

## **An experience on Research training in Higher Education: exploring the case of three doctoral students with different backgrounds**

**Betina Lopes<sup>1</sup>, Maria João Macário<sup>2</sup>, Mariana Pinto<sup>2</sup>, Maria Helena Ançã<sup>2</sup>, Maria João Loureiro<sup>1</sup>**

1 - CIDTFF/Universidade de Aveiro, Portugal

2 - LEIP/CIDTFF/Universidade de Aveiro, Portugal

The growing complexity of the information society and the Bologna Declaration led higher education institutions to revise their curricula and contributed to renewed understandings of teaching, learning and research. Since the Berlin Communiqué, adult education at doctoral level gained more recognition as a mean to articulate post-graduate education and research. Although much has been written about the main aims of doctoral education, many authors agree that a doctoral study implicates creative endeavor through which the student contributes to knowledge development. Furthermore, the focus of this third cycle of education is no longer limited to the product of an original thesis, including also the students' development towards high quality and scholarly researchers of the next generation.

This paper reports work in progress exploring the learning experience of three doctoral students with different backgrounds (two Language teachers and one Biology/Geology teacher) working together in the context of a first year module integrated in the curriculum of a Portuguese Doctoral Program in Didactics and Curricular Development. The research aims to discuss evidences of the (positive) impacts of the collaboration process in which the doctoral students were deeply involved throughout and beyond the one semester module, in particular on their learning experience.

Taking into account that the three first authors are the doctoral students, the study has an autoethnographic nature. Drawing on the concept of learning development/transition from first year doctoral students with lacking academic research experiences to (future) active and independent researchers scholarly engaged in the promotion and extension of a 'knowledge society', a qualitative content analysis of five types of documents produced by the group/community is being analyzed.

Analysis is still running. However multidimensional key-features that should be taken into account in the design of adult learning strategies in the context of research in education could already be identified. It is believed that the discussion of this study might be relevant towards the effort of facilitating the learning transitions from doctoral candidates to early career researchers, thus supporting fine tunings of research training strategies already being implemented in the context of doctoral programs.

Key-words: doctoral education, adult education, autoethnography, reflexivity; research training

## 1. Introduction: New challenges for adult education at doctoral level

The debate around the Bologna Process (1999) has brought to higher education arena a renewed understanding of the relationships between education, learning and academic research, (Evans, 2010). Doctoral education has become one of the key feature within the Bologna Process since the ministerial meeting in Berlin (Berlin Communiqué 2003). Doctoral studies are recognized as being the interplay between education and research and therefore an opportunity for reaching scientific quality and development. Indeed, the European University Association (EUA) recognizes doctoral students as the future knowledge generators and innovators:

*“Doctoral education is a major priority for European universities and for EUA. It forms the first phase of young researchers’ careers and is thus central to the drive to create a Europe of knowledge, as more researchers need to be trained than ever before if the ambitious objectives concerning enhanced research capacity, innovation and economic growth are to be met.”* (Georg Winckler, European University Association – EUA President, 2005 – 2009, <http://www.eua.be/cde/Home.aspx>, retrieved September 2011)

Therefore higher education institutions and particularly doctoral schools started to be seen as privileged spaces for research training and thus knowledge generation and innovation (Evans, 2010; Kehm, 2004) and great attention is devoted on the design and implementation of research training strategies integrated in the first year of the Doctoral Programs. In this sense, the curricular modules of doctoral studies can be conceptualized as ‘pre-research stages/phases’ where the early career researcher has the opportunity to develop and to consolidate research competences needed to carry out an independent and original research, namely his/hers PhD project.

During the PhD studies students are expected to move beyond fact finding, towards conceptual, critical and creative levels, identifying problems and questioning fixed truth, in order to engage in deep learning and contribute to knowledge development (Wisker & Robinson, 2009). Actually, the main tasks to fulfil throughout doctoral studies form part of a complex creative process which entails: i) identifying and describing a research problem, ii) selecting an appropriate approach to investigate the problem, iii) collecting and analyzing data, iv) writing the thesis and defending it during a viva voce examination, and writing research proposals and papers (Dewett, Shin, Tohn and Semadeni, 2005; Trafford & Leshem, 2009).

