



# *Simulation as a didactic strategy in teacher training practices. Experience in the Social Sciences career*

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## **ABSTRACT**

This article<sup>1</sup> on educational innovation arises from a process of pedagogical reflection that aimed to use simulation as a teaching strategy to develop pedagogical skills in teachers in training of the social sciences area, in the subject Specialization Practices of the Social Sciences major. The methodology consisted in developing a mixed study, with emphasis on the qualitative approach, applying research techniques such as observation, survey and interviews to the research analysis unit that was composed of twenty-

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1. Research article product of a systematization of a didactic experience in the subject Specialization Practices.

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eight students enrolled in the subject. The didactic intervention resulted in the development of the ten teaching skills set out in the subject, which was evident in the simulations that the students carried out during the course of the subject. This study shows that simulation is a didactic strategy that favors the training of education professionals and allows the protagonists to assume roles similar to those they should assume in reality, and therefore, to appropriate the role, knowledge, attitudes, values and skills that this field requires to perform effectively.

## 1. INTRODUCTION

This research is the product of a didactic experience carried out in the Specialization Practices course of the Social Sciences career, Faculty of Education and Languages of the Universidad Nacional Autónoma de Nicaragua, Managua (UNAN-Managua). The research arises from the need to develop teaching competencies through the subject Specialization Practices, which contemplates, in addition to the tutorial work by the teacher in the classroom, going to the secondary school classrooms to put into practice the scientific and methodological didactic knowledge acquired during the previous five semesters of the major.

In this sense, it is necessary to point out that the subject in question had to be developed during the II semester 2018 (from August to November), however, due to the socio-political conditions that the country went through, it took place between the months of January to April 2019, likewise, as a consequence of this socio-political context, it was only possible to develop the theoretical part in the classroom and not the practical part of educational intervention in secondary school classrooms, therefore, the team of researchers agreed to develop the pedagogical practices in the classroom through teaching simulations, that is, that the students (teachers in training) put into practice their subject and didactic knowledge, teaching their classmates.

Based on this new approach taken in the learning process, a bibliographic review was carried out on the implementation of simulation in the training processes of education professionals, and various studies applied in different areas of knowledge were found, to cite one, the experience developed by López, Ramos, Pato and López Álvarez (2012) in the area of medicine, who developed clinical simulation as a learning tool, which allows students to develop professional skills without having to be in their own environment, in this regard, the study concludes that: “until now it was with the clinical experience that these skills were acquired, but after the implementation of the safety culture, this type of learning is no longer admissible. Therefore, simulation is the effective tool by means of which it is possible to shorten these curves. Teaching in environments of this type must be perfectly integrated into the curriculum with theoretical and practical teaching and in line with the learning objectives”.

However, in addition to obtaining significant results in the area of medicine, various studies were also found in the field of education where simulation is used as a didactic strategy for the training of professionals in different specializations, an example of this, is the study of Sánchez (2013) entitled *Simulation as a teaching and learning method*, where the following findings were found: (1) The selection of simulation as a didactic strategy contributed for students to develop the confidence and security necessary to stand in front of a group and «act as a teacher» relating the theoretical aspects already acquired with the practice in class; (2) It made it possible to position oneself, make decisions, assume roles and understand situations of the institutional and classroom dynamics, and (3) It allowed teachers to delve into the feeling, doing and thinking of the students and, in addition, recover from simulation practice a space for joint analysis and reflection.

Likewise, in the area of social science didactics in the Nicaraguan educational context, studies such as Orozco and Díaz (2017) already expressed the value of simulation as a didactic strategy in learning processes, such research was an educational innovation that was carried out at the Esquipulas Public School in Managua with secondary school students who, assuming the role of historical figures, generated empathy processes and managed to learn significantly the learning content, which indicates that simulation is a learning strategy that fosters the development of competencies and to generate empathic processes with reality, without the need to be immersed in it.

