Article **ECORFAN-Spain Journal**
June 2018 Vol.5 No.8 10-17

Belief system of students of a quality postgraduate course in educational research

Sistema de creencias de los estudiantes de un curso de posgrado de calidad en investigación educativa

MANIG-VALENZUELA, Agustín†*, VÁLDES-CUERVO, Ángel Alberto, GUTIÉRREZ-DUARTE, Carlos Jesús and MADUEÑO-SERRANO, María Luisa

Instituto Tecnológico de Sonora

ID 1° Author: *Agustín, Manig-Valenzuela* / **ORC ID:** 0000-0003-2109-2920, **CVU CONACYT-ID:** 325854

ID 1° Co-author: *Ángel Alberto, Váldes-Cuervo* / **ORC ID:** 0000-0001-6559-4151, **CVU CONACYT-ID:** 94114

ID 2° Co-author: *Carlos Jesús, Gutiérrez-Duarte* / **ORC ID:** 0000-0002-9271-083X

ID 3° Co-author: *María Luisa, Madueño-Serrano* / **ORC ID:** 0000-0002-9571-3526

Received January 25, 2018; Accepted June 12, 2018

Abstract

The present study aimed to characterize the belief system of master´s degree students about educational research. The approach of the problem points out how students with little experience in educational research have serious difficulties in their formative process when their foundations are not clear. The present investigation obeys to the qualitative method. The non-statistical sample of intentional character was formed by 15 participants of a postgraduate course oriented towards the training of researchers with registration in the National Quality Postgraduate Program (PNPC). The results define the belief system of students in the following theoretical categories: a) Category research paradigms, b) Category Educational Research. The conclusions reveal that the research paradigms represent for the students a set of beliefs that help them to understand or explain the reality in which the object of study is immersed and that each paradigm has a different perspective on the reality that is studied from the educational investigation. Under this perspective, educational research has the purpose of creating new programs and new interventions that make it possible to improve the education sector.

Educational Research, Paradigms, Researchers education

Resumen

El presente estudio se propuso caracterizar el sistema de creencias de los estudiantes de un posgrado en educación sobre la investigación educativa. El planteamiento del problema señala cómo los estudiantes con poca experiencia en investigación educativa tienen serias dificultades en su proceso formativo cuando no tienen claros sus fundamentos. La presente investigación obedece al método cualitativo. La muestra no estadística de carácter intencional se conformó por 15 participantes de un posgrado que se orienta hacia la formación de investigadores con registro en el Programa Nacional de Posgrados de Calidad (PNPC). Los resultados definen el sistema de creencias de los estudiantes en las siguientes categorías teóricas: a) Categoría paradigmas de investigación, b) Categoría Investigación Educativa. Las conclusiones revelan que los paradigmas de investigación representan para los estudiantes un conjunto de creencias que ayudan a comprender o explicar la realidad en la que se encuentra inmerso el objeto de estudio y que cada paradigma tiene una perspectiva distinta sobre la realidad que se estudia desde la investigación educativa. Bajo esta perspectiva, la investigación educativa tiene como propósito la creación de nuevos programas y nuevas intervenciones que posibiliten mejorar el sector educativo.

Investigación Educativa, Paradigmas, Formación de Investigadores

Citación: MANIG-VALENZUELA, Agustín, VÁLDES-CUERVO, Ángel Alberto, GUTIÉRREZ-DUARTE, Carlos Jesús and MADUEÑO-SERRANO, María Luisa. Belief system of students of a quality postgraduate course in educational research. ECORFAN Journal- Spain. 2018, 5-8: 10-17.

* Correspondence to Author (email: agustin.manig@itson.edu.mx)
† Researcher contributing first author.

Introduction

The concern for the training of researchers in quality programs at the graduate level is constant in recent years in Latin American countries (Luchilo, 2010). A quality postgraduate course ensures the continuity of scientific production within higher education institutions (HEIs), trengthening of their research groups, development of knowledge generation lines and their application towards the solution of socially relevant problems (Fresán, 2013).

In Mexico, educational policies have not achieved the integration of the different institutions to improve the growth of the scientific area and researchers (Gómez-López, 2013). During the period from 2010 to 2016 the number of researchers registered in the National System of Researchers (SNI) increased from 16,598 to 25,072, a growth that is encouraging, although it is far from countries such as Brazil, which has 86,932 researchers, and the United States, which hosts 1,393,523 (Rodríguez, 2016). The number of researchers remains poor to achieve a significant change in the transformation of the country. This represents a not very encouraging reality for the development of science in Mexico, which is necessary to analyze in order to find the areas of opportunity that allow quality postgraduate programs to boost it in the training of researchers to improve the world ranking in terms of its scientific production.

