Using Linguistically, Culturally, and Situationally Appropriate Scenarios to Support Real-World Remembering

Researched and Written by Will Thalheimer, PhD

A Work-Learning Research Document
© Copyright 2009 by Will Thalheimer
All rights are reserved
Value: $195, Available Free*
Number of Pages: 25 (8.5 x 11 inches)

WORK-LEARNING RESEARCH, Inc.

How to cite this report using APA style:

Thalheimer, W. (2009, April). *Using Linguistically, Culturally, and Situationally Appropriate Scenarios to Support Real-World Remembering.* Retrieved November 31, 2009, from http://www.work-learning.com/catalog/

Obviously, you should substitute the date on which the document was downloaded for the fictitious November 31 date.

Published April 2009

The Author: Will Thalheimer is a learning-and-performance consultant and research psychologist specializing in learning, cognition, memory, and performance. Dr. Thalheimer has worked in the workplace learning field, beginning in 1985, as an instructional designer, simulation architect, project manager, business leader, trainer, consultant, and researcher. He has a PhD from Columbia University and an MBA from Drexel University. He founded Work-Learning Research in 1998 to help client organizations create learning environments to maximize performance and help learning professionals—instructional designers, e-learning developers, trainers, performance consultants, talent managers, and chief learning officers—utilize research-based knowledge to build effective learning-and-performance solutions.

Dr. Thalheimer can be contacted at info@work-learning.com or at the Work-Learning Research phone number below for inquiries about learning audits, workshops, speaking engagements, high-level instructional design, and consulting on e-learning, classroom training, learning measurement, learning strategy, and business strategy for learning.

Work-Learning Research, Inc.
Somerville, Massachusetts USA
(617) 666-9637

www.work-learning.com

All information contained in this document is copyrighted.
© Copyright 2009 by Will Thalheimer. All rights are reserved.

Sharing Rules: You may copy and distribute this document as long as you (a) share it intact and whole, (b) don't charge a price for it, and (c) don't include it in any priced event or product, (d) don't share it in a manner that generates good will that might be translated in the future into tangible financial benefits.

We do not receive a salary for translating research into practical recommendations. If you abuse the spirit of the "Sharing Rules" describe above, you are not only stealing, you are limiting our ability to continue to support you and others in the learning-and-performance field!

Overview of Findings

Scenarios Support Long-Term Remembering

- Effective training methods must help learners understand and remember what they've learned. Methods that don't support remembering produce inadequate results. Some training methods are particularly good in supporting long-term remembering. We need to design these methods into our learning interventions. Presenting learners with information is not sufficient to induce remembering. Well-designed decision-making scenarios are particularly potent in creating long-term remembering.

Scenarios that Require Decision-Making Provide Memory-Retrieval Practice

- Research has found that learners who practice retrieving information from memory today are better at retrieving the same information from memory at a later time. In the published research, many studies have found improvements in remembering due to retrieval practice in the range of about 30% to 100%. Since scenarios require memory retrieval, we might expect similar benefits.

Scenarios Can Enable Context-Triggered Remembering

- Research has found that learners remember more of what they've learned when the learning context is similar to the retrieval context than when it is not. Many studies have found improvements in remembering due to such context alignment in the range of about 5% to 40%. In using context-appropriate scenarios, we might expect similar benefits.

Scenarios Can Enable Language-Triggered Remembering

- Research has found that learners are more likely to recall information if it is aligned with the language cues they encounter. For example, a person equally fluent in English and Spanish will be more likely to recall information learned in Spanish while they are working in a Spanish-speaking office and more likely to recall information learned in English in an English-speaking office. In three published research studies, benefits due to such context alignment averaged about 50%.

Culturally-Relevant Scenarios Boost Learning and Performance

- Research has found that behavior-change programs tailored to cultural differences are often more effective than non-tailored programs. For example, one meta-analysis found a four-fold improvement due to culturally-tailored programming in comparison to a two-fold increase due to language-appropriate programming. In using culturally-appropriate scenarios, we may create additional learning benefits.

Author's Introduction

Hi. I'm Dr. Will Thalheimer, a consultant and researcher specializing in learning fundamentals, instructional design, performance improvement, learning measurement, and workplace learning. I help people create more effective learning interventions by building bridges between learning research and learning practice. There is wisdom in both camps, but only by integrating the two can we maximize our learning outcomes.

This research-to-practice report focuses on the use of decision-making scenarios in bolstering learning—and specifically scenarios that are linguistically, culturally, and situationally appropriate. I've been researching and writing on this topic for a number of years, starting with my work in 1998 on fundamental learning factors that create the benefits inherent in using scenarios, and continuing through my work on simulation-like questions and in recent work of the past two years on feedback and behavior change.

This report is designed to outline best practices in scenario design and implementation. I certainly won't claim to have all the answers, nor do I think simple recipes are always available to us in learning design. I do believe strongly, however, that scenarios are a critical tool that we should all have in our learning-development toolboxes.

I would like to thank SAI Global for agreeing in advance of my writing efforts to license this report for the benefit of their clients. SAI Global is available on the Web at www.saiglobal.com/compliance.

This Report's Design

This is a research-to-practice report. It provides an overview of the principles and factors involved in scenario design, written so that the key concepts can be easily understood. Research support is offered in footnotes and in cited references.

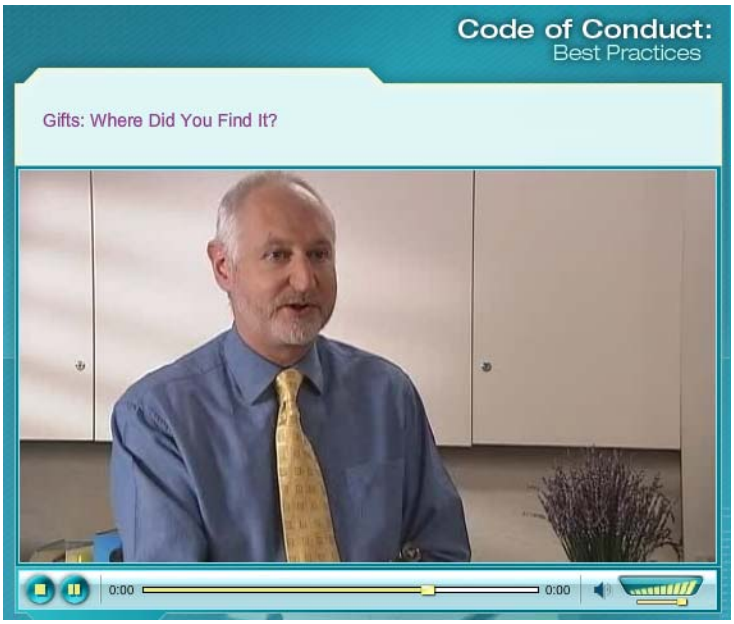
Because some of the concepts and terminology in this report may introduce you to new paradigms, some of the concepts may seem foreign at first. As their power becomes evident—as you build new mental models of these concepts—any initial fog you might experience will clear. Only by gaining a deep understanding can we make optimal learning-design decisions. This report is written specifically to help you utilize decision-making scenarios with wisdom and perspective.

