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Quality Management in the Training of Researchers

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Abstract: The content of the article delves into the essence of quality management in the different postgraduate figures, emphasizing the training of doctors, developing a proposal for research academic management, which means their role in universities. The theoretical considerations that support the dynamics of quality management in postgraduate training are provided, as well as the relationships that, from a holistic approach, reveal the characteristics of the dialectical behavior of the process. It transits through the epistemological characterization of the postgraduate training process and its management at present, through the systematization of its main theoretical references, which allows the elaboration of an authentic proposal of postgraduate quality management, pertinent with the epistemological arguments of the postgraduate process and its relation to scientific research. The article insists on the understanding of the concept of academic research quality, conditioned by the relationship with the terms of management, evaluation and quality, from the perspective that quality is recognized as a quality, dialectical synthesis of relevance, impact and optimization of the process considered. This reflection leads to the fact that the quality of a process or institution is not reduced to a quantitative parameter, but rather constitutes an essential and general category that identifies the process itself and in its relationship with society.

Keywords: University Process, Postgraduate Training, Quality Management

1. Introduction

The postgraduate as a university process arises, since the appearance of universities, the medieval society where postgraduate education appears with the title of Doctor, granted by the church in demonstration of its omnipotence, throughout history its development has been circumscribed to the social needs prevailing in each era and the vision of power structures.

Postgraduate education as a systematic and supervised study carried out by those who previously have a bachelor's degree or a higher professional degree has a social recognition in the nineteenth century, when in 1808 the University of Berlin, in Germany, established the modern or scientific university, characterized by its academic autonomy, the integration of research with teaching and doctoral studies focused on the realization of a thesis that was the product of an individual scientific research, under the supervision of a professor or tutor of recognized scientific prestige [1].

As another alternative in the United States, Jhons Hopkins University in 1876 [2]. The first postgraduate schools in the world are inaugurated, appearing at the end of the century itself in Russia the structuring of a university with three university degrees and in England the German doctorate is assumed.

At present, the postgraduate degree is the essential support for the development of Higher Education, in its nature of continuous and lifelong learning, that reaches all areas of society and, above all, that starts from it in a formation from society in the link and accompaniment between the university and society.

Methodology developed in research

In the research leading to the postgraduate and the training of doctors in science, the historical background of the postgraduate course and the systematization of experiences in tutorials were considered, in an institution in which more than 240 doctors in science from seven countries have been trained and they value the experiences as presidents and members of the Permanent Court of Pedagogical Sciences, for doctoral thesis defenses, based in the institution itself. Applying information systematization methods, observation

guides and annual reports of the thesis defense processes presented and their dissatisfactions.

The foundation and theoretical construction, has constituted a line of research of the authors, which has had contributions in the construction of scientific knowledge, the training of researchers and training in institutions of Higher Education, as well as in the development of research methods theoretical, which allowed to determine a concept of quality, from a totalizing vision and the systematization of indicators in the control and evaluation of the process of quality management in the training of scientific researchers [3]

The model of quality management in the training of researchers has made it possible to achieve the results not only in the training of doctors in science, but also in the training of tutors. On the other hand, the results of the research have been projected in the design and development of the postdoctoral program as a transcendent postgraduate figure in quality management [4].

2. Fundamentals of Postgraduate Training

1. The consideration of the postgraduate course as a pedagogical and didactic process, in which scientific research is present, which connotes the academic formative, but marked by the investigative work [5].
2. The training must be conceived with a personal character, conferring specificity to the process. Postgraduate programs should consider training as a process, in which the objective not only expresses certain knowledge, skills, values and assessments, but the transformation in behaviors, in the vision of their own practice.
3. Training must lead to teaching in an institutional and social framework, with the uniqueness of each context; but at the same time provide an update in reference to new approaches, methodologies and research of a universal nature [6].
4. The objectives to be achieved in the postgraduate will be in correspondence with the professional skills with depth and creativity to be formed, which includes ethical and moral values, which are expressed in the solution of professional and social problems [7].

However, at present the postgraduate management suffers from a didactic foundation of its own, which allows it to be erected with equal consideration to the management of the undergraduate process, without remaining in the theoretical approaches of the preceding formation.

