

PERCEPTION OF PROFESSORS OF A PUBLIC UNIVERSITY UNIT IN RELATION TO THE APPLICATION OF QUALITY MANAGEMENT TOOLS IN DAY TO DAY ACTIVITIES BY ENGINEERING COURSE ALUMNI*.

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Abstract: *The Contemporary World improvingly requires High Quality Standards of Products and Services offered to consumers. To guarantee such Quality Standards, Companies need Labor that not only have knowledge about Quality Management Tools, but also have Quality as a Life Principle. In the case of Engineers, that is a necessary skill not only in Professional but also Personal Life. Namely, it is Imperious that the Engineer applies Quality in a Practical Manner in all the developed activities, both professionally and personally. Therefore, it is imperative that the Culture of Quality is incorporated to its life. Thereby, normally in the Engineering Students formation process, Quality is a subject apprehended in one or more Semesters, but its practice is not always required during the course of their formation. The object of this article was to evaluate to what extent the University requires from its Alumni the practical application of Quality Skills in its everyday activities, taking as a basis a Unit of a Public University located in the Paraíba Valley. For this Paper some Professors of the Engineering Courses of that University were interviewed, and structured surveys were applied with objective questions to all the other Professors in the referred Institution. In the elaboration of the Surveys the Likert Scale was applied, due to its relevance in this type of Survey, with questions numbered from one to five, being one to the answers with little Adherence and five to those with Total Adherence. It is intended to contribute with the Learning Process doing an Evaluation of the current Didactical Practice of the Course in relation to the application of Quality Principles in the Daily Activities of the Students. The Teaching Body of the Unit's perception is that even though the Students are obliged to attend to a discipline focused on Quality Management Tools, in the Daily Life, there is no demand by the own Professors in the activities conducted by the Students.*

Keywords: *Quality, Education, Formation, Engineering.*

1. INTRODUCTION

The objective of this paper was to evaluate in which manner the professors of a Public University Unit located in the Paraíba Valley request of their students the application and the knowledge of Quality Management tools.

The application of Quality Tools is important for it eases the solving of problems that might disrupt the proper running of a process, product or service, and allow the continuous improvement to be a focus in the mind of the Engineer. Therefore, with this research, it is intended to contribute with the learning process, performing a evaluation of Quality Practices by the students of this Institution's Undergraduate Courses.

To Bamford and Greatbanks (2005), quality tools are generally introduced very early on in our education, even though they are not called so. For example, in our day to day lives, many times we use to-do or shopping lists to plan activities, organize and optimize time usage, although not always. But it has made essential to the engineer since 22 August 2005 when the Resolution nº 1010 of the Federal Council of Engineering, Architecture and Agronomy (CONFEA, in Portuguese), entity responsible for normalization, orientation and surveillance of the exercise of these

* A first version of this Scientific Initiation work was presented as a poster in the XVIII INIC, UNIVAP

professions, became effective and introduced important changes in the attributions of an Engineer. The Subsection VII of the second Paragraph of that institute specifies amongst the attributions of the professional competency such as “The Capacity of Utilization of Knowledge, Abilities and Attitudes necessary to the performance of activities in specific professional fields, obeying quality and productivity standards [Our Emphasis]” (BRASIL, 2005). The Standards appointed by CONFEA have been being improved since the Industrial Revolution up to nowadays, not only aiming more Productivity, but also Quality, since Initial Processes until the Final Product.

For its part, the Resolution 11 of the Higher Education Chamber of the Nation Education Council of 11 March 2002 (BRASIL, 2002) de 11 March 2002 (BRASIL, 2002), establishing the National Curricular Guidelines for Engineering undergraduate courses is established that the Engineer is the professional that has

generalist, humanist, critical and reflexive formation, able to absorb and develop new technologies, stimulating their **critical and creative role in identifying and solving problems**, considering its political, economic, **social**, environmental and cultural aspects, with **ethical and humanistic vision**, in meeting the demands of society (BRASIL, 1998).