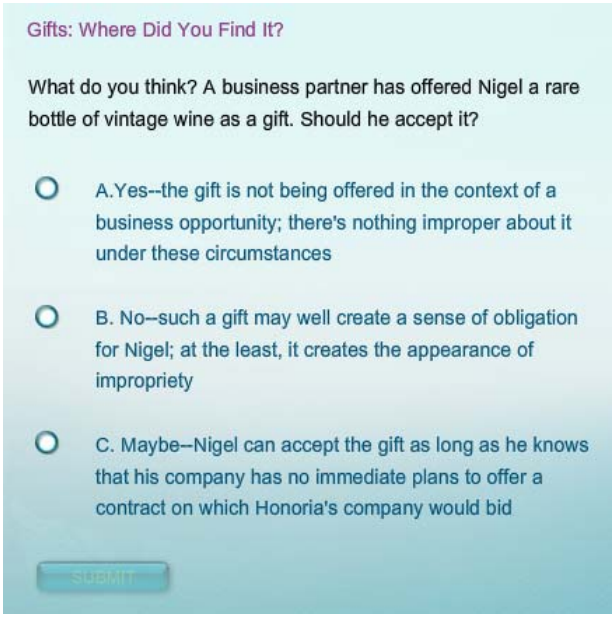
Importance of Learner-Appropriate Scenarios

Today our organizations are global, our employees come from a broad array of different ethnic and cultural backgrounds, and our customers represent a great mosaic. Accelerating changes in markets, work environments, and business structures force quick learning and immediate relevance. The benefits from linguistically-, culturally-, and situationally-appropriate scenarios are more important today than ever before. They provide exacting models of performance as they bolster learning and remembering.

Multimedia Decision-Making Scenarios. What are they?

Multimedia decision-making scenarios are presented to learners as realistic situations they may face on the job. Learners interact with these scenarios by viewing and listening to the information presented and making decisions about what actions to take. The following e-learning program presents a video scenario and then asks learners to respond with a decision[1].





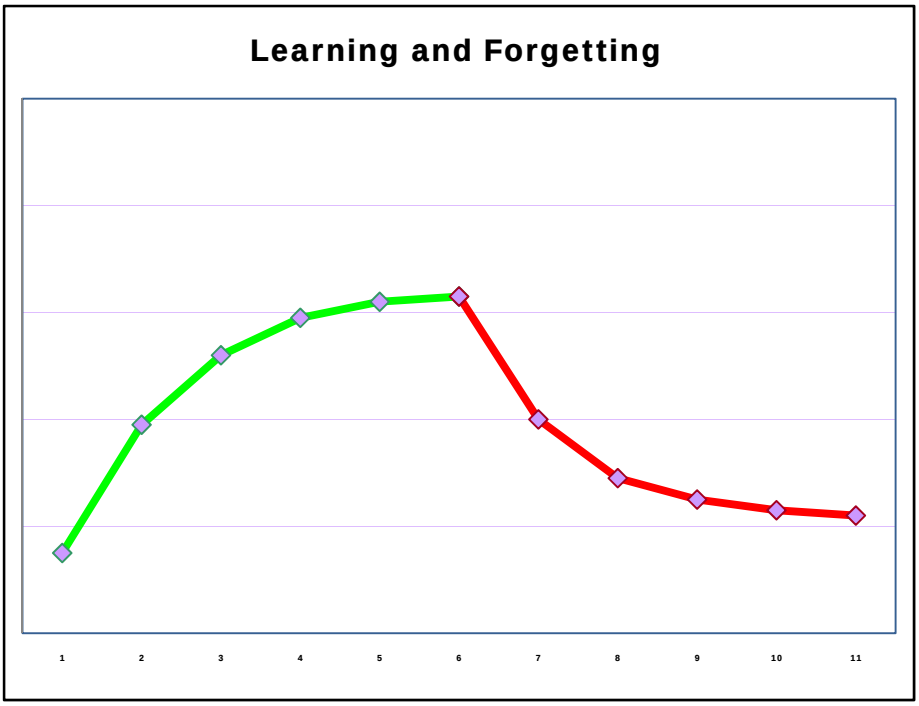
[1] Scenarios courtesy of SAI Global.

As we will see in the next section, multimedia decision-making scenarios offer several advantages from a learning perspective—especially in preparing learners to use the learned information in their jobs.

- Scenarios ask learners to respond to realistic situations, thus better preparing learners for those real-world situations.
- Scenario-based decisions prompt realistic memory retrieval, maximizing the chances that learners will remember what they learned over the long haul.
- Scenarios provide learners with feedback about their understanding, speeding and improving the learning process.

Benefits of Using Decision-Making Scenarios

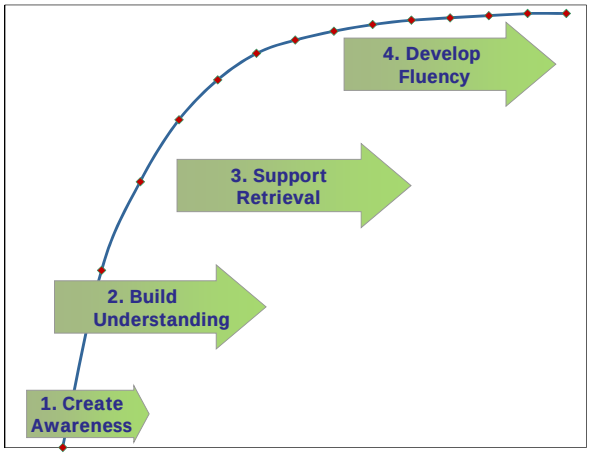
As training professionals our two most fundamental responsibilities are to ensure that learners ***understand*** the learning content and can ***remember*** to utilize that information when they are faced with on-the-job situations that require it. As the graph below shows, learning gains can be eclipsed by forgetting[2].



[2] The trajectory of learning and forgetting curves depends on a host of factors. Suffice it to say that much of what is learned—if not reinforced afterwards—may be lost to forgetting after only a few weeks or months.

Retrieval Practice

To create learning that minimizes forgetting, we have to design our learning interventions to go beyond awareness and understanding. We have to provide our learners with retrieval practice[3]. In other words, we need to give them practice retrieving information from memory.



Retrieval practice—although perhaps sounding like obscure jargon—is simply the process of giving learners practice in remembering. Asking a sales trainee to respond verbally to simulated clients evokes retrieval practice. Having someone consider a topic from various perspectives promotes retrieval practice. Having a group of learners discuss a topic induces retrieval. Retrieval practice is even involved in motor skills—as when a fork-lift operator uses leg and arm movements to move a pallet loaded with boxes. The key finding from the learning research is that learners who retrieve information from memory today are better at retrieving the same information from memory at a later time[4]. To be clear that retrieval refers to memory retrieval, in the rest of this report I will sometimes use the terms ***memory retrieval*** or ***memory retrieval practice***. Remember this: retrieval is memory retrieval.

