

Playing Board Games Inside and Outside the Classroom

Chrysanthi Skoumpourdi, kara@aegean.gr, University of the Aegean

Introduction - Theoretical background

According to research results (Bishop, 1991; DeVries, 1980; Szendrei, 1996) games offer an interesting mean of teaching and learning mathematics. Games use natural competing and creative abilities to stimulate learning (Caldwell, 1998), facilitate children's active construction of mathematical concepts and skills, increase the connections between students' separate fragments of mathematical knowledge, reinforce their current knowledge, and improve their successful mathematical learning and understanding. Games are considered a field in which the complexity of communication, the ability to arrive at a decision and the ability to make a conjecture coexist (Skoumpourdi & Kalavasis, 2007a). Play can give children the opportunity to tackle quite complex ideas (Griffiths, 1994). High quality play can foster to a child to believe in themselves, to have a positive self-image and high self-esteem (Heaslip, 1994). Games can improve the relations and the communication among the persons that are involved in the educational environment. They can strengthen the relations between students and teacher (Ceglowski, 2007), as well as between children and parents (Hansen, 2005).

Although board games are often included by parents in the home experiences supporting numerical achievement (LeFevre et. al, 2009; Skoumpourdi & Kalavasis, 2009; Skoumpourdi, Tatsis, & Kafoussi, 2009) teachers and parents often have different perceptions of the benefits of games in mathematical instruction. It seems (Skoumpourdi & Kalavasis, 2007b) that in kindergarten and in primary school communities there are differing perceptions of "if and how" mathematical learning can emerged from games. Teachers consider that playing games in mathematics instruction could improve students' mathematical learning and their ability to solve mathematical problems as well as their self-esteem and for this reason they include them in their mathematical teaching practice. But there are some parents who believe that games are only for home use and that children cannot learn mathematics playing them. And as Heaslip (1994) mentioned there are parents who believe that play is the time-wasting by-product of the lazy adult. This hidden coexistence of competing attitudes towards the role of games in teaching practice is an obstacle for the design of an operational and instructional use of the games in the teaching of mathematics.

The purpose of our broader research is to explore the factors which can convince parents of the benefits of games in mathematics instruction. Educators need to be able to justify through their practices, how play is the supreme way through which young children learn, and then, just as importantly, be able to articulate this to others, for example parents. This study, which is part of the broader research, is aimed at investigating the practices used in a board game played by a kindergarten teacher inside the classroom and by a parent outside the classroom (at home) for the purpose of recording them and correlating them.

Methodology

The board game that was used in this study was "Cat and Mouse" which was designed by the researcher and a group of university pre-school education students (Skoumpourdi, 2010). The game consists of a board with black and white squares

which are not numbered, of five different-colored mice, one cat, one basket with pieces of cheese and a dice (Figure 1). Each player moves, apart from his/her mouse, the cat and the basket with the pieces of cheese with each turn. They make their markers advance the number of squares indicated by the dice. They may move their markers in any direction, horizontally, vertically or diagonally. The mouse is supposed to try to avoid being 'caught' by the cat and also to try to come close to the pieces of cheese to snatch it from the basket. The cat is supposed to try to come close to the opponents' mice, and catch them. Avoiding and approaching movements are interdependent because neither can exist without the other. This implies the possibility of using strategy. In this game, there is no clear, specific, predetermined end. But it can be said that the winner is the first player who collects the most pieces of cheese.



Figure 1

The “Cat and Mouse” game depends partly on strategy and partly on chance. The game on the one hand serves as an incentive for children to think of alternatives and anticipate what the opponent might do and on the other hand it serves as an opportunity to do what chance dictates. Each player must think on many fronts before making each move. ‘Cat and Mouse’ is an educationally useful game because according to DeVries (1980: 4) it suggests something interesting and challenging for children to figure out how to do, it makes it possible for children themselves to judge their success and it permits all players to participate actively throughout the game.

The “Cat and Mouse” board game was proposed to a teacher and a mother to play in order to increase the opportunities to observe differing practices. It was expected that implementing an unusual game might lead the teacher and the mother to be actively involved, generating different practices which could then be observed.

