

# TEACHER AT DISTANCE LEARNING ACTION IN THE GRADUATION OF STUDENTS IN SEMIPRESENTIAL CHEMISTRY COURSE

FORTALEZA – CE – MAY – 2015

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Scientific research  
College education  
Professional Development and Support to Teaching Staff  
Study Report Completed

## Abstract

*One of the main activities on Chemistry II Teaching Practice in the semipresential Chemistry Course Degree at UFC Virtual Institute of the Federal University of Ceara is the Supervised Internship, consisting of two parts: Observation Stage and Regency Stage, steps in which students of Distance Education begin their teaching practice. The methodology used was the application of a questionnaire by these students during a class at the Regency Stage to the students of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year at Cornelius Diogenes High School in Jaguaribe, Ceara State, on the knowledge of materials that are used at school, at home, in day-to-day activities and in Biomedicine, which are related to Chemistry. After analyzing the results, it was found that the age of the high school students ranged from 14-19 years, 15-22 years and 16-21 years, the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year, respectively. The ten questions questionnaire showed that these students have knowledge of materials, newly discovered or developed and the ones that are already known for long time. The students had shown to have good knowledge of several of these materials. This work is the result of research carried out by students of distance education, and its main objective was the teaching practice, starting point for future graduates in Chemistry.*

**Key words:** teaching practice, questionnaire, materials, research, distance education

## 1 – Introduction

Teaching chemistry in recent decades has been a challenge for teachers, because of the negative results of the official assessment tools used, such as Vestibular, ENEM, ENADE, among others. This occurs due to the lack of information of students, as well as the society about the chemistry and chemical products, which grow every day.

Maldaner (1999 and 2000), points to the initial and continuing teacher education, especially basic education, and more specifically high school and teacher training courses. Assuming that teacher training takes place in a permanent process, including their school experience, initial training and work options, the researcher draws attention that this experience can create a restricted and very simplified idea of the teaching profession, "a spontaneous image of teaching, for which just a good knowledge of the matter, something practical and some psycho-pedagogical complements" (Maldaner, 1999, p. 289).

Schnetzler (2002), presents the "state of art" on the research in Teaching chemistry in Brazil, considering important the meetings, publications, changes and trends that have occurred over the decades. Despite of writing a large number of researches that have been performed, the author states that "the contributions of research to the improvement of the teaching-learning process did not reach the majority of teachers who, in fact, make things happen teaching in schools in this huge country. "

Silva and Spanhol (2014, p. 5) state that "a didactic material that promotes learning needs to awaken the student interest, especially when we talk about distance education (DE). In distance mode the material is indispensable in teaching mediation; it is often the only mediator. The content needs to be organized linking up in some way with the life of the student and his previous experiences, it contributes to the student learning and motivates him/her for such process. "(Maldaner, 1999, p. 289).

Students from the Semipresential Chemistry Degree at UFC Virtual Institute of the Federal University of Ceara, during the Teaching Practice Course in Chemistry II, perform one of the main activities, supervised training,

which consists of two parts: observation stage, in which the student initially follows the lesson subject of the school and the Regency stage where the student of Distance Education Course prepares a class program content, according to the school program, preparing the Lesson Plan. This student is accompanied by the subject teacher, and the same is then assessed on his/her role as a future teacher in Chemistry.

One goal of this research was to analyze through questionnaires applied by the students from Teaching Practice Course in Chemistry II, under the orientation of a Distance Tutor on the knowledge that students of the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> years of high school have about the materials, as well as the newly discovered or developed materials such as prostheses, pins, contact lenses and heart stents, used in biomedicine, and the already well-known as aluminum, stainless steel, wood, clay, glass, gypsum, gold, iron, silver, cement, plastics, ceramics, among others. Thus, it is considered important that the high school student has knowledge of these materials and their application.

It is important to add that the students of distance course, can have the same aspirations that students of classroom teaching on the presentation of papers at Symposia, Meetings, National or International Conferences. The Distance tutor incentive was the main reason for the achievement of this work, as well as the dedication of the Discipline students to apply the questionnaires to the students during the Supervised Internship, which was held for two months in High Schools in Jaguaribe city, Ceara State, a mandatory activity of this Discipline.

Finally, this work has contributed to the students of Semipresential Chemistry Degree to have the opportunity to perform a research at a High School during the Supervised Internship.

