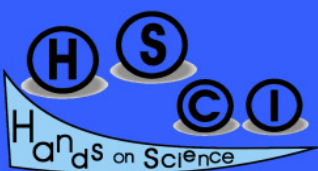


Hands-on Science

Brightening our Future

Edited by
Manuel Filipe P. C. Martins Costa
José Benito Vázquez Dorrió



The Hands-on Science Network

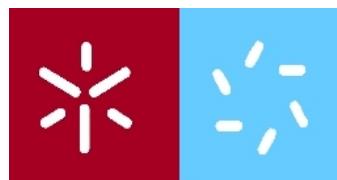
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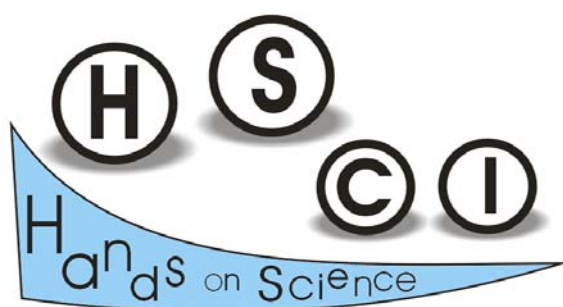


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Hands on Action-Research in Construction of the Teaching Profession: A Scientific Contribution in the Initial Teacher Training of the University of Madeira (UMa)

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Abstract. Action research is more than just a method of searching scientific knowledge in the field of Educational Sciences. It brings together multiple dimensions of educational practice which involves action, observation and contextualized and systematic reflection leading to curricular and organizational development, along with the construction of the teaching profession. Action research aims to find solutions to emerging problems through the creation of curricular strategies that promote pedagogical innovation and improve learning.

The Master's degree in Preschool Education and Primary Education at the University of Madeira is based on these assumptions and has a curricular unit named Action Research Project which is implemented in real contexts of Pedagogical Practice in schools.

This paper is intended to report the beginning of this reflexive process in an attempt to broaden the discussion of teacher training to new audiences. It is important to examine experiences of the use of action research, starting from the diagnosis of problems, passing through the collection and analysis of data as well as the systematization of processes and knowledge and culminating in the realization of scientific reports.

Keywords. action research; education; scientific method; teaching profession.

1. Action-Research in education: conceptions, objectives and benefits

There are many definitions about Action-Research (A-R). All share the idea that consists in an investigation that encourages critical reflection on the educational activities in order to improve it and build new ways of educational intervention. This research seeks to address the needs and problems detected in

educational contexts where the teacher acts (Esteves, 1986; Carr & Kemmis, 1988; Elliot, 1996; Stenhouse, 1991; Bogdan and Biklen, 1994; Sandin, 2003; Carr, 2006; Máximo 2008; Nofke & Somekh, 2010).

Sandín (2003) points out seven general lines that synthesize the various conceptions:

- It aims to transform and improve educational practice. This is object of investigation;
- It features by a change of that develops by successive cycles, each cycle consists of four phases: planning, action, observation and reflection;
- Goes from real problems of educational practice, affecting teachers and students;
- It is based on reflection of communities, so it is considered a collaborative research;
- Involves a systematic reflection on the reality to transform it;
- It is developed by the people of practice, enabling a link between theory and practice;
- This research process is also training;

Thus, it can be said that A-R promotes teacher professional development, as it allows to build scientific-pedagogical knowledge and reflect on their role in the educational process (Sousa, Alonso and Roland, 2013). "*O objetivo da investigação científica é não só descobrir e descrever acontecimentos e fenómenos, mas também explicar e compreender por que razões tais fenómenos ocorrem*" (Jesuíno, 1988, p. 215).

It is therefore a dynamic and interactive process, admitting adjustments resulting from the analysis of the phenomena being studied in a collaborative work

According Ferrance (2000, p. 6), A-R is:

a collaborative activity among colleagues searching for solutions to everyday, real problems experienced in schools, or looking for ways to improve instruction and increase student achievement. Rather than dealing with the theoretical, action research allows practitioners to address those concerns that are closest to them, ones over which they can exhibit some

influence and make change.

2. Action research: from education to science

It can be argued that A-R is a "critical educational science" (Carr & Kemmis, 1988), as it allows the teacher to research, evaluation and reflection of his/her practice, stimulating innovation of the educational process and his/her own professional development. To Alonso (2007, p.118) "*os professores são desenhadores do seu próprio crescimento profissional e pessoal*".

The action research "is a systematic scientific research and self-reflective carried out for practical, to improve the practice" (McKernan, 1998, quoted by Max-Esteves, 2008, p.20). Different from the positivist and interpretative paradigm, so is not identified with the excessive and neutrality objectivism, as well as the subjectivity (Coutinho, 2005).

According to Máximo-Esteves, 2008, p.20). A-R involves a working methodology consisting of "(...) formular questões relevantes no âmbito da sua prática, para identificar objetivos a prosseguir e escolher as estratégias e metodologias apropriadas, para monitorizar tanto os processos como os resultados" (pp.9-10).

"*A Investigação-Ação é uma metodologia caracterizada por uma permanente dinâmica entre teoria e prática em que o professor interfere no próprio terreno de pesquisa, analisando as consequências da sua ação e produzindo efeitos diretos sobre a prática*" (Alarcão, 1996, p.116). The teacher engages in a cyclical process of think-do-think to investigate and create change, given that "*o conhecimento profissional prático é uma janela para uma melhor compreensão e apropriação da prática profissional*" (Oliveira-Formosinho & Formosinho, 2008, p. 8). To perform an A-R project it is essential to develop various procedures, starting from issues that define the problems to be studied. Then it should be done a literature review to gather the necessary information. Follows the definition of the methodology to be implemented and the data collection. Then the data is organized and interpreted.

