

## **Análisis de los Cuerpos Académicos reconocidos ante PRODEP en el área Sociales y Administrativas**

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## Abstract

An analysis of the recognized Academic Groups by “Programa para el Desarrollo Profesional del Docente” related with the Social and Administrative knowledge area was done. Data extraction was performed manually and put into a calculus worksheet to analyze and to get information from them. Basic statistics analysis was performed, for example, percentages, characteristics, presenting as histograms and pie chart. Four in ten recognized Academic Groups belong this knowledge area. It has 5023 members and approximately two in ten belonging to one recognized researching line. Another interesting point to analyze was the maturity level, which is low for this knowledge area since just two in ten of Academic Groups are recognized as consolidate, what is the higher level. State Public Universities have 193 from a total of 195, Technological Universities have the others 2. Related to gender, 47 percent of the total members are women, it means there is gender equity in this knowledge area.

## 3 Introducción

The “Programa para el Desarrollo profesional del Docente” (PRODEP) is an gubernamental organism, what belongs to the “Secretaría de Educación Pública” (SEP) from México. PRODEP purpose is to increase continuously the level of professors skills about academic and research aspects (PRODEP), based on the adequately profiles for each higher education subsystem (Salinas, 2014). PRODEP follows the aim of the Education Sectorial Program 2007 – 2012 to impulse the development and consolidation of Academic Groups (AG) (SEP, 2006), (Salinas, 2014). Academic groups are classified as (PRODEP): Consolidated, To be consolidated and In training. All of the recognized AG belongs to one of them. Higher Education Institutions (HEI) are classified in six subsystems (PRODEP): State Public Universities, Technological Universities, Polytechnics Universities, Technological Institutes and Pedagogic Schools. About knowledge disciplines are six of them: Technology and engineering, Education Humanity and Arts, Social and Administrative, Nature and Exacts, Health and Agriculture (PRODEP).

A previous analysis shown that 81 percent of the total recognized groups belongs to the State Public Universities and just 7 percent to Technological Universities (Salinas, 2014). A related interesting data is that there are more Technological than Public Universities, 101 versus 71 respectively, and the second ones have more Academic Groups recognized by PRODEP, it means not always quantity is straight related with quality. Social and administrative is the second discipline with more recognized AG, approximately one in ten of the total (Salinas, 2014).

The Objective of this work is to analyze data from PRODEP database about Social and Administrative discipline to extract information from it. Information can be used to know different opportunities areas to research, to collaborate, to open new researching lines and so on (Martínez, 2015). The structure of this report is as following:

- Theoretical perspective.
- Hypothesis approach.
- Methodology.
- Results.
- Conclusions.

For authors is important to mention that there is also another objective in this work: involve students in the researching process and project managment to develop skills autonomy.

### 3.1 Theoretical perspective

According to its official web site the objective of PRODEP is: to contribute for full-time professors in public Higher Education Institutions (HEI) reach capabilities to perform researching-teaching tasks, becoming professional, and be able to articulate and consolidate AG (V.G., 2014). There are 133 HEI assigned to PRODEP, and a total of 1054 AG for Social and Administrative área, april 2014 (Martínez, 2015). So this is the universo of PRODEP to work on it.

Inside of the equality of opportunities framework of the National Development Plan (PND, Plan Nacional de Desarrollo) 2007 – 2012, the work must be performed in the aim to expand coverage, promote equity and improve the quality and relevance of higher education. Therefore two main objectives were declared (PRODEP) (Martínez, 2015):

- General: the consolidation of AG of each public HEI assigned to the program with professors having “desirable profile” (this is a kind of personal award with economical stimulus, that professors can ask just one time), who contribute to the new professionals education in each one of all higher education levels: higher technical college, bachelor’s degree, master, Ph.D. With responsibility, commitment, high quality and competitiveness.
- Specific: professors are able to get the adequate academic degree to perform with good quality their work, providing the resources to facilitate a better performance; besides promoting and encouraging the integration of AG in Thematic Networks of Collaboration.

