

The Nose Has It: The Impact of Smells on Learning

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For years researchers have known that aromas and smells impact the human body physically and mentally. Favorable smells and those more repugnant linger in our memory. Think of a banana or a strawberry. Can you imagine what each smells like? How about manure or a skunk? When you detect each of these smells the brain quickly accesses its mental database to conjure up an image of the object responsible for it. This process or recall is deeply rooted in your subconscious and can be accessed on demand.

This all relates to training and education or the business setting in that certain aromas or smells can impact the brain and affect not only learning but also performance, retention and memory recall. Much research has been done on the use of aromas to stimulate the cognitive processes and positively affect learning outcomes. For example, researchers have learned that the receptors (neurons) in the nose that facilitate smell are continually being regenerated during a person's life. Even though these neurons continually die away to make room for new ones there is still a connection to previous ones. This is what allows the human brain to remember smells such as the banana or strawberry.

All of this impacts learning in a classroom. For years we have known that depending on whether a child grows up in a stimulating environment can increase or decrease his or her ability to learn by twenty-five percent. Smell plays an important role in a learning environment. Researchers have been exploring the impact of smells on learning and memory for decades. In a 1997 study by Dr. R. S. Herz, the odors of pine, peppermint and osmanthus were used to determine if odor had an impact on the brain. In the testing, subjects were taken into a room where an odor was present and attention called to the smell. Each person was then left in the room for ten minutes while he or she filled out a questionnaire. Following the questionnaire, the experimenter read a series of twenty common nouns. After each word, subjects were asked to describe some event that the word reminded him or her of. Forty-eight hours later, each subject was tested to see how many of the words could be recalled. When the unusual odor of osmanthus was present during the learning (when words were read and mentally imprinted) and testing recall was best. Of the other two odors, recall was better when peppermint was introduced in a contextually inappropriate manner. Based on this study, the researchers determined that smell is a good contextual cue for learning.

In another experiment by Dr. Herz, forty students were given a word test for which they were not told they would need to recall the words later. Half of the subjects were in a room with no smell and the other half were in a room which smelled of violet leaf (an unusual and unpleasant odor). Seven days later, all students were tested in the same environments in which they had learned the words. Those who were in the violet scented room did significantly better on recall than those without an odor.

Further, Dr. Alan Hirsch has also found a direct link between odors and mental processing. In a variety of studies, he has found floral odor linked environments to increase creativity, learning and thinking ability. A similar finding occurred when a floral odor was introduced as subjects took the Halsted-Reitan Test Battery. In that study, seventeen percent of the subjects completed the test faster when the fragrance was present.

Other studies have come up with similar findings. The following fragrances and results have been observed in various studies:

- Lemon helped clerical workers make fewer computer and word processing errors;
- Peppermint stimulates the brain and perks people up;
- Lavender oil helped 40 college faculty members perform math calculations faster and with fewer errors. Lavender has also been found to induce a deeper and longer REM sleep;
- Pine needle odor relaxes people; and
- Cinnamon boosts problem solving ability.

As a trainer, what this shows is that there is a direct correlation between what someone smells while learning and the amount of retention. It does not mean you should run out and purchase a basket of fragrances to unleash on unknowing learners. It simply provides food for your own thought of how to introduce aromas into your training in a productive and meaningful way. For example, since peppermint has been found to stimulate the brain, why not give out pieces of peppermint candy as small incentives when someone offers an idea or responds effectively to a question instead of giving hard candy that does nothing more than provide a brief sugar rush. Similarly, consider instructing orange or lemon fragrance in some manner. This might be easily accomplished by providing the scented flipchart markers that are available. Participants love to sniff these. You need markers anyhow. For a few pennies more, get some that will achieve multiple goals. One caution that I often give related to any aroma or product that produces a smell in the classroom is that you must be conscious that some people have allergies or breathing difficulties and could react unfavorably to excessive odors. Err on the side of caution.

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