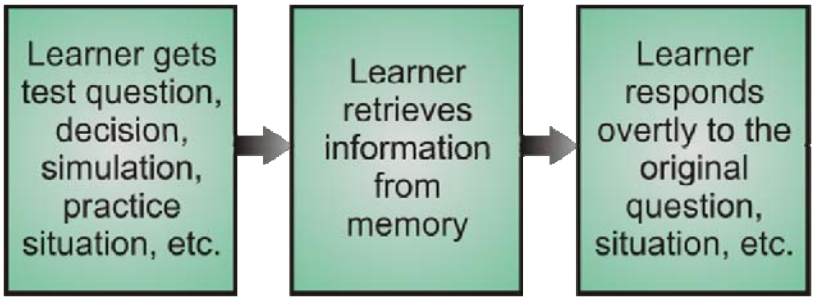
The best way to enable future retrieval is to figure out the salient cues in the future situation, and then give learners practice retrieving information given those cues (or realistic facsimiles of those cues). In short, the best way to enable future retrieval is to provide memory retrieval practice.

---

[3] Note that sustained retrieval practice will lead to fluency.

[4] Many researchers have found that providing retrieval practice after learners have learned something is more effective in promoting their later performance than providing additional time to study the material (Roediger & Karpicke, 2006; Butler & Roediger, 2007; Nungester & Duchastel, 1982; Hogan & Kintsch, 1971; Cuddy & Jacoby, 1982; Kuo & Hirshman, 1996; Izawa, 1992; Allen, Mahler, & Estes, 1969; Jones, 1923-1924).

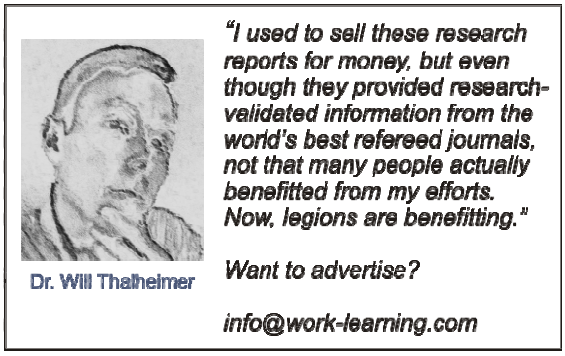
The following diagram highlights the retrieval practice process:



Decision-making scenarios prompt retrieval practice—learners have to retrieve information to make decisions. Such practice bolsters on-the-job remembering better than information presentation alone.

As learning professionals we have a number of methods we can employ to induce memory retrieval practice. The following list includes some of the most commonly used methods:

- True-False questions
- Multiple-choice questions
- Matching questions
- Recall questions
- Essay questions
- Problems to solve
- Case studies
- Simulations
- Decision scenarios
- Skill demonstrations
- Hands-on practice
- Discussions
- Oral responding
- Action planning



The example on the following page outlines how retrieval works, using a simple example, retrieving from memory the meaning of the word *fosse*.

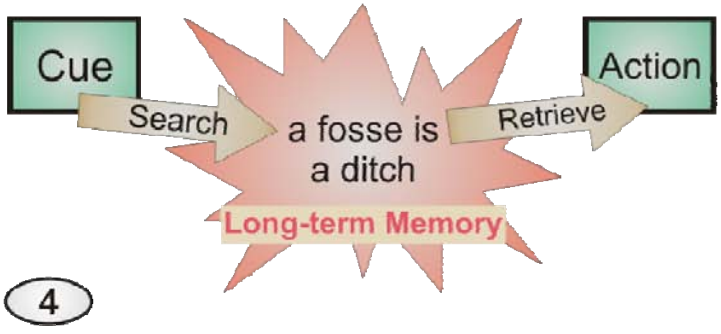
Memory Retrieval Example

1. After learners encode information and store it in long-term memory, the information remains there until it is triggered by external events. Here, the stored information is "a fosse is a ditch."

2. When the learner encounters a cue, for example the word "fosse" or the question, "What is a fosse?," the retrieval process is triggered.

3. The learner searches memory. Because the information was well learned, the learner is able to access the information.

4. The learner then retrieves the information (into working memory) and is able to make an overt response (for example, saying "a fosse is a ditch.")



Using Realistic Situations Enables Future On-the-Job Remembering

Retrieval practice is even more powerful when it utilizes realistic situations that learners will face on the job. When decision-making scenarios simulate future workplace situations, learners are more likely to be reminded of what they previously learned.

If you look at the retrieval example and the accompanying diagrams on the previous page, you'll see how the retrieval process works. Learners are presented with cues, and those cues trigger memory retrieval. When cues reliably trigger retrieval, we say that our learners can remember what they learned.

The trick then is to design learning materials that anticipate the cues that the learners will face on the job. For example, the most salient cues for a person learning Microsoft Excel are the rows, columns, and menus visible on an Excel spreadsheet. The most important cues for a manager learning leadership skills might be represented in a staff meeting, a face-to-face meeting between a manager and employee, or the sound of a phone conversation between a manager and a direct report.

The best memory-retrieval-practice events are designed to mirror future retrieval situations—those that incorporate the most important and realistic cues the learners will face on the job. Inspired by the excellent work of Shrock and Coscarelli[5], I created the following taxonomy of retrieval authenticity, starting with the highest level of authenticity and ending with the lowest level of authenticity[6].

A. Real-World Performance
B. High-Fidelity Simulations
C. High-Fidelity Decision-Making Scenarios
D. Low-Fidelity Simulations
E. Low-Fidelity Decision-Making Scenarios
F. Memorization of Critical Information
G. Memorization of Perfunctory Information

The higher the level of authenticity in our retrieval-practice situations, the better the long-term retrieval. Again, this is true because when learners encounter real-world cues on the job, they will be successful in memory retrieval to the extent that they have practiced retrieval with cues analogous to those on the job. By providing retrieval practice during learning, we promote "spontaneous remembering" when learners encounter similar cues on the job.

---

[5] Shrock and Coscarelli (2007).

[6] Thalheimer (2007). While the list puts high-fidelity decision-making scenarios above low-fidelity simulations, this ordering could be reversed depending on the level of fidelity of each in comparison with what is most important for the learner to be able to do.

Research support on the importance of aligning the learning context and the future retrieval context—for example aligning cues used in learning to cues learners will face in their on-the-job situations—is strong[7]. Context alignment effects have been found using many types of contextual cues, including situations, smells, music, noise, and even internal contexts such as mood and drug use. The bottom line is that contextual triggering of learned information is a fundamental aspect of human learning[8]. Scenarios, if well designed to simulate on-the-job decisions, utilize this cognitive mechanism to bolster long-term remembering.

