ARTIGO

THE SCIENTIFIC PRODUCTION AND THE FORMATION OF THE DATA SCIENCES OF THE INFORMATION OF THE FACULTAD POLITÉCNICA DE LA UNIVERSIDAD NACIONAL DE ASUNCIÓN[1]

LA PRODUCCIÓN CIENTÍFICA Y LA FORMACIÓN DE LOS DOCENTES DE CIENCIAS DE LA INFORMACIÓN DE LA FACULTAD POLITÉCNICA DE LA UNIVERSIDAD NACIONAL DE ASUNCIÓN

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JITA: AC. Relationship of LIS with other fields

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[1]This study was part of Metric Behavior Project of the Disciplinary Development of the Librarianship and Information Sciences in Latin America

RESUMEN: El estudio se propone determinar los factores que condicionan la productividad científica y la relación con la formación académica de los docentes de la carrera de Ciencias de la Información de la Facultad Politécnica de la Universidad Nacional de Asunción, entre los años 2009-2013. El mismo parte de la implementación de un sistema de cuestionarios anonimos, encaminados a la obtención de información y de indicadores sobre las potencialidades de cada país en investigación y docencia. El sistema consta de cuestionarios de tres tipos: cuestionario institucional, cuestionario de recursos humanos y el cuestionario de proyectos de investigación. Las variables en estudio fueron: investigadores, docentes, proyectos de investigación, producción científica, funciones, investigación, indicadores bibliométricos de producción y comunicación científica. Los resultados revelaron que: que en su mayoría el plantel docente de grado son docentes paraguayos *(81%),* y la *baja productividad,* se ve directamente relacionada con este segmento de la población. Esta situación coincide en general con el modelo de universidad que predomina en Paraguay, que es la "transmisora de conocimiento", en lugar de la "generadora del mismo". Es decir, las actividades docentes y administrativas prevalecen por encima de la labor investigativa; la falta de una adecuada política de incentivo, desestimula la investigación.

PALABRAS CLAVES: Producción científica. Docentes de bibliotecología. Facultad Politécnica-Universidad Nacional de Asunción.

ABSTRACT: The study aims to determine the factors affecting scientific productivity and the relationship with the academic training of professors in the career of Information Sciences at the Facultad Politécnica de la Universidad Nacional de Asunción, between the years 2009-2013. The same part of the implementation of a system of questionnaires aimed at obtaining information and indicators on the potential of each country in research and teaching. The system consists of three types of questionnaires: institutional questionnaire, human resources questionnaire and questionnaire research projects. The variables studied were: researchers, professors, research projects, scientific production, functions, research, bibliometric indicators of scientific production and scientific communication. The results revealed that: that most of the teaching staff are Paraguayans grade professors (81%), and low productivity, is directly related to this segment of the population. This situation generally agrees with the university model that prevails in Paraguay, which is the "transmitter of knowledge" instead of "generating the same". Thus teaching and administrative activities take precedence over the investigative work; the lack of an adequate policy incentives, discourages research.

KEYWORDS: Scientific production. Professor of librarianship. Facultad Politécnica-Universidad Nacional de Asunción.

INTRODUCTION

The quality of university education is related with the practice of research, with the aim of promoting research culture as well as scientific production where both professors and research teams are grouped to develop attitudes, fostering exchanges of knowledge Through research projects in accordance with the lines of research agreed by universities.

Scientific culture should be promoted from the classroom, and be strengthened and sustained through the promotion and encouragement of researchers, who develop their lines of research and as a result the scientific production and the visibility of the institution as well as researchers.

Scientific research within a curricular plan should be understood more than as a theoretical course, as a course that must be learned by doing. It cannot be understood that a TEACHER does not perform RESEARCH.

Teachers who give courses in scientific research should guide to the students in this development, they should have done research previously, that is, they have to publish original articles in indexed scientific journals.

In the case of South American countries, the scientific production in the field of librarian science is low, possibly due to economic limited and human resources for research, low scientific culture and poor research training.

However, in the country efforts to motivate researchers to conduct research, has emerged from the Consejo Nacional de Ciencia y Tecnología, CONACYT, since 2011, it create the Programa Nacional de Incentivo para Investigadores, PRONII, which has been promoting the development of research and has cultivated the interest of young people in scientific research.