It is necessary, therefore, to consider that the postgraduate training process involves the appropriation of professional culture in a systematized form, scientific research and scientific and technological development in context and this in a dialectical unity with the appropriation of professional and scientific culture universal.

Thus, the postgraduate process is recognized as a didactic process characterized by the categories of Higher Education Didactics and that it has its own specificities of the answers to the problems generated by the transformations in the social, economic and political processes in which is addressed [8].

The postgraduate course is assumed as a training process, professional and continuous, at the same time based on the development of advanced scientific research and sociocultural management, which constitutes the specificity that characterizes the training for a specific professional performance in diverse contexts, concrete activities and at the same time universal. The levels of development of the professionals involved in their training and social or economic activity, determine the quality of the process of self-transformation and self-training, passing through higher and developing levels, which must be in correspondence with the progress and transformation of development Human social context.

The concept of postgraduate training, in general, has been transformed in relation to scientific and technological advances, as well as economic and social transformations, which induce substantial changes in professional and social performance, requiring the incorporation and Development of new content that responds to the growing requirements of the productive and service sectors. The professional is connoted from the determination of social needs, which through academic and research training are assumed as a starting point, which enable higher levels of professional culture to be reached in their solution, and allow the freedom to solve new problems professionals.

The academic must include aspects of science and technology of a certain profession and that necessarily tends to be more systemic, deep and creative than the training developed in the undergraduate. In the postgraduate course, the relationship between research training and academic training determines the different postgraduate figures in which these training processes are structured, considering in them certain relationships between: academic and research; the specific relationships of the university activity itself and that of the companies or social institutions that participate; as well as the temporal scope and the independence in the formative that unfolds during the development of the process and that are identified from graduates, specialties, masters, doctorates and postdoctorates.

Through the various postgraduate figures, the search for answers to the problems of the professional and social practice of the participants is made possible, promoting the self-development of the professional transforming capacities required in a specific field, which makes the participants into actors' assets of their own training [9]. They are considered fundamentally: the diploma, the masters, the doctorate and the postdoctorate, the last three constitute the academic-investigative forms, conducive to the obtaining of significant scientific results.

The diploma has as its main purpose the training of professionals for the performance of their job or functions with greater depth than the contents of the undergraduate, through the application of newly incorporated or established technologies, as well as professional development that allows

the later development in a certain field of the profession or of the investigation.

The master's degree is the academic training program in which the postgraduate student is able to develop an investigative process, providing an innovative result or aspect in their professional activity, which requires creativity in the methodological aspects where the researcher offers a contribution technical applicable to a certain context and that can also be generalized to other professional fields as an instrument of transformation.

However, the academic is an essential component to ensure the professional training of the future graduate of the master's degree, where the academic is activated the process of scientific training through the appropriation of the scientific-professional culture.

The master's degree leads to the obtaining of an academic degree in which a deepening and systematization of the contents is developed, which allows the solution of professional problems, but unlike the specialty there is a prioritized use of scientific research, being scientific research the integration of the master's training program.

The doctorate is a process of postgraduate academic-research training leading to the obtaining of a scientific degree, in which the postgraduate doctoral student is able, developing a process of scientific research in methodological diversity, to enrich a branch of culture through science and scientific research in which it reaches a theoretical and practical contribution.

With the doctorate in science, the professional develops deep and broad knowledge, skills, values and assessments in a field of professional culture, as well as scientific maturity, innovation capacity, creativity to solve and direct the solution of problems of a scientific nature of independently, which is the fundamental objective of these programs.

The researcher in the argument of his theoretical and practical contribution will consider epistemological assumptions and more comprehensive theories that allow him to support his contributions, they must be able to enrich the theory of the sciences in which he develops his research, which will be applicable to an object and specific and generalizable field to other research fields.

Doctorates must be developed as a result and support of scientific development and relevant projects of science and technological innovation, so that in its development it must be passed in the traditional ways in which each doctorate or doctoral student works individually with his tutor, to an integrated research and postgraduate system where the collective work of the institution plays a relevant role, without it being unknown that the results of each doctoral candidate are individual and should express the creation of the same.

The post-doctorate includes a variety of alternatives, which are applied differently in different countries, however we define it as a professional development process specialized in advanced scientific research in order to develop theoretical thinking, through processes of abstraction and generalization through the development of logical dialectical thinking that enhances the professional's training as a scientific manager.

