

The Psychological Science and Social Technology of TerraCuddles® for Learning Abstract Concepts of Values

Prepared by Terra Cotta Corp. and Camille Productions, Inc., based on The Multidimensional Learning Model: A Novel Cognitive Psychology-Based Model for Computer Assisted Instruction in Order to Improve Learning in Medical Students. Med Educ Online 1999. Tarek M. Abdelhamid, M.D., Formerly from the Medical Education Development Office, The University of Auckland School of Medicine and Health Science

Abstract – Consumers naturally view TerraCuddles as works of art, collectibles, or entertainment characters. Those who get to know them will also understand the messages of positive character values that they represent and inspire. Relatively few people are consciously aware, however, that the TerraCuddles concept is built on a foundation of psychological science and social technology. It is this psychological foundation for learning and memorization that gives the TerraCuddles their unique position in the entertainment and consumer mass markets as a defining leader for many years to come. The purpose of this paper is to provide an overview of that psychological science and technology foundation.



Tarek M. Abdelhamid, M.D. developed the Multidimensional Learning Model (MDLM), published in 1999, in order to improve learning in medical students. The explosion of medical information was creating commonly observed problems in medical education. Dr. Abdelhamid's MDLM used the results from cognitive psychology studies to develop memory strategies in medical education so that the students would understand the information and retain it in a more efficient manner. We have incorporated the key elements of this MDLM herein.

Application to Abstract Character Values

*"To educate a person in mind and not in morals
is to educate a menace to society."
Theodore Roosevelt*

Few people would argue with the importance of positive character values. At the same time, the vast amount of information available about character values from many different sources, without a framework for learning, creates considerable problems and inefficiencies in the learning process.

The fact that these character values are intangible abstract concepts compounds the problem with learning. Assimilating this "explosion of information" in values is particularly acute with children, who have more limited capabilities for understanding abstract concepts and thoughts.

The difficulties with learning these abstract values during childhood often carry over as these children become adults. As adults become the teachers and guides for their own children, the moral problems become cultural issues.

The purpose of this article is to describe how the different memory strategies in medical education apply to the equally complex learning and memory for character values. The TerraCuddles consumer concept and products are designed as an application of this psychological science and technology for learning, as further described below.

Mechanisms for Enhanced Learning

As noted in Dr. Abdelhamid's MDLM report, studies in the process of learning and memory showed that the following mechanisms could enhance understanding and recall:

- The generation effect
- The spreading activation model
- The use of pictures

In addition, other factors that play a role in our memory include:

- The separate store model
- Level of processing approach
- Story-like presentation
- Acoustic coding and memory

We will discuss below how we are incorporating these mechanisms and factors as the scientific framework behind the TerraCuddles concept.

The generation effect – Generation refers to the fact that when an individual generates an item, it is better recalled than when it is merely read.

The TerraCuddles stories all involve dilemmas, which provide the audience with enough facts to understand the situation, and an opportunity to resolve the issues in their own minds before the story resolves it for them. The effect of this is to allow them to generate the solution, and then compare their solution to the one provided.

As noted in MDLM, the empirical finding of the generation effect is not in question, and it is a key element of the TerraCuddles learning and memory approach.

The spreading activation model – This model assumes that stored knowledge is best thought of as a network of multiple interconnected and related data wherein processing of an item leads to action of other related items.

TerraCuddles spreading activation of memory is accomplished by psychologically connecting the following key components within the TerraCuddles concept:

- Verbal character value
- TerraCuddle image
- Icon in everyday life
- Audio sounds of icon
- Tactile reinforcement with products.

The MDLM graphical representation of this spreading activation model is shown below, with TerraCuddle Belle and Truthfulness added as an example of interconnectivity of TerraCuddles:

