

THE "PAYI" T1C-T0C LESSONS

LESSON 1

T1C-T0C ON STAGE

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Introduction. This character, looking like a little clown was introduced by the author of these lessons, with the purpose of taking the role of a partner who motivates the learning of a variety of topics.

Beginning this lesson, we see Payi in the process of teaching how to capture the idea of number, and how represent it, with a minimum of symbolism.

Children at early infancy start getting in touch with opposites like: *me-the other ones* (unity-plurality), *yes-no*; *up-down*; *forward-backward*; *right-left*, and so on. These opposites could be figured out as the extremes, either, of a line segment or the extremes positions of a range of possible options. The little clown TIC-TOC, or shortly, “Payi” (“Clowny”), stays for the figure of binary system at an environment around the duality, black-white, **0-1**, trying to show children in the planet earth, the world where he lives, a fantasy world, created by the spirits of computers, cell phones, Play Stations, Internet and all modern technology.

A dialog conducting towards numbers.

The casting for this presentation is:

Tea (taken from teacher and pronounced tee as in Tic): who makes the questions and animates the show.

Payi TIC-TOC: it is a fantastic feature looking like a little clown, made with *Tea* right hand’s four fingers, dressed in white and black colors.

The TIC-TOC “Payi” House is the Payi’s stage from which he makes his performance.

The presentation’s environment is the classroom, where teacher introduces *Tea* and her guest, the little clown TIC-TOC. The teacher motivates and call the attention of her class around the character on stage to show up, and invite it to know something about **NUMB3R PLAN3T**, the world, where Payi lives.

Payi’s show tries to engage the kids in using their hands as learning tools and captures the fascination for the little clown in order to start a dialog – serious and by joking – about their daily life. At the background of this procedure is a basic pedagogical principle: *The best teacher for oneself is oneself.*

For this lesson the theme will be number representation. Since the essence of the method we want to introduce here is trough duality, we try in this first lesson to identify and handle the use of opposites, here exemplified on the duality: forward

and backward; right and left which let us to introduce some kind of trees (binary trees), where binary number representation appears in a natural and simple way.

Duality is introduced and motivated through the following dialog.

With “Eine Kleine Nachtmusik” K. 525 by Mozart as a theme tune curtain, *Tea* introduces *Payi* to class, asking for a round of applause for him and arousing curiosity and interest in **NUMB3R PL4N3T**, the world where Payi lives.

Tea – Little clown, who are you?

T1C-T0C – I’m *T1C-T0C*, the Little Clown, but I prefer my nick name “Payi”

Tea – *Payi*!?! I like that name. Where do you come from?

T1C-T0C – I come from **NUMB3R PL4N3T**, the planet of numbers and math.

Tea – Oh goodness! It must be a very interesting World.

T1C-T0C – It really is. Up there we learn math playing. We also learn everything while playing.

Tea – That sounds interesting! Would be nice to know how you learn numbers by playing.

T1C-T0C – You’ll see it, whenever you and the class help me.

Tea – Off course. Is it right kids? What do we have to do?

T1C-T0C – It’s really easy. All you have to do is following my movements with one of your hands.

Tea –Perfect! Let’s all of us make a Payi with our hands. We conceal our ring finger in the back, and just we get a Payi’s copy. That’s all.

T1C-T0C – Look at my dress. It has two parts: the right one is T1C, the left one is T0C. When I go a step forward, let’s say T1C. If I go backwards one step we say T0C.

Tea – Let’s see kids. We can imitate Payi with our hands. We all say T1C if a step forward is given and we say T0C for a step backwards.

T1C-T0C – OK. When we start with T1C we mean we’re going forward. When we begin with T0C we’re going backwards. Look at me: forward, *T1C-T0C*, *T1C-T0C*, *T1C-T0C*; Backwards, *T0C-T1C*, *T0C-T1C*, *T0C-T1C*.

