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WORKSHOP AT THE UNIVERSITY OF GRANADA

Strengthening Teaching Competences in Higher Education in Natural and Mathematical Sciences (TeComp)

MODULE 1. TRAINING IN HIGHER EDUCATION

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A good teacher should be concerned about aspects of training related to university teaching, in addition to research. Universities must therefore have systems in place to encourage the training of their professionals. Whilst the researcher is trained through their PhD program and thesis director, who teaches them how to be a teacher? What makes a good teacher? What defines the good teacher: his/her attitude or his/her training?

Objectives

- Understand the relevance of training to the university teacher achievement.
- Analyze designs of training in Higher Education.

Contents

- Power structures that are becoming the training.
- The beginning of teaching.
- Mentor teachers.
- Training programmes.
- Experiences in Higher Education.

Methodology

It will be developed through one seminar of 2 hours, where theoretical information will be alternated with practical reflections.

Assessment

Participants will reflect about explained ideas before, using *Force-Field Analysis*.

DEVELOPMENT OF CONTENTS

POWER STRUCTURES THAT ARE REQUIRED FOR TRAINING

What is the current situation that we take as our starting point?

The functioning of the university institution depends on each of its members. For this reason, the University should ensure that its members are adequately trained to carry out their duties of teaching, research, and management.

The situation of the university teacher is characterized by a "schizophrenic binomial". On the one hand, we must remember that the salary they receive comes from carrying out the university teaching role, whilst on the other hand, access to and consolidation of the professional career is achieved by obtaining merits based on research.

Whilst the university faculty is well-prepared in its specific area of expertise, questions arise with regard to the pedagogical training and social skills of its members. Given this scenario, it is necessary to offer training to university teachers both at the beginning of and throughout their teaching career.

One of the biggest obstacles to the training of university teachers is the lack of training plans that are appropriate for their professional identity (Mayor, 2009). Such plans can be managed at the following three levels: by the rector's office, making these plans dependent on a Vice-Rector's office for teaching or an office in charge of quality; by the faculty; or by the departments.

Requirements or prerequisites

- A greater commitment to teaching is required by the university, so that the same value and dedication to training is given to teaching as it is to research.
- Establish a diverse and permanent training network for university teachers throughout the academic year, since it is not a question of transforming all university teachers into pedagogues, but rather of providing the necessary training to develop quality teaching (Mayor, 2009).
- Make initial teacher training mandatory.
- Recognize and support the promotion of those who are interested and concerned about improving as a teacher during their professional career, through awards for teaching excellence or credits throughout their teaching career.
- Incorporate assessment processes into the university context in a systematic and institutionalized way, as a tool for teacher training (Marcelo, 2009).
- Recognize the importance of calling upon the experience of veteran teachers in the institution for the implementation of these university consultancy processes, since these teachers know the institutional culture well (Mazerolle, Nottingham, & Coleman, 2018) and have mastered the curricular content of their disciplinary area (Sánchez, 2008).

- Provide key figures that can drive the training forward, including a) a training coordinator who is familiar with the idiosyncrasies, structure and culture of that institution and is responsible for the training and innovation processes in that faculty or department; b) a mentor; and c) an external advisor or consultant.
- To have the support of the academic authorities by promoting, financing, and recognizing the training processes developed by the professors (Mayor, 2009)

Proposal

The University must focus its efforts on the period of induction or entry of a new teacher into the profession. This is a long-term investment, since it would lay the foundations for recognizing the importance and need to train to be a teacher. In this sense, it is necessary to:

- Incorporate initial training into a fully integrated training process, with the aim of acquiring knowledge of the professional teaching culture of the place in which they are working (Mazerolle, Nottingham, & Coleman, 2018) along with a series of basic teaching competences, including cognitive, meta-cognitive, communicative, managerial and affective skills.
- Create teaching teams, belonging to the same department or faculty, where they work on didactic, collaborative and critical skills, and strategies such as clinical supervision and peer support.
- Have experienced teachers who can advise other teachers or groups of teachers who are new to the profession or disciplines. We refer to these as teaching mentors.
- Seek external advice from an expert consultant who is able to provide timely information on the subject matter in question.

