

Even so, after do this benchmarking analysis, the team project develop a first stage to create the European Programme with 30 ECTS working in three main topics: human resource and knowledge management, quality management, and assurance intercultural management.

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Cooperation in Science Teaching: The students' contributions, speeches and arguments

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In this paper, we acknowledge curricular practices and other perspectives used for the teaching work in Science teaching, contributing to Teacher Education studies. The specificity of other approaches is sought, whether centered on the relationship between young people and those who them, and their skills to identify how to learn best, assuming a special focus on teaching, explaining and learning Science through the discourse of young secondary students. Different practices and interaction in educational domains are identified in order to achieve better results in school work, through studying the way students «see science education», therefore accomplishing better learning skills and curricular justice in the school environment. In the course of research and review of the literature it is noticed in the speeches of students a reluctance to follow the studies in science (Cachapuz, Gil-Pérez, Pessoa de Carvalho, Praia & Vilches, 2005). This "crisis of science education" (Pozo & Gómez Crespo, 2009:15) is manifest in the classroom with the teaching of a form of science disjointed of scientific knowledge which sometimes is translated into a decontextualized learning. Generally, and consequently, students reveal discomfort,

doubt and anguish to continue their studies in vocational areas where science subjects – Mathematics, Physics, Chemistry, Biology, Geology and Geography – are nuclear. Research in science teaching shows that “most of the students don’t learn the science they are taught” (Pozo & Gómez Crespo, 2009:15). Affirming students’ don’t learn, is clearly different from affirming that students don’t learn what is taught. It is as though two different “sciences” are being taught. In this perspective, we notice a decreasing demand of students for scientific studies. Due to the uncertainties and difficulties presented by students regarding the valid curricular standards there is an increasing demand for alternative science learning skills in non-formal contexts, such as tutoring. Within this context, the project “CiênciasForaEscola” (CFE, SciencesOutsideSchool), which involves a transnational team in a networking and multidisciplinary partnership, that includes the participation of two secondary young students. In this paper, we will present the six tutors’ narratives, three clippings of the focus-group interviews and the preliminary results of the survey answered by tutees and secondary education students from Portugal and Cape Verde. The main aim of this research consists in understanding different strands of knowledge that allow us to understand the Science teaching curriculum for learning and equity, challenge cooperation in Science Teachers Education and develop curricular justice in education.

Keywords: “Cooperation in the Science teaching”, “learning sciences”, “curriculum and equity in school”

1.Introduction

This communication presents the path of this research since the construction of the team to the definition and development of the object of study. The presentation and reflection on the foundations of this mode of investigating has been within the team a scientific and political debate. It is a research located in qualitative looming in education focused on interpretative paradigm that discovers and promotes the debate within the team and the articulation of knowledge and diverse knowledge of its members. Emphasize the experiences and the narratives of all involved in a dynamic of sharing and reflection individual and group. The point of start of this study focuses on students who are studying science and the quality of their learning. Demand to know what their motivations to choose vocational areas directly connected to the sciences, that expectations had, or not, on them. It is also intended to determine the difficulties they encounter in studying the hole content in the school context and/or in their study outside of school. Recognizing the importance of good educational relationship with the teachers of science, it is important to this study know what are the difficulties experienced by students in the context of the classroom, in what ways can, or not, to clarify their doubts and how they feel more or less motivated to continue your academic path in areas and courses with strong scientific and technological. For this project it is essential to identify and enumerating the difficulties experienced and referred to by students and can also find the causes that generate as well as articulate and cooperate with the students, teachers and all educators another look on the concepts and content that are taught to the students feel safer to study science and achieve better academic results in sciences. The ongoing search⁵⁷ develops with the intention to reach the strands of knowledge, learning science outside and inside the

⁵⁷ It is a project in progress entitled: "Science Outside School" (CFE) that seeks partners to integrate and stabilize the research team and that at the time it brings together a group of researchers with practical knowledge and diverse, but common interests around learning, pedagogies and the challenge of teaching and the study of the sciences. So the team account with three