Thus, and considering the purpose of the Bologna Process, in nowadays context, the focus is not (only) on the quality of the academic research product, namely the PhD thesis, but on what Frick (2010) and Trafford and Leshem (2009) describe/define as *doctorateness*. The authors claim that this process lead doctoral student to becomes a responsible scholar, e.g., a researcher who has the confidence and courage to take risks, to make mistakes, to invent and re-invent knowledge, by transferring knowledge between context, and to pursue critical and lifelong inquiries.

The study presented in this paper draws conceptually on the key-idea of the transition process of a group of first year doctoral students with limited academic research experience to an active and independent high quality researcher (Evans, 2010). The following table illustrates the characteristics that can be extended during the previous mentioned transition process.

- 
- Uses and adapts established research methods and develops methodology;
  - Generates and develops theory from research findings;
  - Conducts highly rigorous research drawing upon basic and advanced research skills ;
  - Strives constantly to develop and extend his methodological competences;
  - Strives constantly to apply deep levels of analysis;
  - Recognize the value of, and utilizes, comparative analysis, meta-analysis, synthesizes, replication and so forth;
  - Constantly reflects upon, and frequently revisits and refines his/her own studies;
  - Has developed the skill of effective criticism and applies this to the formulation of his/her own arguments;
  - Publishes frequently in high ranking academic journals;
  - Disseminates the applicability to a range of contexts of generic skills developed within and alongside research activity.
- 

**Table 1** - Characteristics illustrating the extended professionalism in relation to research  
(adopted from Evans, 2010, p. 670)

## **2. The present study: learning transitions facilitated by collaborative work**

### *2.1. Settings/Contextual Background*

The focus of this paper is the reflection about the learning experience of three doctoral students' with different backgrounds (two Language teachers and one Biology/Geology teacher) that worked together in the context of a semester long module of the second edition of a four year long Doctoral Program in Didactics and Formation of a Portuguese University, and which started in the school year 2009/2010. The module is part of the first year, while the implementation of the research project designed by the students is to be implemented during the second and third year of the program. Generally, the dissemination of the ongoing work (for instance, in research meetings) and PhD thesis report are made alongside the three years.

This study aims to identify evidences of (positive) impacts of a collaboration process in which the three colleagues were involved throughout the semester (2009/2010), and which continued after the curricular unit assignments, at the level of the learning experience/transition of the involved doctorate students. The qualitative content analysis of the documents produced by the students individually and by the group is expected to contribute to extend the understanding of how research training opportunities involving collaboration, between students with different backgrounds, benefits the learning experience of the doctorate students empowering their transition into independent researchers.

In order to fully understand the settings to which this study reports, the following paragraphs briefly describe (a) the learning outcomes of the curricular unit in which the students collaborated, and (b) the process of conducting the assigned learning task, namely a collaborative meta-analytical study.

#### *a) Learning Outcomes of the curricular unit Didactics and Curricular Development (DCD):*

The curricular unit DCD is integrated in the Doctoral Program of Didactics and Formation (University of Aveiro, Portugal). The main students task of the module was to conduct a collaborative meta-analytic study focused on the analysis of published literature related with the students' specific academic interests, but also including a common "umbrella"/theme, linking the students' individual research interests.

In order to maximize the learning opportunities the two university teachers (senior researchers and the two last authors of this paper) of the curricular unit suggested that the meta-analytical study should be carried out by a group of three to four doctoral students, if possible with different backgrounds. The group, to which this study reports, had three students (2 Language and 1 Biology teachers) All the group members have teaching experience (at different levels) and research background while at the initial level – Table 2. Thus, the students profil corresponded to "(...) a learner who within a work and professional context might be an expert and at the same time an initiant into research education." (Kiley, 2009, p. 295). The motivations to attend the doctoral studies (Table 2) are in coherence with Shacham and Od-Cohen (2009) arguments that adult learners are life-long and goal-oriented learners. The research students expected/aspirated

to be involved in learning experience relevant, authentic, and meaningful, as well as geared at raising their self-esteem, self-confidence and self-fulfillment (Aldridge & Tucket, 2010).

Evaluation of the students' performance in the curricular unit was based on the scientific quality of the final written report and also on the quality of the oral presentation of their meta-analytical study (supported by PowerPoint slides) to the remaining class.

Drawing on the principles of the Bologna Process, it was intended that each student:

- learn to access, select, systemize and analyze research literature, in order to collaboratively write an academic report;
- had the opportunity to extend and deepen the theoretical knowledge in a specific area related to his individual PhD project.

