain works to provide some tips on using animation effectively in meetings.

Conclusion

A great meeting is a consequence of many factors, all of which combine to produce particular experiences for those who attend them. Everything we experience occurs through our brains, starting with the abundant information that comes to us through our senses. A sensory-rich environment engages the brain, facilitates learning, enlivens our senses, and contributes greatly to an enhanced meeting experience. Audiovisual technology determines, to a large part, the sensory experiences we have in meetings. It can aid - or hinder - your efforts to produce the particular experiences you wish your attendees to have.

This paper has explained what goes on in the brain during the meeting experience, and how to optimize AV to produce both learning and an excellent meeting experience. We've seen how the brain processes information, how we learn, how memory works, and how audiovisual inputs contribute to these processes. We've identified many specific tips on how to use AV technologies to enhance both learning and the meeting experience. Targeted suggestions have been presented from the dual perspectives of mind and technology. We've covered visual presentation in relation to lighting, location of visuals, color, and screen size and placement. We've discussed the use of sound and music, along with technical tips that aid you in understanding the technology available for producing specific effects. Research on the effects of video and animation has been presented, along with tips for optimal usage of these in meetings. The differing needs of the various generations in the workforce has been discussed, with tips given for how to accommodate all of your attendees so they are comfortable and can learn effectively. Finally, a checklist has been provided containing questions you can ask your audiovisual provider to target your AV so it produces the specific outcomes you desire.

Audiovisual input can be a huge asset in your meetings. Far from being simply a logistic to be handled, AV is an essential element to consider in your planning. We encourage you to use the many suggestions presented here, and to work with your AV provider to ensure that your audiovisual technology is doing what you want it to: producing the experiences that will enable you to achieve your meeting's objectives.

APPENDIX A

Generational Factors

> **You have to be ready to serve the geek and the meek.**[50]
>
> Lynne C. Lancaster and David Stillman

The four generations currently in the workforce have very different ways of using and responding to all technology, including audiovisual technology. This stems from having had different experiences with technology during formative years: as you'll recall, everything we do affects not only how our brains function, but how they develop. Those functions we use are reinforced, with the brain regions mediating the activity growing stronger; while those functions we do not use tend to atrophy.

Consider a child growing up 50 years ago as opposed to one that has grown up in the past 20 years. In the 1950's and 60's, when the Baby Boomers were young, there were no computers and there was no internet. Information was obtained passively from books, television, and movies. The telephone rang only in your home or office; perhaps in your car. There was no email; no text messaging. The term "information overload" was unknown, as was that of "multitasking."

Now take a look at a child growing up in the past twenty years. There are computers for children of all ages at home and in classrooms. Most of us are never without our phones. There are online social networks and collaborative games. By the time a typical Generation Y reaches his or her twenties, they have spent over 20,000 hours on the internet and over 10,000 hours playing video games of some kind.[51]

The brain is especially adaptable to outside influences during the first three years of life and then during adolescence – just when most teens are becoming immersed in digital technology. Knowing what we do about how the brain rewires in response to experience, we know this must result in the younger generations developing a very different brain from previous generations. Our different brains, of course, respond to audiovisual technology very differently.

Research has shown that computer and internet usage can sharpen several cognitive faculties (please see box at right).

THE NET GENERATION BRAIN

Research has shown that several cognitive functions may be enhanced by digital immersion. These are:

- Faster processing of rapid streams of visual information
- Ability to quickly sift through large of amounts of information to identify what's relevant
- Improved hand-eye coordination
- Faster response times
- Enhanced ability for divided attention
- Ability to rapidly shift tasks
- Improved spatial skills
- Ability to quickly identify an object briefly presented in a field of clutter
- Improvement in many forms of attention, particularly the abilities to block out distractions and to notice images in peripheral vision.
- Improved decision-making ability

In addition, as opposed to the passive watching of television, working and socializing on the internet requires a great deal of participation. People continually choose links to go to, leading to a decision-based flow of information rather than the passive reception of a linear presentation. This exercises critical thinking and decision-making faculties. Working online with others leads to a familiarity and comfort with collaborative work and distributed, collective intelligence. It's no wonder the younger generations, in particular, prefer meetings that are participative, interactive, and collaborative!

On the flip side, there is speculation that multitasking, continual scanning, and the quick shifting of focus may interfere with deep thinking and conceptualization. This is, however, highly speculative; the consensus at the moment is simply that thinking skills are changing.

Clearly the various segments of your meeting audience have very different technology needs and preferences. Whenever possible, target your AV usage to your particular audience. But what about the vast majority of meetings that include participation by all the generations? It's quite a challenge to accommodate the different learning styles, needs, and preferences.

Research in this area has barely begun, so what we can do at this time is to be aware of the factors involved and strive to accommodate as many people as possible. Here are a few of the issues, along with our suggestions.

Technology Choices

People tend to judge content by the technology on which it is delivered; e.g., use of an overhead projector might lead to the immediate dismissal of the information as being old. Fancy technology, on the other hand, might be seen by older generations as frivolous. This could lead to a perception that the material itself lacks credibility.[52] Know your audience, and choose technology appropriate to both the content and your attendees. Another aspect to keep in mind is that the younger generations tend to be excited by the novelty of new technologies. The dopamine system plays into this; creating an almost irresistible desire for new technology that, once satisfied, leads to a desire for yet more. Older generations, on the other hand, may find new technologies an unnecessary distraction. It's a balancing act to provide enough stimulation for the young, while not overloading elders with stimulation they can't process or utilize for efficient learning.