Below we suggest a possible structure for university training:

LEVEL OF MANAGEMENT	PERSON RESPONSIBLE FOR TRAINING	TRAINING STRATEGY		STAGE OF PROFESSIONAL DEVELOPMENT
Rector	Vice-rectorate (Teaching) Quality Assurance Office	Training plans		Initial Continuing
Faculty	Training coordinator	Teaching Teams	Seminars Workshops	
	Vice-Dean	External consultancy	Workshops Seminars Courses	
		Mentoring	Reflective or Improvement Cycles	
Department	Teaching Mentor			

Table 1. Policy structure for university education



Initial and continuing education at the university is not a problem of means, *it is a problem of attitude* (Mayor, 2009).

What is the current situation in your universities? Would you meet some of these requirements? Do you have a consensus on some of these requirements?

THE BEGINNING OF TEACHING

Definition

The beginning of teaching refers to the early years of professional practice and covers the period of time during which a teacher must make the transition from student to teacher.

This is a period characterized by tension, uneasiness, uncertainty, and intensive learning during which the teachers must acquire professional knowledge (Marcelo, 2009).

Teachers are usually left alone to face this stage of uncertainty about how to respond to day-to-day life in the classroom (Vélaz de Medrano, 2009). Beginners are characterized by:

- Entering the profession with updated skills and fresh ideas.
- The absence of a well-defined professional style because they have not yet established their teaching practices.
- A feeling of uncertainty that makes them require training.

Consequences

It is necessary to promote, from the university, the initiation of programs for beginner teachers and to mentor these teachers.

TEACHING MENTORS

Who are they?

In general, the mentoring process is understood as the relationship established between a person with more experience in a field (mentor) and another with less or no experience (mentee).

A teaching mentor can be broadly defined as an expert with many professional skills, acquired after years of experience. The main objective of the mentor is to integrate the members of the organization (Kahle-Piasecki & Dole, 2015). In the performance of teaching, this would involve transmitting the culture of the organization to which he/she belongs and guiding those who do not have these experiences.

Objective

The goal of the mentor will be to:

- Provide assistance with the teaching task.
- Integrate the person into the group and institution of reference.
- Encourage a permanent inquiring attitude, one in which problems are tackled as professional challenges and not as personal risks, and in which solutions are formulated, discussed, and compared.
- Help to create or improve the set of intellectual, personal, social and technical skills that the new teacher must put into play in order for their students to learn (Vélaz de Medrano, 2009)

Characteristics

Mentors must possess certain traits that make them capable of performing such a role. These criteria can be divided into the following categories:

a) **Institutional**

- They are successful and respected members of their department, college, or university.
- They are willing to invest time in their mentoring role.
- They are recognized as good teachers through established assessment systems (Vélaz de Medrano, 2009).

b) **Personal (Marcelo, 2009; Sánchez, 2008)**

- They are satisfied with their work as teachers.
- They know how to listen and how to show empathy towards others.
- They are committed to the teaching ethic.
- They have social and communication skills.

c) **Professional (Marcelo, 2009; Sánchez, 2008)**

- They have good "chemistry" with their mentees and are able to generate a climate of trust (De Lange & Wittek, 2020).
- They have a certain professional background of more than five years of teaching experience.
- They show a certain awareness of teaching and organizational problems.
- They are skilled at reflecting on and analyzing teaching.
- They know the tricks of the trade required to deal with the professional culture.
- They master the knowledge of the discipline.
- They are learning advisors and can stimulate leadership among equals (Colvin & Ashman, 2010)

Functions

We can identify, among others, the following roles of the mentor:

- They help the mentees to understand the culture of the institution in which they operate.



- They guide, advise and support other colleagues who lack experience, since they have traveled the road before and are familiar with the situation that their colleagues are experiencing.
- They provide colleagues with didactic and personal advice.
- They are a model/example with which to compare teaching performances.
- They stimulate a climate of trust and do not judge the actions of others.
- They reduce any anxiety and concerns that can affect professional development.

TRAINING PROGRAMMES

The training programs can be endorsed by the rector's office, the faculty, or the departments and are aimed at two target audiences: the beginner teacher in the process of initial training; and the expert teaching staff in the process of permanent or continuous training and development. Both types of program can be implemented with the support of a) mentoring processes; b) teaching teams; and c) external advisors.