Thus the learning expectation was that during the process of conducting and writing the meta-analytical study the students would develop competences related with the research process, facilitating and empowering the implementation of their individual PhD research project in the following academic years.

Student*	Background	Brief Description of the Professional Background	Motivation to do the PhD
Ana	Language (secondary and primary school level)	- Bachelor in Portuguese Teaching; - Master in Education - teacher at higher education (teacher training since 1997) - Co-author of the Portuguese (language) Curriculum for Basic Education (Portuguese Ministry of Education); - member of the research Project PROTEXTOS (about writing)	- To deepen knowledge; - Design, implement and evaluate teaching and learning strategies involving the development of writing competences
Beatrice	Biology/Geology	- Finished her Bachelor in Biology/Geology in 2004; - Has been teaching as a part-time teacher at several secondary school since 2004 - Concluded her master at Science communication and education in 2007 - Collaborated in a research project from 2007 to 2009	- To continue the work started throughout the collaboration in a research project and extend the learning/skills acquired throughout that project; - To enhance the opportunity of employability.
Carol	Language (secondary school level)	- Finished her graduate in Portuguese studies in 2006; Has been teaching as a part-time teacher at several basic schools since 2008	- To learn more in the area - To develop personally and professionally

**Table 2** – Professional and Motivational background of each doctorate student

b) *The meta-analytical study*

The meta-analysis should be about research papers in education with a common section and three different parts related with the research topics of student involved in the group work. The general thematic (which linked the individual project), and number of papers to be analyzed was defined by the students themselves. The final written report of this particular group was entitled *Learning to write and writing to learn in the 21st century* (Figure 3).

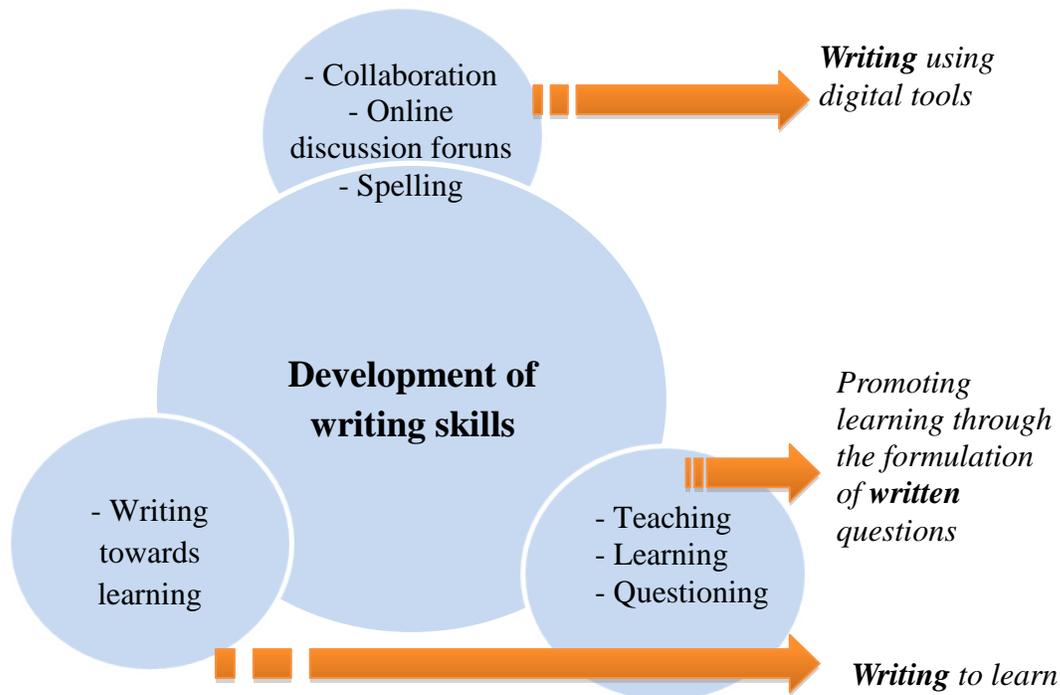


Figure 3 – Areas of interest of the group members and confluence theme.