> **If you're multitasking a lot as a kid, the likelihood is that your brain will develop around your adaptive behavior. Would it change the brain to optimize multitasking? The answer might be yes.[53]**
>
> Jordan Grafman
> National Institute of Neurological Disorders and Stroke

Speed of Presentation

While it's generally agreed that most people can't actually multitask, there has been some controversy as to whether the younger generations are developing this capacity. It's possible the brain is adapting by developing a multitasking ability, but it may be that this is actually caused by an ability to switch tasks at lightning speed.[54] In either case, younger generations do process information at a faster rate of speed and can easily become bored. Older generations, on the other hand, may feel overwhelmed by a faster speed. Choose an appropriate speed for your audience, and make sure your equipment can run slides and videos

at the speed you've planned. For a mixed audience, compromise: not too fast, not too slow.

Lighting

The older generations are more sensitive to subpar environmental conditions. Poor lighting, for example, interferes with reading ability and can even lead to headaches. Readability is vital, so make sure lighting, color palette, layout, and even font size are optimized so all can easily see. Save the dramatic lighting for entertainment purposes – a dark room makes learning difficult and also leads to sleepiness.

Visuals on Screen

One of the more fascinating discoveries is that eye movements when reading on screen vary for the different generations. Baby Boomers tend to read from top to bottom, left to right. The eyes of younger generations leap around – they'll look at images first, then call-out boxes, and finally body text. While this is most relevant to content designers, AV providers should be aware for run-throughs and consultation.

Type & Amount of Sensory Stimulation

While the younger generations thrive on multiple inputs, baby boomers and elders may respond with a feeling of overload. There's a balance to be maintained here as well. Provide choices, perhaps by offering a variety of habitats and meeting spaces with differing levels of stimulation, while maintaining an environmental context that is, at the least, comfortable for all.

Concluding Thoughts

There are so many factors involved in individual responses to AV and other technology that the only guideline we can state as mandatory is that you know your audience and take into account as many factors as you can. Don't make assumptions! A study of 4,374 students in 13 educational institutions found that results challenged even the notion that net generation students prefer extensive use of technology in the classroom. Instead, results showed a bell curve with preference being for a moderate use of technology in the classroom.[55]

Do your research to identify not just the age of your audience, but also gender, industry, and history of technology exposure and usage. All of these will influence whether your AV choices aid or hinder your efforts to achieve meeting objectives. We suggest extensive interviewing to discover what will work best for any particular meeting. You could even incorporate a few questions as a part of your registration process.

One student in the above-mentioned study expressed the results in a way that applies for us in the meetings industry as well, noting "…technology is just a tool. Like all tools, if used properly it can be an asset. If it is used improperly, it can become an obstacle to achieving its intended purpose." Consider the factors involved, and do your best to ensure that all segments of your audience are accommodated.

APPENDIX B

Checklist for Meeting Planners

Please find below a list of questions you can ask your audiovisual provider to enhance your attendees' experience and add value to your overall event.

Visual

- ☐ What size screen is best for my assigned meeting space?
- ☐ Would one LARGE Wide Screen be better than two smaller screens?
- ☐ What type of projection would be best to support my screen and audience size; front or rear screen?
- ☐ Will the people in the back of the room be able to see the screen clearly?
- ☐ How can room design draw my audience's attention to the front of the room?
- ☐ What would you recommend as a cost-effective solution for creating an environment to showcase my presenters?
- ☐ Do you have for a way to allow presenters to upload their presentations prior to event?
- ☐ Can you help optimize all of the presentations, both technically & creatively to compliment my room?
- ☐ When should confidence monitors be used?
- ☐ Do I need Image Magnification (I-Mag)?
- ☐ Will the room be set up and available for rehearsals?

Lighting

- ☐ How can you highlight the company brand or event theme?
- ☐ Where are the best places to project gobos at this venue?
- ☐ What lighting fixtures do you have that can bring an element of excitement into the event space?
- ☐ What scenic elements would you recommend to complement the lighting portion of the event?
- ☐ Should my lighting be ground supported or flown?

Sound

- ☐ How are the acoustics in the room?
- ☐ Is there house sound?
- ☐ Is the house sound okay for speech only?
- ☐ Is an external sound system suggested for an event of my size?
- ☐ Do I need extra sound reinforcement for walk-in music or videos?
- ☐ How many table microphones should I use for my head table?
- ☐ How many aisle microphones should I use?
- ☐ Do I need to be concerned with potential interference related to the amount of wireless microphones we intend to use?

(continued)

Music

- ☐ Is it ok to provide my own music selections for my meeting?
- ☐ Should we specify for meeting rooms and/or common spaces?
- ☐ Do I need permission or a license to play music selections?
- ☐ If I have a CD, do I need to verify it burned and finalized correctly?
- ☐ What are some creative ways you've used music in events to support learning and/or branding?

Meeting Room

- ☐ Does my meeting room have any peculiarities or challenges that I need to be aware of?
- ☐ Which end of the room should I use for a group my size?
- ☐ Have you ever set up the room width ways and was that a good solution for the client you did it for?

Creative

- ☐ Do you have any creative or media services available?
- ☐ How can you take key meeting elements, like brand, goals, presenters, etc., and incorporate them into something dazzling without exceeding my budget?
- ☐ What is the coolest thing you have done here to show a presentation to an audience?

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