The changes in the concept of what being an Engineer means has completely changed the way in which duties and functions are divided, and, therefore, there has to be changes in the way of their capacitation, in meeting the requirements of the Market. Thus “the continuous expansion of the educative system requires strategies, aiming the productive system and advancing to work practices, which also has a qualification dimension” (LAUDARES, 2000, p. 165).

That’s why, nowadays, it is spoken and practiced the entrepreneurship with so much emphasis in its formation. It’s not enough the Engineer only has a technical formation; it is also necessary to be able to conciliate all the areas of knowledge with management and ethical techniques. It is in this sense that Gama (2002, p. 87) affirms this is

an **unreachable pretention**, maintained the formation time (5 years) and the same scientific and technological formation given previously, using sequential didactical techniques and the knowledge concepts associated: theory domain, available methodologies and algorithms in the full range of interest subjects, from scientific basis to its final application, the full theory teaching always preceding its application [...].

Thinking like this, the curricular structural definitions of Engineering courses have to be very well elaborated to stop being almost entirely focused on Exact Sciences, to cease being only decorated and begin to be not only learned, but also associated to other areas of knowledge; To Cunha (2000) these other areas, such as human and social areas, are an intermediate between the technical knowledge acquired in the classroom and its application in the life of a formed engineer.

Even with great changes, besides being able to associate technical knowledge to other areas required by nowadays marked, the engineer has got to, more and more, improve in its specific work area without lose connection with other knowledge areas. After all,

in the scene of major economic changes, such as those that recently have been unfolding worldwide, it has become increasingly evident the need of the Administrator to adopt new strategies and, consequently, to explore their knowledge and relationship skills with the market, especially raising the Company’s “ethical posture”, and the level of competence guarantee and quality of the professional. (MORAES, LIMA, 2000, n/p).

This way, it is up to the engineer not only specialize and learn the technical knowledge and the quality tools that are given throughout college education, but also relate them to other situations of their everyday lives. And it is up to the institution to provide this kickoff, requiring the application of such tools and showing how it is possible to relate them to various areas, inside and out of the education institute.

2. METHODS

The adopted method was qualitative ordinal, with the application of interviews with professors of the unit to delineate the surveys. Following, structured questionnaires were administrated with objective questions to the remaining professors. The Likert scale was used, due to its relevance to this type of study, with questions numbered from 1 (one) to 5 (five), being assigned 1 to answers with little agreement and 5 to answers with total agreement. The Likert Scale is a measurement scale with usually five response categories, ranging from “strongly disagree” to “strongly agree”, and requires the participants to indicate a degree of agreement or disagreement to each one of the affirmations related to the objects of stimuli (Malhotra, 2004).

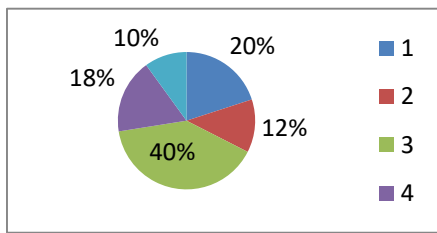
In order to evaluate the perception of the professors of engineering courses regarding the application of the quality tools by students and evaluate this application, a survey was made with 40 professors, randomly chosen, addressing issues related to management and implementation of these tools in the academic environment of the school.

Professors of theoretical and experimental disciplines were interviewed, from ones lecturing classes from the first semester, whose students have almost no knowledge on quality tools and management, to the last, in which already have this knowledge.

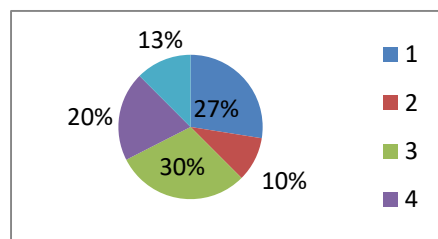
In the questionnaire, the interviewed professors answered 10 questions, classifying them 1-5, being 1 “strongly disagree” and 5 “strongly agree”. The questionnaire was administered for 15 days in alternated periods (morning, afternoon and evening). Data was tabbed using electronic spreadsheet and graphs generated to perform data analysis.