---

[7] Research psychologists have found that learners will retrieve more information from memory if they try to retrieve that information in the same room in which their learning took place (e.g., Smith, Glenborg, & Bjork, 1978). Similarly, when scuba divers learn underwater, they recall more underwater than nearby on land, and vice versa (e.g., Godden & Baddeley, 1975). When people learn during a time when they are sad, they'll remember more when they're sad, and vice versa (e.g., Bower, Monteiro, & Gilligan, 1978; Eich, 1995; Smith, 1995). When people learn under the influence of alcohol or marijuana, they recall more when tested under the influence, and vice versa (e.g., see studies reviewed by Eich, 1980). When people learn while smelling peppermint, they retrieve more information when smelling peppermint than when smelling osmanthus, and vice versa (Herz, 1997); they remember more when smelling chocolate when they learned while smelling chocolate (Schab, 1990); and they remember more about a long-ago museum visit when they are reintroduced to the museum's unique smell (Aggleton & Waskett, 1999). When college students learn with loud noise as a background, they do better on tests when those tests are accompanied by loud noise; silent studying improves performance during silent test-taking as well (Grant, Bredahl, Clay, Ferrie, Groves, McDorman, & Dark, 1998). If people have learned while listening to Mozart, they retrieve more of the learned information while listening to Mozart than they do while listening to jazz (Smith, 1985). Bilinguals interviewed in Russian remembered more "Russian" memories than English memories, and when interviewed in English remembered more "English" memories (Marian & Neisser, 2000). These varied results show that context—whether it is environmental, emotional, or physiological—can provide cues that aid future retrieval of learned information. In other words, returning to the same context facilitates retrieval of information learned in that context (for reviews see Bjork & Richardson-Klavehn, 1989; Smith, 1988; Smith & Vela, 2001; Eich, 1980; Roediger & Guynn, 1996; Davies, 1986).

Percentage improvements have been found of 28% and 41% when people recall information in the same room in which they learned the information instead of recalling information in a different room (Smith, Glenberg, & Bjork, 1978); 30% and 50% for same place over different place (Smith, 1979); 47% for same context (on land or under water) over different context (Godden & Baddeley, 1975); 29% for a short-answer test and 13% for a multiple-choice test for same context (noisy or silent) over different context (Grant, Bredahl, Clay, Ferrie, Groves, McDorman, & Dark, 1998); 33% for same context (odor/music at both learning and performance) over different context (odor/music only at learning) (Parker & Gellatly, 1997); 105% and 53% for same language context over different language context (Marian & Neisser, 2000); and 27% and 22% for same place and mood contexts over different ones (Eich, 1995). It is difficult to know how these results might relate to our own learning designs. Researchers have found circumstances that context doesn't produce significant benefits, which might suggest we could find lesser benefits. On the other hand, the research context effects are found using incidental background cues—not the more-salient cues that we might use in our scenarios—so these results might be substantially diminished from the benefits we could obtain from using realistic scenarios to support learning. To be conservative, we could estimate a 5% to 40% improvement due to the alignment of context between learning and retrieval situations.

[8] Context alignment is so fundamental that it has been codified in the "encoding-specificity" principle (Tulving & Thompson, 1973) and in the notion of "transfer-appropriate processing" (Bransford, Franks, Morris, & Stein, 1979).

Using Multimedia to Present Situations

Because the cues that people pay attention to on the job are predominantly visual and auditory, using multimedia to present scenarios may offer advantages over text-based presentations or audio or visuals presented alone. The more realistic the cues in the learning, the more likely they will be in triggering future retrieval. Multimedia should not be used willy-nilly, but should be intentionally designed to present realistic situations and avoid difficulties of visual or auditory overload[9].

Using Linguistically Appropriate Scenarios

If our goal is to simulate as much as possible a full range of the most important cues that our learners face in their day-to-day experiences on the job, what happens when we have learners with different linguistic backgrounds? Is it important to create scenarios with language cues that our learners are likely to encounter in their jobs? While scenarios themselves have not been researched directly in this regard, there are several strands of research that are suggestive.

Before moving on to that research, let me clarify one thing. It should be obvious that if our learners cannot understand the language used in the scenarios, they won't learn the key points presented. Similarly, if they have trouble understanding the language presented, they'll have trouble understanding the learning content and remembering it. That's a no-brainer. So, what we're talking about are situations where our learners are competent in the language of the learning presentation, whether they are bilingual (as more than 50% of the world is sometimes estimated to be[10]), multilingual, or are monolingual in a language different than the learning developers.

Language Cues during Learning should Match Language Cues on the Job

Since the research is clear that the contextual cues during learning should be similar to the contextual cues during retrieval, it follows that scenarios will be more effective if they utilize linguistically-appropriate cues. So for example, if an English-speaking company is producing an e-learning program for a French-speaking affiliate, scenarios will produce more retrieval if they are conveyed in French. The French spoken on the job will then be more likely to trigger retrieval if the scenarios had been conveyed in French than in English[11]. However, if the

---

[9] See for example research by Mayer, Heiser, & Lonn (2001); Moreno & Mayer. (2002); Moreno & Mayer (2000), which showed that adding interesting multimedia visuals or sounds can sometimes make the learning task more difficult. See Thalheimer (2004) for a discussion of boundary conditions on these effects.

[10] French and Jacquet (2004, p. 87) said, "It is widely assumed that at least half of the world's population is bilingual."

[11] Marian and Fausey (2006) found that Spanish-English bilinguals who learned information about History, Biology, Chemistry and Mythology in two languages, were more accurate and retrieved information faster

French-speaking affiliate conducts business in English, then using English in the scenarios is more likely to trigger retrieval. This assumes that the first-language French speakers are competent in English. If they are only semi-fluent in English, the benefits of the context-based retrieval triggering have to be weighed against the disadvantages of potentially inadequate second-language comprehension. It may be beneficial to use a first-language first, second-language second approach when the non-dominant language is the primary workplace language. In other words, it may benefit learners to see the scenarios repeated in both their first language and the workplace language—a general finding[12].

Culturally-Appropriate Scenarios Can Trigger On-the-Job Remembering

Scenarios that are culturally appropriate may minimize difficulties that culturally inconsistent content may induce. While I could find no research directly testing the cultural aspects of decision-making scenarios themselves, other research is suggestive. As before, the research on contextual alignment may be the most important. For example, if a scenario includes a bottle of wine as a gift for American audiences, in places where alcohol is taboo, the scenario may not just be perceived as weird or offensive. In terms of contextual alignment, such a scenario will fail to utilize real-world cues that could trigger later remembering. To wit, if learners never encounter bottles of wine in their day-to-day lives, then bottles of wine will never trigger reminders about the content of the learning[13].

---

when the language of retrieval and the language during learning matched than when they did not match. Improvements averaged about 24%. Marian and Neisser (2000) found that bilinguals interviewed in Russian remembered more "Russian" memories than English memories, and when interviewed in English remembered more "English" memories. Better recall due to context was 105% in Experiment 1, and 53% and 24% in Experiment 2, depending whether the context triggers were due to language ambiance or the words themselves, respectively. Marian and Kaushanskaya (2007) found that bilinguals interviewed in Mandarin produced more "Chinese-relevant" retrievals (Statue of Mao) but produced more "English-relevant" retrievals (Statue of Liberty) when interviewed in English. Benefits of same-context over different context were 92% and 60%, but were not found when only one answer might be correct. If we took these studies altogether, average improvements of same-context language is about 51%.