It must be based on a conception of assisted scientific self-training of the professional, integrated into a working group as a way for scientific and academic improvement, which favors becoming a promoter of research and training of researchers, in addition to having relevant results in the professional field.

With the completion of the postdoctoral research the researcher must provide theoretical models and methodological instruments applicable to various fields which will argue from more comprehensive theories that recreates in their own investigative work.

The promotion of postdoctoral studies should promote the stratification of scientific management work in the training of researchers, with capable leaders that encourage the training of other researchers, so it is considered that graduates are recognized and accredited for the highest teaching and scientific research, so postdocs must be understood as a result and support of scientific development in relevant research projects and in the training of researchers.

3. The Quality of Postgraduate Training and Its Management

Today, the approach to postgraduate quality and its management highlights the necessary renewal of university postgraduate models up to that point, marked by the German model or alternatives, with approaches to the integration of scientific research and humanistic education as essential processes.

This is possible through the improvement of the postgraduate management processes, which contributes to raising the academic research quality as a transformative intention of the management process of postgraduate training, which is carried out in the university community involved in the postgraduate exercise, but at the same time the research academic quality conditions the social management of the university community and therefore in the social response of the university.

On the other hand, the understanding of the academic research quality concept is conditioned by the relationship with management, evaluation and quality concepts. First, quality is recognized as a quality, dialectical synthesis of relevance, impact and optimization of the process considered. This reflection leads to the fact that the quality of a process or institution is not reduced to a quantitative parameter, but rather constitutes an essential and general category, which identifies the process itself and its relationship with society.

The quality transcends the appropriate (relevant), and also to the perfection (impact), considering itself in the optimization of its resources and possibilities in a time, space and context, for which it will imply the own transformation of the process or the institution, to the At the same time, the relationship between relevance and impact is mediated by the social relevance of the process.

It is, then, that the social relevance is a synthesis of the

adaptation in development and of the expectations accessible to the subjects, but that relevance must reach everyone, which means equity, for what is identified as relevance with equity. It means that the contradiction between suitable and impact is synthesized on the one hand in relevance with equity, such as the social dimension of quality. But on the other hand, the very contradiction between suitable and impact is synthesized in optimization, such as the technical dimension of quality.

Therefore, quality for all is an expression of the dialectical unity between the social dimension and the technical dimension of quality, which has as its synthesis respectively relevance with equity and optimization. Figure 1.

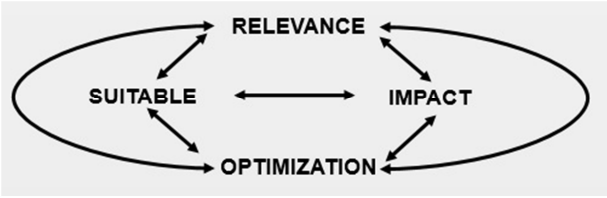

Figure 1. *Quality.*

Consequently, quality is not a rigid parameter, but is the result of the contradictory relationships that are generated between the subjects involved, responding to social demands and that favor the self-development of the process or institution considered.

On the other hand, management takes into account the characteristics of the object of study, is the process that is consciously developed through the extensive system of relationships and interactions of a social nature that are established between the subjects involved in it, oriented to create and promote adequate human relations, as well as human development, to achieve the objectives of the process.

The postgraduate quality management process has to be interpreted in its dialectical relationship with the process of academic research evaluation, where in general the management of quality and evaluation as processes must be given in dialectical unity.

Therefore, the academic evaluation of research is inherent in postgraduate management, since at the same time it is the evaluation that allows for the correct training of scientific training.

This leads us to a new consideration that quality is an intrinsic quality to the process, but that it entails its upward transformation in search of excellence, implies that excellence is a certain level of quality that leads to recognition, not only of the community itself, but of society.

The management of the quality of the postgraduate, propitiates diverse actions, in the search of the continuous improvement, of the formative process, between which they are meant:

1. The active participation of those involved in the processes and training procedures, as a space of relationships that facilitates scientific dialogue in hermeneutical practice, which develops scientific thinking.
2. The permanent link with the problems and social needs in the improvement of the direction of the training processes, which avoids the out of context, and unnecessary encyclopedic.
3. It fosters flexibility in training by singling it out to the needs of those involved and increasing their professional capacity to transform in context.
4. The evaluation that at the same time stimulates postgraduate training, redirecting it, when this management does not fulfill all its functions. A management process that does not entail the academic research evaluation of postgraduate students, can produce counterproductive results to the same management.