However, based on these findings, the team of researchers set out to develop teaching competencies in the Specialization Practices course by implementing simulation as a teaching strategy, that is, the research process started from the hypothesis that simulation as a didactic strategy allows to develop teaching competences in the training of social science teachers, for this, the subject was planned with six theoretical meetings related to the basic aspects to exercise the teaching profession where content related to the role of the teacher in the learning processes, the phases of the learning process, the decalogue of the effective teacher among others; and the remaining nine meetings of the semester were dedicated to carrying out simulations of the different Social Sciences subjects taught in secondary education.

Therefore, this article systematizes this didactic experience carried out with third-year students of the Social Sciences career at the Faculty of Education and Languages of the Universidad Nacional Autónoma de Nicaragua, Managua (UNAN-Managua), and for this a methodological and theoretical reference has been designed whereby the research is governed.

## 2. METHODOLOGY

### Focus and scope of the investigation

Following the theoretical references of Hernández, Fernández and Baptista (2014), the research is situated in a mixed approach precisely because it consists of a set of systematic, empirical and critical research processes that involve the collection and analysis of quantitative and qualitative data.

In the present case, the investigation is considered mixed because it processes data of quantitative and qualitative origin. Regarding the first, a questionnaire was applied to determine the competencies that the student had developed during the course of the subject, and in reference to the qualitative perspective, an interview was conducted with 10 students who completed the subject, this in order to deepen the analysis of the incidence of simulation as a didactic strategy for the training of teachers of social sciences, and blogs were produced as a result of the observation of teachers to follow up on the entire learning process that was taking place, and checklists were also used to show the skills developed by the students.

### Units of analysis

The analysis unit of this research is made up of the 28 students enrolled in the Social Sciences Career, Specialization Practices course, these, following Bernal's (2010) approaches are «the part of the population that is selected, from which the information for the development of the study is actually obtained and on which the measurement and observation of the variables under study will be carried out» (p.161).

The selection criteria was that the students had passed the Social Sciences Teaching subject, which was taken in the previous semester, and that they were enrolled in the subject. This guaranteed that the students at the time of the didactic intervention mastered the basic knowledge on the teaching of social sciences, and that they promoted such knowledge in the theoretical development of the subject, and finally, that they applied it when carrying out the simulation in the classroom.

### Data collection techniques

Three research techniques were applied in the research process: observation, survey and interviews. In the case of the first, attached to Arias (2012), «is a technique that consists of systematically visualizing or capturing by sight any fact, phenomenon or situation that occurs in nature or in society, based on pre-established research objectives» (p.69). This technique, using the checklist and log instrument, allowed registering the competences that the student developed during the learning process of the Specialization Practices.

Regarding the survey, following the contributions generated in Arias (2012), it is conceived as an instrument or paper format with a series of questions that must be completed by the respondent without the intervention of the interviewer. This questionnaire was applied to 28 students who completed the subject with the aim of investigating the teaching skills developed during the subject, and regarding the interview, Arias (2012) also expresses that it is «a technique based on a ‘face to face’ dialogue or conversation between the interviewer and the interviewee about a previously determined topic, so that the interviewer can obtain the required information» (p.73). This technique was applied to 10 students who were taking the subject, and allowed to delve into aspects related to the impact that the implementation of the simulation had on the development of teaching skills.

### **3. RESULTS**

#### **Specialization Practices Course**

The Specialization Practices is a subject contemplated in the VI semester of the Study Plan of the Social Sciences Career of the Universidad Nacional Autónoma de Nicaragua, Managua (UNAN-Managua), and according to the Program of the subject of Specialization Practices (2014), these should be seen as an opportunity for putting into practice the subject knowledge about Geography, History, Economics, Philosophy and Sociology; As well as the psycho-pedagogical knowledge acquired in the subjects taken in the previous semesters, which will allow them to perform effectively and efficiently as a teacher, likewise, the Specialization Practices allow them to interact with secondary school students through the teaching exercise.