Tea – Let’s imitate Payi, with T1C forward and with T0C backward. Let’s try: forward this way, *T1C-T0C*, *T1C-T0C*, *T1C-T0C*; backwards, like this, *T0C-T1C*, *T0C-T1C*, *T0C-T1C*.

T1C-T0C – Congratulations! You have learned that in Number Planet, T1C means forward and T0C means backwards.

Tea – Very nice: T1C means forward and T0C means backwards. But Payi, we don’t see yet, where numbers come from?

T1C-T0C – Be patient my dear Tea, we are playing, and when you do that, you are not in a hurry. Also is a play another way to see *T1C-T0C*.

Tea – My God! Does *T1C-T0C*, mean something else?

T1C-T0C – Off course. *T1C-T0C*, also appears, in everything that has two possibilities to occur. For instance: Right and Left. T1C means through right and T0C means through left. Now, let’s practice a little bit: *T1C* means a right step, *T0C* means a left step.

Tea – That is really easy Payi. Kids, let’s do *T1C* for a right step and *T0C* for a left step.

T1C-T0C – If we want to go right we start with T1C. Also, if we want to go left we start with T0C. See, it is really easy: right, *T1C-T0C*, *T1C-T0C*, *T1C-T0C*. And now left: *T0C-T1C*, *T0C-T1C*, *T0C-T1C*.

Tea – Till now, everything is really easy. Is it right, kids? But, Excuse me, Payi, I don’t see numbers.

T1C-T0C – Look at my dress and you’ll see numbers.

Tea –(Watching curiously) I see black and white, two colors.

TIC-T0C – You said two, and two is a very interesting number. But, watch me again, you'll find many more numbers.

Tea – Let's see ... Two feet, ...two arms, ... two eyes, two ears, one mouth, one nose,

TIC-T0C – Oh that's OK... You can find more and more numbers around me. But, look at me, there are things I don't have. For instance, I don't have horns, I don't have tail, I don't have pick, and so on.

Tea –I understand. You have zero horns, zero tails, zero picks, and so on.

TIC-T0C – That's right Tea. Zero is another very important number (moving his left foot quickly). That number is inside my name, in T0C.

Tea –(With surprise) OH God! It seems that in Number Planet zero and “o” are the same thing.

TIC-T0C – Well, not exactly. However I read zero in my name with a sound as “o”. And look at me; one is also in my name, in T1C, with a sound of “e”.

Tea –Oh, that sounds good Payi! You have two numbers in your dress.

TIC-T0C – That's right. In Number Planet everybody use just two numbers for counting: **0** and **1**.

Tea – It is incredible. Why Payi?

TIC-T0C – In Number Planet, we don't use fingers for counting, because we don't have ten fingers as you.

Tea – Really? How do you count?

TIC-T0C –We have just two arms: the right one, T1C and the left one, T0C. We use T1C and T0C for counting.

Tea - That's very strange! It isn't? But, from where do you think to get the remaining numbers?

TIC-TOC – Don't hurry my dear Tea. We'll be playing to count at next lesson. Meanwhile keep playing with *TIC-TOC* as you learned in this first lesson.

Tea – OK Payi, thank you for your lesson and for visiting us with your T1C-T0C game. It's nice to learn mathematics through playing.

TIC-TOC – Off course, the play is just beginning. Bye. See you next time.

Payi gets out his house, makes a great bow and goes inside again backwards, while the music at the background is the Minuet from the Mozart Serenade No. 13 in G Major K.525.



With Mozart *Serenade No.13 in G Major K.525* as a music curtain "Payi" T1C-T0C appears on stage. His aim is to show kids at Planet Earth the way how to get counting numbers in **NUMB3R PL4N3T**, using the duality Black-White and its digital representation **1** and **0**.

This First Lesson is presented at *Francisco José de Caldas School*, Armenia, Colombia, on May 30, 2008 for 7-8 years old kids. The invitation was made by teacher LUZ ESTELA BEDOYA.