According to Fortin (2009) the data collection can consist of observations, non-

structured interviews, registers or published texts, promoting the discovery of new phenomena by the investigator.

The analysis of the data occurs from the initial stage of collecting data and extends throughout the investigation. The investigator examines and organizes trying to understand. These data are validated through triangulation. Sousa (2005) "*(...) refere-se a uma metodologia de investigação em que se observa o mesmo fenómeno de três (ou mais) pontos diferentes, por diferentes observadores e com diferentes instrumentos*" (pp.172-173).

3. The reflective teacher in a changing school

At the beginning of the XXI St. century pedagogical thinking about school and about its social role has emphasized the view of learning organization, able to reflect its mission, its practices with a view to promoting contextualized and meaningful learning for its students. This thought came to oppose the previous view of the school as an institution that promotes learning (Leal and Fonseca, 2013).

From this perspective, teachers and students must report their own training needs and develop self-development processes, rethinking their role as curriculum mediators, reflective agents in a reflective school (Alarcão, 2000) and curricularly intelligent (Leite, 2003). Reflection on the curriculum happens with the onset of collaborative action-research in order to develop the actors in their work and undertake new change of direction (Leal and Fonseca, 2013).

While agents engaged in learning in action, teachers should assume greater responsibilities in the planning and evaluation of their learning experiences, through reflection on practice and about practice, in a permanent alertness, as Perrenoud (1999) states, faced with problematic situations or dilemmas. In this process of reflection teachers can take various phases, according to Smith (1991): describe the action itself, to report on what it means to this action; confront realizing why this action and rebuild the action, trying to act differently. The teachers involved in the affirmation of identity and authorship unleash the school perspective as constant change. Reflective practice can also be understood as a process

of liberation of the profession routines to invite teachers to take an active role in the construction of their professional identity.

Research-action translates then into a strategic potential for the process of learning and development of teachers. It is the commitment to change that results in the quality of teachers, teaching quality and school improvement.

4. Challenges of Action-Research in initial teacher education

The professional development of teachers is a continuous process of knowledge construction that begins in the initial training. In this sense, Formosinho (2009) advocates greater link between research and teaching by immersing students in scientific research methods, in order to make them more reflective and responsive to the diversity of educational contexts, to make them to connect theory and practice, and to help in the diagnosis and resolution of emerging issues. For Alonso (2013) it is developing practical synchronized with the ecological contexts and community schools, with significance for the formation and the comprehensive development of students as citizens.

The challenge of A-R to be taken either by the student interns or by qualified teachers in practice can take a variety of approaches, Hatton and Smith (1995) such as: projects of A-R; case studies and ethnographic studies on students, on teachers, on the classes or on schools; curricular structuring measures; microteaching and other experiences on supervised practice.

With proper ethical care in the training of young teachers, these strategies can enhance your voice for reflection on the problems they intend to solve or about the evaluation of the triggered actions. The creation of collaborative research and learning cultures constitute a major challenge to student interns for the real complexity and implies a shared vision of the potential and contextual constraints of work.

5. The experience at the University of Madeira

The Master's degree in Pre-School Education and Training of the 1st cycle of basic education at the University of Madeira

introduced from the academic year 2013-2014 in its training plan a curricular unit under the name of A-R. In this, curricular unity students have the opportunity to consolidate their training, exercising skills in pedagogic practice with strong relationship between theory and practice, between action and reflection on and action. The work culminates in a final report to be presented and defended in public in the third semester of the course.

At the beginning of the semester, the first sessions of the course aim to clarify and discuss the basics of research in education and also the conditions for the development of A-R. Then are promoted individualized tutoring or group processes for the design and monitoring of the project.

In an analysis of the constraints relating to the practices of student interns, expressed by them in the reports we found the following:

- We found up problems associated with the definition of a relevant problem and its own definition.
- We found problems in managing time available for project implementation of A-R. Students revealed that the practice time is short for the full development of the project.
- We found problems in reflection as action assessment process: the construction phases of reflective discourse on the information on the meaning of information on the evaluation and on the reconstruction of action in different way.
- We found difficulties in the involvement of actors in educational practice with implications for the continuity of the project after the departure of training student. The implementation of collaborative research and learning cultures are one of the biggest challenges for student interns. It implies a shared vision of the potential of the constraints of work contexts.

6. Issues for important further for the development of this project

This project is crucial in initial teacher education at Master's degree in Pre-School Education and Training of the 1st Cycle of Basic Education of the University of Madeira. We assume continuity putting new issues to the development of the project:

On the formulation of the problem:

How to enhance the critical view of the students in the construction and formulation of problem?

On the time for implementation of the project:

How to best suit the action to the project time available to accomplish it?

On the framework of reflection on practice:

What will be the best support to provide students in various stages of construction of reflective discourse on their practice?

On construction of a culture of cooperation in action-research:

How to promote a culture of cooperation to ensure better support to the action-research developed by the students and ensure the continuity of this work?

7. Important ethical issues

According to Sousa's, Alonso and Roland (2013) this research process implies an ethic of responsibility. The student as a person is at the centre of education as it is an "*ser intersubjetivo que necessita desenvolver gradualmente a autonomia, a sua responsabilidade e a sua capacidade de intervenção consciente e crítica na realidade para a transformar*" (Sousa, Alonso e Roldão, 2013, p. 82).

It is therefore important that teachers are aware of the "power" that his action means when it comes to meeting the needs of students and meet their weaknesses, because acting in the present this will contribute to a better future.

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