[12] Durgunoğlu and Roediger (1987) found that, for free recall, reading a word once in Spanish and once in English produced better recall (35%) than reading the word twice in English (16%) or twice in Spanish (23%), an overall improvement in remembering of about 56%. Glanzer and Duarte (1971) found similar results. Both papers show that varying the language modality of the repetition helps subsequent retention when learners are faced with massed repetitions. But bilingual repetitions don't always produce better results. Durgunoğlu, Mir, and Ariño-Martí (1993) found positive results in Experiment 2 but not in Experiment 3.

[13] A facilitated discussion of the scenario could enable an instructor to ask learners for culturally-appropriate replacements for the wine-bottle gift (such replacements might be artwork, food, or gift certificates). Such a replacement might enable the new cues to act as memory triggers. Note that self-study e-learning programs may have difficulty facilitating such thinking. Moreover, whether such cue replacement will have as powerful an effect as using an appropriate cue in the first place is debatable. On the down side, the replacement might create interference or dilute the effect in some other way. On the plus side, cognitively elaborating on the gift concept may strengthen the triggering effect or may spread the

Culturally-Appropriate Scenarios May be Better Received

Other research on cultural factors in learning includes findings that show learners being more successful in learning when the learning materials are culturally appropriate. For example, in one study English-language learners wrote more fluently about an English passage they had read if the passage was culturally familiar than if it was culturally unfamiliar[14]. Surprisingly, published research of this kind seems very limited[15]. Much more research has been done on cultural tailoring of educational health interventions. In that research, interventions have generally been found to be more successful when they are tailored to the cultural background of the target audience[16]. For example, the authors of a meta-analytic research review on mental-health behavior-change reported that "interventions targeted to a specific cultural group were four times more effective than interventions provided to groups consisting of clients from a variety of cultural backgrounds."

The bottom line is that while translating a learning program to make it more linguistically appropriate is beneficial, results can probably be further improved by making it culturally-appropriate as well. In other words, it may not be enough to translate words—our scenarios have to be reconceptualized from the learners' cultural standpoint. In the scenario below, intended for Indian audiences (Hindi speakers), a business gift in the form of a bottle of wine has been replaced with an electronic gadget[17].

---

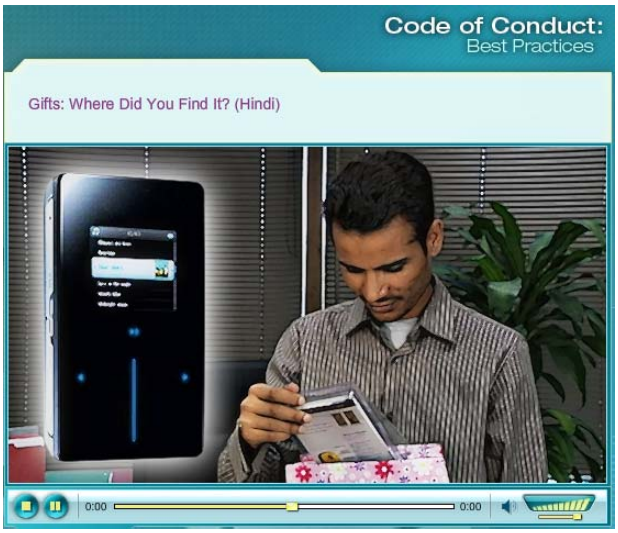
triggering effect to a wider number of cues. It's difficult to know without further research.

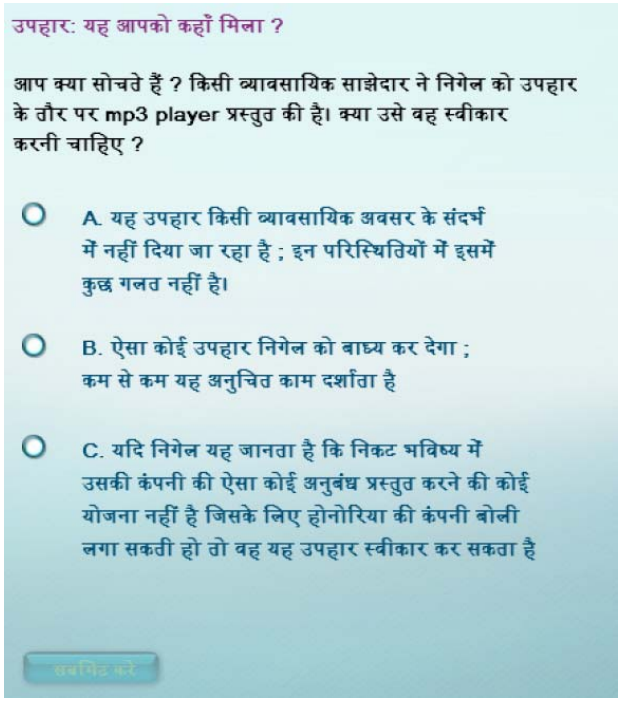
[14] Winfield & Barnes-Felfeli (1982). This type of effect is consistent with the more general finding that people's schemas affect what they perceive and what they learn (for example see Pichert & Anderson, 1977), although the directionality of this finding is not clear as people have been shown to remember both schema-consistent and schema-inconsistent information (for example, see Rojahn & Pettigrew, 1992).

[15] It is unclear whether this reflects a simple lack of research on the effects of culturally-tailored content, or whether research efforts in this area are difficult to separate from bilingual research efforts, or is caused by a publication bias against research results that find no differences between treatments.

[16] Griner and Smith (2006) conducted a meta-analysis regarding mental health services and found, "Interventions targeted to a specific cultural group were four times more effective than interventions provided to groups consisting of clients from a variety of cultural backgrounds. Interventions conducted in clients' native language (if other than English) were twice as effective as interventions conducted in English." (p. 531). Springer, Sale, Kasim, Winter, Sambrano, and Chipungu (2004) found that substance-abuse programs were better received when culturally-specific programming was used. They also found that culturally sensitive programs for African-American youth were more effective than non-tailored programs.

[17] Scenario courtesy of SAI Global.





Courtesy of SAIGlobal (www.SAIGlobal.com/compliance)

People from Different Cultures May Actually Learn Differently

Cultural effects on learning may be even more complicated than modifying content to make it culturally appropriate. There is a growing body of evidence that people from different cultural backgrounds approach learning in different ways[18]. There have even been findings that there are neurological differences during learning between people of different cultures[19]. So, for example, it appears that Western learners (for example, most Americans, Europeans) may focus more on central objects in a scenario and may be more compelled to demonstrate their independence and question instructors or learning materials early in learning. East Asian learners (for example, most Chinese and Japanese) may be more compelled to learn the breadth of the learning material before beginning to question or reformulating the information, are more likely to pay attention to peripheral objects and people portrayed in a scenario, and are more likely to be concerned with what the collective of individuals considers is important.