3. RESULTS AND DISCUSSION

The majority of professors interviewed, 72%, consider the students are able to apply quality management tools in the discipline they minister (Graph 1). However, 67% of the professors do not require their students to use tools and concepts of quality management in academic activities (Graph 2). In addition, 92% of respondents believe also the other



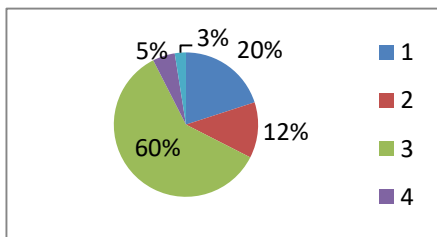
Graph 1. Students are able to apply quality management tools in the discipline ministered by the professor.



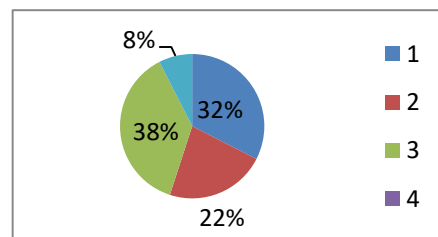
Graph 2. You require the use of tools and concepts of quality management in academic activities.

professors do not require their students to apply these tools (Graph 3).

Even though the majority of professors do not require the application of these tools by students, 92% believe the students are not concerned in applying them (Graph 4).



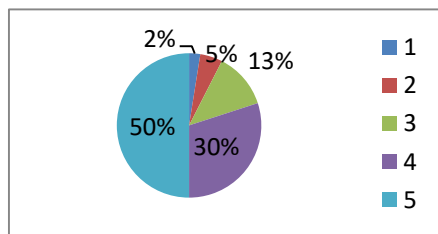
Graph 3. The majority of professors require the usage of tools and concepts of quality management of their students in academic activities.



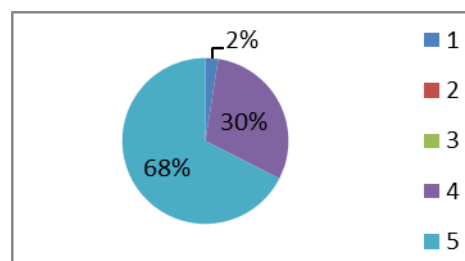
Graph 4. Students concerned to apply quality management tools in the discipline ministered.

Although the majority do not require the usage of quality tools of their students, 80% of professors agree quality management is in fact applied in the corporative world. Another relevant and alarming fact is that 20% do not agree with this affirmation; in other words, a considerable portion of professors do not attribute importance to quality tools themselves, for they do not believe in the importance of these tools in the professional lives of the students.

The answer above contrasts with the following question, because 98% of professors agree the practice of these



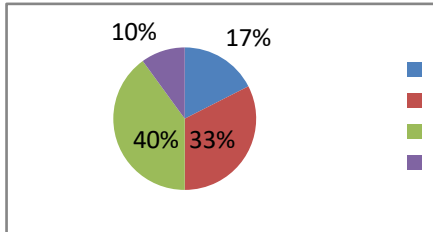
Graph 5. Quality Management is in fact applied in the Corporative World.



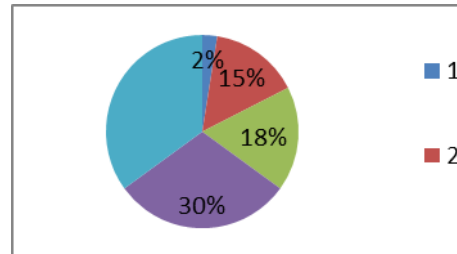
Graph 6. The use of Quality Management Tools throughout academic life may influence the students' performances in companies' selective processes

tools during the academic life has an influence on the student when participating in a selective process in a company (Graph 5 and Graph 6).