It is also important to note that the main objective of this subject is that teachers in training have direct contact with secondary education institutions and can teach in the area of Social Sciences and thus have the opportunity to learn how to handle curricula documents that guides the Ministry of Education for the teaching-learning process in classrooms. In short, according to the Specialization Practices subject program (2014), this aims for the teacher-in-training to develop the following competences: (1) scientific mastery of the contents of the social science subjects, (2) link of the learning contents with the social context, (3) control of the class group, (4) elaboration of didactic materials, (5) use of didactic resources in the learning process, (6) application of assessment instruments of the learning, (7) planning of classes with a focus on competence, (8) implementation of innovative teaching strategies, (9) application of different types and forms of learning evaluation and (10) modeling of participatory methodologies in the learning processes.

In this sense, the subject has been designed in two moments; a theoretical one that consists of the approach of contents related to the professional ethics of the teacher and

contents related to the didactic domain, and another moment that consists of visiting the classrooms of secondary schools to teach in the area of social sciences (Specialization Practices Course Program, 2014), however, as explained in the previous sections, simulation was used as a didactic strategy so that students reached the practical objectives set out in the course program without having to go to secondary education centers.

### **Simulation as a learning strategy**

Simulation is a group learning strategy that allows students to develop empathetic processes and empower themselves with roles in representing circumstances, facts or events. This strategy has been used in various areas of knowledge in order to generate significant experiences in the students so that this knowledge is internalized, durable and applied to other situations. In this regard, various authors have theorized about this didactic strategy, offering their contributions and learning acquired through the implementation of this strategy in their teaching practice. Some of these are discussed below:

In Pimienta (2012), simulation is conceived as «a strategy that aims to represent life situations in which students participate by acting roles in order to solve a problem or, simply, to experience a certain situation» (p.130); similarly, Davini (2008) argues that simulation is a «teaching method that aims to bring students closer to situations and elements similar to reality, but artificially, in order to train them in practical and operational skills when they face them in the real world» (p. 144).

Both conceptions share common references because simulation is a didactic strategy that has the purpose of preparing students to face real situations without having to go to the environment itself, this is advantageous because it fosters the development of competencies and consolidation of the notions that students have on reality in any area of knowledge. In the case of this research, the aim is for students to consolidate their knowledge and teaching skills and to experience what is lived in the classroom without having to be with the students in a classroom, that is, the simulation acts as a kind of laboratory in which the phenomena that occur in the learning processes of secondary education are experienced.

### **The didactic value of simulation**

In the various literatures consulted on the use of simulation as a learning strategy, it can be seen that this strategy is used in the different areas of teacher education and training such as Social Sciences, Mathematics, Language and Literature, Physics, Natural Sciences, etc., but also in other sciences such as Medicine, Dentistry, Law, Archeology etc. From this vast experience of different researchers, various conclusions, contributions and findings have been taken up to determine the different purposes of simulation as a learning strategy in the training processes of professionals, in the different areas of scientific knowledge, such as:



- Simulation favors innovative practices, problem solving, and facilitates the transfer of knowledge, skills, and abilities to various areas of knowledge (Pimienta, 2012).
- Simulation is a strategy that involves making decisions about different dimensions of reality (Sánchez, 2013).
- Simulation enables the student to develop autonomous, meaningful, vicarious, cooperative, reflective learning and critical thinking skills. (Urrea, Sandoval and Irribarren, 2017).

The perspective proposed by these authors (Pimienta, 2012; Sánchez, 2013; Urrea, Sandoval and Irribarren, 2017) point towards common elements: simulation is a favorable strategy for the development of the different specific competences of each area of knowledge and facilitates the training professionals with the knowledge, abilities and skills necessary to face the phenomena present in reality, in this sense, it is a strategy that significantly links the learning processes acquired in the classroom in a theoretical way with the real problems present in the context of each profession, thus acquiring a theoretical-practical dimension in the training of professionals.

### **Characterization of the student body**

There were twenty-eight students enrolled to study the Specialization Practices course, who come from various municipalities in the departments of Managua and Masaya. Of these total students, it is worth mentioning that 57% are working in the Nicaraguan education system, distributed in public and private schools, and 43% do not work in education. It is also important to add that the students who work in education are inserted in different educational modalities, for example, the diagnosis made provided the following information: 7% teach in preschool, 14% in primary education, 29% in secondary education and 7% in remote secondary school.

