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**Resident-as-Teacher workshop impact on Intensive Care Medicine Residents'
perception of their teaching skills**

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Dissertation submitted in fulfilment of the requirements for the
Degree of Doctor of Education (Ed.D)

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Abstract

This dissertation considers the impact of a teaching workshop concerning twenty-five medical residents' perceptions of teaching skills, with the objective of analysing how these perceptions influence their professional development, patients' care, communication skills and patients' safety management, and inquiring whether during their medical training they have had a previous experience of teaching either with students or other residents. A **purposive sampling method** was used to select twenty-five residents who were interviewed before and after a sixteen-hour Resident-as-Teacher workshop given at Luis Vernaza Hospital in Guayaquil, Ecuador. The workshop was divided in two eight-hour sessions during a weekend. Semi-structured interviews were held in the Department of Education of Hospital Luis Vernaza, five open questions were asked to interviewees, all related to Residents as Teachers' activities and how their perception on their teaching skills would influence them and their patients in the future. The findings after analysing pre and post-workshop interviews suggested that students benefited from their participation in a Resident-as-Teacher workshop, since, at the end of the study they could more accurately understand and explain the importance of teaching as a learning tool for them and their peers, as well as feel more confident about their ability to transmit knowledge and be able to explain the uses of teaching skills for the improvement of patients' care, and their professional development. An increase in Residents' motivation to practice peer-teaching was observed, and also the findings evidenced enhanced student understanding, more advanced autonomy and a proactive behaviour in patients' safety and communications skills. The research leads to suggestions with regards to implications for practice of teachers and policy makers for the inclusion of teaching skills training in medical school curricula as well as directions for future research.

Dedication

To my dear Nirita-

Who was the real support and motivation for me to reach this goal, with her patience, her love and mainly with her presence.

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Author's Declaration

I declare that, except where explicit reference is made to the contribution of others, this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Signature:

Printed name Rodolfo Farfan

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Chapter 1

Introduction

In this chapter I will explain the origin and structure of Medical Specialities, specialised studies that are part of physicians' training in specialised hospitals according to the branch of medicine in which they are being formed. In particular the speciality: Intensive Care Medicine, which is part of the structure of this research.

1.1 Defining Concepts

1.1.1 Medical Specialities

A medical speciality is a branch of medical practice. After completing medical school, physicians usually further their medical education in a specific speciality of medicine by completing three to five years of residency to become a medical specialist (CES, 2013). When a physician in any part of the world, initiates his medical speciality training he/she receives the rank of R1 (Resident 1) afterwards; this rank increases each year to R2, R3, R4 of R5, depending on the years of study of the speciality program.

These speciality programs have two working scenarios that medical residents share:

1. Activities related to patient bedside visits and rounds which physicians and residents' attend and enter into formal discussions evaluating cases, learning "key teaching points" from assessment of hospitalised or ambulatory patients. These medical discussions are always led by an attending physician who is part of the hospital's staff.
2. Activities related to emergency room patients. In this case residents are working in the Emergency Room most of the time and medical specialists who are part of the staff are "on call". During these activities, medical residents form the frontline of medical educators. R1 (Residents in the first level) receive instructions and explanations from R2 (Residents in the second level), and both R1 and R2 are instructed by R3 and R4 (Residents in the third and fourth level).

In both scenarios, medical residents have a unique relationship between each other and with medical students. This relationship is known as "near-peer teachers" (NPT), where resident-teachers are ideally placed to pass on their knowledge and experience to more junior learners. Bulte *et al.* (2007), defined a near-peer:

"As a trainee who is one or more years senior to another trainee on the same level of medical education training"

These researchers carried out a study to investigate medical students' perceptions regarding near-peer teaching and near-peer learning in order to identify relevant teacher roles for near-peer teachers at two institutions from two different countries. They concluded that near-peer teaching during medical training appears to be an important curricular consideration. Snell (2011) argues that the impact of effective resident teaching goes beyond medical students and includes effects on

patients but has particular benefits for the residents themselves and the systems in which they work and learn.

A Medical Residency Program is a fundamental element in the healthcare-educational process of Medical Schools. It is necessary to promote the professional development of this facet of Residents and also develop educational interventions on the subject and design instruments to assess its impact on residents, physicians, patients and hospitals. These interventions and instruments must be based on the best available scientific evidence, taking into account the contexts and availability of resources, to progressively professionalise the educational activities we carry out in medical schools and health care institutions. As a principal of Hospital Luis Vernaza' Education Department, with around 200 residents training and learning in different specialities under my direction, I understand the importance of filling this gap in residents' teaching knowledge in order to improve their professional decisions, patients' care and communication skills, and to ensure that the medical knowledge that they are acquiring is consolidated during their professional training. In concordance with this, my study: **Resident-As-Teacher workshop impact on Intensive Care Medicine Residents' perception of their teaching skills** seems to be appropriate to inquire and collect data that will contribute to gain more knowledge on this topic.

1.1.2 Intensive Care Medicine

Intensive care medicine (ICM) - or critical care medicine (CCM) - is a branch of medicine concerned with the diagnosis and management of serious health conditions requiring sophisticated organ's support and invasive monitoring. Patients that are requiring to be hospitalised in an intensive care unit may require support for hemodynamic instability such as hypertension or hypotension and airway

or respiratory compromise, such as ventilator support, acute renal failure, potentially lethal cardiac arrhythmias, or the cumulative effects of multiple organs failure, more commonly known as Multiple Organ Dysfunction Syndrome¹. These patients may also be admitted for intensive/invasive monitoring, for example during the crucial hours after major surgery when they are too unstable to be transferred to a less intensively monitored unit. An Intensive Care Medicine residency program is a relatively new but increasingly important four years' program where physicians on training are referred to as "intensivists" taking care for hospitalised patients in an intensive care unit and may play a major role in teaching and research (CES, 2013).