The collaborative meta-analytical study is a product of a complex learning experience that can be divided into three procedural stages (Macário, Lopes, Pinto, Loureiro & Ançã, 2011):

- **Constitution of the Corpora:**

In order to define the *corpora* the three students had to describe to each colleague of their group the theoretical framework, rational and main aims of their individual PhD project in order to identify the “umbrella theme”, namely “Development of writing skills”. After this, the students selected the scientific researches/papers/articles to be considered for each of the three individual meta-analytical sub-studies. Due to time constraints the group decided that each individual study would include the analysis of 12 research papers, being those preferably of empirical nature. Therefore the findings of the final report resulted from the analysis of a total of 36 papers (3 x12).

- **Corpora analysis:**

After the creation of the database to be used in the meta-analytical study the group prepared its qualitative content analysis. This task implied the definition of common analytical categories by the students based on the floating reading of the collected information (namely the twelve studies by each student). Individual analysis was supported by frequent discussions between the three students in order to negotiate common interests and take shared decision. Naturally some categories of analysis were common to all, while others were adapted, included or excluded considering the specificities of each individual assignment, which would constitute the different sections of the final written report.

- **Writing the final report:**

Like previously referred, throughout the individual analysis of the selected papers, the students had to continuously share, discuss, negotiate and synthesize ideas in order to scaffold the process of emphasizing common concepts and findings. Along the process they co-planned and co-constructed the final report, defining a common structure for the three meta-analytic sub studies. Moreover, using collaborative writing tools the group members wrote the introduction and conclusion of the final report, linking the individual studies and findings.

## 2.2. *Main aims and research questions of the present study*

Like previously stated it is aimed to identify/define evidences of the (positive) impacts on the learning experience of the three doctoral students' due to the collaboration process in which they were involved. By exploring more systematically the documents produced by the students it is expected to contribute to the understanding of how research training opportunities go beyond individualism. To focus the investigation the following research questions was defined:

Which learning transitions/experiences entailed a collaborative work aiming at conducting and writing a meta-analytical study, involving doctoral students with different backgrounds?

## 2.3. *Methodology of the study/Methodological Outline*

The study follows a qualitative model/paradigm. Using a *template approach* (Robson, 2002), content analysis of the following five types of documents is being undertaken:

- **formal and obligatory group documents:** (1) one final written report of the meta-analytical study and; (2) one power point presentation used to support the presentation of the meta-analytical study at the end of the module,

- **voluntary documents, produced by the community after the curricular unit ended:** (3) three individual reflections/narratives about the learning experiences concerning the collaboration between the students; (4) one powerpoint presentation elaborated by the group presented to the colleagues of the third edition of the Doctoral program (school year 2010/2011). This presentation aimed to share the students' learning experiences and to suggest recommendations. This talk was given by invitations of the senior researchers responsible for the module (the two last authors of this article); (5) one descriptive research paper entitled "Research training in the 21<sup>st</sup> Century: A reflection on collaborative work and emergent learning" presented at the International ICEM-SIIE'2011 Conference, September 2011 (Macário, et al. 2011).

Finally, taking into account that the analysis is realized by the doctoral students themselves as an effort of outside positioning from their personal learning experience, while supported by their teachers, the study can be identified as being an auto-ethnographical reflection (Hernández, Sancho, Creus, & Montané, 2010; Mitra, 2010), where the concept of "auto" has a twofold meaning: i) at the individual level, each student *per se* and ii) at the group level.

## **Main Findings and discussion**

In the present section we will present some selected findings resulting from the ongoing content analysis of the previously identified documents. Considering the aim of the study, and drawing on the conception of development towards a researcher (Kiley, 2009) we focused our attention on excerpts that evidence the idea of learning contributing for the ability of 'doing' research activities in a 'better way' (Evans, 2010).

Three dimensions, entailing specific characteristic of Evans' (2011) concept of research professionalism, were defined integrating the main *template* (Robson, 2002). Being the learning experiences mainly a process of transition towards development the following template dimensions should be conceptualized as (sometimes) overlapping and synergistic:

- a) *Creative Abilities*: According to Frick (2010) creativity results from the complex interplay of the following intellectual abilities: synthetic ability (be able to see problems in new ways and to move beyond the boundaries of conventional thinking), analytic ability (be able to recognize which ideas are worth pursuing) and practical-contextual ability (to know how to persuade others of an idea).
- b) *Attitude towards research*: research is a process of constant knowledge extension and even re-invention. An active researcher recognizes this essence of life-long learning, being truly engaged in reflective, critical and creative thinking (Evans, 2010; Frick, 2010);

To date, besides these two main dimensions, another dimension emerged from the data interpretation, namely:

- c) *Interpersonal skills*: the ability (and the disposition) to communicate with others in a constructive way. Sharing knowledge and doubts with others (via oral communication) is not

an intrinsic personal characteristic of every student. Some have the need of developing this facet.