But we must highlight the financial problems of what happens the public universities, mainly will continue to be present in the coming decades, and is even likely to be aggravated because always the cut is given to the budget of the University, to the research sector. Hence it is necessary for universities to seek access to other financing channels, such as business. It is not disputed that in a competitive environment, economic resources would be allocated in terms of teaching and research quality.

When talking about investment, Paraguay is in an unfavorable situation according to Duarte Masi (2015), because it only invests 0.08% of GDP in research, which leaves it well below the regional average, with developed countries Invest more than 1% of GDP in research.

Why is this action relevant: teaching / research? A study by Sancho Gil (2001) points out the following factors as favoring the transfer:

•Research activity leads to the improvement of teaching. Moreover, academics cannot be good, without doing research, although a good researcher may not be a good teacher.

•Some of the infrastructures obtained through research projects are also used for teaching activities.

• If the courses are related to the research profile of the teaching staff, the relationship is favorable.

Therefore, the role of higher education institutions is fundamental for the training of suitable professionals with adequate capacities to provide answers to society; curricular activities must have homogeneous interinstitutional guidelines, periodically revised and updated according to the requirements of the labor market and advances in science and technology.

1. THE ACADEMIC DEVELOPMENT OF LIBRARY AND INFORMATION SCIENCES IN PARAGUAY

The teaching of Library science at university level in Paraguay dates from 1971, year in which the School of Library science is created, dependent of the Rectorate of the Universidad Nacional de Asunción. In 1987, by Resolution Nº. 2418, the Escuela de Bibliotecología became dependent on the Facultad Politécnica. In Paraguay, the Universidad Nacional de Asunción is the only institution, which has a college career, there are other private institutions, but only offer courses at the graduate level.

At the postgraduate level, in 2010 the Master Ciencias de la Información is qualified with three emphases: Information Management in Media, Information and Communication Technologies in Information Units and, Science, Technology and Society.

In 2012, the Information Science Research Group (GICI) is created, which is also part of the Facultad Politécnica. These initiatives are intended to enable library science and Information Sciences to be strengthened at the national level and international visibility.

In 2013, the Specialization Course in Document Management and Archives Management is rehabilitated, with a fully updated plan, continuing the one that had begun in 2006.

All courses are part of the Postgraduate Program in Information Sciences, under the Research Department, Postgraduate and Extension of the Facultad Politécnica. For the development of the modules, it counts with the support of national and foreign specialists with renowned professional trajectory.

In this transit, there is collaboration of international peers, belonging to prestigious universities in Latin America and Europe.

2. MATERIALS AND METHODS

This work is part of the Project: Metric Behavior of Disciplinary Development of Library Science and Information Sciences in Ibero-America, coordinated by Dr. Salvador Gorbea Portal, Senior Researcher IIBI-UNAM, whose objective has been to identify teaching and research potential in Latin America, for which the national diagnoses of all countries were made.

The main information for the development of this research is the implementation of a system of online and nominal questionnaires, aimed at obtaining information and indicators on the potential of each country in research and teaching. The questionnaire system consists of three types: institutional questionnaire, human capital questionnaire and questionnaire for research projects.

The anonymous questionnaires were developed on a website to facilitate their filling from any participating country, website: http://cuib.unam.mx/~gorbea/observatorio.htm.

The variables studied were: researchers, teachers, research projects, scientific production, teaching, research, bibliometric indicators of production and scientific communication, found in the Observatory of Scientific Indicators, Instituto de Investigaciones Bibliotecológicas y de la Información (IIBI) of Universidad Nacional Autónoma de México (UNAM).