## **2 – Methodology**

This research is characterized as qualitative and quantitative. It was developed by students of the Teaching Practice Course in Chemistry II of the Semipresential Chemistry Course Degree at UFC Virtual Institute of the Federal University of Ceara, under the guidance of a Distance Tutor Distance.

The Teaching Practice discipline in Chemistry II was initiated in late January this year, being completed in early June 2015. In the first In-Person Meetings the Distance Tutor sought to educate students about the importance of papers presented at conferences, symposia, meetings etc., in the Chemistry area or education in chemistry, including distance education, with the possibility of later having articles published in national or international journals. Taking into account the interest of students, the Distance Tutor prepared a questionnaire to be applied to students of the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> at High Schools, during the Supervised Internship on that discipline.

Students of Distance Education, during the Supervised Internship, applied the questionnaire in the classroom to students of Cornelius Diogenes High School in Jaguaribe city, Ceara State, Brazil, at 300 km from Fortaleza.

The research was initially carried out requesting the students to identify the age, sex and occupation, in addition to studying. The follow-up, a questionnaire of ten questions, four "yes or no" questions and six multiple choices, on the students' knowledge of the materials, used at home, at school, in day-to-day and Biomedicine. The questionnaire was administered to 64 students, as follows: 31 students from the 1<sup>st</sup>, 12 students from the 2<sup>nd</sup>, and 21 students from the 3<sup>rd</sup> year of high school, aged between 14-19, 15-22 and 16-21 years old, respectively.

Regarding the four "yes or no" questions, the students had the opportunity to respond on the importance of studying chemistry, to identify materials used in the classroom and if they would like to have practical classes in High School.

On regards to the six multiple-choice questions, each student answered on the knowledge of materials used in day-to-day, either at your school, at home etc. and more modern materials such as those used in Biomedicine.

### **3 – Results and Discussion)**

For the analysis of the results on the identification of the students is presented, in Table 1, the students age 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year of high school and the percentage of their ages.

School year	Age								
	14	15	16	17	18	19	20	21	22
1 <sup>st</sup> (31 students)	12,90%	19,35%	22,58%	22,58%	19,35%	3,22%	-	-	-
2 <sup>nd</sup> (12 students)	-	16,66%	41,66%	16,66%	8,33%	-	8,33%	-	8,33%
3 <sup>rd</sup> (21 students)	-	-	9,52%	42,85%	9,52%	23,80%	4,76%	9,52%	-

**Table 1.** Percentage Ratio of the age of the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year students, in response to the questionnaires applied

Checking Table 1, those surveyed 64 students, 31 of the 1<sup>st</sup>, 12 of the 2<sup>nd</sup>, and 21 of the 3<sup>rd</sup> year of high school, the age ranged from 14 to 19, 15 to 22 and 16 to 21, respectively.

Table 2 shows the age of the students of the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year of high school and the number of students, whether male or female.

School Year	Age / Sex (%)																	
	14		15		16		17		18		19		20		21		22	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
1 <sup>st</sup> (31 students)	3	1	3	3	4	3	4	3	2	4	-	1	-	-	-	-	-	-
2 <sup>nd</sup> (12 students)	-	-	2	-	4	1	2	-	-	1	-	-	1	-	-	-	1	-
3 <sup>rd</sup> (21 students)	-	-	-	-	2	-	4	5	-	2	3	2	1	-	1	1	-	-

**Table 2.** Age of the students of the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year of high school and the number of students, whether male or female

It is observed in Table 2 that, of the 31 students of the 1<sup>st</sup> year, 16 are female and 15 male, 12 students of the 2<sup>nd</sup> Year, 10 are female and 2 male and 21 of the 3<sup>rd</sup> Year, 11 are female and 10 male.

Regarding the question whether students, in addition to studying, also worked, 12.90% students of the 1<sup>st</sup>, 14.28% of the 3<sup>rd</sup>, said yes.

On regards to the first four "yes or no" questions, is presented in Table 3, the results analyzed. It was found that most students responded that they consider important to study Chemistry; they also said to live with Chemistry day-to-day, that in school there are materials related to chemistry and would like to

have practical lessons in chemistry. This shows that students in general are interested in learning chemistry (Appendix 1).