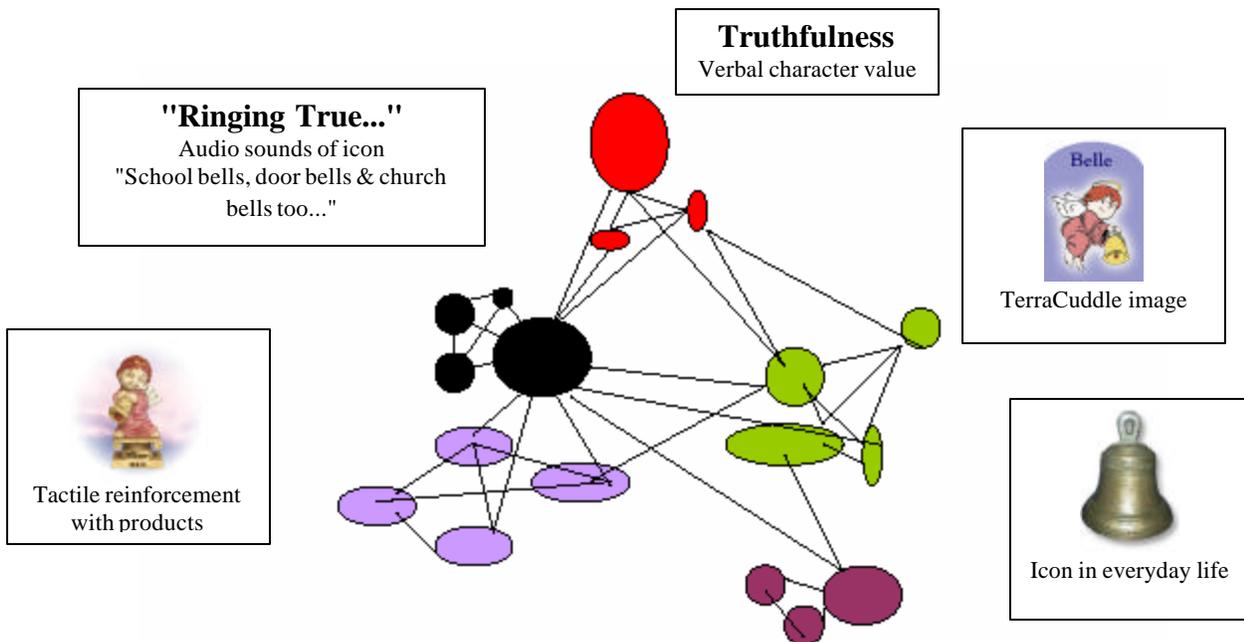


Figure 1 According to the spreading activation model the information (represented by circles) are memorized as a network of interrelated data. Once an item is processed, activation process spreads in all directions to activate other related items.

We believe that this spreading memory activation model will work in any direction. That is, when someone watches Belle's television episode, their memory learns to connect Belle and bells to Truthfulness. Likewise, we believe that once someone learns this connection, when they hear or see a bell in everyday life, they will be reminded of Truthfulness and TerraCuddles. With successful

long-term learning, these images and sounds will become forever connected.

The use of pictures – Research in the field of memory and learning has also indicated that the use of pictorial images can aid the learning process better than verbal description can. Memorization of the images can be further enhanced by presenting the

data in a single visual image and by using high-value items (easy to imagine).

This is one more factor where TerraCuddles really excel. Character values, by their very nature, are abstract and intangible and have no natural picture associated with them. TerraCuddles and their icons in everyday life create a clear and easy-to-imagine picture to associate with each character value. As shown in Figure 1, Truthfulness is interconnected to visual images of TerraCuddle Belle holding her bell, and by bells in everyday life. Likewise, each TerraCuddle has its own image and icon in everyday life for its value, creating a consistent and interconnected collection of images for the entire values collection.

The separate store model – According to MDLM, sensory stimuli e.g. visual or auditory will be lost from our memory immediately unless *attention* was given to that stimulus. Attention seems to be necessary to shift the information from the sensory

register to our short-term memory (STM) stores. To then shift the data from short-term memory to long-term memory (LTM), rehearsal is necessary. That rehearsal could be intentional or unintentional, overt or covert, voluntary or involuntary.

The TerraCuddles television and video series is ideal for this. First, each episode will develop and maintain attention with an entertainment format that includes story and dialogue, fantasy, animation, humor, drama, intriguing characters, and music. Within each episode will be opportunities to combine all of the visual and audio elements of the TerraCuddles character value, and connect those with the elements that the audience encounters in their everyday life – many of which may be in the room where they are watching the program. This multi-sensory connection and repetition creates the rehearsal necessary to move this information into long-term memory.

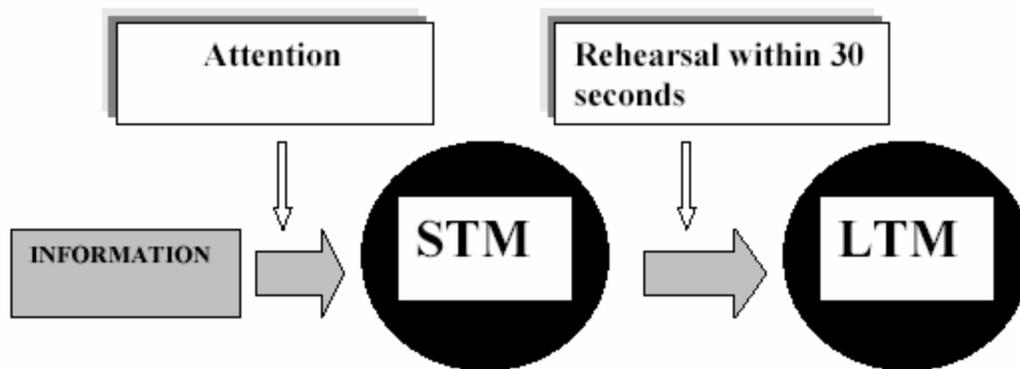


Figure 2 The separate store model for memory. Attention is needed to shift the information to Short Term Memory (STM) and rehearsal of the information within 30 seconds is important to shift it to the Long Term Memory (LTM).