Tabla 1. Relación de variables seleccionadas, según valores

Variables de Potencialidades	Variables Bibliométricas
Recursos Humanos	Producción Científica
Cargo:	*Tipología Documental:*
· Docentes	· Artículos
· Investigadores	· Libros
Grado:	· Capítulos de libros
· Doctorado	· Ponencias
· Maestría	· Tesis
· Licenciatura	*Lugar de Publicación:*
Proyectos de Investigación:	· Nacional
· En Curso	· Extranjero
· Terminados	*Fuente de Indización:*
Programas Docentes:	· Base de Datos Especializada
· Licenciatura	· Índice de Citas
· Maestría	*Idioma de la Publicación:*
· Doctorado	· Español
· Otro	· Inglés
Matrícula de Alumno:	· Portugués
· Licenciatura	· Francés
· Maestría	*Origen de publicación de las Revistas Fuente:*
· Doctorado	· Nacional
· Otro	· Extranjera
Año	*Año*
Identificador de la Institución	*Identificador de la Institución*

Source: Proposal of an indicator to measure the behavior of the disciplinary development of the Library Sciences and Information in academic institutions, Gorbea Portal, Piña Pozas.

Tabla 2. Relación de indicadores seleccionados según tipo para cada Institución

Indicadores de Potencialidades	Indicadores Bibliométricos
· Recursos Humanos por año, según cargo que se ocupe	· Producción científica por año, según tipología documental
· Recursos Humanos por año, según el último grado obtenido	· Producción científica por año, según lugar de publicación
· Proyectos de Investigación por año, según tipología	· Artículos científicos por año, según fuente de indización
· Programas docentes por año, según el nivel académico impartido	· Producción científica por año, según idioma de publicación
· Matrícula de Alumnos por año, según el nivel cursado	· Artículos científicos por año, según el origen de la revista
· Valor Promedio de Recursos Humanos según el cargo que ocupan	· Valor Promedio de la Producción científica según la tipología documental
· Valor Promedio de los Recursos Humanos, según el último grado obtenido	· Valor Promedio de la Producción científica según el lugar de publicación
· Valor Promedio de Proyectos de Investigación según su tipología	· Valor Promedio de artículos científicos según su fuente de indización
· Valor Promedio de Programas docentes según el nivel académico impartido	· Valor Promedio de la Producción científica según el idioma de publicación
· Valor Promedio de Matrícula de Alumnos por año según el nivel cursado	· Valor Promedio de artículos científicos según el origen de la revista
· Estructura porcentual de Recursos Humanos según el cargo que ocupan	· Estructura porcentual de la Producción científica según la tipología documental
· Estructura porcentual de Recursos Humanos según el último grado obtenido	· Estructura porcentual de la Producción científica según el lugar de publicación
· Estructura porcentual de Proyectos de Investigación según la tipología	· Estructura porcentual de artículos científicos según la fuente de indización
· Estructura porcentual de Programas docentes según el nivel académico impartido	· Estructura porcentual de la Producción científica según el idioma de publicación
· Estructura porcentual de Matrícula de Alumnos por año según el nivel cursado	· Estructura porcentual de artículos científicos según el origen de la revista
· Proyección de Crecimiento de Recursos Humanos según el cargo que ocuparon para el 2012	· Proyección de Crecimiento de la Producción científica según la tipología documental
· Proyección de Crecimiento de Recursos Humanos según el último grado obtenido para el 2012	· Proyección de Crecimiento de la Producción científica según el lugar de publicación
· Proyección de Crecimiento de Proyectos de Investigación según la tipología para el 2012	· Proyección de Crecimiento de artículos científicos según la fuente de indización
· Proyección de Crecimiento de Programas docentes según el nivel académico impartido para el 2012	· Proyección de Crecimiento de la Producción científica según el idioma de publicación
· Proyección de Crecimiento de Matrícula de Alumnos por año según el nivel cursado para el 2012	· Proyección de Crecimiento de artículos científicos según el origen de la revista

Source: Proposal of an indicator to measure the behavior of the disciplinary development of the Library Sciences and Information in academic institutions, Gorbea Portal, Piña Pozas.

3. DESIGN AND STUDY POPULATION

Professors of the career of Information Sciences (LCI), MSc in Information Sciences (MCI) and Specialization in Document Management and Archives Management of the Facultad Politécnica of the Universidad Nacional de Asunción, totalling 59 people.

Fifty-three teachers have responded to the questionnaire, of which 34 are undergraduate and 14 master's and 8 professors from the Specialization. Of the total, 3 did

not complete the questionnaire, and 3 are teachers in the Bachelor's degree, as well as in postgraduate courses.