These findings are too new and unproven to have yet produced clear recipes for learning design. It would be premature to charge full force in following recommendations. Nevertheless, several conjectures come to mind in thinking about the design of decision-making scenarios based on the research just cited. I offer these to illustrate some of the leverage points you may have in designing decision-making scenarios.

Here are my best-guesses at this point in time: First, for scenarios presented to non-Western audiences, the background context may be especially critical. Moreover, in video or photo development, very good actors and direction need to be used to ensure that non-focal actors are exhibiting the right emotional tone required in each scene. Second, it may be helpful to frame questions for non-Western audiences using a more collectivist approach. So for example, instead of asking learners for the best answer, we might ask, "Which answer would be considered most acceptable at your company?" Third, using scenarios as prequestions—providing the scenario questions before we introduce the concepts targeted by those questions—may be better used with Western audiences, who are

[18] Tweed and Lehman (2002) reviewed evidence of different cognitive processing between culturally Western and culturally Chinese learners. Masuda, Ellsworth, Mesquita, Leu, Tanida, and Van de Veerdonk (2008) looked at how Westerners and Japanese differed in responding to facial emotions. They found that Japanese were more likely to look at other people depicted in a scene in evaluating the person at the center of attention. Howard (1991) has argued that every culture utilizes a small number of dominant stories. These stories are understood by everyone and are used to make sense of the different situations they face in their daily lives.

[19] Lewis, Goto, and Kong (2008), examining neural activity, found that, European Americans had greater target P3 amplitudes, whereas East Asian Americans showed greater novelty P3 amplitudes. They concluded that the results were consistent with a pattern of neural activity that has been associated with cultural differences in contextual sensitivity. Specifically, it supports the observation that East Asians are typically more sensitive to situational context and attend to a wider portion of the perceptual field, and that European Americans focus more on the focal object and are more field independent.

especially fond of jumping into material without authoritative support. Fourth, Western audiences may benefit from going beyond the strict multiple-choice format, especially multiple-choice forms that frame answers in terms of right or wrong—to enable learners to express their individualism and questioning.

Benefits May Accrue by Matching the Culture of Learner and Narrator

The cultural match between the learner and the narrator may also impact engagement and learning. In health education, behavior change has been found to be more likely when drug users were presented with information from other drug users, young people listened to young people, or African American women learned from African American women[20]. While decision-making scenarios may not utilize narration explicitly, the transition from one scenario to another or from scenario to learning material requires some sort of narrative glue within those transitions. Perhaps adding a culturally-matched narrator or culturally-matched narrative would support greater learning.

Facilitated Storytelling May Overcome Cultural Differences

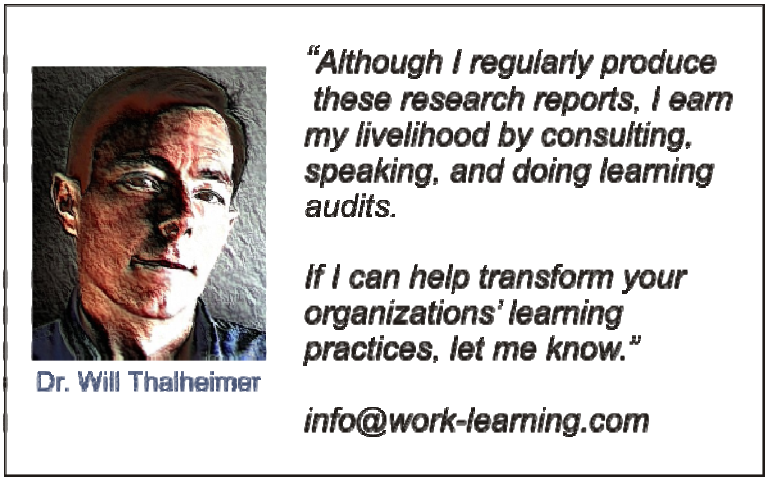
One method that has shown success in overcoming cultural differences in learning—albeit in children—is the use of stories in a facilitated learning environment (for example, where an instructor is available to facilitate discussions between learners)[21]. Stories, even if they contain culturally-inappropriate referents, can be understood because the human themes in the stories resonate and shape understanding. Instructors can ask learners about the culturally-inappropriate references, or answer questions about those objects—all in an effort to enable the learners to replace those referents with culturally-appropriate referents. So for example, while teaching Americans using a story from the Middle East, the learners might ask what "baklava" is. The instructor could explain that it is a type of sweet dessert and suggest that the learners might think of it as a piece of really good "cake."

[20] Durantini, Albarracı´n, Mitchell, Earl, Gillette (2006), in the area of HIV education, found that, "First, women and girls changed their behavior more in response to female interventionists and interventionists of the same ethnic group than in response to male interventionists and to interventionists of a different ethnic group. Second, young people were more persuaded to use condoms when the interventionists were also young than when the interventionists were older than them. Third, interventions were more effective for people with African ethnicities when the interventionist was also from an African ethnicity than when the interventionist was from a European ethnicity." (p. 235). Kalichman, Kelly, Hunter, Murphy, Tyler (1993) found that African American women responded better to a health message when delivered by an African American messenger.

[21] Ghosn (2004) found that using stories was more effective in teaching English to children in Lebanon than using standard exercises.

Learning and Culture Need to be Tested in Your Environment

Let me reiterate that some of the recommendations in this section are conjectures on my part. Do not design your programs using these conjectures without testing the ideas in small pilot tests using well-designed evaluations. Note also the huge difficulty of deciding what cultural categories your learners fall into. In what cultural category do ethnically-Chinese Canadians born in Vancouver of Hong Kong émigrés fit? Probably in the Western category since they've gone to school in Vancouver, but can we really be sure? Where do Armenians, Egyptians, Ethiopians, Indians, or Peruvians belong? Finally, note that while most of the recent research has focused on East-West differences, there are many cultural differences that may also have an impact on learning. Hofstede's research from the 1980's—recently revalidated in 2002—uncovered over 40 distinct national cultures and outlined a number of different dimensions of culture[22]. Certainly even here in the United States where I write these words, there are important differences marked by socio-economics, geography, education, ethnicity, assimilation, age, politics, gender, and the rural-urban divide. Perhaps these differences are just as critical in the design of scenarios and examples.



[22] Hofstede, 1980, 2002.

Other Learning-Design Considerations to Further Bolster the Power and Effectiveness of Scenarios

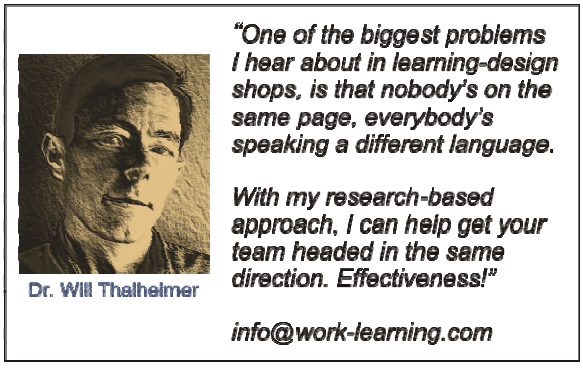
Decision-making scenarios may benefit from repetition and spacing. While you might repeat an exact scenario after waiting a day or two, using different scenarios covering the same learning point may be more effective. The bottom line is that spaced repetitions can be a powerful way to support long-term remembering and retrieval on the job[23].

