



## The Co-construction of Knowledge by Way of Cooperative Projects

Tânia Correia<sup>1</sup>, Valter Rato<sup>2</sup>

### Abstract

*The present work describes the curricular learning process, through the realization of cooperative projects, by two mixed groups (in terms of schooling level) of a private sector elementary school associated with the Movimento da Escola Moderna. The project guided research is comprised of a set of interdependent phases: (i) the definition of the study subject, where the students register the questions to be answered; (ii) Research and information processing based on different information sources (iii) final product preparation (iv) presentation, not only for the other group, but also for kindergarten groups present at the same institution, fostering a generational exchange, enriching the acquired knowledge. After the presentation, everybody is asked to give feedback to the final product and to the process that leads to it. It's through this presentation that the co-construction of knowledge occurs. In this way we stimulate perspectives and invite to thinking in collectively, starting from different viewpoints. Our classrooms projects tend to grow naturally helped by the fact that they are present from the initial levels of schooling at the institution. Students pick the theme of the projects they want to work on, emerging from their curiosities or from the relation with the curricular materials of the several areas of study. The present work describes the advantages of working via cooperative projects: autonomy in the search for information, decision power on the choice of what to communicate to others and tools that facilitate this communication. Following the project presentation, a group systematization of the theme/subject is done. If the project is related to the curricular themes, a summary is written and delivered to each student, regardless of the level of schooling or of having participated in the project development. Exercises of validation and practice are proposed to the students, for them to do when they feel prepared. Learning through projects gives meaning to it that traditional methods don't, by fostering a cooperative, meaningful, dialogic learning process.*

*Keywords: Co-construction of knowledge, Work by away of cooperative projects, Meaningful learning.*

### 1. Introduction

The present work describes the curricular learning process, through the realization of cooperative projects, by two mixed groups (in terms of schooling level) of a private sector elementary school associated with the Movimento da Escola Moderna.

### 2. Cooperative projects

The projects appear in our groups in a natural way, even because they are already part of the lives of most of the students of the institution where we teach from the kindergarten. In the 1<sup>st</sup> cycle students have a greater autonomy in the execution of the projects, planning, working on the information collected and in the preparation of the final product to present to the 1st cycle group. The work on projects is a moment prioritized by the group and that appears in our weekly agenda.

From the beginning, students are involved in the whole process, leaving them the power to decide and choose the path to follow when executing it. We teachers are then seen as coordinators and guiding the whole process ([1] Correia, 2012).

In our classrooms there are projects that come from the interests of the students, with questions resulting from their curiosity and questions related to the contents of the different curricular areas. Whether it is interest or content, the most important is that they go through the different phases of a project: (i) planning; (ii) research and treatment of collected information; (iii) execution of the final product and (iv) communication. It should be noted that the working groups are constituted according to the interest that the students reveal in the different themes.

In planning students define their topic of study and record all the questions related to this. Then they ask the other groups if they want to contribute with some questions. This year, and autonomously, the students went to the other classrooms of kindergarten, in our school, to know if they had questions

---

<sup>1</sup>Colégio Piloto Diese, Teachers Association of Movimento de Escola Moderna, Portugal

<sup>2</sup>Colégio Piloto Diese, Teachers Association of Movimento de Escola Moderna, Portugal



about the topic they were working on. The most interesting of this questioning is that "my question" ceases to be mine and becomes "our question". Students give their questions, their curiosities to others so they can investigate and bring them the answers. It is the trust and commitment they have to each other in the pursuit of knowledge, to give the other the responsibility to bring the answer to the question for which he longs.

After the questioning and registration made in the project plan (figure 1), which is the same for all projects, the students go to the research and treatment of the information and collect the answers to the questions initially formulated. They can use the books we have available in our classroom and school library, search the computer, the tablet, and construct questionnaires and interviews. This phase is the most time consuming in that, in addition to reading much information from various sources, they have to select the one that interests them the most, differentiating the accessory information from the essential one. Sometimes it is at this stage that they need more support from the teacher in order to question them as to what actually answers the questions that have arisen and what is in fact more important.

Project: \_\_\_\_\_  
Group: \_\_\_\_\_

What we already know	What we want to know	What the group wants to know	Syllabus contents

What do we need to do to present the group:

- Album
- Book
- Posters
- Flyer
- Another one \_\_\_\_\_

Needed materials: \_\_\_\_\_

Number of sessions for the survey: \_\_\_\_\_

Number of sessions to do the abstract: \_\_\_\_\_

Number of sessions to prepare the presentation: \_\_\_\_\_

Total of sessions: \_\_\_\_\_

Date of presentation to the group: \_\_\_\_\_

Fig. 1. Plan of the project

After a few sessions in the research (figure 2) and processing of information (figure 3), students move on to the execution of the final product. What to do with the whole material they collected? Initially in planning the group defines how the acquired knowledge will pass through the project, making it easier to materialize the final product. Nowadays, PowerPoint has been appearing in our classrooms, another tool that has helped them to sketch information and organize it in a dynamic and interactive way. However, the end products vary widely: books, posters, pamphlets, among others. It is important, therefore, to vary the type of productions they are making to share with others the information they collect so that they can gain tools to support them in communication.