Analysis is still running, however some first findings considering the types of learning experiences, due to collaborative work between students with different background, could already be identified and will now be pointed out. Due to space constraints only excerpts from the personal narratives will be used. However, the aspects highlighted below are also reflected in the documents used for data gathering.

- *Deepening and Extending the boundaries of Academic/Domain-specific Knowledge and Cognitive Skills*

The fact that the students had so far developed their career in different academic fields enhanced the challenge of conducting a collaborative meta-analytical study. In order to link their interests it was first of all necessary to get familiar with the state of art of each research field and also with the individual project of their colleagues. This contact with different (but related) scientific areas, that facilitate crossing each own 'comfort zone', would not have happened if the students had exclusively worked alone, or with colleagues of the same area. Like Beatrice and Carol state:

*"In my PhD work [...] I basically try to design and implement innovative teaching-learning-assessment strategies that help undergraduate biology students to develop their questioning skills. By reading the references suggested by my colleagues about the stages of 'learning to write' and also references about the process of 'co-writing' ... I realized that I had to think of this dimension also ... because when I ask the students to write in different moments their questions down...well to what extent can I assert that the improvement of the questions quality is due to the improvement of their thinking skills, which are the focus of my research? Isn't it possible that what actually improved was their writing abilities?! I never thought about this so obvious issue. I definitely will have to read more about this for my thesis...It is exciting to think how I can get inspirated from Language teaching! After all questioning is a complex competence..." (Beatrice)*

*"During the journey of conducting the meta-analytical study I realised that the research area considering questioning, deeply embedded Science Education, seems surprisingly not to include the dimension of the process of learning to write that is intimately linked to the formulation of (written) questions..." (Carol)*

Furthermore, the effort of trying to explain your own research project to someone that is not an expert on that particular academic research topic extends the use of your own knowledge. It is like the *Information literacy* of the student that is trying to explain his ideas and expose his arguments is putted under 'special proof'. Drawing on Beatrice's statement, the student has to be twice effective in selecting, organizing and synthesizing the main information. The key-points of your rationale have to be shared in a simple and, still, rigorous form:

*"During the first phase of the curricular unit, when we were trying to identify our common theme I had to explain my PhD project to Anna and Carol. This caused a moment of anxiety, (...) How would I be able to show, and convince [them] that what I do in Biology [teaching] is important and make sense...and is NOT boring? (...) I was surprised with the interesting comments of my colleagues and (...) during the process of answering to their clarifying or simple*

*curiosity doubts I realized I started to refine my own project...sometimes an external view is very positive [...].” (Beatrice)*

Within the previous narrative excerpts the important ability of dealing with the comments of peers and integrating them in a constructive and relevant way is also present. Each student had to be able to understand the other and be able to recognize which ‘items’ of the work of her colleague were linked to her own research interest and therefore were worth pursuing. These learning challenges remained during the entire process of conducting the meta-analytical study:

*“For me one learning output was the frequent process of sharing ideas while we were conducting our individual sub-studies .. we constantly had to plunge back...reflect on what we have produced so far in order to be certain that the ‘bits’ would fit together...we had to share and negotiate constantly our interests...it is like a meta-work about your own work ... it was very stimulating to step back ...every time (of the meetings) the bits gained more shape as one coherent work with a richer texture (...)” (Anna)*

Indeed, only by a continuous effort of re-shuffling information, training their ‘cognitive flexibility’ it was possible to identify a common research topic underpinning the final report entitled “Development of writing skills”.