- a) The *mentoring processes* would be led by the teaching mentors already referred to in previous sections:
 - The idea is that mentors provide new teachers with security during those first years of teaching and help them to feel less isolation than they would otherwise experience.
 - It is recommended that the mentor and new teacher belong to the same disciplinary area, even if they are colleagues in the same subject.
 - There should be a clear definition of the roles and tasks to be performed by both the mentor and the novice teacher. Thus, mentors will help the new teachers to develop different skills that are specific to the profession, stimulate self-confidence, and introduce them to the culture of the profession, the department, and the institution.
 - The mentor will act as a model, demonstrating his or her teaching skills in class, social relations with classmates, ways of dealing with students, and managing meetings. They will also demonstrate a commitment to personal and professional work as well as helping the new teacher in their development. The mentor will ultimately be a facilitator of change and improvement.
 - Teaching mentors will observe beginner teachers in their teaching practice and provide them with feedback that will drive them towards autonomy. To this end, they will use the training strategy known as Improvement Cycle or Clinical Supervision or Reflective Cycle (Smyth, 1984, 1991). Each cycle is divided into four stages (planning interview, observation, analysis, and analysis interview). In each stage, the teaching concerns presented by a given teacher are identified, information on those teaching aspects is then observed and collected, and that information is reflected upon and analyzed in order to understand and make sense of that teaching performance. Teaching mentors are trained to guide these improvement cycles with their mentees, individually or in groups (Darwin & Palmer, 2009).
- b) The *teaching teams* work collaboratively. These can be composed of teachers from the same department or from different areas of expertise and from either the same or



different faculties. The mission of these teams is to reflect on practice, with the aim of improving teaching. These teams must be backed up and legitimized by the Rectorate's training plan. In order to be productive, these teams should include a minimum of 5 teachers and a maximum of 20.

- c) *External advisors.* These are individuals who, without being administratively linked to the internal structure of the institution, provide assistance in the training activities. Their tasks would consist of using their experiences and training to model the design, diagnosis and planning of teaching. This external assistance can be channeled through specialists in different areas. They can be, for example, specialists in pedagogy or psychology (Sánchez, 2008).

In summary, a *Training Plan* must meet a series of conditions based on the following set of principles:

- Institutionalization: training will be understood as part of the organizational development of the institution and should therefore be recognized and promoted through a public call for proposals by the educational institution.
- Continuity: teacher training will be thought of as a long-term process based on principles and procedures that are stable and permanent.
- Integration: of disciplinary content and psycho-pedagogical content.
- Rationality: a certain systematic approach is needed in the design, development, and evaluation of training plans.

But, in addition to the principles of action, in an operative way, certain premises could be considered for the execution of the *programs*:

- Promotion of training in the context of work, calling upon the expertise of colleagues with more experience.
- Proposal of a flexible structure that would combine various types of activities: classroom and non-classroom (Tinoco-Giraldo, Torrecilla, & García-Peñalvo, 2020), seminars, workshops or courses, along with morning and afternoon shift activities to facilitate attendance by making these compatible with class schedules.
- Making analysis and reflection on teaching practice the main thread of the program.

EXPERIENCES IN HIGHER EDUCATION

In this section, we describe the experience of the University of Granada, although we would also like to mention the collaborative project that was implemented between professors of the Engineering degree of the University of Montenegro, University of Belgrade and the University of Granada (Šćepanović, Gil, Hernández, Mijušković, & Žugić, 2020), on the mentoring and training of university teachers, along with the experience of mentoring graduates, undergraduates and university professors in the context of STEM (Science, Technology, Engineering, and Mathematics) subjects (Lunsford, Crisp, Dolan, & Wuetherick, 2017)



The University of Granada has approved a Training and Teaching Innovation Plan (FIDO), which includes both the program for initial training and the program for continuing education. These programs offer calls for teachers to attend.

The initial training or training for novices is delivered through the Course plus Mentoring modality and also through the Teaching Teams, whilst continuing education and training is primarily delivered through short courses (20 hours) with external consultation, along with the Teaching Teams (one year). We will describe two examples: a) Introduction to University Teaching; b) Teaching Team in Initial Training.

INTRODUCTION TO UNIVERSITY TEACHING

Objectives:

- Improve competence in didactic communication techniques, teaching planning, methodology, use of new technologies, evaluation, and tutoring.
- Provide references for decision making in teaching.
- Generate positive attitudes towards continuing education in all areas of their professional teaching work.
- Provide support through mentoring practices.

Contents: developed in 3 phases

Phase 1. Face-to-face training (72 hours)

Module 1. Planning Teaching in the EHEA (3 sessions, 9 hours)

Module 2. Ethics of the teaching profession (2 sessions, 6 hours)

Module 3. Teaching methodology (5 sessions, 15 hours)

Module 4. ICTs in Higher Education (3 sessions, 9 hours)

Module 5. Evaluation of Teaching and Student Learning (4 sessions, 12 hours)

Module 6. University Tutoring and Personalized Student Care (3 sessions, 9 hours)

Module 7. Transfer of Teaching (2 sessions, 6 hours)

Module 8. Basis for the development of the teaching and research project (2 sessions, 6 hours)

Timetable: it is possible to choose mornings from 9 am to 12 pm or afternoons from 4 pm to 7 pm

Phase 2. Non-contact training (114 h.): The aim of this phase is to engage in innovative activities and improve professional practice in accordance with the indications provided in the face-to-face phase.