Questions (n°)	1st Year (31 Students)		2nd Year (12 Students)		3rd Year (21 Students)	
	YES	NO	YES	NO	YES	NO
1	96,77%	3,23%	100%	-	95,23%	4,77%
2	83,87%	16,13%	100%	-	90,47%	9,53%
3	87,09%	12,91%	100%	-	90,47%	9,53%
4	93,54%	6,46%	100%	-	100%	-

**Table 3.** Data on the answers "yes or no" questions 1-4 of the questionnaire administered to students of the 1st., 2nd. and 3rd. year of Cornelius Diogenes High School.

In the six multiple-choice questions on the knowledge of materials generally used in daily life, questions were asked citing that the most used at home, such as aluminum and glass, in the classroom, such as wood and plaster, construction, like cement and sand, metals like gold and silver, among others; as well as the materials used in biomedicine, such as contact lenses and prosthesis, whose results are presented in Table 4 (Appendix 1).

Questions (n°)	1st YEAR (%) (31 students)				2nd YEAR (%) (12 students)				3RD year (%) (21 students)			
	a	b	c	d	a	b	c	d	a	b	c	d
5	80,64	35,48	9,67	83,87	66,66	50	8,33	83,33	80,95	28,57	-	76,19
6	87,09	19,35	9,67	48,38	100	33,33	25	58,33	100	4,76	-	47,61
7	25,80	38,70	80,64	12,90	66,66	66,66	91,66	8,33	28,57	23,80	85,71	9,52
8	83,87	70,96	64,51	35,48	100	83,33	83,33	50	100	38,09	90,47	28,57
9	22,58	3,22	25,80	90,32	25	8,33	8,33	83,33	23,80	4,76	33,33	85,71

10	64,51	48,38	16,12	16,12	33,33	58,33	33,33	33,33	38,09	42,85	38,09	23,80
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**Table 4.** Data on the answers of multiple choice questions 5-10 on the knowledge questionnaire of materials applied to the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year students of Cornelius Diogenes High School.

It is necessary to explain that in the multiple choice questions, students could respond for more than one item, so the percentages are based on the number of students per class and in accordance with the "a, b, c and d."

It is also important to clarify that students were not identified, assuring them the guarantee of anonymity and the freedom to participate.

#### 4 – Conclusions

The analysis of information based on the questionnaire applied by students of the Teaching Practice Course in Chemistry II, to students at Cornelius Diogenes High School in Jaguaribe city, Ceara State, Brazil showed that students of the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year, a total of 64 students, most consider important to study chemistry in high school, that Chemistry is part of day-to-day in his house, at school there are various materials related to chemistry and would like to have practical classes at the school.

Regarding the multiple choice questions, students responded that in their home there are materials such as aluminum and glass, that the school has materials like wood and plaster. In construction, students know that the cement is the most widely used material. In biomedicine, most students said they know about the existence of contact lenses and prosthesis.

This work is considered extremely important for students of Teaching Practice Course in Chemistry II Semipresential Course Degree at UFC Virtual Institute of the Federal University of Ceara because it enabled them during the supervised internship, apply a questionnaire to High School students on the knowledge of materials, and make them aware of living with chemistry in day-to-day, whether at school, at home, at work and in the application of medicine, among others, giving a contribution on the Chemistry Teaching, mainly as a teaching practice for future graduates in Chemistry in Distance Education.

## 5 – Annex 1 - Questionnaire applied to students

**Question 1:** Do you consider important to study chemistry in high school?

**Question 2:** Do you think you live with chemistry on a day-to-day?

**Question 3:** Do you think are there materials related to chemistry at your school?

**Question 4:** Would you like to have practical lessons in chemistry in your school?

**Question 5:** Which material listed below do you believe to have in the tools used at your home?

a) Aluminium ( ) b) Stainless steel ( ) c) Clay ( ) d) Glass ( )

**Question 6:** Which of the materials below are present in your classroom?

a) Wood ( ) b) Aluminium ( ) c) Plaster ( ) d) Plastic ( )

**Question 7:** Among the materials below, which would easily identify?

a) Gold ( ) b) Silver ( ) c) Iron ( ) d) Gemstone ( )

**Question 8:** Which of these materials used in the building construction you know?

a) Cement ( ) b) Ceramics ( ) c) Cal ( ) d) Marble ( )

**Question 9:** Which objects below can be composed by the metals gold and silver?

a) Iron Bar ( ) b) Headset ( ) c) Pressure Cooker ( ) d) Jewelry & Watches ( )

**Question 10:** Which of these materials used in biomedicine do you know?

a) Contacts ( ) b) Prostheses ( ) c) Pins ( ) d) cardiac stents



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