Scenarios can be used both as prequestions—to introduce a concept—and as postquestions—to enable learners to test their understanding and to reinforce long-term retrieval. Prequestions are particularly effective in helping guide learner attention to critical information in the subsequent learning material[24].

Scenarios provide an opportunity to provide feedback to learners after they make an answer. Follow feedback guidelines of the type recommended in my research-to-practice report on feedback, available free at www.work-learning.com/catalog.

Quick Summary

We've looked at various design factors that can influence the learning results of decision-making scenarios. We began by looking at the value of memory retrieval practice. We discussed the criticality of ensuring that scenarios utilize contextual cues that learners will face in their work situations—so that those real-world cues will later trigger memory retrieval of the information that was learned. We looked at the benefits of multimedia in providing such contextual cues. We examined the importance of using language cues and we explored the benefits inherent in using culturally-appropriate scenarios. And finally, we looked at how repetitions, spacing, and feedback can be used to boost learning outcomes.



[23] Thalheimer (2006). *Spacing Learning Events Over Time*.
[24] Thalheimer (2004).

Overall Recommendations

1. Utilize decision-making scenarios. Consider using them not just in a minor role—for example at the end of a section—but integrated into the main narrative of your learning design.

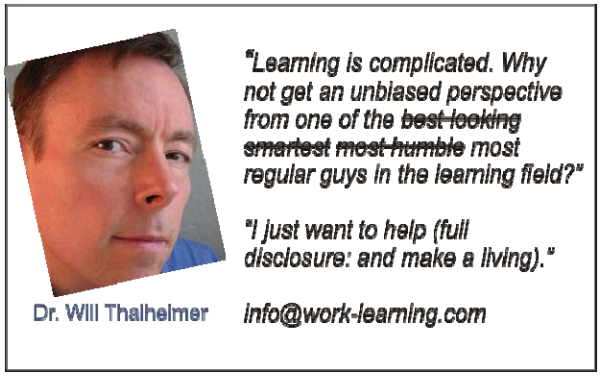
2. Figure out what the salient cues will be in the workplace situations that your learners will face in utilizing the content you are conveying. As much as possible, simulate those cues in your decision scenarios. Consider using multimedia to augment this effect, relying on excellent acting, directing, and set design to enable the context effects that will trigger remembering.

3. In simulating workplace cues, consider the range of cues that your learners will pay attention to in their work, including background objects, people and their facial expressions, language cues, and cultural referents.

4. Determine the most important points you want to get across AND the most important situations in which these points are critical. Then, provide extra repetitions spaced over time on these key points and situations.

5. Utilize culturally-appropriate objects, backgrounds, actors, and narrators in creating your scenarios. Consider not just ethnicity, but the many aspects of culture, including such things as socio-economics, education, international experience, immersion in popular culture, age, etc.

6. Pilot test new designs using valid evaluation methods to determine the most effective designs for your learners, your workplace situations, and your learning points.



References

Aggleton, J. P., & Waskett, L. (1999). The ability of odours to serve as state-dependent cues for real-world memories: Can Viking smells aid the recall of Viking experiences? British Journal of Psychology, 90, 1-7.

Allen, G. A., Mahler, W. A., & Estes, W. K. (1969). Effects of recall tests on long-term retention of paired associates. *Journal of Verbal Learning and Verbal Behavior, 8,* 463-470.

Anderson, R. C., & Pichert, J. W. (1978). Recall of previously unrecallable information following a shift in perspective. *Journal of Verbal Learning & Verbal Behavior, 17,* 1-12.

Bjork, R. A., & Richardson-Klavehn, A. (1989). On the puzzling relationship between environmental context and human memory. In C. Izawa (Ed.) *Current Issues in Cognitive Processes: The Tulane Floweree Symposium on Cognition* (pp. 313-344). Hillsdale, NJ: Erlbaum.

Bower, G. H., Monteiro, K. P., and Gilligan, S. G. (1978). Emotional mood as context for learning and recall. *Journal of Verbal Learning and Verbal Behavior, 17,* 573-585.

Bransford, J. D., Franks, J. J., Morris, C. D., & Stein, B. S. (1979). Some general constraints on learning and memory research. In L. S. Cermak & F. I. M. Craik (Eds.), *Levels of processing in human memory* (pp. 331-354). Hillsdale, NJ: Erlbaum.

Butler, A. C., & Roediger III, H. L. (2007). Testing improves long-term retention in a simulated classroom setting. *European Journal of Cognitive Psychology, 19,* 514-527.

Cuddy, L. J., & Jacoby, L. L. (1982). When forgetting helps memory: An analysis of repetition effects. *Journal of Verbal Learning and Verbal Behavior, 21,* 451-467.

Davies, G. (1986). Context effects in episodic memory: A review. *Cahiers de Psychologie Cognitive, 6,* 157-174.

Durantini, M. R., Albarracín, D., Mitchell, A. L., Earl, A. N., & Gillette, J. C. (2006). Conceptualizing the Influence of Social Agents of Behavior Change: A Meta-Analysis of the Effectiveness of HIV-Prevention Interventionists for Different Groups. *Psychological Bulletin, 132,* 212-248.

Durgunoglu, A. Y., & Roediger, H. L. (1987). Test differences in accessing bilingual memory. *Journal of Memory and Language, 26,* 377-391.

Durgunoglu, A. Y., Mir, M., & Ariño-Martí, S. (1993). Effects of repeated readings on bilingual and monolingual memory for text. *Contemporary Educational Psychology, 18,* 294-317.

Eich, E. (1995). Mood as a mediator of place dependent memory. *Journal of Experimental Psychology: General, 124*(3), 293-308.

Eich, J. E. (1980). The cue dependent nature of state dependent retrieval. *Memory and Cognition, 8*, 157-173.

French, R. M., & Jacquet, M. (2004). Understanding bilingual memory: Models and data. *Trends in Cognitive Sciences, 8*, 87-93.

Ghosn, I. (2004). Story as Culturally Appropriate Content and Social Context for Young English Language Learners: A Look at Lebanese Primary School Classes. *Language, Culture and Curriculum, 17*, 109-126.

Glanzer, M., & Duarte, A. (1971). Repetition between and within languages in free recall. *Journal of Verbal Learning & Verbal Behavior, 10*, 625-630.

Godden, D. R., and Baddeley, A. D. (1975). Context dependency in two natural environments: on land and underwater. *British Journal of Psychology*, *91*, 99-104.