Phase 3. Mentoring (20 h.): This phase will take place once the face-to-face phase has been completed, under the supervision of a faculty mentor from the University of Granada, from the same University Centre and/or scientific field as the participant. It assumes that the mentor will guide the training process of the novice teacher. He or she will dedicate 20 hours to this task in accordance with the following recommendations:



1. The process will be adapted to the thematic needs of the novice teachers.
2. The mentor will observe, analyze, and evaluate at least two classes taught by the novice teacher; and the novice teacher will also observe, analyze, and evaluate at least two classes taught by the mentor. These classes should be video recorded for later viewing.
3. The mentors and the novice teachers will meet in three clinical supervision seminars:
 - Seminar 1: the new teacher will identify his/her training needs.
 - Seminar 2: aspects related to class observations and/or recordings will be discussed.
 - Seminar: Any observable improvements will be analyzed

TEACHING TEAM IN INITIAL TRAINING

This is a one-year program. It is composed of a maximum of 20 new teachers with less than 5 years of teaching and at least 5 teachers with more than 10 years of teaching experience. During that year, topics related to teaching are addressed that respond to the needs of the participants and also those that topics were presented in the Rector's call for proposals.

Title: The teaching team as a strategy for training in transversal skills for young and experienced teachers.

Topics:

- Purpose and constitution of the Team (2 hours)
- Diagnosis of needs (3 hours)
- Planning of activities and subjects(3 hours)
- Brain-based learning: fact or fashion? (3 hours)
- Becoming established in the teaching profession(2 hours)
- Teaching Staff Repository (2 hours)
- ANECA Accreditation Preparation Workshop (4 hours)
- Professional Teaching Skills (4 hours)
- Prevention of vocal pathologies (3 hours)
- Teaching guides and gender perspective (3 hours)
- Occupational hazards and teacher stress (3 hours)
- Project Based Learning (4 hours)
- Teacher Empathy (4 hours)
- Pedagogical view from everyday life (4 hours)
- Team evaluation (3 hours)
- Proposals for improvement (3 hours)

Sessions: Twice-monthly sessions, held on Thursdays, usually from 12:30 to 14:30, although some topics require additional hours.

Development: Seminars or workshops are delivered by experienced teachers, members of the teaching team, and also by external advisors.

Subsidy: the project presented to the Rectorate can be awarded a maximum subsidy of 3000 euros. The money is allocated according to the number of new teachers that participate, since 150 euros is available for each new participant.

TO FINISH: A REFLECTION ON THE REALITY OF OUR CURRENT SITUATION

Let us practice Force-field analysis. When faced with a problem or situation, this technique identifies and describes all the forces or conditions that are at play, allowing us to reflect on the conditions that should be kept as a priority and those that should be changed, as well as the estimated degree of difficulty that implementing each action would entail.

This allows us to reflect and make decisions based on two criteria. The first is concerned with the degree to which the aspect being evaluated is a priority, assuming that 1 indicates a high priority, 2 is neutral, and 3 not a priority at all. The second concerns the level of difficulty that would be involved in implementing this aspect, with these levels being a (maximum difficulty), b (average difficulty), and c (minimum difficulty).

With this, the participants can select the possible and/or desirable fields of action in a reflexive and consensual way. We refer to all aspects scored using the following format, so that, for example, 1c would indicate maximum priority and minimum difficulty. These are good reference points from which to start working.

FORCE ANALYSIS						
Aspects to consider	Priority			Difficulty		
	1 (max)	2	3 (min)	a (max)	b	c (min)
...						
...						

Of all the aspects proposed here, how would you view them in your universities?

FORCE ANALYSIS						
Aspects to consider	Priority			Difficulty		
	1 max	2	3 min	a max	b	c min
Policy of the rectorate in relation to training						
Consideration and respect for teaching at the same level as research						
Training structures: vice-rectorate, faculty or department						
Staff trained in teaching						
Creation of teaching teams						
External consultancy						

Mentoring						
Courses, workshops, seminars						
Commitment to initial training						
Willingness to engage in continuous training						

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