ENSEÑANZA BILINGÜE EN MATEMÁTICAS

A trilingual experience for a mathematics immersion

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In this article we summarize the programme at the *"CEIP Angel Frígola"* (La Mojonera, Almería) to introduce basic concepts of mathematical language in a class of rather heterogeneous First Year pupils (five Guineans, three Moroccans, ten Spanish and a teacher with the intention of teaching math). In this situation, the main difficulty in teaching the first steps of the universal language of mathematics is that the pupils, being of various nationalities, have different first languages. We have to develop material that allows us to:

- Make the mathematical operations into games.
- Show different representations of each number.
- Use colour codes for different languages.
- Carry out additions and subtractions with numbers from one to twenty.
- Create activities of different levels of difficulty.

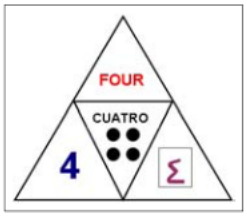

Figure 1

Material

The numerical pieces: in these each number is written in three languages (Arabic, English and Castilian), together with a graphical representation of the amount that they represent and their mathematical symbol. Moreover, each language will be in a different colour (Figure 1).

Operations Sheets: On these the symbols $+, -, =$ are also written in the three previously mentioned languages (Figure 2).

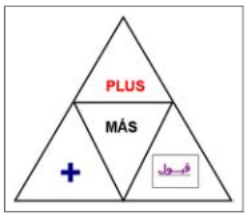

Figure 2

The main points of the activity sheets are:

1. Complete the set of chips.
2. Read the following operations.
3. Verify that the chips are correctly placed.
4. Fill in the missing part of the operations.
5. Problems in the students textbooks: We translated and adapted some of the common exercises that appeared in the textbooks to our triangle tokens.


Figure 3: Example of a board with multiple operations

We think it is important that the child be able to transfer the basic operations into different languages and recognise the numbers in these languages. This provides the students with a fun way to reinforce their mastery of these operations and shows them how to use them to solve simple problems.

References:

[1] Ramírez, R. y Escañuela, J. (2009). *Triángulos de cálculo trilingüe: un primer paso para la inmersión matemática.* Epsilon. Revista de la S.A.E.M Thales. Vol. 26 (3) pp. 47-52.

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Problemas de las Pruebas de Acceso a la Universidad

Problema propuesto en el número anterior

Un comerciante quiere dar salida a 400 kg de avellanas, 300 kg de nueces y 400 kg de almendras. Para ello hace dos tipos de lotes: los de tipo A contienen 2 kg de avellanas, 2 kg de nueces y 1 kg de almendras; y los de tipo B contienen 3 kg de avellanas, 1 kg de nueces y 4 kg de almendras. El precio de venta de cada lote es de 20 euros para los del tipo A y de 40 euros para los del tipo B. ¿Cuántos lotes de cada tipo debe vender para obtener el máximo ingreso y a cuánto asciende éste?

A continuación presentamos la solución al problema propuesto en el número anterior.

Solución del problema:

Denotemos por x al número de lotes de tipo A y por y al número de lotes de tipo B que se deberían vender.

El ingreso obtenido por su venta vendrá dado por la función:

$$F(x, y) = 20x + 40y.$$

El enunciado del problema nos dice que hay una serie de restricciones sobre la disponibilidad de los componentes

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