For instace based on the PRODEP specific objective, a coordination of AG was created in 2012 at UTEZ (Estrada, 2013) (Luna, 2014). Colaborative and coordinate work is a very important issue, for PRODEP and for UTEZ. One of the main results of the coordination was to get the status of “To be consolidate” for two UTEZ AG’s (Luna, 2014).

#### Hypothesis approach

Since State Public Universities, in Mexico, are the ones with highest budget comparing with other subsystems and actually is the oldest subsystem in the country, meaning this that they have two of the main conditions to develop high level research, therefore one hypothesis can be written:

Hypothesis 1: State Public Univerisities have most of the consolidated AG assigned to PRODEP for Social and Administrative knowledge area.

According with life experience, Social and Administrative areas are more attractive for women than another kind of disciplines, therefore a second hypothesis can be written:

Hypothesis 2: Most of the members of AG in the Social and Administrative knowledge area are women.

Focussed work let be more productive, if the team have very clear the main objective and the main idea, it can be more productive. According with the experience if purpose of the work is well defined is easier to get high quality products and be efficient about the use of all resources. Based on that a third hypothesis can be written:

Hypothesis 3: Consolidate AG have no more than three researching lines assigned by PRODEP.

Small groups must work better and must be more productive, since is easier to coordinate few people. Tasks can be better programmed, splitted and assigned, therefore a fourth hypothesis can be written:

Hypothesis 4: Most of consolidate AG have few members, equal or less than four.

### 3.2 Methodology

The researching procedure was simple and is an standard one (Sampieri, 2010): research question, obtain data, sort and classify data, analyze data, test hypothesis, discuss results and make conclusions. The knowledge area was selected due to a new AG was created and already assigned as “In training” status in PRODEP. Professors are trying to identify the main characteristics of consolidated AG to compare with their strengths and identify their improvement opportunities as AG. The question was: there are some common specific characteristics of consolidate AG for Social and Administrative areas?. Data were extracted from PRODEP web page (PRODEP) and pasted into a calculus worksheet to be analyzed with basic statistics. An example about the procedure to analyze data is explained at the literature (Martínez, 2015) (Sampieri, 2010).

The criteria that authors considered for information validation are: objectivity, sufficiency, adequacy, timeliness, actuality and accessibility criteria (Mohammad, 2013). Data becomes information when they are properly analyzed and presented appropriately. The representation of data basically refers to statistical data representation (Mohammad, 2013). In this report authors use basic presentation like histograms, tables and pie chart.

The project management was carried out following the PMBOK Guide (PMI, 2000).

### 3.3 Results

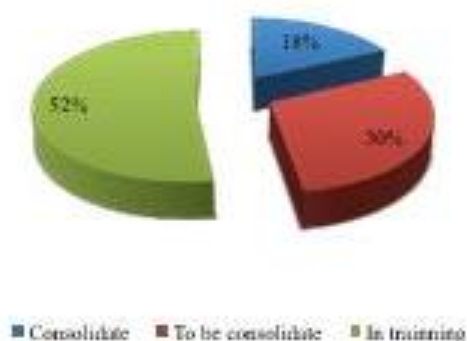
PRODEP has in Social and Administrative área, 133 (April 2014) HEI assigned in accordance with its database, Table 1 (Martínez, 2015), and a total of 1159 (April 2014) AG assigned for all subsystems,.

**Table 3**

Subsystem	Number of HEI	Number of AG
State Public Universities	56	977
Technological Universities	42	112
Polytechnics Universities	12	20
Technological Institutes	23	35
Pedagogic Universities	1	1

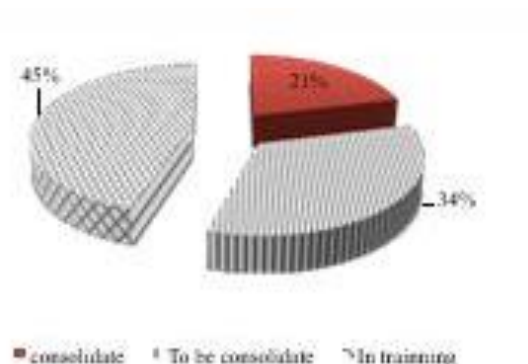
Fourty-two percent of the HEI assigned to PRODEP are Public State Universities, and eighty-six of the AG belongs to this subsystem. It means the majority of the research work is done by this subsystem, this is not just about this specific area but in all PRODEP (Salinas, 2014). However the degree of maturity of this area of knowledge is low, since 52% of the AG are in a state of In training, Figure.

