

CONCEPTUAL MAPS AS A TOOL TO MAKE A SCIENTIFIC EDUCATIONAL VIDEO, IN COOPERATIVE LEARNING

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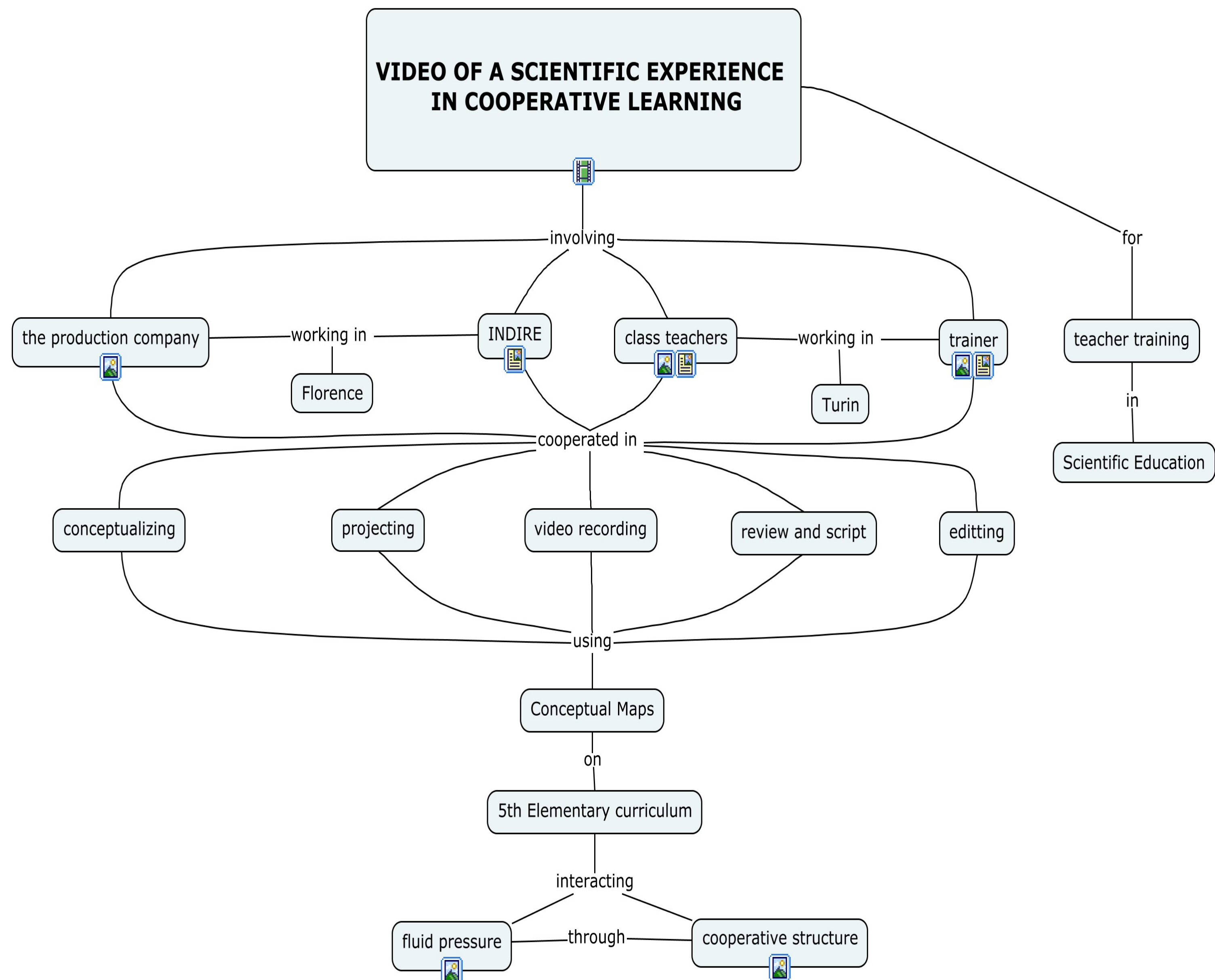
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Introduction