The time to this study was to the professional development to the teachers between 2003 at 2009

4. ANÁLYSIS RESULTS

Table 3: Population under study by carecer and postgaduate course

Curso	Cantidad de Módulos/Asignaturas *	Total de Docentes	Docentes que completaron	Docentes LCI/MCI/Esp.
Licenciatura	61	35	34	
Maestría	17	16	14	**2**
Especialización	10	8	8	**1**
Totales	**88**	**59**	**53**	**3**

Source: Data collected for research. Year 2014

In relation to the section of Teachers LCI / MCI / Esp., It refers to the fact that certain teachers teach in the degree course, as well as in the courses of the Postgraduate Program: Specialization in Document Management and Archives Management, and Master of Science of the information. The ratio of subjects / teachers in the Degree, that disparity is given effect, that a teacher, teaches in more than one subject in the undergraduate degree.
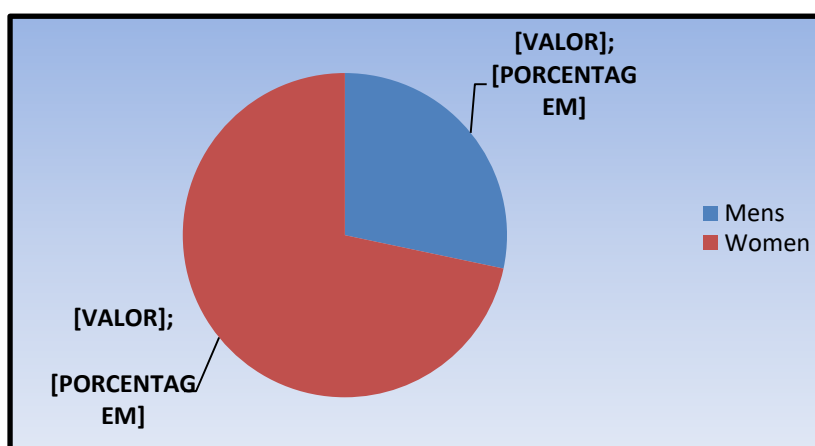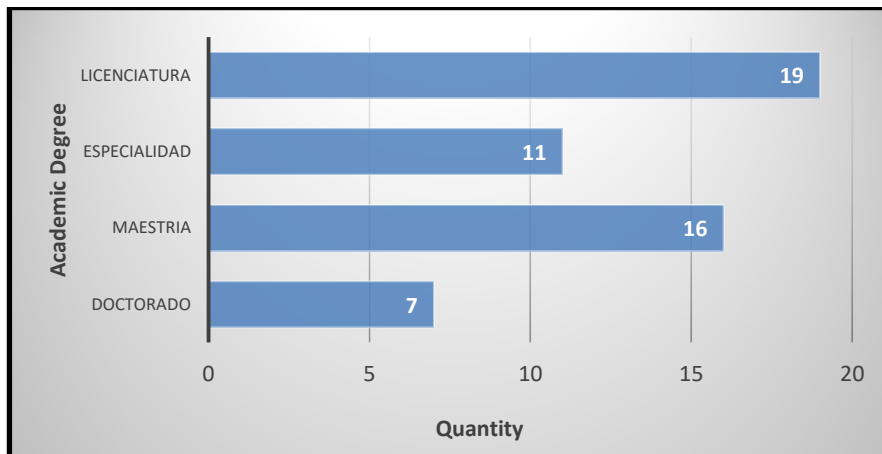

