

Learning Retention

Hillary Bark

Gayle Curtin

Nathan Galster

Lauren Watanabe

Colorado State University

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Introduction

The specific goals for each class may vary, but undoubtedly the overall purpose is to transfer knowledge. The hope is that the learners will retain a high percentage of the content, well beyond the timeframe represented by the weeks in class. While lecture is often used in the classroom, there are many techniques that can be used in conjunction to further enhance learner retention. This paper will explore how anticipatory sets, peer assisted learning, music, and meditation techniques can assist the learner with retaining information.

Anticipatory sets

While we are focused on adult learning, it is important to consider that some methods work equally well with young students and those who are more mature. One method is the use of anticipatory sets, which aligns well with Robert Gagné's first of his Nine Steps, Gain Attention (Clark, 2013). One way to define anticipatory sets is an exercise at the beginning of class that primes the student to receive the lesson to follow. Just as appetizers serve to whet diners' appetites, anticipatory sets are able to spark the learners' interest in the content that will follow (Stephens, n.d.). It is often said, and repeated by Lim (2014) that you can lead a horse to water, but you cannot make him drink. Lim follows that up with the valid point that, in fact, you *can* make him drink. Anticipatory sets are the salt given to learners so they will be eager to quench their thirst. The class content serves as the drink.

A critical point, however, is that to be effective, the anticipatory sets must flow into the session's topic without an awkward transition (Portner, 2008). It is not enough to make students thirsty. It is necessary to also direct their choice of beverage by keeping the subject-at-hand front and center. Unlike icebreakers, anticipatory sets should always maintain topical consistency.

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They should help learners connect the dots between the knowledge presented and how it relates to the learner (Connelly, 2011), which is highly aligned with adult learning needs. Some of the methods encourage student interaction and mental stimulation. The next step is to determine how we influence the beverage choice.

There are a number of effective ways to coax students into preliminary conversations, but care should be taken to avoid unintended consequences. Even exercises that are simple to perform require preparation, so that the end user can relate to the information in a way that is not completely off-topic. Connelly (2011) provides an example of an anticipatory set gone bad. A teacher asked young students why weather was important, and got crickets. Apparently none of her students thought weather *was* important. She failed to consider the myriad responses (or non-responses) that might bring conversation to an awkward halt, or take it in directions the teacher does not prefer to explore. The lesson is that if the learners are not engaged in the curriculum offered, they'll start their own conversation. (Connelly, 2011).

To get them interested, and keep them on course, consider a few of these suggestions made by Lim (2010):

- Media - videos, audio or pictures, as long as they are relevant. If teaching insurance coverages, for example, the use of photos reflecting the devastation of tornadoes, fire or hurricanes could be an effective way to begin the conversation.
- Relevant Content - pay attention to the local news on the day/week of the class. Tie current events to the subject being taught. Whether it is sports, politics or the weather, there is almost always a connection. Adult learners are much more likely than children to see and value the relevance between what is going on in the world, and what is to be

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shared in class.

· Enthusiasm - have some. Generate some. There is always an intriguing tidbit in even a dry subject. Tell a story. Consider Workers' Compensation--did you know that, "under ancient Arab law, loss of a joint of the thumb was worth one-half the value of a finger," and "the value an ear was based on its surface area" (Guyton, 1999)? While this would not fascinate every man on the street, it is indeed interesting to those about to dive into the Workers' Compensation form, as they may think it is a modern concept.

Whatever method is used will serve to enhance the learning experience by engaging the learner early on in the process. Portner (2008) tells us that anticipatory sets generate thought and build expectancy, and thus increase interest in the topic. This, in and of itself, does not necessarily increase retention, but the relevance that the exercise brings should. Anticipatory Set (AS) & Closure (n.d.) refers to this as giving the student a method to recall information. By organizing the detail and injecting visual imagery, the brain is able to retrieve data from its memory banks in a way it could not otherwise. As we will discuss further in meditation techniques, once the mind is receptive to the topic, the likelihood of retaining the learning is intensified. While the result is difficult to quantify, it is hard to imagine an unwilling learner surpassing a willing learner. What might surprise some, however, is how useful learners can be *to each other* in the learning process, and that is the next method to be addressed.

