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► **To cite this version:**

Rita Khanfour-Armalé. PROFESSIONAL IDENTITY OF CHEMISTRY UNIVERSITY ACADEMICS. ESERA 2017 Conference, Aug 2017, Dublin, Ireland. hal-01861025

**HAL Id: hal-01861025**

**<https://hal.science/hal-01861025>**

Submitted on 24 Aug 2018

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# PROFESSIONAL IDENTITY OF CHEMISTRY UNIVERSITY ACADEMICS

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*Abstract: Nowadays in France, more trainings regarding "university pedagogy" are intended for teacher-researchers (TR), but very few studies are concerned in how they are absorbed by the TR. In fact, TR expectations from students of the secondary level education are also rarely studied. As a first approach to these general questions, our objective is to know better the community of the teacher-researchers of chemistry. This paper is part of a group work project on four disciplines representing chemistry, geography, mathematics, and physics in our laboratory. For this purpose, we propose to give some elements of reflection around the following questions:*

*- How does the discipline of teacher-researchers mark their practice?*

*- What is the imprint of the profession of researcher on the teaching profession?*

*Our questioning is structured around the notion of professional identity, the dimensions which enable us to take into consideration what constitutes the core of TR's discipline (de Hosson & al., 2015). This identity has been developed according to various axes such as: rules which govern their profession, qualities and skills for the practice, values of the profession, as well as a didactic axis, dealing specifically with chemistry teaching (Cattonar, 2001). Therefore, we will try to give the results of the analysis of interviews conducted from 14 chemistry TR from two universities in France like de Hosson & al. (2015). We will link them to problems related to the epistemology of the disciplines, to tensions in the profession or to didactic elements.*

**Keywords:** University teaching, University academics, Professional identity, Chemistry.

## INTRODUCTION

In France, research on the teaching practices and the professional identity of the teachers in the higher education started to be the subject of various studies (Annoot & Fave-Bonnet, 2004, Leininger-Frézal, 2016). The question regarding the evolution of the teaching practices in the higher education is currently being debated whether it is a fall of motivation of the students or heterogeneity of the student community. More and more of training courses covering "university pedagogy" are intended to be made for the teacher-researchers (TR) but very few studies are interested in the way in the TRs are receiving them. Also, the expectations of the TR regarding students coming especially from secondary education are not studied often.

In a recent research, de Hosson & al. (2015), showed interest in the teacher-researchers physicists of the same Unit of Formation and Research (UFR), by questioning them on their teaching profession of physics. Their research originated from an ordering of this UFR whose objective was to identify consensual proposals of change in the teaching methods and organization of the lesson of physics of license level (in particular L1). de Hosson & al. (2015) mobilized the framework of the professional identity (Cattonar, 2001) in as well "as together of particular elements of professional representations, specifically activated according to the situation of interaction" (Blin, 1997). It was a question of considering the occupational group teacher-researcher like a "subculture" characterized by modes to perceive, think and act particularly, and to go back to the standards, the values and the clean rules to their trade of teacher related to their object of work and their occupational practice (Cattonar, 2001, p.6) and thus on their discipline.

This article belongs to a bigger project in our group on higher education whose objective is to continue the work made by de Hosson & al. (2015) while extending to other universities<sup>1</sup> and other disciplines

<sup>1</sup> We have interviewed 42 teacher-researchers from the four disciplines and in 7 different universities for the project as a whole.

(chemistry, geography, mathematics and physics). The objective is to know better the community of the teacher-researchers.

In this article, we propose to give some elements of reflection around the following research questions:

- How the discipline of TR marks their practices?
- What is the imprint of the profession of researcher on the teaching profession?