This work describes how a documentary video, about a scientific experience in cooperative learning, was made coordinating different work phases across conceptual maps creation and sharing, among the project’s stakeholders. The video illustrates how to explain the fluids pressure concept to a 5th elementary class presenting a scientific experiment and using the **cooperative learning method**. Preparing the video was a very complex procedure that required the integration of different resources from different parties: researchers of INDIRE, teachers of the 5th grade, a Project “Parole della Scienza” expert, and technicians who carried out recording and editing. The scope of this project is exposing an example of teaching creates learning opportunities for teachers. The assumption is that through field experiences theachers will meld theory into practice by being exposed to concrete images of the teaching strategies: cooperative learning. Conceptual maps have tied our ideas to one another, shared and organized them over the distance, such a choice allowed us to use a graphic modeling to express our concepts synthetically. Furthermore, these maps supported communicative settings in our experience.

MAIN QUESTION: How can we organized the path that leads to the video?

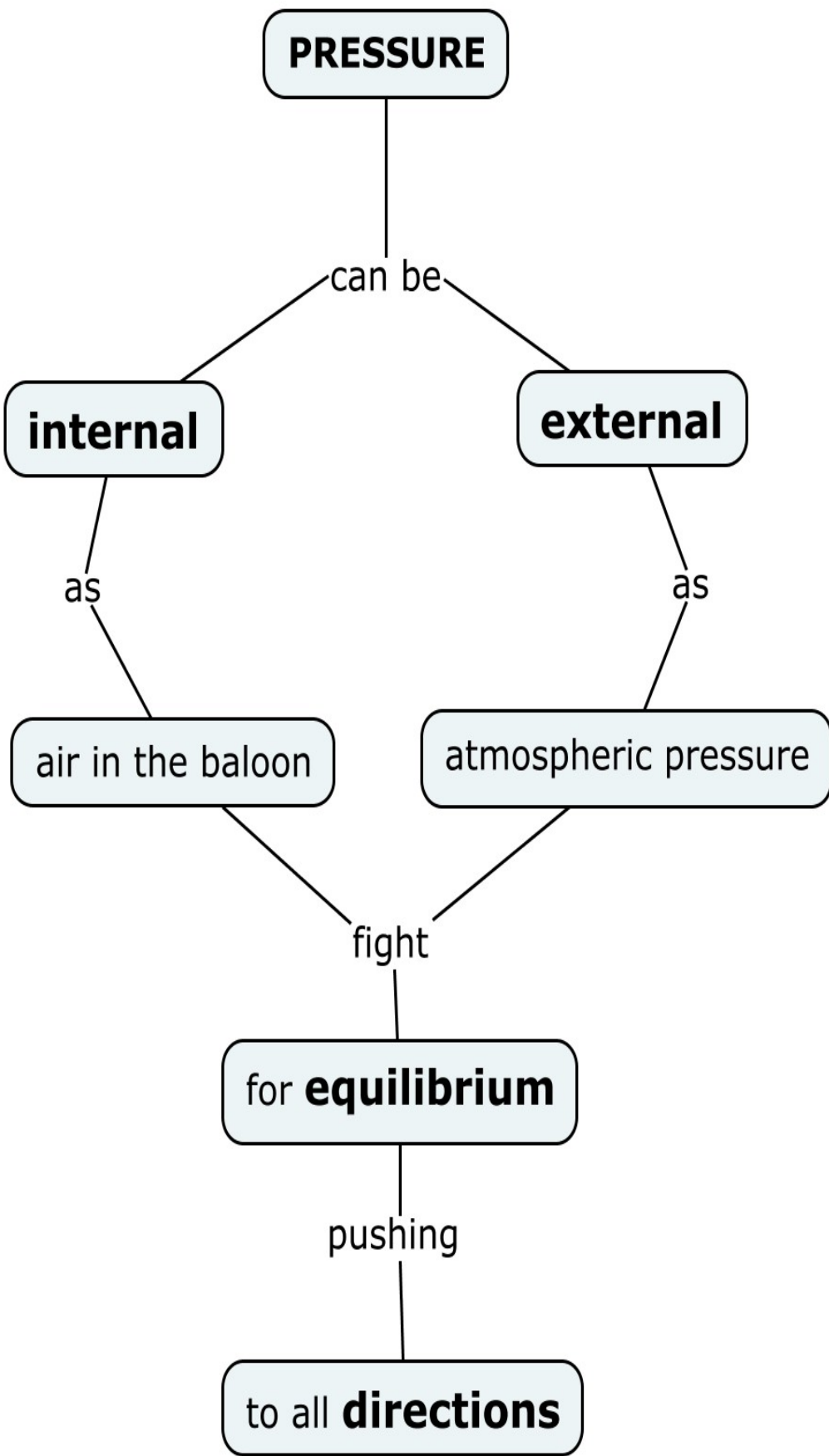


The map was created by the authors of the video at the end of the experience to explain the architecture of the path that leads to the video that involved the participants.

The scientific experiments

For the **first experiment** the pairs blew a balloon; We immediately asked the groups: "Why did the air you blew caused the balloons to blow?" Thus we asked the pupils to push the balloons slightly with the cardboard to observe how it deformed and how the air inside moved. At the end of this experience we asked the class to create a concept map to be used to describe the concept of pressure, starting from the examined events. The result comes from the pupils cooperation, who summed up and reworked the experience in order to formulate and learn the concept more easily. Using conceptual maps as a tool to re-elaborate the experiment, helps pupils to rearrange thoughts about the examined concepts.

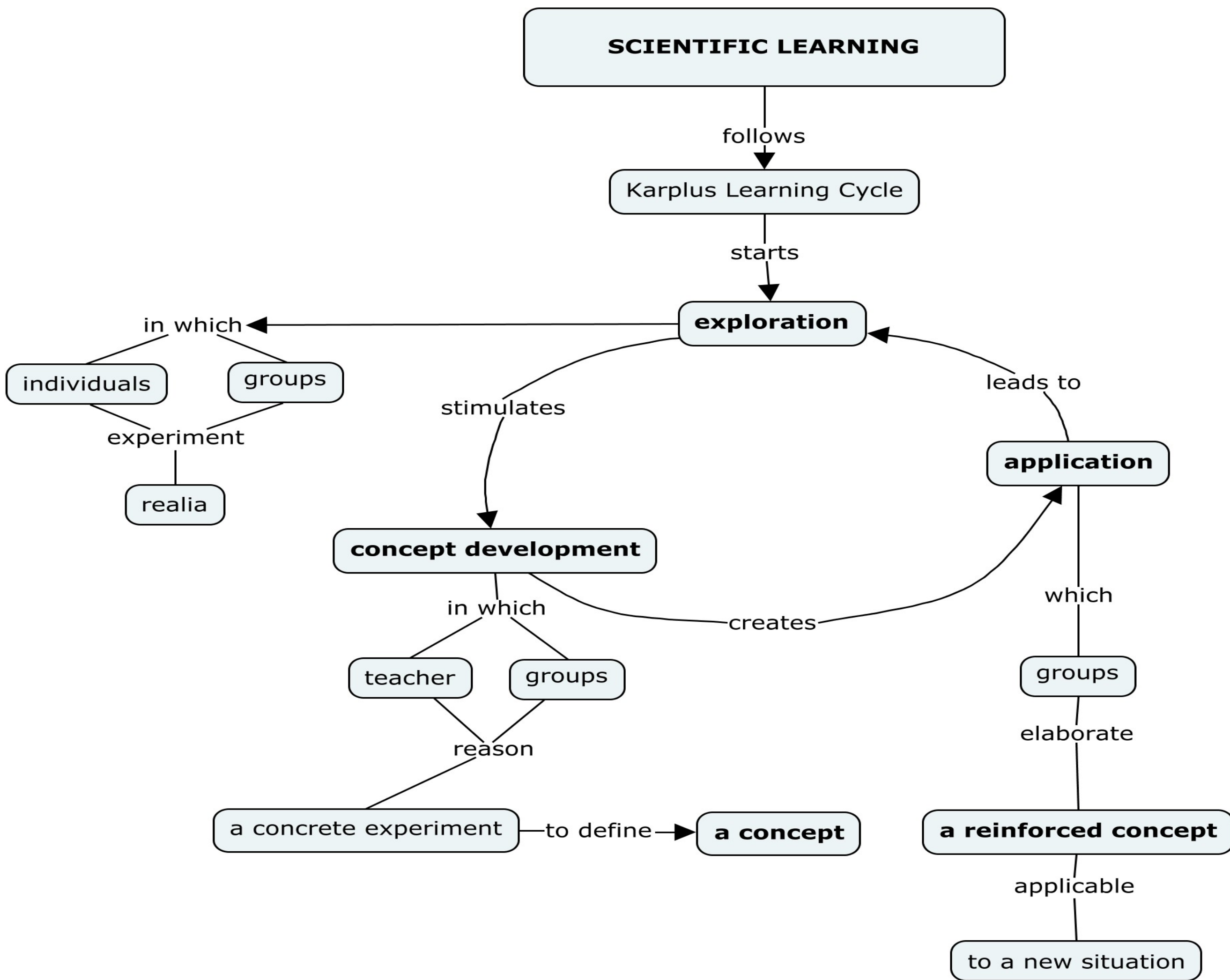
MAIN QUESTION: WHAT CONCEPTS DID YOU LEARN BY THE EXPERIMENTS?