In this sense, it is important to highlight that a little more than half of the students enrolled in the Specialization Practices had teaching experience, for this reason, they have developed different teaching competencies to carry out the learning processes, however, 43% of students had no teaching experience but had accumulated experience through the Familiarization Practices course, which is a preceding subject and a requirement for taking the Specialization Practices, since in this subject the students go to schools to observe social science classes and interview teachers, students also attend the Pedagogical Inter-Learning Encounters (PIE) as listeners to know how the monthly educational planning process is developed.

## 4. DISCUSSION

### **Didactic strategies applied in the simulation**

The didactic strategies that the students applied in their respective simulations were diverse, for this, they first carried out a documentary review and then made an innovative proposal for the teaching of social sciences, based on this, the students implemented the following didactic strategies: Readings commented, exhibitions, study guide resolution, case study, *collage* making, album making, teamwork, dictation of contents, resolution of practical classes, model making, simulation of historical events or events, song interpretation, drawing up of diagrams (concept maps, thematic networks, synoptic table, etc.), observation and video analysis; among other strategies that allowed them to put into practice their innovative proposals for improving learning processes in social science subjects. The following will describe, the didactic strategies that students used the most in their respective simulations:

### **Study guides**

The study guides implemented by the students in the simulation are based on an innovative proposal made by Orozco and Díaz (2018), which is conceived as a «didactic resource made up of a set of learning activities through which teachers create the didactic conditions so that the students approach the study material or content object of learning autonomously» (p.59). In this sense, the study guide that the students prepared, both in its internal and external structure, was innovative because they did not write a set of mechanical questions, but instead designed learning activities such as: case analysis, heading analysis and analysis of images; In addition, once the study guides were resolved, the students went to a phase of socialization of knowledge through conversations, plenaries or debates, this in order to generate significant learning in the students.

Regarding this didactic strategy, one of the students who applied this strategy expressed the following: «The implementation of this strategy allowed active participation, thus facilitating that the students are the protagonists in the construction of their learning, in the same way it allowed student-content, student-student and student-teacher interaction when socializing planned activities».

### **Simulation of historical facts or events**

The students also used simulation as a didactic strategy, in this the students simulated the functions of Pharaoh within the Egyptian civilization, which allowed them to lead this event interacting with the class group and assume empathetic attitudes with this historical fact. And this idea coincides with the perspective of Ibáñez (2015), who maintains that through simulation empathy is generated and the arrogant prejudices of the present towards situations



of the past are released, trying to understand the reality of men of other times as well as the current problems.

### **Interpretation of songs**

Following the results of didactic experiences carried out by Díaz, Mendoza and Arce (2015), music is conceived as a didactic element that can be applied in educational spaces to capture the attention of students and generate content reflection. Therefore, within the simulations carried out, the students used the song interpretation strategy, which was observed to generate interest in the classroom and allow knowledge to be socialized and the learning content to be contextualized. Regarding this strategy, one of the students expressed the following: «I liked this strategy because two things were done, first analyze the song, and then link it with the content. In other words, it is a very good technique because it leads us to reflect not by reading, but by listening».

### **Teaching skills developed through simulation**

To determine the degree of achievement of the aforementioned competences, a checklist was designed with a scoring scale which was used to evaluate the simulations carried out by the students. The following is a brief description of the development of the competences, and the total percentage that the students reached in each of them:

- *Scientific command of the contents of the social science subjects:* This competence was evidenced by the explanation and feedback from the tutor-teacher about the learning content. According to the results of the checklist, 95% of the students showed mastery of the learning content.
- *Linkage of learning content with the social context:* It was observed that teachers were able to contextualize learning content by relying on short-term news, videos and testimonies from people about the current situation. In this sense, according to the checklist, 87% of the students who participated in the study managed to link the contents with the context.
- *Control of the class group:* Acts of indiscipline were presented that allowed the teacher to act with tolerance and assertiveness by creating a classroom environment conducive to learning. The results obtained indicate that 100% of the students had mastery of the group.
- *Preparation of teaching materials:* It was evident that teachers implemented study guides, files, group dynamics and other teaching materials carried out by them, in order to create a space for participatory learning. In this regard, one of the participants highlighted the importance of designing teaching materials: «I managed to prepare my

lesson plan and I also developed skills, among which I was able to identify the need to practice order, make a commitment when preparing the materials to be used, as well as the innovation that allowed me to develop my content in the most dynamic and innovative way». According to the checklist, 82% of the students (teachers in training) prepared didactic materials for the development of their classes.