## FRAMEWORK

Our questioning structure around the concept of professional identity whose dimensions enable us to take into account what constitutes the heart of the profession of TR of a discipline. Cattonar (2001) defines the teaching professional identity as the way in which an individual “teacher” is defined in his/her relationship with his/her professional practice of teaching (de Hosson & al., 2015): “there are those characteristics that identify the individual as a teacher and which he/she shares and has in common with other teachers because of belonging to the same occupational group” (Cattonar, 2001, p. 5). Here are the dimensions under consideration by de Hosson & al. (2015) that we consider again:

- The qualities and competences necessary to the exercise of the profession
- The standards (what the teacher judges legitimate to perform well in terms of rules, behaviors, operation and what with the opposite seems to him/her illegitimate or not very suitable)
- The values and rules (what the teacher develops in his/her job, the functions which he/she would like to delegate and those that he/she would never delegate) which are related to their work object and their practice professional (Cattonar, 2001, p. 6).
- The didactic dimension, the report which the teacher-researchers maintain with the discipline specialty (de Hosson & al., 2015)

## METHODOLOGY

We adopted the interview used by de Hosson & al. (2015) which was envisioned in order to collect the opinion of the teacher-researchers interviewed on the following aspects: the traditional organization lectures, directed studies and practical work, innovating practices, difficulties of the students, evaluation of the students, the university teacher training, the profession of teacher-researcher, the didactic questions. The sample is composed of 14 teacher-researchers of variable seniority (9 to 26 years), belonging to two universities. The interview parts were presented by the interviewer at the beginning, then were recalled and introduced by “what did you think about...”. The talks lasted between 25 and 60 minutes.

The transcriptions of the talks were read in a detailed way in order to index the ideas corresponding to the principal questions of the guide of interviews. According to the research question which they answered, the principal ideas were then categorized.

As a propriety, we considered the elements which could testify to affect the researcher profession in the teaching profession.

## RESULTS

We have here partial results which still need to be supplemented and specified. We could notice common results to all the disciplines:

- The teacher-researchers are in the search of coherence with what is the discipline - including in its professional dimension - which will be translated, according to cases', by variations or proximities with the discipline
- The hiatus between the comprehension and the success of the students, the hiatus between what is developed and what is evaluated in the exam.

What is specific to the research presented here is what relates to the chemistry which was associated by the teacher-researchers to understand what surrounds us and the everyday life. The teacher-researchers who are interviewed describe chemistry like an applied science more practical than theoretical. But they do not manage to practice chemistry with their students because of their difficulties and it is not easy for them to evaluate them in this sense. The principal explained that the difficulties are due to the lack of work and the

insufficiency in mathematical tools. Half of them showed the difficulty of students in giving meaning to the concepts and the knowledge.

The teacher-researchers state to have learned how to teach in the course of their professional experience. Half of the questioned TR is not favorable to the university training teacher, the other half is favorable and wishes to take trainings by professionals on pedagogy and the didactic one.

The teacher-researchers are not with a view to delegate part of their activities. But if they must, then they would go for the evaluations but they do not want to delegate the courses in master. The contact with the students appeals to them the most in their profession. The women (1/3 of the sample) evoke this contact on the side of teaching and the 2/3 which is men evoke this contact on the side of research (training course or direction of thesis).

The teacher-researchers evoke that they draw from the results of their research to feed their course for the students in Master. They declare that the fact of being a researcher helps them become a good teacher.

This study has enabled us to pinpoint elements of their professional identity as teachers. TR make (or would like to make) work with their students, because according to them activity “to nearly making it research”: they develop work in small groups to reflect together.

## CONCLUSION AND PERSPECTIVES

This preliminary analysis of the collected data allows us to identify major trends among university academics' conceptions about teaching as follows: a good teacher is above all a good researcher (de Hosson & al., 2015), or teaching has to favor interactions with students. We seek in the continuation of this project to validate a result found by de Hosson & al. (2015) that this identity is marked by tensions sharp between “what it would be necessary to make” and “what TR makes or which TR is ready to make”; tensions which are explained on one hand given the importance of research activity in the evolution of the teacher-researcher career, and on the other hand, by the tacit standard on which the evaluation of the students rests (checking of a technical form of skill in the detriment of comprehension). We will compare thereafter the chemistry teacher-researchers of the two universities and then we move on to comparing the enquiring teachers of the various disciplines.

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