

PROGRAM FOR LEARNING STRENGTHENING: EXPERIENCES, RESULTS AND PROSPECTIVE

Teresa Merchand Hernández¹, Jesús Hernández Villa² and Darío Guaycochea Guglielmi³

Abstract — Performance and efficiency of an educational institution depend on different factors: academic and administrative policies, curricula, resources and infrastructure, students and also the teachers and their training. The analysis and solution of the problems faced by the institution demand an integral focusing of the different sub-systems; in this sense, quality will be the result of the coordinated promotion of all the elements as a whole. Regarding the improvement of the faculty members academic level, the CBI Division of the UAM Azcapotzalco has implemented different strategies; however, they had little influence in teaching-learning indicators. The Program for Learning Strengthening consists of the diagnosis and attention of deficiencies in teaching skills through basic pedagogic training courses. This program is based in modern educative trends and aims to develop, not only skills but also attitudes in the teachers, to promote the students success.

Index Terms —Didactics, pedagogy, teaching administration, teaching formation.

BACKGROUND

The Universidad Autónoma Metropolitana (UAM) is the third university in Mexico, regarding students population; it was founded in the 1970s with an innovative model, in which, the figure of teacher-researcher, the trimestral terms system and the departments organization, have been distinctive features. At present, programs for the effective attention of teaching problems is an institutional concern. This paper describes the Program for Learning Quality Strengthening, promoted in the Academic Unit (Campus) Azcapotzalco of that institution since 1999; depicts a revision of experiences and shows the short and medium term perspective of the program.

THE CHALLENGES OF THE UNIVERSITY FORMATION

Since teaching is one of the main functions in the university system, it faces the challenge of producing human resources with an integral focus. From the point of view of the engineers formation in Mexico, the teaching practice demands the inclusion of new needs, derived from the

discipline evolution: the command of pedagogical knowledge and skills; a teacher's attitude which recognizes the education as an essential element of change; the insertion of activities to encourage the students effective learning; as well as other aspects, such as the comprehension of the new information and communication technologies and their use in the educative practice. This context as a whole will help to bring a more professional focus for high education teaching. After three decades of the UAM foundation, period in which its professional programs have been operating, significant changes happened in different aspects of the human life: economy, politics, society, science and technology. This changes have affected production systems, professional work, information management and in general, the way of solving problems. Together with this, the demand of professional abilities such as: team working, decision taking, formal languages knowledge and autonomous learning, reinforce the university commitment to achieve an integral formation for graduates, and to set up a real platform, so that they get a professional development and display their skills. In this sense, the challenge of the high education institutions is to give the students a solid scientific and technical formation, as well as to develop and consolidate skills and attitudes, professionally, personally and intellectually, to cover graduates and employers necessities in a highly competitive, changing and global environment. An integral formation will facilitate the graduates their incorporation to the professional field and to different opportunity areas in the productive sector or to follow their academic formation through postgraduate or permanent education programs.

THE ROLL OF ACADEMICS IN STUDENTS FORMATION

Teachers are the central axis, among different elements in the university, for the educative project, its viability and fulfillment. They are who know, interpret and recreate the curricula; design strategies; apply and adapt educative material, as another way to make academic contents more accessible; moreover they generate a favorable climate within the classroom to get a significant learning and a quality education. However, teachers, at least in this institution, used to face several difficulties, such as insufficient material and infrastructure, the lack of an integral organization for teaching, absence of a program of

¹ Teresa Merchand Hernández, Universidad Autónoma Metropolitana Azcapotzalco, México D.F. México 02200, mht@correo.azc.uam.mx

² Jesús Hernández Villa, Universidad Autónoma Metropolitana Azcapotzalco, México D.F. México 02200, jjhv@correo.azc.uam.mx

³ Darío Guaycochea Guglielmi, Universidad Autónoma Metropolitana Azcapotzalco, México D.F. México 02200, sacbi@correo.azc.uam.mx

induction to the institutional educative model and absence of a permanent pedagogical program to support their performance. To solve this, it's essential to implement policies and programs to make effective the teaching functions development. There's no doubt that the success of any educative model or improvement program, should become clear in the classroom; that's why it's important to promote programs to improve the teachers performance, under the basis that the more the teachers are trained, the better and more effective will be their results.

TEACHERS STAFF CHARACTERISTICS

The institutional tendency to the strengthening of academic teams, was centered in teacher's disciplinary improvement through postgraduate programs. Although the command and deepening in a discipline is an important factor for teaching practice, a program based essentially in the acquisition of an academic degree, attends just one of the aspects of teaching performance improvement. At present, about 50 % of the teachers in the UAM Azcapotzalco completed postgraduate studies, and this feature is recognized as one of the strengths of this school in the nation. The teaching staff is integrated by part time, half time and full time professors in three categories: assistant, associate and tenured; and also by academic technicians and aides. The Academic Unit Azcapotzalco, as well as the two other units in the UAM, stands out for its high percentage of full time professors (73 %), a less presence of half time professors (13 %) and part time (14 %). These data reveal the institutional concern to conform an academic staff with a professional activity, focused essentially to education. Regarding the postgraduate studies followed by the academics, they have a close relation with a deep and specialized knowledge about a study object related to the professional teacher's discipline; this formation allows him to propose, formulate and develop research projects in a field. But this is not directly related to teaching effectiveness.