**Figure 3** Distribution of AG assignment level



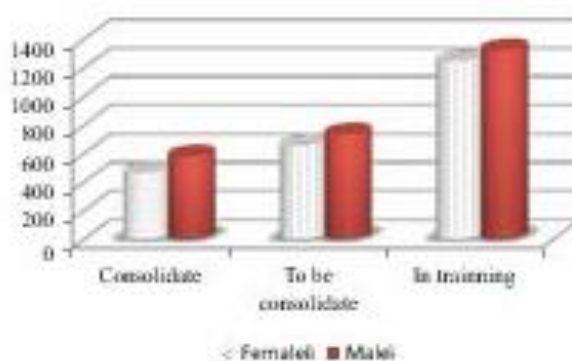
Based on Table 1 and Figure 1 can be inferred that most AG consolidated belong subsystem State Public Universities. 206 consolidated AG belongs to State Public Universities and just 2 belongs to Technological Universities. This information let accept the Hypothesis 1. However the level of knowledge maturity is also low in this subsystem since one in five of the AG are consolidate and two in five are in training assignment, Figure.

**Figure 3.1** Maturity level for the subsystem state public universities



The participation of women in research has its inherent value added, which implicitly expand the panorama of knowledge disclosure mechanisms and the assessment of the theoretical and experimental data. Doctor Medawar writes an interesting discussion on the participation of women in science (Medawar, 2013). About the participation of women in this knowledge area analysis shows that there is gender equality, not expected by the authors, since 44% of the members of the selected sample (it was selected by authors criteria (Walpole, 1999)) are women. This percentage does not depend on the level of maturity, Figure.

**Figure 3.2** Participation of women in knowledge generation



Based on information, Figure 2 and 3, the Hypothesis 2 can be rejected. The participation of women and men in this knowledge area is the same, there is not statistically significant difference between them.

Data were analyzed also to quantify the number of researching line by AG and the number of the members belonging each AG.

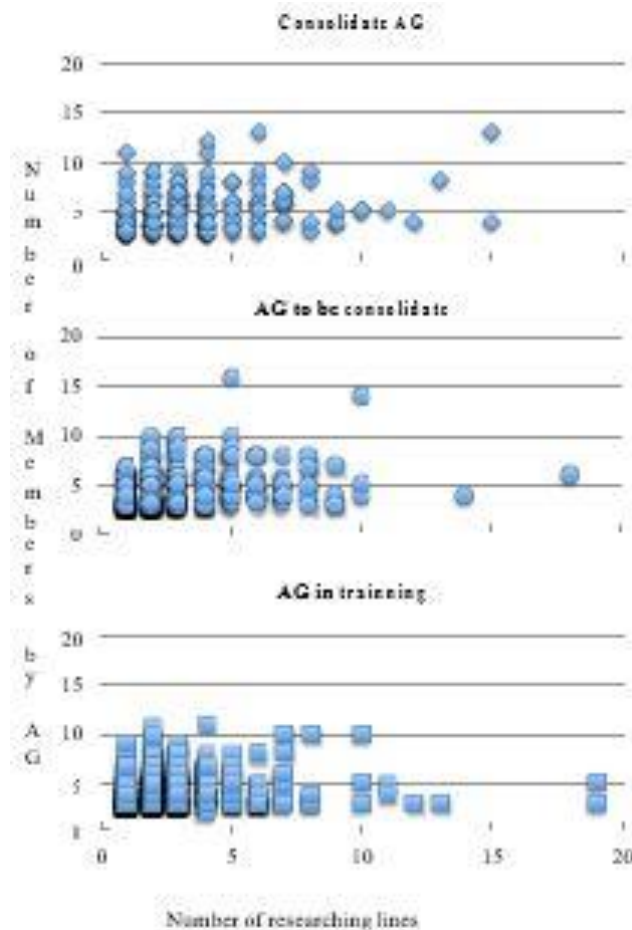
**Table 3.1**

AG	Researching lines	Number of members	Index a
Consolidate	3.6	5.2	2.1
To be consolidate	3.1	4.6	2.2
In training	2.6	4.4	2.5

