mimecast

White Paper

Teaching Good Security Behaviors with Seinfeld:

Overcoming the employee engagement challenge in security awareness training

Executive Summary:

Failure to deeply engage employees is the great challenge of corporate learning and training programs. And — despite the high stakes involved — security awareness training is not granted an exception. Employees' primary complaint about security awareness training is that the content is boring, so they find it difficult to stay engaged with lessons.

A significant amount of scientific evidence proffers a solution. The research shows that training that is truly entertaining — and humorous — is proven to increase employee engagement and lead to deeper embedding of crucial lessons into memory, resulting in more effective outcomes. Further, training that relies on storytelling maximizes learning by recruiting more systems of memory to increase lesson retention, recall, and application.

Mimecast's approach to security training exploits these academically proven lessons. It employs an ongoing cast of characters to create lesson continuity and reinforce content over a series of short videos. Empirical validation of training effectiveness demonstrates a marked improvement in avoiding simulated phishing attacks, while employee feedback indicates a high level of engagement in — and even enjoyment of — the content delivery.

The Challenge of Employee Engagement

A recent survey of security education training awareness (SETA) programs found that the delivery of content was overwhelmingly boring; as a result, employees found it difficult to engage with the material. The surveyed employees were so unenthusiastic that one even remarked "Get a red-hot poker and open up my eyes, it's so boring."[1] Maintaining employee engagement with training material can be one of the most challenging obstacles in delivering security awareness content. A precarious balance must be struck between being informative and entertaining to sustain engagement.

A highly effective approach to this challenge is to deliver training content that does not "feel" like training. SETA lessons that engage viewers through entertaining dialog motivate employees to watch training videos because they're enjoyable, rather than to "check-the-box" for a requirement. A storytelling approach that centers around situations that are relatable to everyone, including those from non-technical backgrounds, can draw learners into lessons without their explicit awareness that they are "doing training." Relying on storytelling that integrates engaging characters who repeatedly interact through relatable everyday situations conveys training objectives through narratives, which is proven more effective than rote memorization.

Thus, training lessons conveyed via humorous narrative storytelling would appear to constitute an ideal, providing advantages over more traditional approaches that include:

- Training that is engaging instead of boring,
- Increased learning retention and lesson recall, and
- Ongoing reinforcement due to a consistent cast of characters that creates lesson continuity.

[1] *Computers & Security.*

Seinfeld's Cognitive Solution

It is no coincidence that these elements are also crucial to the formula for successful television situation comedies. Consider Seinfeld. The "stickiness" of the show begins with the everyday situation or circumstance that opens most episodes, is relatable by most people, and then woven into the episode's narrative. This approach to storytelling combined with character building across many episodes lead audience members to more deeply engage with the storylines because they become invested in the characters and begin to anticipate their actions.

From a cognitive perspective, Seinfeld is successful because:

- It engages multiple memory systems through narrative,
- Induces memory elaboration through character development,
- Involves distributed learning through weekly episodes, and
- Is enjoyable because it's funny!

Similarly, Mimecast's approach to security awareness training draws on the same cognitive principles that have brought success to Seinfeld and all of the world's favorite sitcoms, from M*A*S*H to Big Bang Theory. Mimecast awareness training teaches its lessons over a series of short episodes that engage distributed learning, use relatable narratives that recruit multiple memory systems for better encoding and recall of material, rely on a continuous set of characters to encourage memory elaboration — and are funny. This is a more effective way to deliver training because it is based on scientific research that shows how humor improves student understanding of material, and how learning is more productive when delivered through asynchronous video instruction.[2,3]

[2] *OSF Preprints.*
[3] *Qualitative Research Journal.*

Recruiting More of the Brain for Better Learning

Using All Three Primary Memory Types

Have you ever forgotten someone's name, even when you recognize their face and can remember details about your last conversation with them? Most of us have had this experience. Why does it occur? The reason is that the brain handles different types of memory in distinctive ways. There are three primary memory systems that the brain relies on to retain information about the world: Procedural, Semantic and Episodic. Understanding these three memory systems explains why storytelling narratives are such powerful learning tools.

- Procedural memory: This is exactly what it sounds like, memory for how to complete different types of procedures. This is sometimes referred to as "muscle memory," yet it has little to do with the muscles in our body and more to do with the muscles in our head. Learning to maintain balance when riding a bike involves relying on your procedural memory. In learning to avoid phishing attacks, simulated phishing emails that we must identify and report trains our procedural memory to make us more secure.
- Semantic memory: Another category of memory, semantic memory, is memory for information such as facts, figures and attributes of things in the world. When learning to ride a bike, knowing the "rules-of-the-road" such as traffic and hand signals are types of semantic memory. When learning to avoid phishing attacks, semantic memory allows us to remember rules, such as do not download attachments from senders we do not know, to keep us secure.
- Episodic memory: The last category of memory allows us to recall events; it is this category of memory that is recruited through narrative stories. When we consume a story, we simulate those events in our own mind and create episodic memories for them as if they were our own experiences. This is why most people are more likely to forget Julie Baker's last name than they are to forget the fact that Julie is a baker. The second example is easier to recall because when we think about the fact that Julie is a baker, we mentally conjure several examples of her in action as a baker. In other words, we create episodic memories related to baking that are associated with the fact that this is her job. Examples of episodic memories for learning to ride a bike are times that we crashed, or the first time that we were successful in maintaining our balance. An episodic memory relating to security might come from a friend who tells the story about opening a malicious email attachment that deployed ransomware on their system.