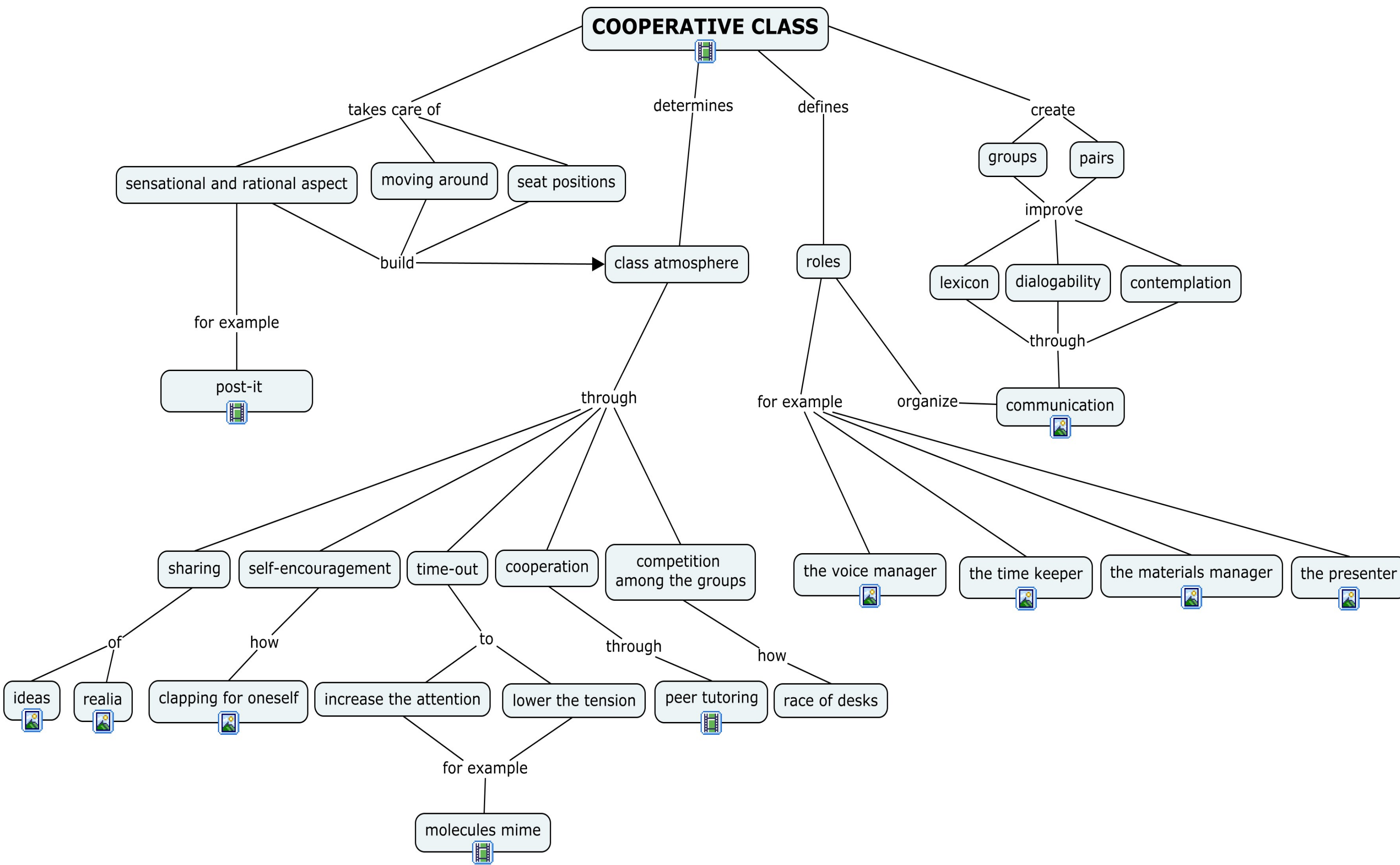
For the **second experience**, we used a hotplate and an erlenmayer flask with a balloon inside. In this case, the teacher conducts the experiment and the pupils are observers. Once the hotplate was hot enough, we placed the erlenmayer flask on it. We observed the balloon blowing again on the external side of the flask to allow the metacognition we used the *Placemat* cooperative structure. The last request was to write a post-it about the satisfaction in the activity. In the cooperative class, the focus is the development of social skills, teaching them to reflect upon their emotions and discussing them with the others.