In Mexico, the National Council of Science and Technology (CONACyT) through the National Quality Postgraduate Program (PNPC) is responsible for human resources related to science. The PNPC evaluates the quality of postgraduate programs and awards recognition to programs that meet their quality and relevance standards (González, Gómez, Martinell, & Frenk, 2014). The PNPC has registered in its register 1,742 quality programs, equivalent to 25% of the total postgraduate offer nationwide (Torres, 2015).

Admission and permanence in the PNPC, according to the study by González (2013), are largely defined by the terminal efficiency per cohort. This is an indicator that holds a significant weight to assess quality. The terminal efficiency is defined by the time elapsed to obtain the degree once the student has been admitted.

If a program wants to be recognized in the Consolidated Postgraduate Register (at the national level) the terminal efficiency must be specified up to three years for the master's level, with a parameter in which the average graduation time must be equal to or greater than 50 %, although this efficiency must be increased to 70% after two years of obtaining the registration in the PNPC. For the Postgraduate Certificate of International Competence, the lapse is two and a half years for the graduation and it is required that this terminal efficiency is 70% in average time (Urrego, 2011).

Among the main deficiencies detected by Martínez (2015) in six academic programs of the National Polytechnic Institute, registered in the PNAC of CONACyT, that affect the terminal efficiency is the lack of a methodology or advice for the preparation of thesis and the low participation of the students in the research projects. For Mireles (2016) the research is learned through the commitment that a graduate student puts into the realization of his thesis in collaboration with a research group. In such way, one of the important challenges for postgraduate courses of the PNPC is limited to generating significant learning experiences so that their students complete their thesis in a timely manner.

A scientific research carried out with quality must be reflected with the publication of an article in a prestigious magazine. That is, the article is an inseparable part of the investigation. Scientific articles are regularly requested structured for publication according to Murillo, Martínez-Garrido and Belavi (2017) in the format called IMRyC, on wich I means introduction, where the question "What is studied?" Must be answered. M method, which responds to, how is the research problem studied? R of results that responds to, what were the findings? and, C of conclusions that respond to, what do the results mean and what do they contribute to the state of knowledge on the subject studied? In this way, professional training must make an effort to integrate research within its contents or methodologies.

That is, reinforce the issues with the development of research skills, which means that future professionals must apply the methodological tools of research in their usual content, not only through a specific subject of the program, but through the continuous work in the different subjects (Perines & Murillo, 2017). In the field of scientific research there are different positions on the nature of the problems and the methods to study them (Taylor and Bogdan, 1987).

ISSN: 2444-3204

The paradigms according to Kuhn (1971) are defined as "universally recognized scientific achievements that, for a certain time, provide models of problems and solutions to a scientific community" (p.13). The problem arises at the moment in which the students of a postgraduate program are not clarified, the paradigm of scientific research that dictates the design and development of their research projects with legitimacy and truthfulness (Briones, 2013).

A research paradigm is made up of different levels of understanding that provide the theoretical basis for a scientific study. The first level is the ontological one that defines the way of seeing and understanding reality. The second is represented by the epistemological level that provides a coherent position on how to know the ontologically defined reality. The last level is the methodological one that provides the technical guidelines based on the onto-epistemic criteria that allow the production or re-production of knowledge. That is why the researcher, by understanding the three levels that make up a paradigm, establishes the form of design, implementation and concretion of his research project in consonance with the foundations provided by the paradigm in which it is developed (Sánchez, 2013).

In the social sciences and humanities, according to Gil-Álvarez, León-González and Morales-Cruz (2017), there are three recognized paradigms for scientific production: positivist, interpretative and socio-critical. The positivist paradigm arises in the field of natural sciences, as a product of the empiricist approach, which is distinguished by the objective analysis of reality. The interpretive paradigm implies the understanding of reality from the perspective of the individual who lives and experiences it; it is derived from the social sciences and is of the phenomenological, subjective and functionalist type. The sociocritical paradigm, sustains that intervention and study on local practice, is carried out through processes of self-reflection that generate changes and transformations of the actors at a social and educational level.

Barraza (2014) states that positivists traditionally convey the idea that quantitative research is the one with the highest validity and quality. However, Neuser (2014) considers that the interpretive paradigm through qualitative research promotes a profound change in the study of human and social sciences in the last century. In this sense, educational research is a rigorous process that has as its starting point any of the paradigms marked in science.