Level of processing approach – This model argues that the "depth" to which it is processed essentially determines the durability of a memory trace. Accordingly, attending to the "physical" properties of an item (what it looks like) leads to a shallow form of processing. Attending to the "acoustic" properties of an item (what it sounds like) will lead to a relatively deeper form of processing. Finally, attending to the meaning of an item will lead to the "semantic" level of processing, the deepest and the most durable form of processing.

Within each TerraCuddles television and video episode, for the featured abstract character value, we will be creating both a visual image and an acoustic support for that image. In addition, we will be

providing some subtle definition of the character value to give it meaning, and applying it to at least one situation so the audience can relate it to their own lives.

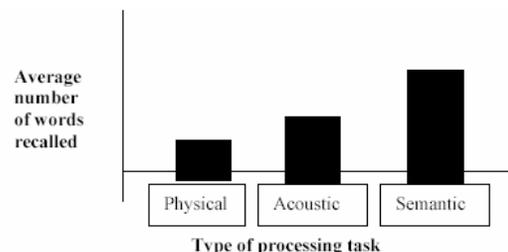


Figure 3 According to the level of processing approach the semantic (meaningful) coding of information provides the deepest form of processing.

With TerraCuddles, we intend to take this level of processing approach to one additional level with the introduction of emotion into each episode. While it may be difficult or even undesirable to evoke emotion in much of the medical education process, studies have shown that emotion further enhances the learning process. Emotion will be an integral part of the TerraCuddles episodes.

Story-like presentation – As noted in MDLM, studies in cognitive psychology have also indicated that presenting the to-be-remembered information as a story is far superior in terms of learning and memory than presenting the same information in a random manner. In the story-like presentation, each sentence refers to something in a previous sentence and adds something new.

Every TerraCuddles television and video episode is built around a story. The values we hold drive all of our behavior as humans. Therefore, anything that someone can do or feel, we can relate back to one or more of the TerraCuddles character values. Since there is virtually no limit to the range of human behavior, there is no end to the TerraCuddles stories that we can develop. Story ability is another one of the beauties of the TerraCuddles concept.

Acoustic coding and memory – Early studies in memory had indicated that "acoustic coding" is involved essentially in short-term memory, while semantic coding is involved in long-term memory. However, more recent evidence indicates that acoustic coding is involved in long-term memory as well.

Regardless of its method of positive impact on learning, TerraCuddles episodes will include acoustic coding in the form of dialog, icon sounds, and music that enhance the learning and memory process.

Framework for Values Collection

People tend to learn their moral values from a variety of disparate sources. As children, we are read bedtime stories of fables and fairy tales which have morals and lessons. Some of us get additional moral guidance through Boy Scouts, Camp Fire, sports or other youth programs. Our parents often give us guidance on learning right from wrong, to the extent they know it and can teach it. We learn additional values through church, and we often continue that later in life through Bible study or other religious experiences. We see in the news where people who have violated certain legal codes, often based in some

way on moral issues, are punished, in part as a lesson to others and us.

At the same time, we are also gathering considerable information about values from friends, school, television, movies, magazines, books, business associates, and others, and through all of this there are often conflicts. In our society, we are often left to sort through this on our own, generally by observation, trial and error. There is no single clear, organized reference source for character values.

This is where TerraCuddles may enhance the values learning process the most. TerraCuddles provide a complete, consistent collection of character values as a reference for most any situation. This organized framework provides a logical and finite collection of values to which a person can relate any situation.

The Bible, fairy tales and Boy Scouts all provide great guidance on moral values. Even the Bible, in its completeness, does not provide an easy reference list for the character values it encompasses, and readers often spend a lifetime working to understand and extract its values to apply to their lives.

TerraCuddles are designed as a complement to all of these sources of moral guidance, greatly enhancing the learning efficiency, memory and referral process.

Summary

Consumers will look at TerraCuddles products, and watch TerraCuddles television and video episodes, and will see the artistry and feel their emotions. That is the intent. To consumers, the learning should be subconscious and subtle. But nevertheless, the learning and inspiration is there for people of all ages.

The learning is there because of the psychological science and technology we are applying in the development and presentation of the whole TerraCuddles package. It is this psychological foundation – from the character value definition and framework, character design, icon selection, story writing, and music and audio working together – that gives the meaning to the art that the consumer touches, sees and hears.

Our TerraCuddles character concept combines this cognitive psychological research science with art to create our unique opportunity.

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