Peer Assisted Learning

Learning does not have to be a solitary action. Learners can actually help each other to increase their long-term knowledge retention. Peer assisted learning is a method where students teach other students. It is a learner-centric method of teaching that is quite versatile and has

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varying applications. For instance, it can be used formally with a senior peer teaching a class session or informally through a study session (Kirkham & Ringelstein, 2008).

Peer assisted learning has been studied in various fields of education, for both youths and adults. With young learners, it is a method recommended for use in English as a Second Language (ESL) programs (Gersten et al., 2008). With adults, it has been largely studied in those pursuing medical and healthcare education, particularly medical doctor education (Abedini, Mortazavi, Javadina & Moonaghi, 2013). Medical school is conducive to peer assisted learning because of the availability of skilled peers in medical schools to facilitate learning and the critical nature of the content. Although peer assisted learning has been applied and studied in a few areas of education, it has promise for application across the educational spectrum.

Peer assisted learning has been shown to improve the learner's short-term gain and long-term retention of knowledge. For instance, a study of third year medical students showed that those participating in peer assisted education scored higher on exams than their counterparts participating solely in traditional lectures. A surprise post-test was conducted three months later with these same students, and the peer assisted students scored higher there as well, indicating improved retention (Abedini, et al., 2013). This improved retention results from the deep learning that the learner and peer teacher experience in peer assisted learning, which aids in forming a deeper and longer lasting understanding of the material (Kirkham & Ringelstein, 2008; Lincoln & McAllister, 1993). In addition to deep learning, students feel more comfortable and less intimidated in peer assisted learning environments and are more likely to ask questions to gain a clearer understanding of new material (Longfellow, May, Burke & Marks-Maran, 2008). The deep learning experienced by both learner and peer teacher, as well as the added level of

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comfort in the educational setting, can benefit the long-term retention of knowledge.

There are multiple ways that peer assisted learning can be implemented in an educational program. Many of the options for implementation fall under one of two categories: peer teaching and reciprocal peer learning. With either option, peer assisted learning is not intended to be the sole educational treatment. It is suggested as a supplement to education from a teacher, professor, or a person in a mentoring role.

Peer teaching consists of utilizing the knowledge and skills of a more senior peer, who is in the same educational situation, but has already taken the class or mastered the skill at hand (Boud, Choen & Sampson, 2001). This peer could facilitate a required class session in place of one of the week's lectures, host a study group or tutoring session outside of class, or serve as a lab instructor. It is vital that a capable peer is chosen to facilitate these educational sessions and that the expectations and responsibilities are clear. While the senior peer is teaching and explaining concepts, he/she is reviewing previously gained knowledge and thereby increasing retention of that knowledge. The junior peer benefits from the alternate methods of explaining and teaching concepts and the relevancy of a teacher his or her age.

Reciprocal peer learning is a more informal process where students at the same level are interacting and reciprocally improving the gain of knowledge and skills (Boud, et al., 2001). This type of learning often happens informally inside and outside of the classroom, but can be facilitated as well. To implement this method, a teacher or facilitator would either assign or let the students choose their own partners. These partner teams then work through a series of questions or key points, with partners taking turns answering the questions and explaining their answers. In a sense, each partner takes a turn being the teacher. Collaboration and discussion are

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encouraged for the partner teams, as it can help form a deeper understanding.

Learning with one another helps bring a deeper meaning and understanding of information. Rather than passively gaining knowledge through lectures, peer assisted learning helps reinforce the intended message by allowing the learner to play an active role. Peer assisted learning is not the only method that promotes deep learning, though. Music has also been successful with various types of learners. Peer assisted learning depends on learners interacting and building skills together using common ground to promote deeper understanding. One possible method for finding common ground could be through the use of music.