school, the understanding of the relationship between teaching, explain, demonstrate and learn science, that is, "... identify modes OF pedagogical work in the act of teaching, to analyze the relationship between those who teach and learning of young people, recognize pedagogies and relations between scientific knowledge and professional." (Ferreira, E. Fonseca, M. & Teixeira A. , 2014). In a 1ST step to cooperation with Cape Verde it is accomplished through the integration of a science teacher initial team of the project and that together they think and promote the exchange of knowledge and of difficulties intrinsic to each one of the realities and the recognition of common singularities in the teaching and learning of science where the cooperation can help one another to training of science teachers and earn a prominent place in understanding the transnational phenomenon. When you take the need everyone to contribute to a policy of education for all and for all, we need to look, but with a new look, for those who teach and study. The look that suggests tends from the vision of those who are the main recipients of education, students, in particular the young students. This meander began to research by collecting and analyzing two narratives of professionals in the study and teaching of science, one of Portugal (PA) and another of Cape Verde (PB), a focused discussion with a group of 12 students and a questionnaire collected an exploratory group (n= 40) and " In this context several were and are the questions: Why not include in the research work what they say and think young people on the content of what they teach and how they are taught? Why not form a research team with diverse partners, educators and young students? Why not listen to those who practice the teaching in contexts outside of the classroom and even outside of school?" (*ibidem*). It is precisely on the concrete and the initial training of the students that the Project CFE directs its research work while open to the contribution and the sharing of all the other actors in the process of teaching and learning science. This text summarizes the idea of cooperation in science and we will present preliminary results of work through the visions of the one who teaches and the arguments that the young people come to us.

2. Cooperate in Science

In an increasingly global world, Education is, with total justice, a priority in the promotion of the development of a state and a pillar of security and respect for the fundamental rights of its citizens, as well as the cultural values that characterize them. Thus, "The history of education of the 20th century until the present registers a growing national movement and international and intellectual cooperation between entities of political society and civil society that act in distinct educational specialties." (Sander, 2014:35) .According to the European Union "The education and training has a crucial role to play in meeting the many challenges socio-economic, demographic, environmental and technological to Europe and its citizens, today and in the years to come." (in Official Journal of the European Union 5.28.2009 : C 119/2). We live in a society where science and technology are present in all the steps that we take in our daily lives. These advances allow us to travel without leaving the place, communicate in isolation and access to all kinds of information, thanks to the phenomenon of globalisation, having dethroned the school as the only means of access to information to become another means possible. In this way it seems paradoxical when, in the course of research work and the review of the literature it is clear that in the speeches of the young a reluctance in follow-up studies in the area of sciences (Cachapuz, Gil-Perez, Pessoa de Carvalho, Praia, & Vilches, 2005). Over the course of time the teaching of science has to be socialized in all children and young people along

researchers in Science Education and three teachers/educators in science (Physics, Chemistry, Biology and Geography). It also has a special feature to include in the team two young students of secondary education.

the basic education, however, only a minority is able to achieve the success - the elite - which constituted, an opportunity for the teachers identify and distinguish them from the more able and talented among all, which will be forwarded to the universities (Aikenhead, 2009). Throughout basic schooling, has been to develop the idea that the previous levels serve as preparation for the following levels and, in the last instance, prepare for university education, reached only by a minority, since the "outsiders" are finding options and alternatives to courses scientific-technological. Those are the "world of diversity", are on the way, being considered as the not endowed with a scientific vision, making Science a culture strange (*ibidem*). This "crisis of science education" (Pozo & Gomez Crespo, 2009:15), manifested in the classroom with teaching a form of science spineless of scientific knowledge, sometimes leads, a learning uncluttered. Although the entire school does not form experts, does not comply with the its role in forming citizens who may find strategies to respond to the problems that the society offers. This is due, in part, to the content and procedures associated with their teaching, based on the transmission of school knowledge that is not always a representation of scientific knowledge. Sacristán (2013) states that there has been to open a gap between what are the scientific knowledge produced by experts and the knowledge which has been approved by the children and young people in schools, where the second, sometimes appears as caricature of first, revealing an intellectual degradation. The content of the curriculum are selected in accordance with the role that education must play, with reasoning of ideological nature, as to what you want to that society will come to be in the future. The education system can focus its action in forming people as citizens/Democrats able to understand the society and intervene in it (Zabala, 2002), or in the training of professionals in response to (and as the needs of the market.

In relation to the cooperation and when we consider the Official Journal of the European Union, we emphasize the understanding that ' The European cooperation in the field of education and training should be undertaken in a looming lifelong learning, effectively using the open method of coordination and developing synergies between the different sectors of education and training" (*ibidem* 5.28.2009 : C 119/2). But for that linkage and cooperation mentioned above and recommended are successful, it is justified that internally also establishes a good relationship and cooperation between all stakeholders in educational act. Therefore, it will be opportune and useful reverse the chain of information so that all the different levels of education internal feel well represented to commit to programs and teaching methods more global. We need -because, a study and a study of perception of what is taught, how to teach and finally, how to learn " Only an efficient and sustainable use of resources - both public and private), as appropriate, will make it possible to achieve the high quality that if you want to, there are simultaneously that promote in this field the adoption of policies and practices in education and training, based on actual data." (*ibidem*). Assuming then, of a political approach and enlarged international, requires, at the same time, a coherent implementation and sustained the principles and goals of education that the different stakeholders are extensively. Thus to define content and objectives the more possible cross between nations and peoples, it is required that the customers stakeholders know and share the best of the educational reality of each one, in order to be able to create and develop programs that are well articulated, in respecting the characteristics of each of the countries involved, providing a dynamic education capable of promoting a teaching to and along the life becoming crucial to clarify and set ways and resources to achieve the goals set are achieved with the citizens. If we consider the narratives collected realized the importance that the actors attach to international cooperation and the education/training in all contexts and poor or in desenvovlimento while possibility solidarity for the change and the improvement of conditions of the populations through the training of their young students. Repair the

narrative of **PB** in that the author was clear and safe to enumerating the main difficulties for the study and learning of these disciplines and who are responsible for failure and school dropout. In their words:

