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CONCEPT MAPS IN A COOPERATIVE LEARNING CONTEXT

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Abstract This article is about a concept map experience realized in a cooperative context which was carried on in a little infant school in Giugliano, a country in the surrounding of Naples, Italy. It's part of a research project that started last year by the PRODEST group of Naples, that belongs to a national net of schools that share same ideas on teaching. It regards mainly teaching science by means of concept maps and key-words. The research, still in progress, involves teachers and students from infant to secondary schools which work in order to find methodologies and good practices for meaningful teaching/learning process. Concept map in cooperative learning groups is the core of the research.

1 Introduction

At the beginning of this school year the PRODEST group of Naples planned a long term research based on 3 hypothesis. Each teacher, then, involved set a personal planning in his own school. These are the 3 hypothesis:

- In each level of school there is "minimum linguistic luggage" that let students to carry on their studies. A distinguished scholar, T. De Mauro, says that to have a satisfactory school experience, a pupil in the first year of primary school (in Italy: a 6 years old boy) must have a luggage at least 2000 words. Therefore, it is vital that school, especially on deprived areas gives effective linguistic models and lot of reasons to speak in class. For this motive, learning in cooperative groups is very successful methodology: it increases the number of linguistic interactions students can have in class at the same time;
- In our global society the amount and fragmentation of information on one hand and the lack of family and social structures to support children and youngsters in their personal and emotional growth on the other hand, lead to a negative attitude towards school education and formal teaching. In this situation schools-for many pupils the only place to meet culture, people and learn new skills- could have yet a really important role if they teach cognitive skills useful to live in this world and social skills to interact whit others. Teaching concept maps through cooperative learning is the right strategy to reach these goals. It enables children to acquire at the same time skills like listening, comparing, cooperating and give them chances to use meta-cognitive abilities like analysing, generalising, selecting, summing up.
- Because the importance of the "implicit curriculum"- routines, times, spaces, relationships (between children/adults, adults/adults, children/children..) external environment, parents' role – it is necessary schools take it into consideration when plan their activities.

2 The educational project in the infant school: description of the teaching planning

In September the rubbish collection in Naples and surrounding was really bad and everybody was talking about the problem. People began to realise that ignorance and negligence of local authorities and citizens could cause serious economic, environmental and social damage and menaced the public health. It was inevitable that schools were feeling the need to contribute to change wrong ideas and behaviours towards environment and the citizens' relations whit the government. This strong social feeling found answer, in our school, in an educational long-term project involving teachers, pupils, parents, local authorities and private associations. In the following, we describe only on the cognitive and social skills of the school planning. During this first year, the attention of children was focused on the differential collection of the rubbish and the recycling. To introduce these topics teachers started from two concepts: object (in PRODEST Project it means: what you can know through senses) and material (what an object is made of). These are core concepts in science teaching from the PRODEST point of view. The school project started with a plenary led by each teacher in class to let ideas come out in a brainstorm activity.

2.1 Initial conversation

Focus – question : What are rubbish?

Anna: What we don't like and throw away.
Marco: What is old and throw away.

Andrea : Old things we don't use or empty bottles
Luca : I don't know.
Giovanni: Everything we throw in the bin because if we leave in the grass we don't love nature.

After the conversation, children and teacher set a legend and worked on the first group map where rubbish were considered broken, useless, rotten or old objects (fig. 2).

Fig. 1 The big problem in the city: the rubbish

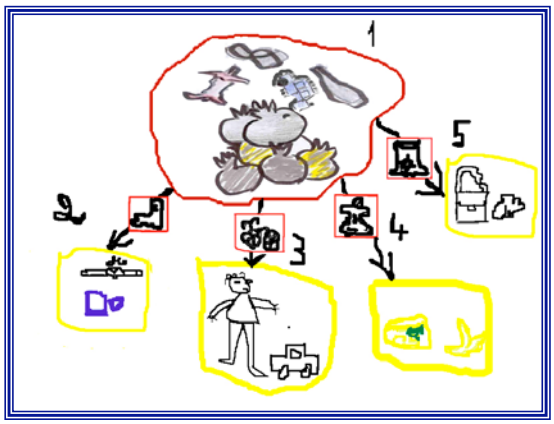

Fig 2. : Classification of rubbish: map of group
Legend
Number 1: rubbish;
Number 2: broken object;
Number 3: useless objects;
Number 4: rotten objects;
Number 5: old objects