How Stories Embed Memories

When we experience lessons through storytelling, we recreate events in our own minds as if we ourselves experienced them. This leads to better retention and recall because we can relate to the experiences as if they had happened to us, and because they are drawing upon multiple types of memory systems in the brain. Episodic memory is engaged by mentally simulating events, semantic memory is engaged through the facts that are presented in the narrative, and (sometimes) procedural memory is trained through the events experienced by characters in a story.

Telling someone a story (complete with all the dramatic details) about a time when you were almost hit by a car that was making a right turn while you were riding a bike is likely to have a powerful, lasting impact, effectively conveying the message that a rider should be vigilant for cars making right turns. In contrast, simply telling someone "Watch for cars making right turns" is unlikely to have the same effect. Similarly, a dramatic narrative that illustrates the consequences of opening a malicious attachment that was downloaded from a phishing email will make a more lasting impression than a simple bullet point stating, "Don't download attachments from unknown sources." Learning from narrative is one of the most powerful methods for processing training material[4] because it recruits all three categories of memory.

Exploiting the Memory Elaboration Effect

A related memory advantage that narrative training provides is known as elaboration. Elaboration helps us recall what Julie the baker does more easily than what Julie's last name is because her job role inspires the activation of many other memories that we have for other bakers, baking shows, recipes, scenarios involving bakers and a host of other related pieces of information. In a process known as spreading activation, a piece of information that activates memories related to other information in our brain through elaboration is more deeply encoded in our memory and more easily recalled than information that is less elaborate.

[4] *Critical inquiry.*

Ongoing storytelling that involves a consistent cast of characters facilitates this memory enhancement by activating additional episodic memories that we have for those characters. For example, if we know that Doug has a habit of clicking the hyperlinks in emails that he shouldn't, we expect him to be more likely to engage with a hacker's social engineering tactics. This is our schema of Doug — that he is prone to poor security habits. Our expectation significantly enhances the training value of a particular video because of the spreading activation in memory that it creates between our expectations for what Doug will do (based on previous episodes) and what he actually does in this situation.

This constructed expectation adds significantly to the lesson in a way that traditional training could not. If Doug does engage with a social engineer, that reinforces our beliefs about Doug and will be better encoded because of greater memory elaboration. If Doug does not engage with the social engineer in this episode, that violates our expectations and leads to a different type of memory enhancement known as distinctiveness. In either case, we enhance the learning effect of a particular lesson by using familiar characters that inspire elaborate memories.

Leveraging the Distributed Learning Effect

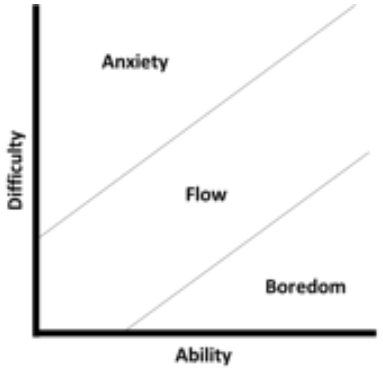
One of the oldest and most well-established research findings in educational psychology is known as the distributed learning effect. In the late 1800s, the German psychologist Hermann Ebbinghaus ran a sequence of experiments that involved learning a series of nonsense syllables and later recalling them. From this research he derived the "Learning Curve," which graphs proficiency of recall and the amount of time spent learning the syllable lists. Using this research as a starting point, educational and cognitive psychologists have established that the most effective way to learn a skill or topic is through repeated exposure and interaction over a given period.

This distributed learning effect is put to good use in training that uses a sitcom model of content delivery, i.e., that employs an ongoing set of cast members with personalities and proclivities that learners become familiar with over time, leading to a sense of familiarity. In the sitcom narrative context, lessons can revisit topics from different perspectives to reinforce learning without become repetitive. Relying upon a consistent cast helps to reinforce lessons without becoming dull and routine while also maximizing training effectiveness. In Mimecast's awareness training, two popular characters — named Human Error and Sound Judgement — represent the lesser and better angels of ourselves, with the former advocating for unsafe actions and the latter advocating for the more prudent option. Surveys of customer employees who have undergone the training show that they like and relate to these characters, and consider the characters' interactions a "great way for people to understand" the security lessons being taught.

An Autotelic Training Approach

The best way to get a pet dog to take medicine is to coat that medicine with something tasty. If done effectively, the dog will think of the medicine as a treat and eagerly await pill time. Making training that is enjoyable and does not feel like "work" engages autotelic learning (learning that is enjoyable for its own sake).[5] This inspires employees to actively engage with the content and to want to learn more on their own volition, potentially leading to psychological flow states.