- *Use of didactic resources in the learning process:* The students of the specialization practice used maps, spheres, timelines, images, diaries and objects associated with the learning content. In this regard, one of the students emphasized the didactic value of using these types of materials in the learning processes: «with the observations to each group I realized the variety of strategies and previously elaborated didactic material used, thus help to achieve the class indicator». According to the scale of the checklist, 86% of the students used teaching resources in the learning processes
- *Application of learning evaluation instruments:* Among the applied evaluation instruments we can highlight the following: KWL (What I know, what I want to learn and what I learned), KPSI (Knowledge and Prior Study Inventory), PA-Q-LA means (PA Previous Answer, Q question and LA Later Answer), checklist and rubrics. These assessment instruments are innovative in social science teaching, and allowed practitioners to more accurately assess student performance. In this sense, 76% of the students applied these assessment instruments in the learning processes.
- *Class planning with a competence-based approach:* A review was made of the teachers' lesson plans, in which the application of a competence-based approach and the methodological and didactic coherence of the planned activities were evidenced. Regarding this, 100% of the practitioners implemented the competence-based approach in their teaching planning.
- *Implementation of innovative teaching strategies:* It was observed that the teaching strategies implemented in the simulation were innovative, as the example of the study guides described in the previous section, likewise, in this aspect the teachers in training obtained a 95% reach in this competition.
- *Implementation of different types and forms of learning evaluation:* an innovative proposal was to implement more frequently the formative evaluation and the co-evaluation, which is unusual in the learning of the social sciences, this was evidenced in the simulation of the content industrial revolution, where students participated in developing a timeline and a team album about the main inventions given at this time. To assess this activity, one team would evaluate the other through an elaborated rubric. In this aspect, students achieved 86% of the development of this competition.

- *Implementation of participatory methodologies in the learning processes:* In the simulations carried out, it was observed that the practitioners implemented participatory methodologies accompanied by group motivational dynamics, among the most used didactic strategies the following can be mentioned: teamwork, debates, conversations, round table, simulation of historical events, commented readings, plenary sessions. In this aspect, the students reached 70% of the scope of the competition.

## 5. CONCLUSIONS

The present study is the result of a complex social context that imposed different limitations on the learning processes, however, being the teacher a researcher and innovator of their pedagogical practice, different alternatives must be drawn up that lead to achieving the educational purposes of each subject, and this was precisely what led the team of researchers to rethink the subject's methodology and arrive at the finding that simulation is a didactic strategy that fosters teacher training. The conclusions of this study are detailed below:

- Simulation is a didactic strategy that favors the training of education professionals in various areas of knowledge. Through this strategy, empathic processes that allow the protagonists to assume roles similar to those that they must assume in reality are carried out, and therefore, appropriate the role, knowledge, attitudes and skills that the environment requires to perform effectively.
- The students (teachers in training) when performing the simulations were able to observe the effectiveness of the various teaching strategies collected through the documentary review, which were effectively implemented by the entire class group. This in itself expresses a new conception of teaching practices which aim to develop novel learning experiences in the classroom, thus facing the traditional methodologies with which social science learning processes are carried out on a daily basis in Secondary education
- The role of the tutor is essential in the process of training social science teachers. In this case, the role of the team of research teachers consisted of providing constant feedback to the students, this with the aim of positioning them against the development of the ten competences proposed in the development of the subject.
- The teacher is an investigator of their pedagogical practice and the external limitations are nothing more than reasons to undertake a new pedagogical innovation that leads to achieving the previously proposed ends. Knowing this, it is essential that our teaching practices are accompanied by new methodological incorporations that lead to the same ends or that allow us to improve the quality of learning.

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