- *Developing and researchers’ attitude/ Engaging into a research ‘culture’*

The constant cognitive challenge facilitated the students’ ‘engagement’ into a critical, reflective and creative ‘mood’ which defines the attitude of a researcher (Evans, 2010), identified by Kiley (2009) as the research culture. The constant strive to discuss arguments, generate ideas and understand the perspectives of others, and also the willingness to handle/manage critique, grew along/throughout the learning journey, being particularly strong during the last moments of the module:

*“By working with my colleagues throughout this module, I realized that not every questions need a quick answer...there are issues that need deep reflexion...and not an immediate answer. It is ok, and even desirable, to be involved in a study where new doubts are raised. And even when the questions came from the others it doesn’t mean that the study or work is bad or weak..it might mean: interesting!... so doubts ... might be a good thing.. it doesn’t mean that you have done a bad work...” (Beatrice)*

The students’ ‘will to engage’ into research activity was re-expressed when they prepared a presentation to share their learning experience and their field knowledge with their colleagues of the following edition of the doctoral program:

*“The teachers’ invitation to share our ‘knowledge’ with our colleagues of the third edition was really rewarding...not just because it meant that the teachers recognized our work as being of merit to be presented to others...but also because it would be another opportunity to discuss ideas...and perhaps move one step further in our own research project.” (Carol)*

Finally, throughout the semester, the collaborative work, which implied the negotiation of common area of interest and the re-organization of information in order to create common and (new) knowledge helped students to create and maintain solidarity and to be aware of the individual, but also shared responsibility (Shamcham & Od-Cohen, 2009). First within the

group, then with learners in the same situation (colleagues of the same Doctoral Program) and more recently with researchers in a broader community:

*“On another level, the contact with my colleagues enhanced my awareness about belonging to a community of (novice) researchers, and the importance of collaborating towards a common goal: co-construct more and better knowledge.” (Carol)*

- *Developing Interpersonal skills*

Like previously stated the ability to express your ideas and argue with peers is also an ability that can be developed. The process of meaning making through oral or written communication is mainly acquired by ‘field’ experience, e.g. ‘generating practical knowledge through their practice’ (Shachman & Od-Cohen, 2009):

*“[...] For example presenting our work the second time [to the colleagues of the third edition of the Doctoral Program, school year 2010/2011)... I felt much more confident. I was not that nervous, the ideas came out more clearly. And I honestly felt that my colleagues and me were already doctoral students with some valuable field expertise... at least to our younger colleagues... this gave us confidence... during the presentation, while speaking you are being confronted with your own learning progress and also developing communication skills in public.” (Carol)*

Finally by reading the documents written by the students, other, more specific learning outputs could be identified:

- . Construction of artefacts/Methodological instruments

*“Anna’s’ knowledge about the methodological approach when organizing data was crucial. She alerted us to the importance of DEFINING, a set of common key-concepts, as well as transversal criteria for including/excluding references to be included in the corpora. So we constructed a common grids to be used by everyone... Otherwise we would have lost a lot of time doing this in a more intuitive approach...” (Carol)*

- . Use of new information technology (ICT)

*“ Looking back, I now feel that I was a complete ignorant about many informatics tools that are available at the Internet. Ana and Carol were much more advanced in this knowledge, I never had used Google Docs...and this was an enormous help because it allowed us to work at a distance. ...” (Beatrice)*

*“ (...) the high quality of the collaboration (was) facilitated by the use of many informatics tools/instruments (...). It was throughout this particular collaboration that I recognized many other facilities/potentialities ICT tools of which I already had some knowledge...Some of those tools I actually started use on my own PhD project” (Carol)*

## . Development of academic writing

*“Academic writing constitutes, normally, a process of evidencing knowledge in a very personal format ... The work we developed implied a bigger effort of adaption of the ‘individual writing style’ of each student, in order to obtain a coherent puzzle, where every part fitted with the others. This challenge was an asset, since it ‘forced’ to constant syntactical and semantical reformulations (...). (Anna)*

### **Concluding remarks: towards the empowerment of an early career researcher identity**

Nowadays doctoral education is considered as one of the key adult/lifelong education strategy in order to achieve a knowledge based society (Pires, 2009). Indeed doctoral candidates are conceptualized as the next generation of researchers. Moreover, it is expected that they will undertake research of the highest quality. In order to achieve this aim, innovative and student-centred research training strategies have to be designed and implemented (Kiley, 2009).