TABLE I
DISTRIBUTION OF ACADEMIC DEGREES IN THE TEACHERS
STAFF OF THE THREE DIVISIONS OF THE UAM AZCAPOTZALCO

Degree	Basic Sciences & Engineering	Social Sciences & Humanities	Sciences & Arts for Design	Average
Bachelor	40.8 %	48.8 %	66.1 %	51.6 %
Master	37.4 %	30.6 %	24.3 %	30.7 %
Ph. D.	21.8 %	20.6 %	9.6 %	17.7 %

The development of teaching skills is important, as it is the disciplinary improvement. It's necessary to facilitate the teaching formation to academics, through a program identified with the peculiarities of the institution, the curricula, the subjects given by the teacher and their relation to others. Regarding this issue, some unconnected actions

were carried out in the Academic Unit and the result was a limited knowledge about techniques, methods, strategies and procedures to contribute to the professionalization of the teachers activity; however it's necessary to promote reflection about the implications of teaching under a focus of integral analysis.

ACTIONS UNDERTAKEN FOR TEACHERS FORMATION

Regarding teaching formation, the institution has passed through diverse experiences along its history; some particular efforts can be remarked. That's the case of the Commission for Academic Support and Development (CADA); this office was created in the early stages of the institutional life and initially focused its activities to the support for the development of the departmental organization and the formation of basic academic groups to satisfy curricular necessities; this lead to carry out a project, which involved a considerable part of the early academic community, for the design of curricular programs following the institutional model. CADA assisted to academic and psycho-pedagogical support to students in the 70's and 80's; this task was later assigned to the Professional Orientation Office. As well, the national educative tendency of those years was supported by CADA, through the organization of different courses and seminars in subjects such as: basic didactics, objective-oriented curricular design, didactic material design and learning evaluation. These courses had a limited and restricted impact, regarding the number and kind of teachers who participated. They didn't conform a permanent program, although solved particular problems and demands of that moment. Another set of actions, carried out by CADA in the 80's and 90's were related to the organization of short courses for teachers, about different subjects, mainly computer skills. In recent years, CADA transformed its structure and at the present offers support to teachers, through: promotion of scholarships program for postgraduate studies in the country and abroad; search of financial support by means of agreements with other institutions; and promotion of academic exchange for the development of scientific and technological research.

ANALYSIS OF THE STUDENT'S INQUIRY.

The opinion of students is important to orientate the strengthening quality teaching program, It was taken from a survey. A survey is regularly applied to students between the 6th and 7th weeks, each trimester. One of the purposes of the instrument is to know the opinion of the students. regarding the acting of their professors. The survey includes three parts, one of them is dedicated to evaluate the students performance in the course, another part shows important elements of the professor's acting and finally it has a part

that gives the students the possibility to write free comments to expose opinions or recommendations about the course or the professor's work. An analysis was done on a sample of 1063 free comments extracted from the survey, selected from the three levels of engineering careers: basic level, basic professional and concentration areas. The student's comments were classified in professor's acting, curricula structure and infrastructure. Regarding professor's acting results were classified in function of domain of three aspects: knowledge, command of teaching abilities and capability to transmit values and attitudes. The analyzed information emphasize the follow aspects:

- Most of the students recognize the high academic level of their teachers.
- They value apprenticeship that comes from professors who have professional experience additional to teaching experience.
- They demand an education based in concrete applications besides of theoretical approach to the topics.
- They show the necessity of doing evaluations closely related to the courses objectives.
- Comments show the necessity to reinforce educational skills of the professors; for example: ability to give appropriate rhythm and correct level to different parts of the course, enhancing personal aspects, such as voice management; leading students to learn processes with effective strategies instead of teaching practices based and focused in professor's activities.
- Also the students refer the necessity of improving motivation, equal treatment and achieving better communication and cooperation between students and professors.

RECENT ACTIONS. PROGRAM FOR QUALITY LEARNING STRENGTHENING

In order to attend specifically the teaching formation of the faculty members, as well as other problems related to educational aspects, The Coordination of Teaching (COD), depending on The General Coordination of Academic Development, was created in the UAM Azcapotzalco in April 2001. At the present, the work of this Coordination refers mainly to the *Program for Learning Quality Strengthening*, which in turn is divided into three sub-programs:

- Program for teaching formation and upgrading;
- Program for educative innovation and curricular implementation and
- Program for planning support, follow up and evaluation of teaching.