Music and Retention

Have you ever had a song stuck in your head? Have you ever heard a song on the radio that you had not heard in years but you could instantly remember all of the lyrics and sing along? Why does this occur? As educators, why do we not tap into this resource? This phenomenon could be a useful tool for educators to tap into and utilize for the benefit of learners. There is currently much research that attempts to determine the impact that music has on memory and text recall (El Haj, et al, 2012; Ludke, et al, 2014; Rainey & Larsen, 2002; Thaut, et al, 2008; Wallace, 1994). The research is not entirely conclusive, and as with most theories and issues there is debate over the effectiveness of music to improve memory and retention. However, there are studies that have shown the positive effects of developing music as a tool to increase memory retention (El Haj, et al, 2012; Ludke, et al, 2014; Rainey & Larsen, 2002; Thaut, et al, 2008; Wallace, 1994).

There is a common and widespread belief that learning and remembering information can be enhanced by setting the information to music (Rainey & Larsen, 2002). Rainey and Larsen

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(2002) state that a common support of this phenomenon is that individuals are able to remember the lyrics of a song as adults that they listened to repeatedly at a younger age, even if they have not heard the song lyrics in many years. The study did not find conclusive results that music actually improved learning or recall. Although participants in their experiment did not learn the material faster using music, some evidence showed that music had a positive effect on longer term recall. The researchers stated that the familiar melody used in their studies may have served as a retrieval cue for the lyrics when participants returned a week later for a second learning session (Rainey & Larsen, 2002).

In another study Wallace (1994) also states that music, specifically melody, impacts text recall. Perhaps it is because text and melody in combination may make a memory more unique or more connected, therefore more easily accessible. As anticipatory sets and peer assisted learning referenced the importance of making deeper and stronger connections to materials, music can aid in maintaining those connections. Wallace cites prior studies by Bartlett and Snelus (1980) and Rubin (1977) that support the idea that melody has a positive effect on recall, but notes that these studies used songs that had been previously well rehearsed so that there was sufficient opportunity to learn the melody and text (Wallace, 1994). Wallace's study yielded results that support the position that music can improve text recall. The melody of a song can indeed make a text easier to remember when compared with hearing the text out of the context of the melody. This phenomenon is more effective when the melody is simple and easy to learn (Wallace, 1994).

Thaut, Peterson, Sena and McIntosh (2008) also contend that music has the ability to increase memory and retention of language. Their study found that, in patients with multiple

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sclerosis, music can improve word order memory and suggests that there is also a therapeutic potential of musical study in verbal learning and memory (Thaut, et al., 2008, p. 328). This impact on memory is also beneficial for second language learners. Ludke, Ferreira and Overy (2014) showed in their study that a listen-and-repeat singing method using simple, previously unknown melodies can provide a significant memory benefit for foreign language learning, both immediately and 20 minutes after instruction (Ludke, et al, 2014).

Another study by El Haj, Postal and Allain (2012) found a link between music and autobiographical memory in patients with Alzheimer's disease. The study mentioned that memories with an emotional connection are easier to remember. They conducted a study using Vivaldi's *Four Seasons* to facilitate stronger memory. A major finding was that autobiographical memory of mild Alzheimer's disease patients improved after listening to music. (El Haj, et al, 2012).

Although the research is not conclusive, it seems that music can have a positive effect on memory, text recall, and retention. As educators, using music as a tool to aid and improve retention could be a fun and interesting way to assist learners. There are numerous ways that music could be employed as a means for retention with adult learners. As discussed in peer assisted learning, music is commonly used in ESL classrooms as a way to connect to language. Listening exercises such as filling in the blanks or correcting the grammar in lyrics while listening to a song are great ways to aid language acquisition. Adult educators may feel that music is a tool more suited for educating children. However, many exercises using music as a learning tool for children could be easily adapted for adult learners. Music exercises could be used as an introduction to a topic or icebreaker in a class, much like an anticipatory set.

