

Evaluation of training in educational research in the development of research skills in middle school teachers: Analysis by zone of residence

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Abstract:

Background : The aim of the research was to evaluate the role of training in educational research in the development of research skills in teachers of secondary education.

Materials and Methods: For this, a quasi-experimental pretest-posttest design of a single group was applied, in the form of training through a basic course in educational research. The participants were middle school teachers who teach the seminar subject, men and women from different departments of El Salvador. The course was applied for five weeks in four venues, western, central, paracentral and eastern, with an average attendance of 10 participants per zone. The main variables of the study were information search, technological skills, methodological research skills, oral communication, communication of results and work in research teams.

Results : Among the main results were that participation in a research course has an impact on the development of general notions of the scientific research process and the tasks associated with it, but little in the application of specific skills, which could be observed in development through its use in the proposal of research proposals. Likewise, teachers have a limited technological and methodological set of skills, which slightly improved after participating in the course.

Conclusion : Teachers of rural area have less resources and formative opportunities to develop research competencies.

Keywords: Secondary education, training in research, research methodology

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I. Introduction

Being competent implies having a high degree of knowledge integrated with aptitudes and abilities to have the ability to function as responsible subjects in different areas of personal, social and work life. Although many educational institutions when referring to competencies emphasize job training in a discipline, minimizing the general or basic competencies of human training; it is forgotten that "it is not the specific competences per se that are going to make a professional efficient, because knowledge is affected by innovations in each work environment, and this implies having learned to learn [5]"; So, the most important thing is to lay the firm foundation to continue to base the development of self-taught professionals who can adapt to changes and new ways of seeing life.

According to Beneitone, Esquentini et al [1], the Tuning Project for Latin America as an adaptation of the European Tuning Project, is a source of inspiration in curricular improvement, as it provides interesting reflections to rethink didactic strategies in higher education. This methodology includes the development of generic and specific competences as the first line. Therefore, the generic competences imply the coexistence and values of an integral person, of communication and self-training, development of critical thinking and logical reasoning based on the knowledge of reality, while the specific competences are those necessary in each discipline to be technician or expert in a specialized area.

Tobón [6], transcends the training by competencies from complex thinking when he exposes that the complex vision leads to a comprehensive training, from the contributions of different areas, from the training institutions proposing good quality in the training, from the families, society and corporate social responsibility engaging with the training needs of society.

Educational research

The continuous social changes that our society experiences are reflected in the behavior of citizens and in the dynamics that are generated within educational institutions. Educators and schools face the current challenge of responding to the broad educational demand of contemporary society.

On the one hand, the instructional processes focused on the teaching-learning of traditional curricular contents need to be extended to others that facilitate the training of students in all facets of their integral personal development (attitudes, values, emotional and behavioral self-regulation, personal safety, etc.) and throughout life (lifelong learning).

On the other hand, the changing characteristics of our society (multiculturalism, diversity in structures, family dynamics, globalization and consumption, well-being, conflict, low tolerance for frustration, information and knowledge society, incorporation of women into the world of work, decrease in the birth rate, information and communication technologies, etc.) make the context or exosystem that surrounds educational centers and institutions exert important and complex influences on their internal dynamics of communication and coexistence, which affects the various agents of the educational community, mainly students, teachers, parents.

The need to research on education and on educational institutions arises from the need to improve learning, on the behaviors of people and educational institutions, on the effects produced by our educational practice or on how we can innovate and improve the results of the own shares.

It arises from the moment in which it is intended to better understand the functioning of a given educational situation - be it a subject, a group of subjects, a program, a methodology, a resource, an observed change, an institution or an environmental context - or from respond to the many questions we ask ourselves about how to improve our educational activities [2].

For Piña [4], the purpose of educational research is to know a knowledge problem in detail and in detail, as well as to expose and publish the discoveries that the investigation throws up.

Considering this definition, research in the educational area allows us to increase our knowledge about the reality of a particular phenomenon; It helps us to analyze the relationship that is established between the elements that make up a certain educational situation and, often also, to make decisions about how to intervene in said situation to improve it.

Today, research on educational issues should be considered highly relevant and demanding, both for teachers and authorities.

II. Materials and Methods

A quasi-experimental study was carried out with a single sample pretest-posttest design [3], where a measurement will be made at the beginning and after the research course, in this case, the research course, to determine if there are statistically significant differences between both moments.

Study Design: Quasiexperimental

Study Location: El Salvador

Study Duration: March to September 2018

Sample size: An intentional sampling was made, taking into consideration participants of each of the four zones in which the country is divided, from the fourteen departments, bringing a total of 60 participants.

Sample size calculation: Intentional sampling based on availability of teachers.

Subjects & selection method: The study included high school teachers from the public sectors, that impart the subject of research seminar. The selection was made with the help of the Departmental Directorate of Secondary Education of the Ministry of Education. Taking into inconsideration for the inclusion in participation that they must be middle school teachers, serving at least for 5 years, teaching in public sector, recommended by the Ministry of Education, and they must not have less than a year at teaching, or be the school principal.