Gráph 1- Porcentage of teachers by gender

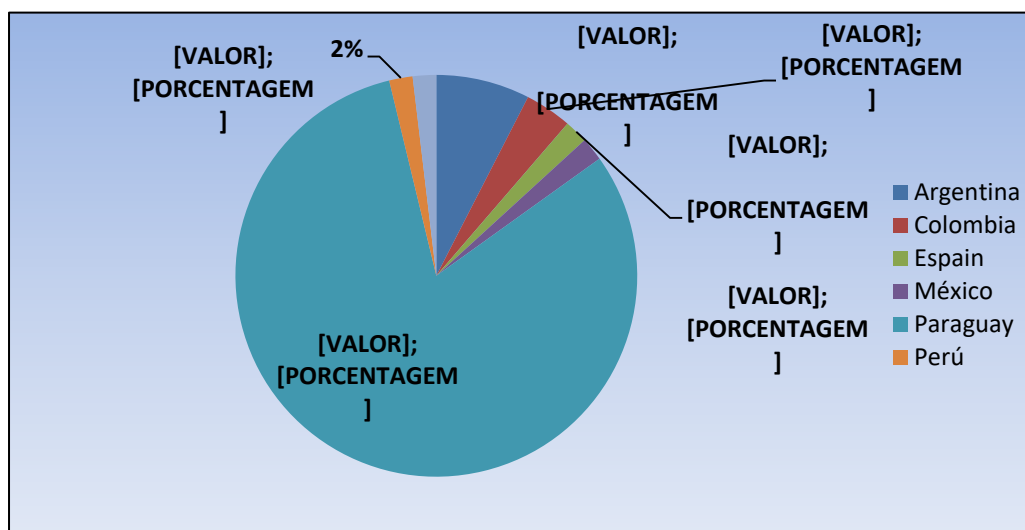**Source:** Data collected for research. Year 2014.

The result that is presented in Graphic 1 is very common in this speciality because the large percentage of teachers belongs to the female gender, a situation that is also observed when analyzing the student population of the career.

Graph 2 - Academic training of teachers
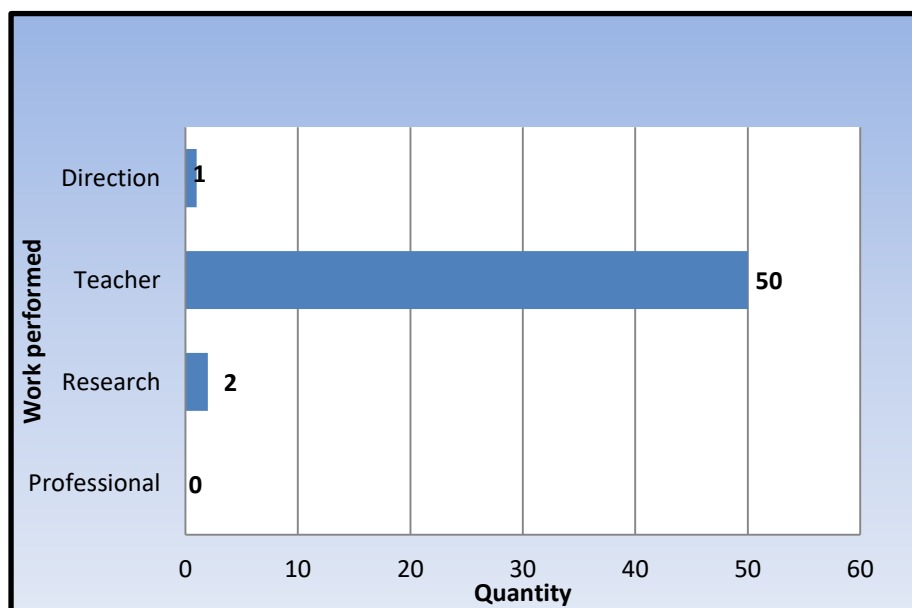
Source: Data collected for research. Year 2014

As can be seen in this Graphic 2, when analyzing the academic training of teachers, the highest level of studies predominant is that of the bachelor´s degree. These are part of the teaching staff of the undergraduate course and to teaching in this area, it isn´t a requirement for a postgraduate degree, as it happens in other universities in the region. Teachers who hold postgraduate degrees are those who teach in master's, doctorate or other postgraduate courses, most of which are foreigners.