Grant, H. M., Bredahl, L. C., Clay, J., Ferrie, J., Groves, J. E., McDorman, T. A., & Dark, V. J. (1998). Context-dependent memory for meaningful material: Information for students. *Applied Cognitive Psychology, 12*, 617-623.

Griner, D., & Smith, T. B. (2006). Culturally Adapted Mental Health Intervention: A Meta-Analytic Review. *Psychotherapy: Theory, Research, Practice, Training, 43*, 531-548.

Herz, R. S. (1997). The effects of cue distinctiveness on odor-based context-dependent memory. *Memory & Cognition, 25*(3), 375-380.

Hofstede, G. (1980) *Culture's Consequences: International Differences in Work-related Values.* Beverly Hills, CA: Sage.

Hofstede, G. (2002) Dimensions do not exist: A reply to McSweeney. *Human Relations 55*(1), 1355–1361.

Hogan, R. M., & Kintsch, W. (1971). Differential effects of study and test trials on long-term recognition and recall. *Journal of Verbal Learning and Verbal Behavior, 10*, 562-567.

Howard, G. S. (1991). Culture tales: A narrative approach to thinking, cross-cultural psychology, and psychotherapy. *American Psychologist, 46*(3), 187-197.

Izawa, C. (1992). Test trials contributions to optimization of learning processes: Study/test trials interactions. In A. F. Healy, S. M. Kosslyn, & R. M. Shiffrin (Eds.) *From Learning Processes to Cognitive Processes: Essays in Honor of William K. Estes* (Volume 2, pp. 1-33). Hillsdale, NJ: Erlbaum.

Jones, H. E. (1923-1924). Experimental studies of college teaching: The effect of examination on permanence of learning. *Archives of Psychology, 10*, 1-70.

Kalichman, S. C., Kelly, J. A., Hunter, T. L., Murphy, D. A., & Tyler, R. (1993). Culturally tailored HIV-AIDS risk-reduction messages targeted to African-American urban women: Impact on risk sensitization and risk reduction. *Journal of Consulting and Clinical Psychology, 61*, 291-295.

Kuo, T. M., & Hirshman, E. (1996). Investigations of the testing effect. *American Journal of Psychology, 109*, 451-464.

Lewis, R. S., Goto, S. G., & Kong, L. L. (2008). Culture and context: East Asian American and European American differences in P3 event-related potentials and self-construal. *Personality and Social Psychology Bulletin, 34*, 623-634.

Marian, V., & Fausey, C. M. (2006). Language-Dependent Memory in Bilingual Learning. *Applied Cognitive Psychology, 20*, 1025-1047.

Marian, V., & Kaushanskaya, M. (2007). Language context guides memory content. *Psychonomic Bulletin & Review, 14*, 925-933.

Marian, V., & Neisser, E. (2000). Language-dependent recall of autobiographical memories. *Journal of Experimental Psychology: General, 129*, 361-368.

Masuda, T., Ellsworth, P. C., Mesquita, B., Leu, J., Tanida, S., & Van de Veerdonk, E. (2008). Placing the face in context: Cultural differences in the perception of facial emotion. *Journal of Personality and Social Psychology, 94*, 365-381.

Mayer, R. E., Heiser, J., & Lonn, S. (2001). Cognitive constraints on multimedia learning: When presenting more material results in less understanding. *Journal of Educational Psychology, 93*, 187-198.

Moreno, R., & Mayer, R. E. (2000). A coherence effect in multimedia learning: The case for minimizing irrelevant sounds in the design of multimedia instructional messages. *Journal of Educational Psychology, 92*, 117-125.

Moreno, R., & Mayer, R. E. (2002). Verbal redundancy in multimedia learning: When reading helps listening. *Journal of Educational Psychology, 94*, 156-163.

Nungester, R. J., & Duchastel, P. C. (1982). Testing versus review: Effects on retention. *Journal of Educational Psychology, 74*, 18-22.

Roediger, H. L., III, & Guynn, M. J. (1996). Retrieval processes. In E. L. Bjork & R. A. Bjork (eds.), *Memory* (pp. 197-236). San Diego, CA: Academic Press.

Roediger, H.L. & Karpicke, J.D. (2006). The power of testing memory: Basic research and implications for educational practice. *Perspectives on Psychological Science, 1,* 181-210.

Rojahn, K., & Pettigrew, T. F. (1992). Memory for schema-relevant information: A meta-analytic resolution. *British Journal of Social Psychology, 31,* 81-109.

Schab, F. R. (1990). Odors and remembrances of things past. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 8,* 648-655.

Shrock, S., & Coscarelli, W. (2007). *Criterion-Referenced Test Development* (Third Edition). San Francisco: Pfeiffer.

Smith, S. M. (1985). Background music and context-dependent memory. *American Journal of Psychology, 98,* 591-603.

Smith, S. M. (1988). Environmental context-dependent memory. In G. M. Davies & D. M. Thomson (eds.) *Memory in Context: Context in Memory* (pp. 13-34), Chichester, UK: Wiley.

Smith, S. M. (1995). Mood is a component of mental context: Comment on Eich (1995). *Journal of Experimental Psychology: General, 124*(3), 309-310.

Smith, S. M., & Vela, E. (2001). Environmental context-dependent memory: A review and meta-analysis. *Psychonomic Bulletin & Review, 8,* 203-220.

Smith, S. M., Glenberg, A., and Bjork, R. A. (1978). Environmental context and human memory. *Memory and Cognition, 6,* 342-353.

Springer, J. F., Sale, E., Kasim, R., Winter, W., Sambrano, S., & Chipungu, S. (2004). Effectiveness of Culturally Specific Approaches to Substance Abuse Prevention: Findings from CSAP's National Cross-Site Evaluation of High Risk Youth Programs. *Journal of Ethnic & Cultural Diversity in Social Work, 13,* 1-23.

Thalheimer, W. (2002, May). *Instructional objectives: A Work-Learning Research instructional research report.* Retrieved September 12, 2006 from http://www.work-learning.com/.

Thalheimer, W. (2004, November). *Bells, whistles, neon, and purple prose: When interesting words, sounds, and visuals hurt learning and performance—a review of the seductive-augmentation research.* Retrieved September 12, 2008, from http://www.work-learning.com/catalog/.

Thalheimer, W. (2006, February). *Spacing learning events over time: What the research says.* Retrieved November 31, 2006, from http://www.work-learning.com/catalog/

Thalheimer, W. (2007, April). Measuring Learning Results: Creating fair and valid assessments by considering findings from fundamental learning research. Retrieved September 12, 2008, from http://www.work-learning.com/catalog/.

Tulving, E., & Thompson, D. M. (1973). Encoding specificity and retrieval processes in episodic memory. *Psychological Review, 80,* 352-373.

Tweed, R. G., & Lehman, D. R. (2002). Learning considered within a cultural context: Confucian and Socratic approaches. *American Psychologist, 57,* 89-99.

Winfield, F. E., & Barnes-Felfeli, P. (1982). The effects of familiar and unfamiliar cultural context on foreign language composition. *Modern Language Journal, 66,* 373-378.