The video creation through concetual maps

The video was recorded in January 2015, in a 5th Elementary School in I.C. “King-Mila” in Turin. The teachers, beside Prof. Falasca, elaborated the activities and programmed the way to conduct them in class. In order to clarify things further, some conceptual maps were built up through which the activities and the content of the video were displayed. **The maps were a precious resource to connect theory and activity.** The other map was particularly important to describe and schematize the class setting, to help the video technicians figure out how the class was arranged as for desks, student movements in order to facilitate the recording process. The diversity of the work environment made it necessary to introduce the characteristics of a cooperative class and a detailed description of various moments of a scientific experience.



The cooperative structures



The map has been the guide to video editing. The technicians used it to highlight single elements of a cooperative class; thus marking the methodologic characteristics of the activity. An important part of collaboration with INDIRE was programming single experiments. Conceptual maps were a helping hand in this step as well, facilitating the schematic representation of an activity, describing the methods through which experiments were proposed and the cooperative structures to be used for the reflections.

Conclusion

This experience has produced a video for teacher education and represents a way of laying the cognitive groundwork for developing teacher self-reflection. The video is supposed to be used by INDIRE of Florence (i.e. Istituto Nazionale Documentazione Innovazione e Ricerca Educativa) in European project of PON “Scientific education”. You can watch the video on the website http://repository.indire.it/repository_cms/working/export/6684/, it’s dedicated to train the newly hired teachers who can find here an example about how to set up a science class in cooperative learning.