Within this exploratory study the focus was a group of three doctoral candidates with different backgrounds which undertook and auto-ethnographical reflection in order to identify the learning outcomes that emerged from the collaborative research training strategy implemented in one semester long curricular unit. By doing this study, the aim was to understand how it is possibly to enhance strategies that assist/empower the PhD students to achieve more creative outcomes by interacting with peers, than when they work alone, since research on doctoral learning processes has shown that learning to do research has been, so far, experienced as a solitary process (McWilliam & Dawson, 2008; Shamchman & Od-Cohen, 2009).

The first findings evidences that the collaborative work involving PhD students with different background provided access to new and different visions/perspectives on their previous knowledge. During the entire learning experience the members of the group had to immerse in several researches linked tasks, negotiating common area of interest and re-organizing information in order to create common and (new) knowledge. By doing this critical and creative development students benefited not only their research project and thesis, but also their ability and disposition to be an active (future) researcher. Indeed, opportunities for democratic work, collaborative decisions and collegiality (McWilliam & Dawson, 2008) were created. As active researchers the students had to assess the arguments of their peers and give input, even if their mates’ topics were not exactly related to their own work (take as an example the peer-review process), developing cognitive flexibility (Evans, 2010) and self-management skills (Frick, 2010), that are considered to be important research skills.

The continuous challenge that the heterogeneous group had to deal with strengthened the cohesion between the PhD students, enhancing the development of a sense of belonging - pivotal to the constitution of learners communities (Henri & Pudelko, 2003; Wisker & Robinson, 2009) and stimulating the students to make their first steps as and into a (broader) community of (research) practice (Shachman & Od-Cohen, 2009), empowering therefore their own ‘researcher identity’ (Figure 4). Indeed the doctoral learning experience is all about undertaking a ‘rite of passage’: Many doctoral candidates “ (...) demonstrate through their writing, presentation, and even demeanour, that they have undergone a change in the way they understand learning and themselves as learners” (Kiley, 2009, p. 293).

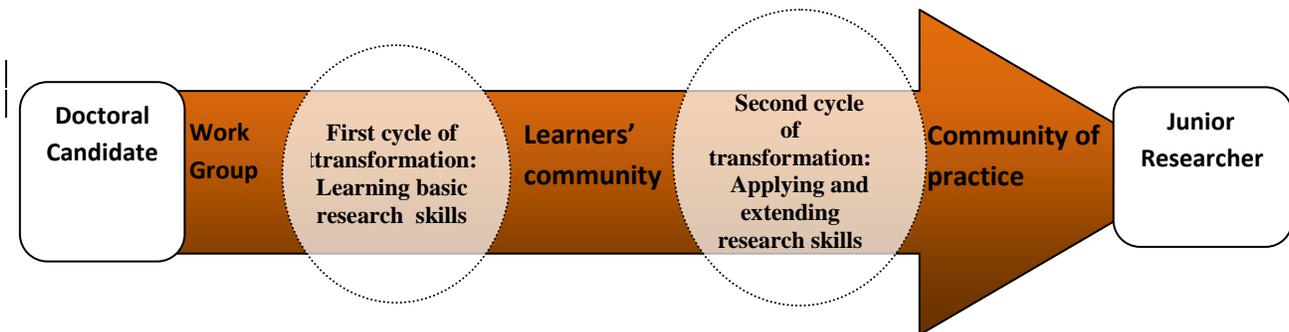


Figure 4 – The doctoral student in transition between lack and achievements of research ability (Evans, 2010; Shacham & Od-Cohen, 2009) or the “minimal state” (Kiley, 2009)

Significant within this auto-ethnographical study is that it was at the community level (and not individual level) that creativity, was initially fostered. Like McWilliam & Dawson (2008) state: “ (...) the creative impact and output of such research (working in teams with similar interests) is far more beneficial than small scale individualized studies. Indeed we believe that working with colleagues with different backgrounds helped the students to cross the *threshold concept* (Kiley, 2009) of ‘doctoratness’ (Frick, 2010; Trafford & Leshem, 2009).

Therefore, and in order to enhance relevant PhD learning experiences, crucial for an innovative and creative Europe, the authors believe that the maximization of the diversity of that unit – group -by joining people with different backgrounds, raises substantially the significance of the learning experience/transition of each PhD student, particularly during the first years of curricular units. Experiences as the one described in this contribution which value divergence and diversity, encourages risk-taking and experimentation supporting and promoting students’ creativity (Shachman & Od-Cohen, 2009; McWilliam & Dawson, 2008).

