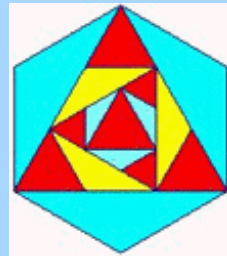# The SAM protocol

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Meeting SAM
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THE CHESS PROTOCOL IN THE SAM PROJECT

➤ Need of an unique protocol for the 30 h chess course

➤ Need of a valid, flexible and full applicable tool

➤ Reference to previous experiences

STRUCTURE OF THE PROTOCOL

➢ The protocol is planned to be employed by the italian federal trainers in scholastic contexts; Its goals are much more educational than technical, i.e. the discovery of chess talent it's not the principal target of the protocol itself

➢ It is divided in two parts: 10 h protocol and 20 h protocol. The last one has been planned specifically for the SAM project

STRUCTURE OF THE PROTOCOL

➢ 10 h protocol: aimed at allowing children to play a game according to the chess rules

➢ 20 h protocol: aimed at not losing participants in the chess course
till to the end of the project, and at supplying of a valid chess instruction, in full accordance with the project targets

10 h Protocol

➢ It is the same the FSI Piemonte Committee used, tested in the project "Chess: a game to grow up with" (3th grade children)

➢ The contents are concerned basically with the chess formal rules

➢Recreational approach: children are stimulated to play as soon as possible

➢ Educational aims : (not too much formalism)

10 h Protocol

➢Immediate introduction of the coordinates

➢Immediate introduction of checkmate as target of the game:

THE KING IS THE MOST IMPORTANT PIECE: TO CHECKMATE THE OPPONENT'S KING IS THE TARGET OF A PLAYER IN EVERY CHESS GAME.

➢King's "golden rules"

20 h PROTOCOL

➢ To write the 20 h protocol it was taken into account:

➢ The experience developed in Piemonte, most by the "chess: a game to grow up with" project

➢ The contribution of well-known Italian trainers; The protocol was written by: Alessandro Dominici, Alex Wild, Giuliano D'Eredità and Marcello Perrone, in collaboration with Carlo Alberto Cavazzoni and Sebastiano Paulesu

➢ The contribution of our University concerning some topics we considered relevant for math education

20 h PROTOCOL

➤Basic guidelines:

1) The protocol had to be used in a way as uniform as possible, by consistency with the SAM framework (randomization)

 2) Both by ethical and educational purposes, and by consistency   with the experimental framework, the protocol aims at not losing any participant, more or less motivated in chess, till the end of the course

20 h PROTOCOL

These choices are to be integrated with the following needs:

➢Prove to be a proficient educative activity for 8 years old children

➢Prove to be a proficient activity from a chess technical point of view

➢ Prove to be coherent with the whole project

20 h PROTOCOL

➢ Therefore, in the protocol we stated:

1. It is fundamental to involve children in chess;

2. To pay a great attention to ethic and educational aspects

3. Theoretical, frontal parts of every lesson limited to 15-20 min max

4. To take into a great account play and recreational items

20 h PROTOCOL

➢ Introduction of exercises by using diagrams, dedicated most to checkmates and to pieces' captures;

➢ Immediate introduction of algebraic notation, to allow a better use of the diagrams and a better communication

20 h PROTOCOL
RELATIONSHIPS WITH MATHEMATICS
AND LOGICAL ABILITIES

➤ To stimulate problem solving abilities , several exercises have a "if...then" structure

4) Inventa uno scacco matto

20 h PROTOCOL

RELATIONSHIPS WITH MATHEMATICS

AND LOGICAL ABILITIES

➢ Introduction of specific items who may induce mathematical items:

1. Counting of pieces by using conventional values (taking care to recalling the relative value of chess pieces) and introduction of the order math symbols, i.e. < , > , =

MATERIAL BALANCING EXERCISES

Bianco: 5 Pedoni, 1 Torre, 1 Alfiere.
Nero: 4 Pedoni, 1 Torre, 1 Cavallo.

Bianco: 5x1+1x5+1x3=13.
Nero:4x1+1x5+1x3=12.

Punteggio Bianco=13 > Punteggio Nero=12
Il Bianco ha vantaggio MATERIALE.

20 H PROTOCOL
RELATIONSHIPS WITH MATHEMATICS
AND LOGICAL ABILITIES

Taking into account the numerical Pyramids (Ar Al Project, Università di Modena and Reggio Emilia), we introduces the chess pyramids, using again conventional values

6) Scrivi il simbolo di un pezzo, nel quadratino vuoto, per equlibrare i valori tra l tre caselle sotto e la casella sopra.
D=9 - T=5 - A=3 - C=3 - P=1

20 h PROTOCOL RELATIONSHIPS WITH MATHEMATICS AND LOGICAL ABILITIES

We introduced also some specific mathematical contents induced by the *Artifact Chess,* like powers and big numbers through the legend of Sissa, where numbers are doubled for every square of the board starting from 1 : 2,4, 8, 16, 32, 64, 128…

…arriving to 2 to the power 63

Traversa	Numero finale	Ordine di grandezza		
1^	128	Centinaia	10^2	100
2^	32.768	Decine di	10×10^3	10.000
3^	8.388.608	migliaia	10^6	1.000.000
4^	2.147.483.648	Milioni	10^9	1.000.000.000
5^	549.755.813.888	Miliardi	$10^2 \times 10^9$	100.000.000.000
6^	140.737.488.355.328	Centinaia di	$10^2 \times 10^{12}$	100.000.000.000.000
7^	36.028.797.018.963.968	Miliardi	10×10^{15}	10.000.000.000.000.000
8^	9.223.372.036.854.775.808	Centinaia di Bilioni[1] Decine di Biliardi[2] Trilioni[3]	10^{18}	1.000.000.000.000.000.000

nota 1: Centinaia di Migliaia di Miliardi
nota 2: Decine di Milioni di Miliardi
nota 3: Miliardi di Miliardi