Fig. 2. Working group in the stage of researching for information



Fig. 3. Working group in the stage of selecting information

The communication of the projects (figure 4) is the culmination of the whole process. This is the moment when it is presented to the group what they have been doing and will somehow want to respond with the responsibility they had to bring the answers to the questions raised, since the project is a social commitment ([1] Correia, 2012, p.13). The communications, on the initiative of the students, extend to the other Kindergarten classrooms of our school (figure 5), thus sharing knowledge with other age groups, giving rise to a generational meeting. This dynamics, integrated in communication circuits, is reflected in the view of [2] Niza (2001) in “objectos de partilha, de solidariedade e de coesão comunitária” (p. 3).



Fig. 4. Working group in the stage of communication



Fig. 5. Working group sharing their project with other classes

Communications are rich moments of learning in which the co-construction of knowledge exists in its fullness. In this way, we stimulate looks and invite to think together from different points of view. The individual and collective learning is based on the curiosities and desires of the people who make up the group and on the collective interpretation of the external order made to the group in the form of general curricular guidelines. Thus, work projects are developed based on the interests of the students, which are planned and monitored, which in some occasions give rise to new projects. The final products (except for PowerPoint) are posted in a room of the rooms, allowing, once again, a sharing of knowledge with everyone.

Even at this stage, and after each group communicates their project, everyone is invited to analyze of the communication and the course that the work group carried out during the project: difficulties and



anguishes felt, positive aspects, points to improve, among others . In this way, it is through this reflection “que o conhecimento e o respectivo trabalho humano reiniciem, ciclicamente, uma nova volta de espiral contínua de desenvolvimento do conhecimento e do trabalho humano que o produz” ([3] Niza, 2005, p. 4).

## 2.1 The evaluation of projects

As previously mentioned, the projects that appear in our classrooms come from different areas and themes, from Arts to Sciences, Mathematics and Languages. In this way, we highlight some projects in the areas previously mentioned.

Table 1. Projects conceived in both groups by subject

Arts	Mathematics	Portuguese	English
- "Drawing"	- "Roman numeration" - "Measures of length" - "How did you come up with the numbers?"	- "Adjectives" - "Names and verbs" - "Synonyms and antonyms" - "Adverbs and prepositions" - "Affixes: prefixes and suffixes"	- "Animals..." - "Body" - "Prepositions" - "This/ That, These/ Those" - "Question words" - "Picture Dictionary"
Science	Sports	Others	
- "Skeleton" - "Brain" - "Water" - "Sea animals" - "Dinosaurs" - "Plants" - "The hair" - "Universe" - "Reptiles" - "The eyes" - "Food" - "Ar" - "Electricity" - "Recycling" - "Robots"	- "Handball" - "Basketball" - "Hockey"	- "Road signs and traffic prevention" - "Countries" - "Bugatti" - "Signs" - "Minecraft" - "Movies" - "Monuments" - "Movies"	

The communications of these projects bring the knowledge dynamically, based on the dialogue and the final products made, in the discussion of the points of view, making the learning effectively significant.

After the moment of communication, the students who presented the project together with their colleagues and teachers who attended the communication, are invited to carry out a systematization, in a large group - "What do we learn from the project?" -, organizing the information heard and relating it to content that appears in the school program. From this systematization comes a note, carried out in a large group. The notes are archived in each student's portfolio, which is often used to make records, during the times when students work autonomously (Autonomous Study Time).

Regarding the validation of the contents of the program that comes from these projects, a form is elaborated with the purpose of consolidating the knowledge worked on the projects. After completing the course, the teacher corrects it immediately, providing the student with the necessary feedback to continue in their teaching-learning process. If you master the content, the student registers in the checklist, which contains all the program contents of his year, the validation of the same. (figure 6). If you are still having difficulties, mark support with a student and / or teacher, and self-propose to do another check.





Fig. 6. Syllabus (Checking list – Portuguese 1<sup>st</sup> grade and Mathematics 4<sup>th</sup> grade)

In this way, the contents of the different curricular areas are not presented in an expositive way to the students, but they are the ones that explore and communicate to the group their findings, in a dynamic and interactive way. Thus, knowledge is generated through the sharing of discoveries and reflection of the same, realizing the true co-construction of knowledge. The evaluation is done with the students, with the purpose of knowing the contents that already dominate and others that need to deepen. Students are able to make sense of many learning that the school cannot give. In addition to the validation of the contents of the program, there is also an evaluation of the execution of the project, the communication and proposals to improve it.

### 3. Conclusions

In short, work by cooperative projects promotes questioning, research, treatment of information and its organization and communication. Students are invited to take responsibility for bringing the answers to the questions, for the whole group and, with them, to build the knowledge, reflecting on it. The detailed listening of what each one has to say, of what each one brings of their life history, generates the dialogue learning. For all that has been said, working on projects promotes numerous skills from the scientific to the relational part. Project work is a cooperative activity in permanent construction.

### References

- [1] Correia, C. "Aprender através de projetos", Escola Moderna, Lisboa, (2012), 12-36
- [2] Niza, S. "Editorial – A socialização dos produtos socioculturais da escola", Escola Moderna, Lisboa, (2001), 3-4
- [3] Niza, S. "Editorial – Todo o trabalho humano requer a idealização de um projeto", Escola Moderna, Lisboa, (2005), 3-4.