Despite the relevant and rich highlights for training doctoral candidates of the adopted model in this particular curricular small scale study, findings were obtained from a singular case. In order to assert (with more certainty) the (positive) impact of the training strategy that the students experienced on their identity (and ability) as researchers, the following future investigations are suggested: a) conduct this kind of auto-ethnographical with other future doctoral students that attended similar research training strategies; ii) include interviews with the senior researchers (teachers); iii) revisit this particular group after finishing their PhD, when theoretically the transition of the doctoral candidates towards an active researcher will be completed/consummated (Kiley, 2009). This would give access to their reflection about the entire learning experience after some time distance.

## References

- Alridge, F. & Tucket, A. (2010). Change for the better. *Adults learning*, Vol. 21 (9), pp. 8 – 11.
- Berlin Declaration. (2003). *Realising the European Higher Education Area. Communiqué of the Conference of Ministers responsible for Higher Education*. Berlin.
- Bologna Declaration. (1999). Joint declaration of the European Ministers of Education. *Bologna, Italy, June, 19*.
- Dewett, T., S.J. Shin, S.M. Toh & M. Semadeni (2005). Doctoral student research as a creative endeavour. *College Quarterly*, Vol. 8, No. 1, pp. 1-20.
- Evans, L. (2010). Developing the European researcher: 'extended' professionalism within the Bologna Process. *Professional Development in Education*, 36(4), 663-677.
- Frick, L. (2010). Creativity in Doctoral Education: conceptualizing the original contribution (15-32). In C. Nygaard, N. Courtney & C. Holham "Teaching Creativity – Creativity in teaching". Oxfordshire: Libri Publishing.
- Henri, F., & Pudelko, B. (2003). Understanding and analysing activity and learning in virtual communities. *Journal of Computer Assisted Learning*(19), 474-487
- Hernández, F., Sancho, J. M., Creus, A., & Montané, A. (2010). Becoming university scholars: Inside professional autoethnographies. *Journal of Research Practice*, 6(1), Article M7. Retrieved [date of access], from <http://jrp.icaap.org/index.php/jrp/article/view/204/188>
- Kehm, B. M. (2004). Developing Doctoral Degrees and Qualifications in Europe: Good Practice and Issues of Concern – A Comparative Analysis. In J. Sadlak (Ed.), *Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects* (pp. 279-298). Bucharest: UNESCO/Cepes.
- Kiley, M. (2009). Identifying threshold concepts and proposing strategies to support doctoral candidates, *Innovation in Education and teaching International*, 46:3, 293-304.
- Macário, M.J., Lopes, B., Pinto, M., Loureiro, M.J. & Ançã, M.H. (2011). ' Research Training in the 21st Century: A reflection on collaborative work and emergent learning. ', In António Moreira, Maria José Loureiro, Ana balula, Fernanda Nogueira, Lúcia Pombo, Luís Pedro & Pedro Almeida (Eds.). *Proceedings of 61st ICEM&XIIISIE - Joint Conference, 27-29th September, University of Aveiro, Aveiro, Portugal*, p. 34 - 44.
- McWilliam, E. & Dawson, S. (2008). Teaching for Creativity: towards sustainable and replicable pedagogical practice. *Higher Education*, Vol. 56, pp. 663-643.
- Mitra, R. (2010). Doing ethnography, being an ethnographer: The autoethnographic research process and I. *Journal of Research Practice*, 6(1), Article M4. Retrieved [date of access], from <http://jrp.icaap.org/index.php/jrp/article/view/184/182/>
- Pires, A.L.O. (2009) Higher Education and adult motivation towards lifelong learning. An empirical analysis of University post-graduates perspectives. *European Journal of vocational training*, Vol. 46, pp. 130-150.
- Shacham, M. & Od-Cohen, Y. (2009). 'Rethinking PhD learning incorporating communities of practice', *Innovation in Education and Teaching International*, 46: 3,279-292.
- Trafford, V. & Shosh, L. (2009). Doctorateness as a threshold concept. *Innovations in Education and teaching International*, 46: 3, 305-316.
- Robson, C. (2002). *Real World Research*. Oxford: Blackwell Publishing.
- Wisker, G. & G. Robinson (2009). Encouraging postgraduate students of literature and art to cross conceptual thresholds. *Innovations in Education and Teaching International*, Vol. 46, No. 3, pp. 317-330.