This should be made concrete through a quantitative, qualitative or mixed methodological process aimed at improving education and with this to society in general (Murillo & Hidalgo, 2017). Research at the level of higher education proposes concrete ways of working on projects with the necessary elements of quality for their design and development.

The novice researcher to realize that the process of knowledge construction is not a neutral process. That is, making aware that the production of knowledge is made as a representation of their own reality and vision of the world. When venturing into research this vision is confronted by the current paradigms belonging to the scientific perspective of what reality is. For Cedeño-Suarez (2001) the paradigm chosen by the researcher will be the one that conditions the theoretical premises that are fixed in the research, the type of problem chosen, the strategies, techniques and instruments and the criteria of validation and legitimation of the knowledge that is produces.

The novel researcher encounters a series of problems when starting his research project. These are circumscribed by the belief system supported by the characteristics of the research paradigms, which can produce confusions in the learner. In this sense, a student may present difficulties in understanding research paradigms at their ontological level. This has a negative impact on the training of researchers given that students regularly do not have clarity about the theoretical foundations of the research paradigm from which they start (Neuser, 2014). Thus, students experience theoretical confusion in the argumentation of their thesis document and manifest difficulties in defending it once it is finished.

The construction of scientific knowledge is subject to the belief system of the research paradigm in which it is produced. This belief system dictates models of problems and solutions that are approached according to the method, techniques and instruments of data collection and analysis, as well as the type of validation, quality criteria and ethics that entails a research paradigm (Cedeño-Suarez, 2001). In this sense, the researcher in training has the task of reflecting on the belief system about educational research. Accordingly, the following research question is asked: What is the belief system that graduate students share about educational research?

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Method

The present qualitative research was developed under the focus of symbolic interactionism. The design was based on the exploration process proposed by Blumer (1982), which involves an open collection of beliefs and meanings through a flexible procedure. The criteria of quality and scientific rigor applied were reliability in terms of consistency and credibility as a criterion of internal validity (Sandín, 2003).

Participants

The selection of participants was based on the criteria sampling procedure. Students who attended the second year of a postgraduate education aimed at training researchers from a Northwestern University of Mexico with registration in the PNPC and who voluntarily agreed to participate in the present investigation were included. The sample was formed by a total of 15 students (9 men and 6 women).

Information gathering technique

To obtain the information, we used the semi-structured interview technique of a focused type (Vela, 2004). This type of interview was guided by the following criteria:

a. Range and specificity, which refer to the description made by the participant according to the questions that were asked about the paradigms of research and educational research.

b. Depth and personal context, these are related to the beliefs collected about the experiences of the participants on the ecuative research.

Systematization and analysis of data

The systematization and information analysis procedure is based on Manig's proposal (2014), which is conformed by the following stages:

1. Systematization, signaling and codification of the data.

2. Analysis of coded units and graphic construction of theoretical categories.

3. Qualitative interpretation and description of the theoretical categories.

Stage 1. Systematization, signaling and coding of data

This first stage consists of the following procedures:

a. Control of informants, the informant control procedure was performed by assigning a password to each teacher for identification.

b. Transcription of interviews, once the interviews were recorded they were transcribed in order to obtain the data source to carry out the corresponding analysis.

c. Signaling and coding of the units of analysis, this is a first level of analysis. The signaling procedure was performed by assigning a color to each unit of analysis for identification.

Stage 2. Graphic construction of the theoretical categories

In the second stage, the theoretical categories were named and grouped according to the intersubjectivity identified as a product of the second level of analysis. The intersubjectivity, according to Bonilla-Castro and Rodríguez (2005), is the result of the social construction of reality that represents the way it works daily. The researcher relied on this stage using Freemind software in order to graph the theoretical categories from the different units of analysis.

The next step was to group the units of significant analysis, which are those that are related to the units of meaning defined as theoretical categories in order to characterize and describe these categories. Therefore, intersubjectivity has the function of naming the theoretical categories, since these make possible the objective representation of units of analysis in units of meaning according to what postgraduate students attribute to educational research. Also, what is significant will allow the researcher to describe the characteristics that distinguish each of the resulting theoretical categories, respecting in their description the social construction of the students on educational research.

Stage 3. Qualitative interpretation of the theoretical categories

The qualitative interpretation of the theoretical categories is considered as a moment of scientific experience that allows to generate knowledge according to the results obtained by the researcher (Bentolila, 2000).