Diary and videotaped data were used to compare findings obtained in research of the practices the teacher and the parent used when playing the board game with the

children. The former played the board game in her kindergarten class with 24 children and the latter (a kindergarten child's mother) in her home with her daughter and two friends (of the same age as her daughter). No specific directions or guidance on how to play the board game other than the rules were provided.

Results

Inside the classroom

The teacher of the class formed groups of kindergartners by giving to each child in each team a bracelet of the same color as the color of their mouse. Then she explained the rules of the game, and the game started. The teacher chose not to participate in the game as a player. Her role was to organize children's turns. The teacher's role was passive but crucial in order to ensure fair participation of all children in the game. The teacher maintained complete control of the class. She kept the process under control, guiding them by means of reminding them who was to play as well as which marker to move. She usually left the children to play as they thought right. She always encouraged children to count loudly. She insisted on correct counting and for one to one correspondence for movements on the squares but she did not notice when the squares were not adjacent to one another (C: child, T: teacher):

C12: (She throws the dice) *Four*

T: *Count the squares loudly and correctly*

C12: (She moves her mouse 3 squares instead of 4 and in places not adjacent to one another).

T: *Did you move your mouse four? Count them.*

...

C19: (He throws the dice)

T: *How many is that?*

C19: (He counts one by one) *One, two, three, four, five.*

T: *Move your mouse five squares.*

C19: (He moves his mouse in places not adjacent to one another) *One, two, five.*

T: *Count again correctly.*

C19: *One, two, three, five.*

T: *Which number is after three? Count again.*

C19: *One, two, three, four.*

T: *Which number is after four?*

C19: *Five.*

The children were not encouraged to take into consideration what the cat could do to opponents' mice. Although the teacher did not mention any rule/strategy for the cat in some cases she mentioned a rule/strategy for the mouse (or the pieces of cheese) either before or after child had moved it:

T: *Did your mouse pass by the pieces of cheese? ... Try to move the pieces of cheese toward your mouse to get a piece ... Why did you move the pieces of cheese away from your mouse, how will you get a piece of cheese?*

Outside the classroom (at home)

The mother chose to participate in the game as a player, and after explaining the rules the game started. The mother's role was active and carefully structured in order to make movements which showed the strategy she adopted. She always described her strategy verbally (M: mother):

M: *I am going to think how I can get a piece of cheese before moving my markers. Ok! one, two, three ... and now watch what am I going to do ... one,*

two I take a piece of cheese and three, I move my mouse away from the cat. And I move the cat one, I 'eat' your mouse, two, three ... I took the cat away from my mouse...

She always recommended to the child who threw the dice to think carefully before moving the markers:

M: Before moving the markers we have to think about where to move them. Do not move them just anywhere ...you have to think where the other mice are, where the cat is, where the pieces of cheese are ... you have to think where you want to go ...

The movements and the counting were always in correspondence with the number of squares and their position. She noticed when the counted squares were not in a chain and she corrected it.

Conclusions-Discussion

Children had quite different experiences when playing the same board game inside and outside the classroom. Both the teacher and the mother used different practices to give children the opportunity to develop various strategies in order to make a 'successful' movement. The practices varied in terms of the style and the quality of the adult (teacher/parent) involvement, as well as the way the rules were treated—repeating a part of the rules or all of them. Thus apart from the way the adults participated—as a guide or as a player—it seemed that the quality of their intervention was critical. When the intervention was early, it gave the child the opportunity to develop a strategy. When it was too directed it destroyed the child's ability to think for themselves. When it was too late, it was of no use, for this child, as the movement had already been made.

Informing parents of teacher's practices, and vice-versa, and analyzing and discussing them with each other might be a starting point for teacher-parent cooperation. These practices could facilitate parents' access to and participation in the mathematics teaching process thus reducing competing attitudes between them and teachers about the role of games. Inviting parents into the classroom to play board games with the children or to observe teachers playing board games with the children could be a stepping stone toward appreciating the positive role of games in children's (mathematics) education and result in an acceptance of teacher's didactical choices.

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