AG in training have 2.6 researching lines in average, which is the lowest number by AG, the highest one is for Consolidate. Therefore the Hypothesis number three can be rejected. Also Hypothesis 4 can be rejected since in average the highest number of members by AG belongs to Consolidate ones, and is more than four. On the contrary the lowest number of members in average by AG belongs to In training AG, which have 4.4 members by AG in average.

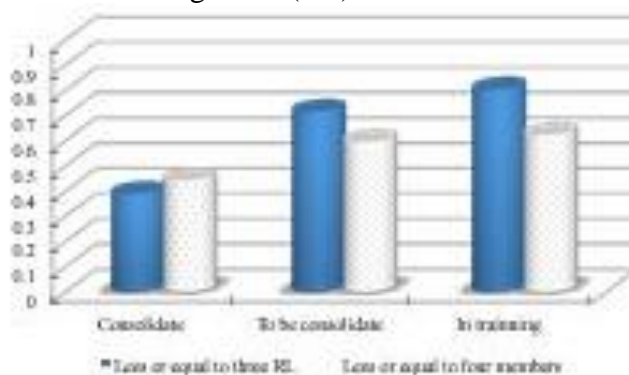
Two variables were defined to perform a correlation analysis: the number of members by AG and the number of researching lines by AG, Figure 4.

**Figure 4** Correlation analysis for Number of members by researching line



There is no correlation between this two variables for any assignment level, it means the number of members by AG and the number of researching lines by AG have no impact about the maturity level of them. Another parameter was defined: Index a, Table 2 which is the ratio between the number of members and the numbers of researching lines. All of them are around two members for each researching line, therefore there is not statistically significant difference between them. Maturity level does not depend on the quantity but quality according with data analyzed. Well defined focussed work on the leadership and well defined job rather than the number of members or researching lines.

Observing data from this two variables in a different way, shows some interesting information, Figure 5. Data were analyzed versus a threshold set by the authors for each variable, AG with: less than or equal to three Researching Lines (RL) and less than or equal to four members, Figure 5. There are some differences between AG, for instance about 61 % of Consolidate AG has more than three RL while just 20 % of the In training has that number.

**Figure 3.2** Number of researching lines (RL) and members versus a defined threshold

On the other side about 56 % of the Consolidate AG have more than four members while about 38 % of the AG In training have more than four members. Most AG consolidated have more than three researching lines and more than four members. Interesting since it could mean that the maturity level may depend on number of RL (higher than three) and number of members (higher than four). However this is not possible to accept or reject the data presented, as other variables not included in the analysis may have weight in the information.

### 3.4 Conclusions

We could not identify the characteristics that identify and distinguish the AG consolidated the other two types of them. They are not obvious and probably needs an analysis which involved, other variables or more of them. Based on information obtained if it can be determined that the consolidated AG have more members and more lines of research, which in principle means that a greater number of people working on a larger number of areas of expertise, result higher quality products which results in a level of maturity.

Women participation is important in any field of knowledge; they expands the visión in most scenarios. For this area of knowledge, authors expected that most of the memebers were women, by affinity skills, but men are most. This can not be classified as good or bad by itself, but as an interesteing fact that is linked to the issue of gender equality currently happen in Mexico.

The analysis of the data does not le identify a pattern in the characteristics of the consolidated AG. A deeper analysis needs to be done to get the pattern, if there is one. Interesting information was got from PRODEP database, finding one aim to continue the analysis. Such as defining more variables and try to bring the analysis to the field of data mining.

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