

# **EXPERIENCES ON EMOTION-BASED TECHNIQUES AIMED AT ENHANCING THE PERFORMANCE OF THE LEARNING PROCESS**

Carles Gómez

*Technical University of Catalonia*

*carlesgo@entel.upc.edu*

## **Abstract**

According to numerous works, the performance of the learning process depends on the emotions of the students. In my opinion, it is particularly interesting to consider the role of emotions in learning in areas where concepts are rather abstract. In this paper I present some of my experiences on using techniques that involve emotions of different types during the learning process of my students. The goal was to create emotional states that could contribute positively in the learning process.

## **Workshop Topics**

The role of emotions in learning.

## **I INTRODUCTION**

In my career as a university professor, I have been teaching subjects that belong to telecommunications degrees. In this field, the concepts that have to be taught tend to be abstract and are generally described by means of analytical models, which can be sometimes quite “unfriendly”. While provoking students’ emotions improves the performance of the learning process in general, my personal opinion is that the use of emotion-based techniques is particularly interesting in this area. In consequence, I try to offer alternative points of view about the concepts I have to explain in my lectures (whenever it is possible and adequate).

This paper describes some of my experiences on emotion-based techniques I have used in my lectures. Section II presents a brief background on the impact of emotions in the learning process. Section III explains a first experience, where students assume a role related with a well known event. Section IV describes a second experience, which focuses on challenging the students. Section V describes a third experience which has a humouristic touch. Finally, section VI concludes the paper with a summary of the main remarks from this paper.

## **II BACKGROUND**

There are studies in the literature which predict that learning generally takes place during an emotional episode [1] or in affective states [2]. It has been reported that some teachers are able to identify the emotional states of their students and react to them in a way that benefits their learning process [3].

## **III HOW MUCH INFORMATION IS GENERATED BY AN EVENT ?**

“Imagine that you are living in 1995 in New York. Imagine that you sign a contract for a job that is as follows. Your task is to spend eight hours every day in a building close to the Twin Towers of the World Trade Center, and once per hour, you have to monitor and check whether the Twin Towers are in good condition or not. Your first day at work finishes with eight ‘Good condition’ checks. The second day follows, with the same results. And the third day ends with the same results. And the fourth , and the fifth... The state of the Twin Towers is always the same. Year 1995 ends and you have obtained for more than one thousand times the ‘good condition’ result. Year 1996 follows and the results are always the same. No changes occur in 1997... Neither in 1998... But one day, in September 11, you take your hourly note and for the first time, the result of your check is different from the more than 17.000 previous samples of the state of the Towers. The whole world was shocked by the tragedy. A very unexpected event took place. The amount of information that this event generated was huge and, somehow, it had an inverse relationship with the probability of that event happening.”

These were my first words as a teacher of the ‘Information and Coding Theory’ subject. I had to explain the concept of ‘information’, and the relationship it has with the probability of an event (the more unlikely something is, the more information we get when it happens). My students were expecting mathematical expressions in the blackboard (and actually the expressions came later), but they did not expect such an introduction.

The technique I experimented with had two elements that may have impacted on the emotions of my students: i) they had to assume a role (they had to make the exercise of imagining themselves in that kind of job) and ii) the scenario of that role involved a dramatic tragedy that had been the main news in the mass media for a certain period. The first element may have contributed to attract the attention of my students and motivate them. The second element is related with the fact that emotionally charged events are remembered better [4].

I believe that, by using this introduction in my lecture, my students would not easily forget the basis of the rather abstract concept I aimed at teaching them.

#### **IV CAN YOU DECIPHER THIS STRANGE MESSAGE ?**

I carried out another experiment in a lecture of a subject called ‘Cryptography’ (which is also quite abstract). I reproduced a cryptographic method used in the ancient Greece, which is based on changing the order of the letters (or characters) that form a message. With that purpose, the Greeks used to roll a long stripe (e.g. of paper or cloth) on a cylinder and wrote a message on that stripe (see Figure 1). Without the help of the cylinder, what is written on the stripe cannot be understood.

Before explaining that cryptographic technique, I gave to my students one such stripe with a written (ciphered) message and the appropriate cylinder and challenged them to decipher the message. After some time, one of them successfully found how to read the original message.

The students were in an emotional state which is driven by a challenge, a goal to be pursued. My impression is that they would not easily forget that ciphering technique.

#### **V WHAT IS A COMMUNICATIONS LINK ?**

A different subject (‘Networking fundamentals’) was the scenario for another experience. I had to explain the concept of ‘communications link’. For illustrating the concept, I built one and put it inside of a mobile phone box. During the lecture, after giving the definition of a ‘communications link’, I showed the box (which was closed) to my students, saying that it contained an example of such a ‘communications link’. Then, I opened it and took out my ‘communications link’. The students expected that maybe some high technology devices were inside of the box. But then I showed a ‘communications link’ composed of two yoghurt envelopes and a string, as many of us have done in our childhood.

They were surprised. Some of them laughed (I tried to emphasize the joke). I assume that some others could have thought that the joke was stupid. But in either case, they were in a ‘good mood’ emotional state, which facilitates learning [5]. Furthermore, my ‘communications link’ probably brought childhood memories to the students, which also has an emotional effect.

By the way, I was actually showing them a proper ‘communications link’ which was in accordance with its theoretical definition.



Figure 1. (left) A view of the ciphered message; (right) the original message

## VII CONCLUSIONS AND FUTURE WORK

This paper described various personal experiences on using emotion-based techniques in the process of learning. My personal opinion is that these techniques helped my students to understand better the concepts I aimed at teaching them.

For future experiences, it would be interesting to quantitatively evaluate the enhancement in learning that takes place as a result of the application of the techniques presented in the paper.

## REFERENCES

1. Stein, N.L. & Levine, L.J. (1991). Making sense out of emotion. *In* Kessen, W., Ortony A. & Kraik F. (Eds.) *Memories, thoughts and emotions: essays in honor of George Mandler* (pp. 295-322). Hillsdale, NJ, Erlbaum.
2. Kort B., Reilly R. & Picard R. (2001) An affective model of interplay between emotions and learning: reengineering educational pedagogy – building a learning companion. *In* Okamoto T., Hartley R., Kinshuk J. & Klus P. (Eds.). *Proceedings of the IEEE International Conference on Advanced Learning Technology: Issues, Achievements and Challenges* (pp. 43-48). Madison, WI, IEEE Computer Society.
3. Goleman D. (1995). *Emotional intelligence*. New York, Bantam Books.
4. Erk, S. et al. (2003). Emotional context modulates subsequent memory effect. *Neuroimage*, 18, (pp. 439-447).
5. Vail P. L. (1993). *Emotion: the On/Off Switch for Learning*. Modern Learning Press.