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In this sense, from the interpretation of the graphic organizer that organizes the theoretical categories into units of analysis that account for intersubjectivity and units of analysis that account for the significant, educational research is defined and characterized according to the voices of the participants. The description of each category is accompanied by the evidence composed by the units of analysis interpreted until reaching a specific graphic organizer using the tool CmapTools where the study findings are defined to finally present the conclusions of the study.

Results

The results of the study are presented through a categorization of theoretical type according to Ruiz-Olabuenaga (2003). Which are guided by the principle of fidelity of the register to reproduce the expressions of the participants with accuracy by coding the units of analysis obtained (Corbetta, 2007). The results obtained include the possibility of identifying the belief system shared by postgraduate students in their training as researchers according to the following categories: a) Category of research paradigms, b) Category of Educational Research. Which are described below.

Category Research Paradigms

The research paradigms according to the graduate students are a set of beliefs and ideas that provide a scientific community with the methodology for the study of reality. In this sense, the selected paradigm provides a series of strategies, methods and instruments for the realization of scientific work. As it could be observed in the following units of analysis:

"I consider that it is a set of beliefs, work styles, strategies, that a scientific community uses or follows to carry out its work, so I would define it as well as a style of beliefs, strategies to approach the different works that are presented "(14CP73). "The paradigm is the set of ideas or beliefs that will guide you to interpret reality" (1CP2). "What do you believe, where do you see that reality, what do you identify with, what do you feel is that reality... what that reality means to you" (10CP57). "Reality, objective reality or multiple realities, also instruments, methods and ways of life" (12CP64). "What comes to mind, beliefs, perceptions of people, what comes to mind is also method, methodologies, how to work, how to approach" (14CP72).

According to the graduate students he paradigms provides a vision on how to perform the analysis of the information obtained from the interaction with people in the field of study. In such a way that the paradigm places you in the way you should follow the methodology through a series of rules and regulations applicable to the research process. This is evident in the following units of analysis:

"The scientific paradigms give us a vision of how to analyze the information of what we are going to obtain from the field or from the people with whom we interact "(11SI66)."The paradigm is a model in which a group of experts from the scientific community agree to use and in turn use certain rules and certain rules that are applicable in the research process" (2SI10). "The paradigms place you in your way in which you are going to follow your methodology and your ideas" (1SI5).

Graduate students classify paradigms as a quantitative paradigm and a qualitative paradigm, recognizing both scientific rigor in the application of their methodology. For students, the object of study under the qualitative paradigm seeks to understand and in the quantitative paradigm determine its magnitude. In such a way, that the qualitative paradigm is associated with an interpretive process of reality, while the quantitative paradigm is associated with the rational explanation of it. The above can be observed in the following units of analysis:

" The paradigms that have been qualitative and quantitative, both have their scientific rigor to carry out the methodologies "(5CP25)" In a way we take a qualitative paradigm, to understand, understand, appreciate and on the other hand the quantitative paradigm makes us be a bit more deterministic "(2CP7)" They have both their specific work, in this case a quantitative paradigm indicates the magnitude of a certain educational phenomenon and in the qualitative paradigm they inquire more about the reasons "(6CP29)" It is the most that nothing to see how you are going to associate that information, how are you going to interpret it, how are you going to see reality and how are you going to take all this and you are going to explain it, either in the qualitative or quantitative paradigm "(11CP61).

Consequently, according to the students the research paradigms represent a guide defined by beliefs belonging to a scientific community that guide the research process according to a vision of reality, either qualitatively or quantitatively. As shown in Figure 1.

ISSN: 2444-3204

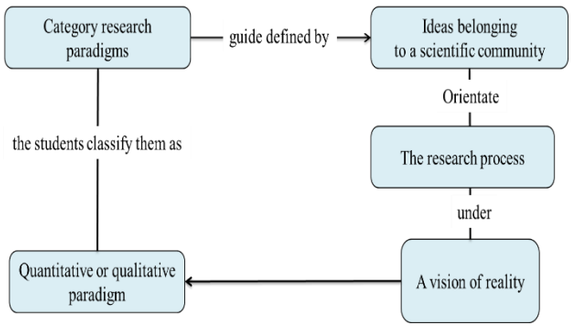

Figure 1 Research paradigm according to graduate students
Source: Self Made

Category Educational research

Graduate students recognize the importance of educational research in the identification of problems that arise in certain educational contexts. For students to know the problem is the secret ingredient of educational research. In this orientation, researchers are dedicated to finding and solving educational problems that affect the daily lives of students and / or students within the school environment. As represented in the following units of analysis:

"I think that educational research is something important because based on research you can realize the problems that arise within this area of education in the context that is presented "(14SI88). "It is knowing problems, knowing phenomena and being able to work on it, it is like discovering, educational research is like a secret ingredient for research" (8CP45). "The researcher is dedicated to look for situations or phenomena that occur in real or daily life and look for problems" (2CP6). "The educational research can be the one that is focused on teachers, on students, is what they participate in education. Well, seek more than anything to solve the educational problems that are currently being presented "(15SI94)." Inquiring about problems within the educational field "(5SI30).