Graph 3 - Country of origino f teachers

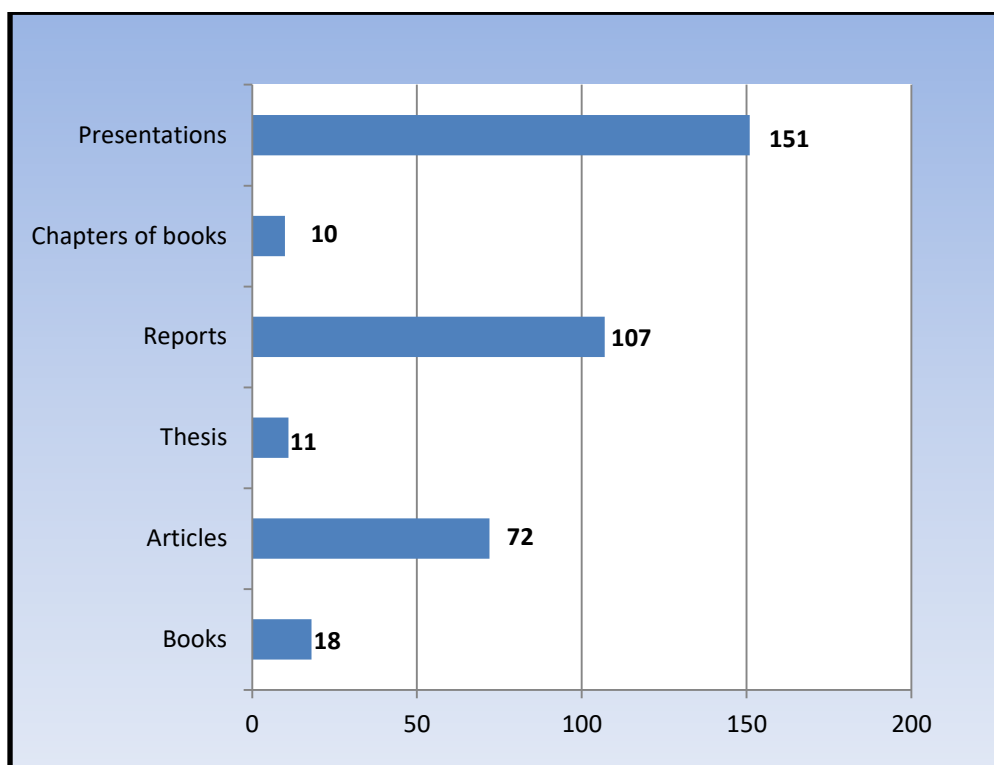**Source:** Data collected for research. Year 2014.

Graphic 3 shows the origin of teachers. According to these data, if we refer to the total, we find that 81% of the teachers are Paraguayan and 19% foreigners, and the countries with the greatest bonding are Argentina and Uruguay. This is explained by the regional proximity and by the existence of the Teaching Mobility Program of the Association of Universities of the Montevideo Group, known by the acronym AUGM.

Graph 4 - Faculty Position

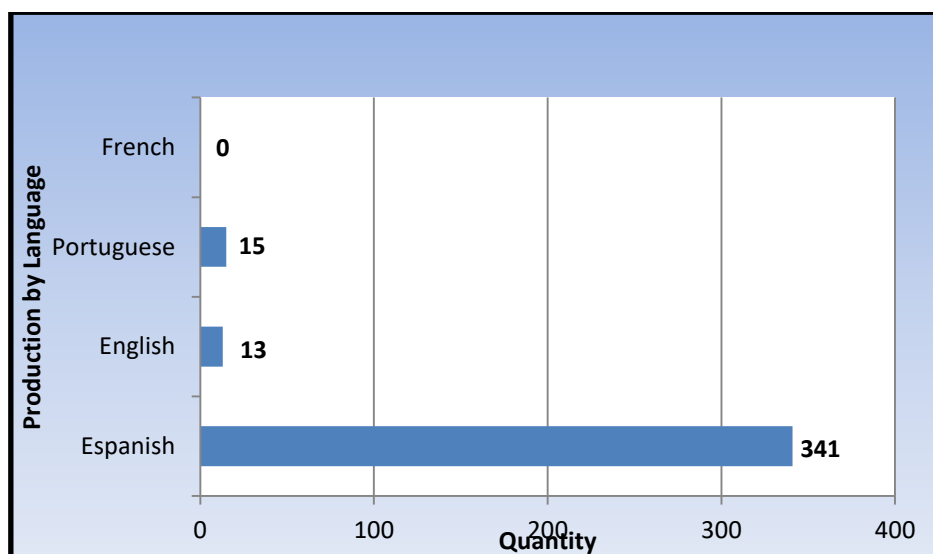**Source:** Data collected for research. Year 2014

With respect to the functions of the **53 teachers** surveyed, **50 declared** that they are teachers, 1 in the position of Director, in this case, the person occupies the position of Director of the undergraduate course, **2** defined as researchers, corresponding to researchers of the *Research Group in Information Sciences*, both oh then have doctorates, however, this function does not imply dedication in an exclusive way, that is full time for those activities. In the University, there is the figure of the Researcher with Exclusive Dedication: DITCoDE, but nevertheless, professional in the area of Information Sciences, has this item, this focuses more on the areas of engineering and technologies.