Psychological flow states occur when someone becomes engrossed in an activity such as reading a book, playing a video game or working on a project. Flow states have an important relationship to learning because they occur when there is a perceived balance between the difficulty of the material and the learner's ability to absorb it. The learner will experience anxiety if material is perceived as too challenging, and boredom will set in if it is too easy. Research on the relationship between flow states and memory has shown benefits to memory encoding and recall for individuals while in this state.[6]



1. Source: Adapted from Flow: The psychology of optimal experience.[5]

[5] *Harper & Row.*
[6] *Canham, M., & Wiley, J. (2003). / Cognitive Technology, 8, 24-33.*

Two ways that instructional materials can induce a flow state are through narrative and humor. Narrative storytelling induces a flow state through engrossing content that relies on simple and relatable everyday situations. If you have ever lost yourself in a story while reading, you experienced a flow state through narrative. This approach leads to an autotelic state of intense focus and a sense of losing oneself in the moment. Learning during flow states is demonstrably enhanced.[7]

Humor is also believed to help induce flow states by lowering an individual's level of anxiety[8] related to learning the material. Humor can be another highly effective method to increase engagement by making material more approachable and entertaining. This is especially true for lessons that are not delivered in person because virtual courses can suffer from having "a socialization period" when compared to courses taught by a live instructor.[9] Overcoming this socialization period is important when lessons are taught through a virtual environment where a "live" instructor is not present. Without the copresence of an instructor, some students find it challenging to engage with material sufficiently enough for effective learning to occur. Customer feedback, again, indicates that this approach has been effective in keeping learners engaged and absorbing the material:

1.

"This was right on point. It kept my attention with the slight humor and the 'Human error & Sound Judgment shirts'. It held my attention and had me interested the entire time unlike some other learning modules."

2.

"I enjoy the videos, it's actually not painful to watch like other training videos and I can relate to them."

3.

"I have told many that humor via short clips is by far the best way to keep all of the non-IT folks out there engaged in this. Humor will also help them remember why the human error was a bad thing."

[7] *School Psychology International.*
[8] *Thinking with Children-3rd Global Conference*
[9] *E-Journal of Business Education and Scholarship of Teaching.*

Security Awareness
Training Effectiveness

While there is a significant amount of scientific research supporting the integration of humor and narrative into online SETA training, the question remains: Does this approach actually work? When considering the effectiveness of a training program, both quantitative (statistical data) and qualitative (text responses) information should be considered. The first gives insight into the degree of effectiveness and the second gives a sense for how it is received by the learners and how likely they are to continue engaging with the training.

During the initial shift to online work due to the COVID-19 pandemic, online social engineering attacks skyrocketed — some scams reportedly increased by as much as 820%.[10] In Mimecast's State of Brand Protection 2021 report, an analysis of data derived from the company's monitoring of its 40,000+ customers showed that employees who were not provided with Mimecast Awareness Training were 13.6 times more likely to click malicious links than those who were provided with the training.

Qualitative feedback from employees who have received the training also provides insights into the value of the training approach. Examples of some of the customer feedback include the following.

- "These scenarios are great. There's really nothing to be done to change or do better. The presentations are communicable and timely."
- "Funny videos and right to the point."
- "Keep making it funny."
- "We learn so much, it's funny and have your attention throughout the video. Love it!!!"
- "I think that this is the best training that I have experienced."
- "I love these trainings."
- "Keep the same actors in the videos. Good video!"
- "Awareness training is comical and easy to learn! Short and to the point, easy to remember, quick and engaging."

[10] *Tech Republic*

The Bottom Line

Mimecast's entertaining and humorous approach to content delivery is based on a solid foundation in cognitive and educational scientific research. These approaches have been shown to increase retention and recall by recruiting a diversity of memory systems, distributing lessons over an extended learning period, and increasing engagement through humorous narratives. Employee feedback demonstrates that people enjoy interacting with these lessons and the empirical evidence demonstrates the effectiveness of this approach.

Just as characters like Jerry Seinfeld and Kramer, Sheldon and Leonard, and Hawkeye and Honeycutt have drawn in tens of millions of habitual viewers over the course of decades, so, too, have Human Error and Sound Judgment embedded security lessons for thousands of Mimecast customers. Much like Kramer, Human Error can be erratic — reinforcing the point that this is not the character the learner should emulate. By contrast, Sound Judgment acts more like Jerry's character, as a sort of voice of reason. The familiarity of these characters shapes learner expectations for the prudent courses of action when faced with a potential threat. And using sticky narratives to Illustrate these lessons is a more effective approach to SETA training, inspiring learners to continue thinking about the lessons after the training has finished.

mimecast™

Mimecast was born in 2003 with a focus on delivering relentless protection. Each day, we take on cyber disruption for our tens of thousands of customers around the globe; always putting them first, and never giving up on tackling their biggest security challenges together.

We continuously invest to thoughtfully integrate brand protection, security awareness training, web security, compliance and other essential capabilities. Mimecast is here to help protect large and small organizations from malicious activity, human error and technology failure; and to lead the movement toward building a more resilient world.