Educational research according to the beliefs of graduate students is focused on the participation of teachers and students in order to provide solutions through the development of new programs and forms of intervention. This implies, keep updated and deepen in increasingly specific topics. This is evidenced by the following units of analysis:

" To be a researcher is to contribute to a scientific area in which we can conduct new and updated research in which we can inquire about a specific topic that promotes a solution to a problem of society "(5SI29)" Educational research is a contribution that can help to generate new programs, new interventions and that can be seen in a different way the appropriate solution "(1SI4)." Research always involves being updated in your information and delving into a specific issue "(12SI77). Students consider that educational research is not just about sitting down and doing something; rather it is to use thinking skills such as analysis and logical reasoning in order to make proposals that support solving current needs. This is seen as evidence of the student's academic achievement. In this sense, educational research in a postgraduate program requires a greater effort than in the Bachelor's degree. Which can be observed in the following units of analysis:

" Research is not just sitting and doing it, but analyzing, reasoning "(5SI35)." It is another way in which I can help programs, research, to the needs that are being lived in the present, they affect in some way the academic achievement of students "(12SI78)." Educational research for me means finding areas for improvement, pointing them out and providing information on how to exploit them "(6SI36)." Educational research demands a lot, it demands from you what it's being a bachelor's degree, it's been a PNPC, it's not just a master's degree, it's an extra to be here "(11SI76). In sum, educational research according to students is a way to address the current problems that arise in school contexts. Educational research is an effort to update students and teachers aimed at developing proposals as alternatives to the educational needs. Likewise, it entails a greater degree of complexity in graduate studies than in undergraduate studies.

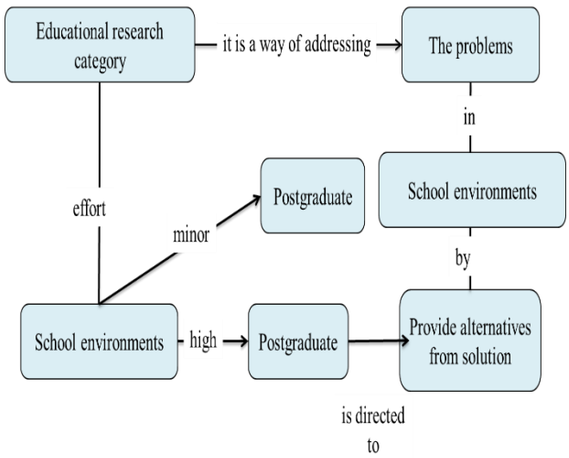

Figure 2. Educational research according to graduate students.
Source: Self Made

The resulting categories represent the belief system that students share in their educational context and that support their decision-making regarding their educational process. In this sense, the conclusions of the study are presented below.

Conclusions

The students affirm that the paradigms focused on education are the set of beliefs that them to understand or explain the reality in which the object of study is immersed. For Zor (2011) the beliefs allow to mold and modify reality. Therefore, reality is only a mirror of the true, which at the same time is configured in a belief system that is part of the daily life of the people.

The paradigms, according to the students are defined from the methodological point of view as quantitative or qualitative. Although each paradigm has a different perspective on reality, the knowledge and the research work carried out under both approaches offer a broader perspective on the object of study.

Educational research has a defined purpose oriented to education, this according to the students opens the way to various ideas and formative conceptions. In this sense, Sanabria (2010) indicates that educational research works under a defined objective aimed at describing, interpreting or, where appropriate, measuring or interpreting a reality in a given educational context. Educational research represents a contribution to the scientific community. The students mention that it helps to the creation of new programs, new interventions that allow the improvement in the educational sector. Therefore, it is finally concluded that research represents a cornerstone in science, since from it emanate theories, models, methodologies and processes that help to develop contributions as alternative solutions to solve current problems that afflict education.

Acknowledgement

Publication financed with PFCE 2017 resources. Also, the Program of Promotion and Support to Research Projects (PROFAPI) of the Technological Institute of Sonora is thanked for the resource granted.

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ISSN: 2444-3204