Among the population participating in the course, the following sociodemographic characteristics were obtained, of the total 55% were men and 45% women. Coming from the western (22.5%), eastern (35.0%), paracentral (15.7%) and central (25.0%) areas, from both urban (85%) and rural (15%) areas.

Regarding their work characteristics, 20% of the teachers who took the workshop have between 1 to 5 years of teaching experience, 12.50% were between 6 and 10 years, 37.5% between 11 and 15 years, 20% between 21 and 25 years and 7.5% between 26 years and more than being a teacher. When consulting the teaching category, 18.40% belonged to category 1, 26.30% to category 2, 23.7% to 3, 13.2% to 4, 10.5% to 4, and only 7.9% in category 6.

When asked about the daily hours worked, 57.5% stated that they work 8 hours, while 35% stated that they worked 10 hours a day, and 7.50% worked 12 hours or more.

Table 1.
Characteristics of participants

		Pretest	
		F	%
Gender	Male	22	55.0%
	Female	18	45.0%
Department	Ahuachapán	3	7.5%
	La libertad	5	12.5 %
	La Paz	2	5.0%
	La Unión	2	5.0%
	Morazán	4	10.0%
	San Miguel	8	20.0%
	San Salvador	5	12.5%
	San Vicente	5	12.5%
	Santa Ana	2	5.0%
	Sonsonate	4	10.0%
Zones	Western	9	22.5%
	Central	10	25.0%
	Paracentral	7	17.5%
	Eastern	14	35.0%
Living area	Urban	34	85.0%
	Rural	6	15.0%
Social status	Married	28	70.0%
	Single	8	20.0%
	Divorced	1	2.5%
	Married	3	7.5%

Procedure methodology

A small research training course was designed, which was given by zones. One course in the western area, another in the central, paracentral and another in the eastern area, which were carried out following the same didactic letter for a period of 20 hours. A test was carried out at the beginning and at the end of the course to determine the fulfillment of the hypotheses. The data was processed in SPSS v23, while the qualitative data was documented and processed using the Atlas.ti program. Parallel to the face-to-face classes, a virtual classroom was set up where participants were required to upload their activities, and where they could download the content of the sessions.

III. Results

Variables according to geographical area

The variables of research competences in teachers were compared together with the geographical areas to which they belonged, among the identified areas they were classified as west, central, paracentral and east.

When comparing the knowledge to search for information together with the geographical areas, it is observed that the highest means belonged to the paracentral area with a mean of 30.60 (SD = 5,413), followed by teachers in the central area (M = 28.89 , SD = 4.98), from the West (M = 27.50, SD = 3.665), and the East with an average of 23.10 (SD = 7.203).

Regarding the technological domain, the area that manifests the greatest technological domain was the central area with 22.10 (SD = 3.604), followed by the paracentral area (M = 21.50, SD = 2.510), the eastern area (M = 17.36, SD = 5,093), and with a lower average the western zone (M = 14.67, SD = 3,428); a significance of 0.001 was obtained according to the Anova test.

Comparing the areas, the western area with a mean of 47.75 (SD = 7,686), followed by the central area with a mean of 47.20 (SD = 7,361), the paracentral area (M = 45.86, SD = 8.395), and the eastern zone (M = 39.67, SD = 8.370).

Table 2. Descriptive variables according to zone

Variables	N	Media	Standard Deviation	Standard Error	95% Confidence interval		
					Inferior limit	Superior limit	
Searching information	West	8	27.50	3.665	1.296	24.44	30.56
	Central	9	28.89	4.986	1.662	25.06	32.72
	Paracentral	5	30.60	5.413	2.421	23.88	37.32
	East	10	23.10	7.203	2.278	17.95	28.25
	Total	32	27.00	6.032	1.066	24.83	29.17
Informatics	West	9	14.67	3.428	1.143	12.03	17.30
	Central	10	22.10	3.604	1.140	19.52	24.68
	Paracentral	6	21.50	2.510	1.025	18.87	24.13
	East	14	17.36	5.093	1.361	14.42	20.30
	Total	39	18.59	4.903	.785	17.00	20.18
Method	West	8	47.75	7.686	2.717	41.32	54.18
	Central	10	47.20	7.361	2.328	41.93	52.47
	Paracentral	7	45.86	8.395	3.173	38.09	53.62
	East	12	39.67	8.370	2.416	34.35	44.98
	Total	37	44.62	8.408	1.382	41.82	47.42
Results sharing	West	9	37.44	7.384	2.461	31.77	43.12
	Central	10	34.90	7.564	2.392	29.49	40.31
	Paracentral	7	50.14	24.334	9.197	27.64	72.65
	East	14	29.64	7.334	1.960	25.41	33.88
	Total	40	36.30	13.584	2.148	31.96	40.64
Oral communication	West	9	3.78	1.093	.364	2.94	4.62
	Central	10	2.70	.949	.300	2.02	3.38
	Paracentral	7	4.00	.816	.309	3.24	4.76
	East	13	2.85	.987	.274	2.25	3.44
	Total	39	3.23	1.087	.174	2.88	3.58
Teamwork	West	8	17.63	4.719	1.668	13.68	21.57
	Central	10	16.70	5.677	1.795	12.64	20.76
	Paracentral	7	19.14	4.451	1.682	15.03	23.26
	East	12	15.67	4.313	1.245	12.93	18.41
	Total	37	17.03	4.793	.788	15.43	18.63