Sommando tutti i numeri a partire da 1 sulla prima casa e raddoppiando di volta in volta fino all'ultima casa della scacchiera, Il numero finale che si ottiene è: **18.446.744.073.709.551.615** = 264 - 1.

mille	1.000	quadrilione	1.000 triliardi
milione	1.000 migliaia	quadriliardo	1.000 quadrilioni
miliardo	1.000 milioni		
bilione	1.000 miliardi	Il numero totale ottenuto si legge:	
biliardo	1.000 bilioni	**18 Trilioni 446 Biliardi 744 Bilioni 73 Miliardi 709 Milioni 551**	
trilione	1.000 biliardi	**Mila 615.**	
triliardo	1.000 trilioni		

We proposed also interdisciplinary links, e.g. with Italian language and Art Education

David McKee The Chess Match
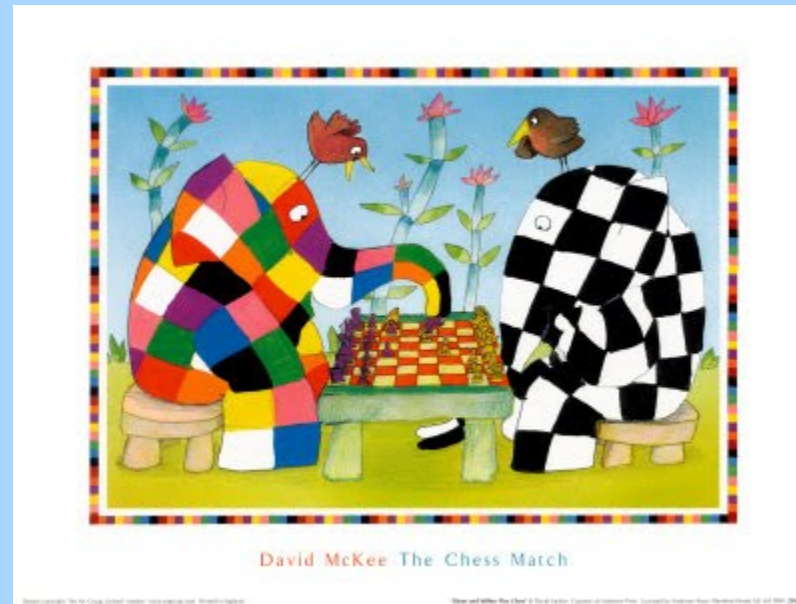
THE EXPERIENCE IN PALERMO: CLASS ACTIVITY

➤ We already did experimental inquires concerning chess and math, but we didn't consider carefully the math and chess activity during the inquiry;

➤ Shift of perspectives: Chess is not a medicine!

➤ We followed the math activity in the class, to better observing the processes

THE EXPERIENCE IN PALERMO: CLASS ACTIVITY

➢ The teacher reported some sharp improvements, probably caused by the chess activity:

- better attention and concentration

- better deductive reasoning

- good performance in spatial orienteering activity (anticipatory visual thinking)

A MORE SUBTLE ANALYSIS

- We performed an activity using numerical pyramids (cfr. Malara & Navarra, Prog. Ar Al), recording a un video and extracting from it some crucial episodes, with particular reference to key words, and gestures and writings by children and/or by teachers and colleagues.
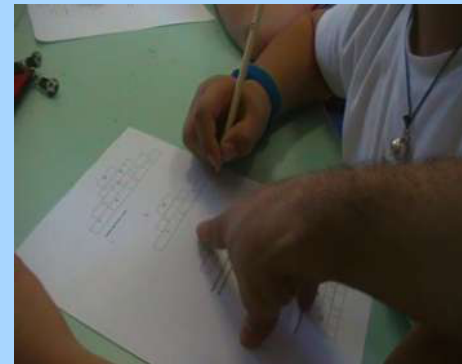
VIDEO ANALYSIS

➢ We appreciate the children maintained a high level concentration for 44

➢ Children show a strong attitude to accomplish anyway the task

➢ Children adopt regularly deduction deduzione
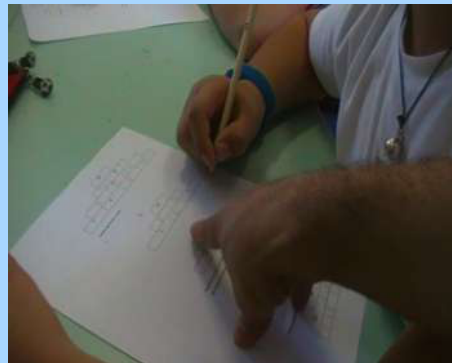
CONCLUSIONS

➢   Chess may represent an useful didactical and educational tool, with special respect to mathematics. Anyway chess is not a medicine, then we have to consider carefully the contents we want to propose, the educational contexts and the ways in which the chess protocol is proposed. In particular, the chess activity in primary schools seems very proficient, especially if the activity is proposed in an enjoyable manner. In fact….

As chess trainers we know that chess is most....

➢   Respect of the rules

➢   Attention and concentration

➢   Learning by the losses

➢   To be able in something (ability), ambition of self-realization , communicative and   relational motivations, sense of belonging, desire of emulation…,

➢   aesthetics, love for well-done things, but most ….

Game!!!!

THANK YOU FOR ATTENTION!