" Here in Cape Verde there are two causes of Conforming our reality economic and social that determine a significant decrease in the number of students pursuing their studies after the completion of basic education.

The first is exactly the fact that the state ensure charge only the basic education that is required, by which only those students whose parents have higher economic conditions and some sensitivity to the importance of school education is sponsoring the frequency of cycles of education that follow. The other is the pregnancy precose that even if checks and limits the continuation of studies for many of our students". But when questioned about whether the students who continue their studies, in particular those who arrive to secondary education, reveal difficulties in the study of instructors as Mathematics or Physico-chemical, responds:

" Students in general do not like Mathematics or Physical-chemical and show many difficulties and do not have good notes to them. And this happens by the materials given do not identify with the reality in which they were born, live, and grow. On the other hand, they do not know studying these disciplines, because they fall into the error of doing a study on that predominates the garnish. I do not understand the concepts, not having method of study and not felt motivated in the classroom, has failure and then make choices on your academic future of distant areas of science and technology. And that is bad for the development of our country that lacks tables properly qualified in the areas of engineering and technology".

The title flowchart our understanding to cooperate in science assumes a dynamic exchange of experiences supportive and reflective in that everyone can benefit and understand the challenge of teaching and learning in science for the building of a world that is more just and fair given the power that is given to these knowledge. The political commitment and the involvement of all becomes essential in the development of knowledge in the sciences.

3. Arguments of Young on cooperates and learns more science

The teaching and learning of science in the voice of the students listened to, in the form of discussion focused, within the framework of this project, it allows you to identify the difficulties experienced by them in their daily school and that in very affect their use and many times they generate disillusionment, lack of motivation and school dropout.

When freely questioned about the difficulties and worries that the study and learning of sciences raise them, show us that the difficulties in Mathematics, and the Physical-Chemical they commit themselves, many times, the linkage with the knowledge of the other sciences, such as Biology, Geology and Geography. They evoke in his speech that many of the difficulties they experience in the study of sciences are related to how the lessons of these disciplines are carried out, in particular the relationship with the respective Professor, greatly influenced by their doubts and school performance:

"The teacher gives the matter to those who are best, headlights never approaches that holds more difficulties. There are many students in the class and he did not have time to ourselves, who are more learning difficulties" .

And clearly need saying:

"The teacher has their favorite students, those who are more attentive in class, and those who have the best notes".

To focus on a good part of their difficulty in educational relationship unsafe and demotivating effect that has with those who teach them science, reinforce what we state in this respect Perrenoud when he says that " In truth, the know rarely is decoupled from person who embodies and know well that a good teacher can make pleasurable even knowledge ungrateful." (2001:79). Despite the doubts and difficulties encountered in the context of the classroom, the students add that your individual study outside of school also does not contribute to reverse the situation as you would expect generates failure in learning. This is why they claim that in general use the explanations and the explainers, form of education outside the School, implemented in different educational systems and with a dimension known and recognized and even studied under several prospects.

The students justify this way of Teaching/Study as a way to clarify their doubts and to complement what they learn in the classroom with the Teacher, trying to look better and be able to improve their performance at school.

"I came to explanation to improve the medium, I came up the notes". Others have said that the first reason to have explanations is due to the fact that they are not able to study in an individual way and autonomous these disciplines: "At home do not study, I get lost (etc. .) I at home I am not 2002-2010 (etc. .) And I do not have at home a good method of study and my parents opted for me to put in explanations in these disciplines (...)".

However, the students heard show, in the form of Investigation by questionnaire, that the study of disciplines related to science is very important because:

" The sciences cover a large part of the things of the world that surrounds us and sometimes are faced with problems and questions whose answer is only given by them".

Also recognize that the study of these disciplines will be important throughout your life to the extent that "It is essential we know them in the Future", either because they are part of our daily lives", either because they give us 'the knowledge and information necessary to fulfill our future work". To recognize the importance of studying and learning science in a dynamic future students, even though young people and many difficulties in their study, corroborate the need for a study and a learn to life in accordance with the educational goals established by political power on an international scale that calls for a concerted cooperation " particularly in basic skills in the areas of reading, math and science : investigate and disseminate existing good practices and the results of the surveys by intensifying the existing cooperation to improve the component mathematics and science at higher levels of education and training to improve the teaching of science." (*in* Official Journal of the European Union 5.28.2009 : C 119/9).