Regarding the communication of results, the paracentral zone has the highest mean figures (M = 50.14, SD = 24,334), followed by the west (M = 37.44, DT = 7,384), the central zone (M = 34.50, SD = 7,564), and finally with the eastern zone represented 29.64 on average (SD = 7,334).

The oral communication variables have the lowest means among the variables studied, with the highest mean of 4.00 (SD = 0.816) in the paracentral zone, followed by the west (M = 3.78, SD = 1.093), the eastern zone (M = 2.85, SD = 0.987), and central reflecting a mean of 2.70 (SD = 0.949).

When asked about their ability to work in teams to carry out research, the paracentral zone leads in the figures with a mean of 19.14 (SD = 4.451), followed by the western area (M = 17.63, DT = 4.719), the central area (M = 16.70, SD = 5.677), ending with east (M = 15.67, SD = 4.793).

Conditions precedent to participation in the course

The interviews coincide in that the seminary subject is considered in a state of abandonment, both as a subject in itself as well as its teachers, and even its students. There is no real interest in the monitoring and structuring of the subject, which allows the achievement of specific objectives or goals according to a study plan. In none of the cases was a single training related to the seminar received, and the participants agree that both at an institutional, personal and work environment level, this matter is perceived as filling, and, therefore, does not receive real attention.

This has planning and methodological implications. Specifically, the speeches agree that there is at least one single thing that is "fundamentally necessary" for the substantial improvement of the subject: a study program.

"In relation to the seminar, we need a study plan that allows us to guide the boys ..."

Workshop participant

It is admitted, however, among the participants that there are tacit conditions that are accepted as things that the seminar "must" do. Such is the case of projects, which, in some cases, are research, but in others, this practice is associated with the generation of immediate benefits for the school or institute, and little to the academic achievement of students. In this regard, a teacher said that "the principal only worries that they make the school beautiful", which meant that the students, to pass, had to buy benches and tables for the courtyard of their institute. Also, another teacher said that his projects consisted of making piñatas, and another commented that there were girls who were asked to take care of small children and make a report about it. However, when speaking specifically with those who did do research projects, it was concluded that there is a real interest on the part of their students towards it, and that there is "a lot of enthusiasm" towards the research. One of the interviewees stated that "99% of his students" participated in their last research exercise, and that there is interest in the subject.

On the other hand, and in relation to this same topic, it is appreciated that there are weaknesses, accepted by the teachers themselves, in relation to their training and the lack of knowledge to accompany certain investigative processes, especially those at the end of the course, which, all participants agree that they are a graduation requirement. Among the competences where deficiency is openly admitted is the calculation of population samples, preparation of preliminary projects for research and the practical application of theoretical knowledge.

These deficiencies encompass other underlying deficiencies, which, when crossed with the results of the questionnaire, reveal the subsets to which they respond, mainly in the methodological area, in which there are systematic gaps in several of the categories surveyed.

IV. Conclusions

The seminar subject does not currently have a didactic or pedagogical structure that allows monitoring the learning of students from an institutional perspective, which generates that local pedagogical offers are imposed in terms of what or how content is taught in the seminar. What most of the teachers who teach this subject agree, however, is that the research process is very important as the completion of the teaching-learning process in secondary education. In some cases, with the name of thesis, in others, as graduation work.

A training course was developed where a pretest-posttest test was administered, which allowed a descriptive investigation of the efficiency of said teaching-learning modality in the achievement of the proposed competencies, which was complemented with a qualitative approach that allowed access to experiences and learning not measured in the test.

In the pre-test tests carried out prior to the research workshop, it was observed that the previous conditions for knowledge of research, methodology, information search and other associated categories, are present from medium to low. In this context, competencies related to the search for information showed that the participants have the perception of having good skills in searching, citing, and constructing theoretical frameworks, mainly among teachers from the paracentral and central areas of the country, even when the research It is not an everyday practice for them, and they do not use it on a regular basis. When building a teaching profile around this competence, both genders show a perception of similar mastery. On the other hand, the urban housing area also showed a high perception, in the same way teachers with 21 to 25 years of experience, as well as teachers between 11 to 15 years of work, who work around 10 hours of work, teachers 6th and 2nd category teachers who participated, and those teachers who have not received training lately. This last aspect, implicitly indicates that the trainings given by the MINED have not been related or have not had an impact on the development of the capacities associated with the course. On the other hand, it is teachers who have extensive experience in teaching who manifest mastery of these competencies, which implies that it is considered a skill that develops over time.

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