Graph 5 - Production of teachers by documentar tipology

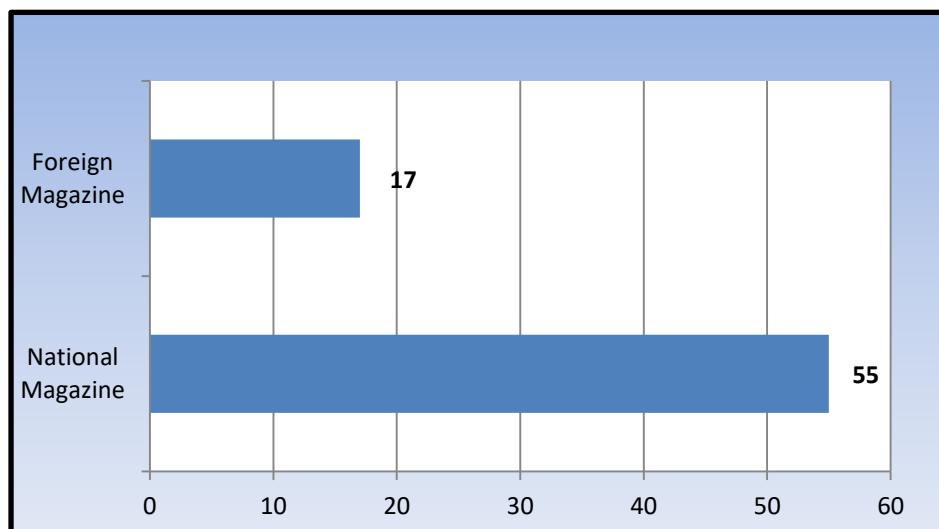**Source:** Data collected for research. Year 2014

As for the documentary typology of the publications teachers, a great number of presentations are observed in professional events, as well as an important amount of reports, and in 3rd place positions the articles in magazines. It is visualized, a scarce publication of books, that calculates an average of 3 books, per teacher during the period of study, 2009-2013.

Graph 6 - Teachers production by language

Source: Data collected for research. Year 2014.

As for the languages of publication in the analysis period, has been in Spanish (341), followed by Portuguese, English occupies the 3rd place, and in French no document has been published.

Graph 7 - Where the scientific articles publish the teachers?

Source: Data collected for research. Year 2014.

National journals are the sources where most articles are published, in relation to foreign ones. It should be pointed out that national journals don´t meet international standards of impact factor, so that Paraguayan researchers, despite having a quantity Of production of

articles, don´t have much presence at international level. This difference between the publication in national and foreign magazines is due to the non-compliance of editorial standards of indexation in the most important international scientific databases.

CONCLUSIONS

Considering that the scientific article is the main means of communication science, scientific production - in general - of FP-UNA, less than 1 article per year per teacher. Taking into account the books and chapter books, the production is even smaller. It was found that 1 book is generated every 8 years per teacher. The dimension of "presentations" also reflects low participation: 1 presentation every 2 years per teacher.

Of the total number of teachers (81%), practice teaching, research and the extension, which are fundamental pillars of higher education.

It is observed according to the results obtained, that the scientific production in the librarian field is low, possibly due mainly to the to the lack of motivation to the development of scientific research, low scientific culture and lack research training on the parte of teachers.

In Paraguay between to the year 2011, It was carried out the Programa Nacional de Incentivo para Investigadores, PRONII, depend to the Consejo Nacional de Ciencia y Tecnología, CONACYT, whose objetive is strengthen, consolidate and expand the country`s scientific community to the Paraguayand stablish a system of economic incentive for research that encourages dedication to scientific production in all áreas of knowledge. This program hab been a great step for national Science, which is giving its results.

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