This way, and from the data already collected at the stage of investigation the students, they also have the notion that the areas of Science and Technology has "much more outputs and cover so a wide choice of options". Paradoxical as it is, the students even those with more difficulties in mathematics and physics and chemistry, show

taste for studying science, in spite of some being Biology as the preferred, mathematics, physics and chemistry occupy the positions following in their order of preference.

4. Final Considerations

The movement of this exploratory work in progress is clearly heuristic and dynamic process in which young people have visions debatable but audible and fundamentally, the participation of them as research partners gives them certainly an unprecedented nature of thought and effort to identify indicators that will realize and point as crucial for the improvement of the study and of knowledge in science. Therefore, it is important that we continue to study, in the form of an educational research continued, the more cross as possible to different educational contexts, for which an open cooperation and critical to understand and monitor the possible causes, motivations and barriers to a study motivating and successful that affects many students that the study and learn or that promotes the widespread leakage to your study. It also emerges in this first approach to informal, on the educational reality of Cape Verde, nomeadamente, with respect to the teaching and learning of mathematics, difficulties similar to those that the students of European countries with level of compulsory schooling differently, such as Portugal, show. We must therefore bring to the debate the educational awakening to the need for a greater and better articulation of knowledge shared between the disciplines related to the sciences, to which, on the one hand, we can define and work the closest to the students, inside and outside the school to reverse the failure and discouragement to mathematics, discipline across all fields of science as says Barroso " despite the specificity inherent in the teaching of Mathematics [...]the problems related to the shortcomings of his teaching and the failure of their learning may not be off the shortcomings and failures of school education in general." (Barroso,2004:10). On the other hand, it is very important that the political power with direct responsibilities in Education is sensitive will need to improve the knowledge of science and of the conditions and the profile of Teacher/ Educator for and in the teaching of science. In fact, the professional who teaches science is identified eplos students as a reference for good or for evil. Once that the pupils themselves to recognize and define the person with whom they study and learn science, inside and outside of the classroom as a determinant for a study more inspiring, enlightening and consequently to better use. In the words of the students about what they like or appreciate who teaches them these disciplines is clear when we say and relate be: " how explains and how transmits the knowledge", and also the fact that attempting to "find an answer on the basis of the reaction to the question we asked you", highlighting " that to be able to explain in several ways the same subject for people studying the understand". In addition to the clear and reasoned that those who teach must have for their students, they also add " the ability to listen to and is not entitled to top, even if the is", " must have good provision to teach and also professionalism". It is because in the person of the Teacher/ Educator who is part of the secret of the success of teaching and learning science. A summary of the argument of the young people to know in science is the interdependence of the enthusiasm of those who teaches with the will of those who learns much more than with the reality and or conditions of contexts or programs.

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The curriculum and teacher education fields in Brazil

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The fields of Curriculum and Teacher education are interconnected fields, once curriculum becomes a concrete reality through teacher's pedagogical practice. Nevertheless, each one of these areas has its own specialized production, with its own journals, academic groups and scientific events. Curriculum and teacher education are fields whose pedagogical dimensions can give the necessary support for school practice and educational policies. In this context, the objective of this paper is to analyze the production of these two fields, seeking the identification of subjects, authors and theoretical approaches used in both areas and their contribution for school practices and educational policies. To reach these objectives, recent literature of these areas was appraised, looking for articles that discussed the production of each one of these fields. The data for discussions on the field of teacher education derives from surveys produced in this area considering its own academic production. Differently, the curriculum field has not produced surveys for the discussion of its recent production. Thus, the data for this field was collected from papers presented at the Luso-Brazilian Colloquium on Curriculum held at the Minho University, in the city of Braga [Portugal], in 2014. Based on the data of these two fields, this paper analyzes the development, raises questions and points out ways which could help to overcome some of the identified problems. At the Colloquium on Curriculum, the largest number of papers was focused on the axis Curriculum, Didactics and Teacher Education (22.7%). It was also observed that few papers of this axis raised critiques, gave suggestions or made proposals for the curricula of teachers training courses. At the same event 11.5% of its production was focused on the axis entitled Curriculum, Knowledge and School Disciplines. It was also found that on this axis only some papers seek to provide contributions for the development of school curriculum and suggest ways of pedagogical approach for the different disciplines. Regarding the academic production on the field of Teacher Education, the surveys show that while in the 1990's predominated theses and dissertations focused on teacher training courses or initial teacher education (76% of the academic production in this area), in 2007 they start to focus on teacher identity