Prior to the creation of this office, the first of this programs was already put in force; different courses were offered for teachers, with the following titles: Introduction to

the teaching process; Planning and formulation of learning objectives; Group techniques applied to teaching; Production of didactic materials with the use of electronic media; Production of multimedia didactic materials; Effective education and micro-teaching; Introduction to the teaching-learning process; Groups dynamics; Didactics and teaching techniques; Learning evaluation; Learning to learn; Learning to think; Development of intuition and perception for learning; Didactic planning and Descriptive chart elaboration.

The courses with highest demand by engineering teachers, in decreasing order, are: Learning evaluation; Didactics and teaching techniques; Learning to learn; Production of multimedia didactic materials and Group techniques applied to teaching.

The average offer of the courses was four per period between trimesters (twelve courses per year); they have been conducted in total in ten periods; they comprise 20 hours; 220 professors of the three divisions have participated; the share of each division is almost equal; it shows that the interest is similar, regardless of the professional field. The criteria for the course selection was to look for a basic proposal to attend practical-methodological aspects, focused mainly to help the teacher in planning, performance and evaluation activities. However, articulation and harmonization of efforts in very important, in order to consider the diverse aspects which lead to a professional teaching function. Thus, it's very important to design and put in force an integral, well defined and permanent program, with the objective of enriching the formation of the academic staff with knowledge, skills and attitudes, to help them to achieve an optimal performance as teachers. So, the integral program for teaching formation and upgrading in the UAM-Azcapotzalco is being defined looking for three particular objectives:

- To get the introduction and incorporation of the teacher to the institutional model, through a project of induction to the teaching function.
- To design a project of basic teaching formation directed to attend different didactic-pedagogical aspects, to improve activities for planning, conduction and evaluation of the teaching-learning process.
- To contribute to the disciplinary formation of teachers, through a project of specific teaching formation, derived from necessities in the divisions.

At the same time, the following activities are suggested, to strengthen the production of didactic materials, reflection about teaching and administration:

- Lectures given by guest experts.
- Courses and seminars with the support of teaching administration experts.
- Cooperation with other branches of the university to incorporate new communication and information technologies in the teaching-learning process.

- Promotion of didactic materials production using new technologies and favoring distance learning.
- Development of evaluation projects to identify and to plan solution to relevant teaching practice problems in the Academic Unit.

- Implementation of educative projects by electronic media

To get from the teachers a different form to give his classes it's necessary that they gets a different formation, answering the following questions:

What's the formation to be encouraged?

What are the characteristics to achieve in the graduates?

What are the mechanisms to get these qualities?

PRELIMINARY RESULTS OF THE FORMATION COURSES

As mentioned above, the Program for Quality Learning Strengthening began in 1999. Different courses were offered since that date; the quantitative impact of the program has been approximately 700 inscriptions. At the end of each course, a survey is always applied to identify the participants' opinions, regarding contents, instructors, and the strategy itself. An analysis shows the following results:

- The professors make evident the necessity of offering a more structured program, capable to link and give sequence to the courses' contents.
- They demand an institutional recognized teaching program.
- They suggest more levels for different topics that can be structured either in a wide permanent education program or in a master program in education.
- They mention how they have improved their teaching abilities after they have taken some courses.
- They mind greatly about the importance of their work in education.
- They declare to have achieved critical and reflexive thought about ways to improve their activity.
- They recognize teaching as a collective, interactive and dynamic activity that includes students and teachers.
- They give importance to the search of strategies to allow them to achieve a better knowledge.
- They mention the necessity of programming more practical sessions and linking the topics in the teaching courses with the objectives of the courses they offer.
- They suggest to explore other ways to access teaching courses, for example web and multimedia supported distance education.

It's very important, for the **specific teaching formation**, to consider the particular necessities for each knowledge field, taking into account that the teacher bases his didactic action on what he has received. In engineering courses, for instance, it's necessary to support the process in the skills and attitudes to be promoted in students, such as: analysis and synthesis abilities, alternatives analysis, searching capacity, team work, identification and application of strategies for problems solution, incorporation of the systemic thought and the relation cause-effect.

CONCLUSIONS

Teachers profile and formative requirements. Analysis of cultural characteristics and emergent demands, allow to depict the required general profile of the XXI century high education teacher:

- Reflective and autonomous person, capable of acquire permanently professional skills, through observation and systemic registration of actions; conscious of his acting and of the effects produced in students.
- Prepared for the design, evaluation and reformulation of strategies and innovative pedagogic programs, with comprehensive knowledge of techniques and methods, which he employs, evaluates and improves, modifies or creates other more efficient methods.
- Capable of systemic research and permanent reflection about his professional practice, basing his decisions on the critical application of upgraded specialized knowledge; which he understands and uses properly in the processes and methodologies of the disciplines or disciplines he teaches.

FURTHER ACTIONS

The following topics are considered as essential aspects for the basic teaching formation; to be implemented with courses, activities and with projects conducted by teachers collectives:

- Significance of the educative work
- Pedagogic competence
- Design of learning objectives
- Teaching evaluation
- Classroom communication and team work
- Strategies and styles of teaching and learning

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