Analysing the conversation, teachers realized children didn't know anything about rubbish collection and recycling process. So, they built together containers for recycling waste using carton boxes and painted them with different colours (fig. 3). At the same time the concept of materials was introduced through games and sensorial experiences and children produced conceptual maps (fig. 4). To evaluate this first step, children worked on a group map on differentiated waste disposal (fig.5)

Fig. 1. pupils sat next to the carton boxes for recycling painted by them

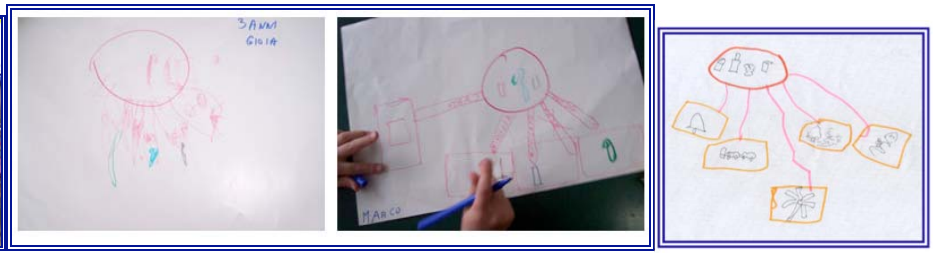

Fig. 4 :Individual map drawing: a) Gioia, 3 years old; b) Marco, 5 years old; c) Sara, 5 years old

Fig. 5: Concept map of group on differentiated waste disposal

On that occasion, teachers gave to children 4 yellow circles representing the concept of materials (plastic, paper, aluminium and organic), same arrows named with linking word "is made of.." and a red circle representing the general concept of waste. Older children put circles in the room: the big red circle at the top

and the yellow ones at the bottom linked by the arrows. Then, in turn, each child put one object from the red circle to a yellow one. Children were very active during the game participating with comments and advices. For these reasons, when the local authority put the recycling containers in the school garden, children found very easy to use them. (fig. 6).

Fig. 6

Bins of different colours for separate rubbish collection

At this point, pupils had to understand the concept of recycling. So they went to visit a recycling factory (fig. 7); took part whit their parents in a creative laboratory using recycled materials (fig. 8); prepared with local environmental associations the containers to fertilize the vegetable garden (fig 9).

Fig. 7 Visit a plastic recycling factory

Fig. 8 Finding a creative way to use recycling waste: the laboratories

Fig. 9 Black bin for organic waste that become compost to fertilize our vegetable garden

At the end of May the school organized a big event. There was an exhibition with the objects made by the children and everybody could taste the vegetable from the garden.

3 Teaching concept maps in cooperative learning context

In our school concept maps are made first by groups and then by individuals. This because we think in the strength of the cooperation: it represents the only way to solve practical, social, personal or interpersonal problems in the global society. In fact, nowadays problems are usually complex and many-sided: it is not enough people has correct information to solve them. Everybody needs to be able to listen, work and interact whit the others. Taking this into consideration, school education can't suggest individuality and competition but has to create learning contexts where social skills are as important as conceptual ones. Regarding social abilities, we trained pupils starting with games in pairs that facilitate the promotional interaction "face to face"; then they played in small groups of 3 -5 children (fig. 10), and only later they worked with a group made up of the whole class. After these experiences pupils were meeting in cooperative learning groups were the success of the activity depends on everybody involved working with the others. In fig. 10 you can see children involved in small group games to improve social abilities; in fig. 11 children are working on concept maps. Cooperative groups have to rethink, check, generalize and formalize their experiences and concepts to create concept maps. These are realized using semi-structured materials given by the teachers to each child of the group. Groups are different according to the activity: in fig. 5 the group was the whole class, in fig. 11 there are five-six pupils per group.

Fig. 10 Games of social interaction

Fig.11 The cooperative groups working on concept maps

Conclusion

During this first year, we have put to the test the usefulness to link cooperative learning method and concept maps. Even we still don't have final results and scientific evidence we could say that this methodology has improved our pupils' vocabulary and their cognitive and social skills a part from a notable reduction of social conflicts in class**.**

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