The considerations made require instruments to ensure participation, linkage, flexibility that are synthesized in the evaluation, where the experience developed in the Higher Education Study Center "Manuel F. Gran" allowed to identify indicators of academic research evaluation in the postgraduate courses that are consistent with the nature of the specific training process, called scientific performance indicators, as the instrument that allows the development of training to be assessed through the categories that characterize the scientific research process.

The indicators of professional performance are based on the consideration of the general nature of scientific research as a cultural process of human development, which takes place in spaces and times of construction of meanings and meanings, between subjects involved, through inquiry and argumentation, mediated by innovation and creation, for which the indicators will specify and express the achievements made by postgraduate students in inquiry, argumentation, innovation and creation, as summarized In the following list

1. Basis of the investigation
2. Epistemological argumentation of the object of science investigated
3. Foundation of the theoretical contribution.
4. Elaboration of the theoretical and practical contribution.
5. Corroboration and application of the results.
6. Integration of the scientific logic, the results and transformations of the thesis.

The relationship expresses how the dynamics of the construction of scientific knowledge as a human practice is based on the research activity in which they identify performance indicators. Figure 2.

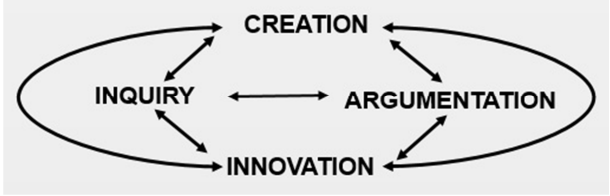

Figure 2. *Scientific research.*

On the other hand, the consideration of the individualized work plan stipulates the research and postgraduate activity of each

participant that is inserted in one of the different postgraduate processes, conditioned by the objectives of each of these processes and in turn the performance indicators conditions the development of the work plan and the precise, while the indicators, of a general nature are made in the achievement of the individual work plan, depend on the development of this, but in turn meet those identified in the performance indicators conditions the advance in the development of the postgraduate according to the work plan. Figure 3.

Figure 3. *Dynamics of Management of Quality in Postgraduate Training.*

The relationship between the indicators and the individual work plan is mediated in quality management through thesis workshops and seminars, which in particular constitute the way to systematize and socialize the progress of each of the participants, which is developed with the intention of evaluating the academic research quality of the process. The double relationship is consistent with the epistemological foundations of the holistic dialectical method [10].

Consequently, with the epistemological foundations of the aforementioned holistic dialectical method a system of quality indicators is developed, as a whole in which the components of the management process are integrated in an articulated manner in the training of doctors of science, which respond to a logical sequence with the management process, composed of:

1. Design control and planning of the training program for doctors of science.
2. Control of the scientific level of the professors and tutors involved.
3. Control of the methodological preparation of the teachers and tutors involved.
4. Control of the results of doctoral training.

The quality indicators, for the components of the management process, are configured as standards of a quality standard, which must meet national and international accreditation criteria for doctoral programs in science.

4. Conclusions

1. The dynamics of quality management of postgraduate training, as a process has led to the results in the training of doctors in Pedagogical Sciences. It is a systematized process and in which experiences in the management of postgraduate training are socialized, through the scientific dialogue promoted by scientific seminars and workshops for presentations of advances in the thesis, in the search for quality.

2. The results can be seen in the graduation between 1993 and 2018 of more than 240 graduates and a figure greater than 600 graduates of masters, as a system that promotes the doctorate. It has been projected as a process that from the human and cultural university formation, manages to enhance the professional culture in an integrative way.

3. The doctors graduated today are part of the teaching staff of the postgraduate and doctoral programs. The results of the research have been applied in subject programs, curricular strategies, management proposals at different university levels, as well as in community extension programs. Provincial awards and awards have been obtained from the Academy of National Sciences.

4. The application of the dynamics of quality management of postgraduate training is consistent with the development of a graduate school that has allowed the development of professionals in the postgraduate course with a recognized impact on the Center for Higher Education Studies “Manuel F. Gran”.

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