Despite having great importance to the student in a job interview, 90% of professors do not think students deem due importance to quality management tools (Graph 7).

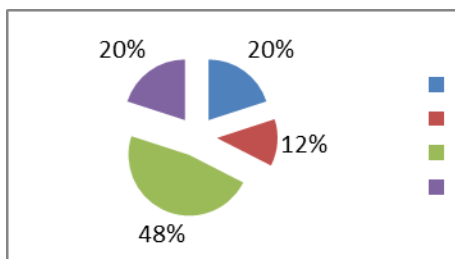


Graph 7. Students give plenty of importance to the quality management tools.

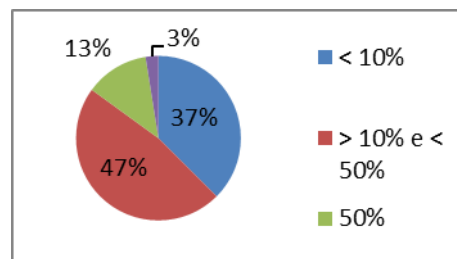


Graph 8. You grant a lot of importance to quality management in the personal lives of students.

About 65% of professors attribute much importance to quality management in personal lives of students. But when it comes in how students apply these tools throughout academic life, a mere 20% of respondents consider them well applied. Furthermore, to them the number of students who apply them is also small. The vast majority, 97%, consider the number of students that apply these tools in their disciplines to be less than or equal to 50%, and 37% consider that less than 10% of their students use these tools in their discipline (Graph 8, Graph 9 and Graph 10).



Graph 9. How do you evaluate the application of quality management tools by students in the discipline that you minister?



Graph 10. What percentage of students in the subjects you minister apply the tools and concepts of quality management in school activities?

It can be noticed that despite the professors confer great importance to quality management tools, on the one hand the vast majority do not require them and a significant number does not consider them important. Some explain this phenomenon by the fact they only lecture the first period, when students still have no information about these tools, or, still, by lecturing a subject in which the usage of these tools seems inopportune.

If, on the one hand professors do not consider students able to apply the quality management tools, on the other, for them students think that the institution does not give much importance to such tools.

To Fonseca (2012, p. 9), students do recognize the importance of quality management in their academic lives, but they are not encouraged to put this into practice. According to her, this fact "indicates the need that professors are also aware of the importance of skill development in quality management techniques to teach students and require the application of quality management tools."

It seems clear that it has not adversely affected the unit under study, since the undergraduates seem to have been successful in the selective processes, and apparently the vast majority able to successfully enter large enterprises. But it would be important to assess how the lack of requiring by professors and education system indeed influence the professional life of undergraduates. But it is certain the importance of the academic community awareness of the importance of the practice of using quality tools. This way it would be given due importance to these tools, and students would come out of college able to apply them at any point in their lives.

4. CONCLUSIONS

Overall, the unit's professors believe that the quality management is actually applied in the corporate world and that the use of such tools during academic life can contribute to the success of students in selection processes of companies and professional life. But the very professors of the unit consider that there is no proper requirement in this

regard by these professors, so students do not end up putting these principles into practice. One of the factors that some professors attach to this lack of practice is because many professors teach to freshmen classes, that is, teach students who, according to them, have no knowledge of quality management tools, or do not see the relationship of these tools with their discipline.

Thus, the unit should develop a culture of quality to develop in students the competencies required by the work market. For that, something that could probably contribute is the establishment of an awareness program about the importance of developing such competencies in engineering students since the beginning of the course. This way teachers would have a way to require more the use of these tools by their students, and evaluate them in this regard, and the students would have basic information to apply such concepts.

It is necessary that quality management is no longer perceived as only one subject of the course curriculum, and become a concept that can be used in any situation of life of an engineer.

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