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Engaging adult students in creating their own lyrics with catchy melodies as a way to remember new terms, equations or important dates could create a fun learning environment that improves participation as well as retention. Music lyrics address nearly any topic or social issue and could be a way to spark discussion and aid in the retention of important information related to these issues. The opportunities for applying music as a retention tool in the classroom are bounded only by the educator's imagination. To enhance the success of this tool, the mind must be fully present and there are specific meditation practices that can be used.

Meditation Techniques

Today's world is filled with smartphone push notifications, social media updates, and 24 hour access to information. Being inundated with this much knowledge can pull one's attention in multiple directions, making it very difficult to concentrate and retain the relevant information. Techniques that direct a learner's attention in a conscious and controlled manner should be considered in classrooms in order to allow an increase in learner retention (Helber, Zook, & Immergut, 2012).

Before specific techniques are discussed, memory and executive functions should both be understood, as they pertain to students. Rathus (as cited in Hall, 1999) defined memory as the process by which information is stored and accessed by recall or recognition of objects or events encountered before. Executive function is the term for the complex, cognitive skills that are conducive to studying and performing well (Helber, et al., 2012). To date, several studies indicate that meditation has a positive effect on both memory and general executive functions. Hall (1999) performed a study in which college-aged students were assigned to either a meditation or a non-meditation group for a semester, where they engaged in one hour study sessions each

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week. The meditation group engaged in 10 minute breathing and relaxation techniques during the study session and used those same methods before each test (Hall, 1999). The GPAs of these groups were not significantly different prior to the study, but post study the GPAs of the meditation group rose considerably during the semester and for the remainder of the year (Hall, 1999). Those findings are consistent with state-dependent learning, which suggests that information is better retrieved in the physiological or emotional state when it was learned (Rathus, as cited in Hall, 1999). Helber, et al. (2012) performed a similar study with a meditation and a control group of college students, but instead of testing GPAs, they tested a series of executive functions by using The Stroop Color and Word Test and Trail Making Test. The findings between both the control group and the meditation group both showed an increase in executive functions, but the meditation group showed a greater increase (Helber, et al., 2012). The results of these studies support the idea that meditation can positively influence a learner's ability to recall and retain information.

The question now is what specific techniques can one use in the classroom? At the beginning of his classes, Hart (2004) asks his students to take a few deep, clearing breaths and allow themselves to be silent. He advises that they should focus on their breathing and redirect their mind back to their breaths if they find that their minds begin to wander. This is known as in-class contemplation. The exercise itself can last anywhere from 2 to 15 minutes (Hart, 2004). Once the instructions are finished, the sound of a bell might be added to help the students ceremoniously recognize this as a special time. While a bell may not necessarily be considered music, it does provide support that sounds can help direct the mind to a particular place.

Another technique is a quiet concentration exercise in which the class engages in

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contemplative writing assignments. It could be a simple description, such as what would the ideal classroom look like? It could also be a memory question, such as what is your earliest memory? The question could also be tied to the work that is currently being done in class. As with anticipatory sets, this specific technique could be quite impactful if it allows a connection directly to the learning. The lights and electronic devices are turned off and the meditation writing will last five minutes. Once the silent meditation is complete, the students are given a chance to write their paragraphs and their reactions to the process are shared.

The final is a true guided meditation. Evans (2012) describes a technique in which students close their eyes, are asked to breathe comfortably in and out and instructed to relax their feet, ankles, knees, hips, stomach, throat, and eyes. They are then guided in meditation which asks the learners to imagine that they are walking and come to a gate that leads to an open field. Then they are told that they come to a body of water, where they stay for a while and then the learners are asked to come back to where they began (Evans, 2012). The meditation techniques are designed to allow a scattered, racing mind to open up and be present. When provided the break it needs, the mind's capacity for learning increases because better attention can be given to task at hand (Hart, 2004).

Conclusion

There are many techniques that describe effective methods for learner retention and this paper explored four that are not typically discussed. Anticipatory sets, peer assisted learning, music, and meditation techniques describe innovative methods to open up the mind, give the mind salt to get thirsty, increase its capacity for memory, and provide performance support to aid with that necessary knowledge transfer beyond the timeframe of a given class.

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