1.1.3 Concepts and characteristics of Intensive Care Medicine (ICM) ²

Intensive Care Medicine (ICM) is a speciality dedicated to the diagnosis, monitoring and treatment of clinical or surgical critically ill patients in an integral and multidisciplinary manner (Meeting of experts for consensus building on critical medicine, training and accreditation of specialists and units of critical medicine and intensive care, Quito-Ecuador, 2002). Intensive Care Unit (ICU) is the hospitalisation unit for patients of any age who are in a current or imminent critical state, with possibilities of partial or total recovery, who require permanent and constant comprehensive medical and nursing services for their treatment and sometimes for their survival, and in addition equipment and instruments that ensure adequate control of patient treatment (Argentine Society of Intensive Therapy, 2001).

¹ Multiple dysfunction syndrome is the presence of altered organ function in acutely ill patients such that homeostasis cannot be maintained without intervention. It usually involves two or more organ systems. It calls for an immediate intervention.

² Critical Medicine or Intensive Care Medicine are synonymous to call this medical speciality.

Patients that are in an ICU are usually at risk of death or recovering from life-threatening diseases or serious health situations, because of a failure of one or more of the body's organ systems. Medical attention in this unit includes the provision of organ system support, the investigation, diagnosis, and treatment of acute illness, systems management and patient safety, ethics, end-of-life care, and the support of families and social workers. ICM comprises a constellation of knowledge and practice that is also part of a variety of other specialties. The ICM's specialist transcend the traditional borders of medical specialties bringing all these competencies together in one specialist who develops a unique approach to critical illness. Intensive Care Medicine specialists are therefore medical experts in:

- Resuscitation
- Advanced physiological monitoring
- Provision of advanced organ support (often multiple)
- Diagnosis and disease management in the context of the most gravely ill patients in the hospital
- Provision of symptom control
- Management and support of the family of the critically ill patient
- End of life care
- Collaboratively leading the intensive care team
- Coordination of specialist and multi-speciality input to complicated clinical cases in the unique context of intensive care.

These specialists work in Intensive Care Units (ICUs), which are hospital areas in which increased concentration of specially trained staff and monitoring equipment allows more detailed and more frequent monitoring and interventions for a seriously ill patient. Whilst practitioners may be working in Intensive Care and High

Dependency Units their range of referral practice includes most of the modern acute hospital. Within a single day, intensivists may find themselves involved in the care of patients ranging from the young to the very old; encompassing locations as diverse as the Emergency Department and the day case surgery unit (Tooke, 2008). Management of intensive care patients, by doctors who are specialists in Intensive Care Medicine has been demonstrated to have a significant beneficial influence on patients' outcomes with a decrease in mortality and a reduction of complications.

1.1.4 Critically Ill patient

Critically ill patients are defined by the current or probable existence of an alteration in the function of one or more organs or systems, a situation that may compromise their survival at some time during their medical evolution, so death is always a possible and eventually close alternative. The critical nature of a condition may occur at the beginning, during the course or at the end of any illness. (Argentine Society of Intensive Therapy, 2001). Critically ill patients are the common type of patients admitted in ICUs and being cared by ICU's residents.

1.1.5 Vital Support

Vital or life support is any technique or treatment that applied to the body can replace the physiological function of an organ, when its affectation endangers life. This method usually uses specialised instruments for life support ranging from mechanical ventilation and hemodynamic support to oxygen therapy, nutrition and parenteral hydration (SATI, 2001).

1.2 Historical Background

Medical specialities were not part of postgraduate medical education in Ecuador until 1971, during Jose Maria Velasco Ibarra's presidency, when an important support ordered by the government, was given to universities and medical programs. This gap occurred because of the poor financial budget for health education that previous Ecuadorian government assigned before 1971. During this period, medical students had to choose different options for medical specialisations in USA or Europe. The first medical speciality program in Ecuador was Paediatrics, a three-year program created to train physicians to become paediatricians, intended to provide preventive health maintenance for healthy children and medical care for children who are acutely or chronically ill. Many physicians were included in the Paediatric Speciality Program taught by Central University of Quito, Ecuador (Estrella, 2004); after this, other medical specialties were offered by Ecuadorian Universities such as General Surgery, Internal Medicine and Gynaecology. In 2008, Ecuador's Minister of Health interrupted authorisations for medical specialities; this decision was taken because of the restructuring of teaching hospitals in the country and also because of the enforcement of new policies and regulations for universities such as Higher Education Organic Law (LOES) that determined new academic and technical conditions for postgraduate medical residency programs. This law ordered the accreditation of universities by the Evaluation, Accreditation and Quality Assurance Council (CEAACES); during this process, twenty-four universities were audited and fourteen universities were considered not qualified to offer medical specialties³. The parameters that authorities considered for the accreditation of a university were socialised through a Government's resolution stating the requirements that universities must accomplish in order to be accredited. (CES, 2012). The Council for Evaluation, Accreditation and Quality Assurance of Higher Education (CEAACES) adopted five evaluation criteria: **Academy, Academic**

³ <http://www.ceaaces.gob.ec>

Efficiency, Research, Organization and Infrastructure, to evaluate, accredit and categorize three universities that offer postgraduate courses, forty-two that offer undergraduate and graduate, and nine universities that only offer undergraduate (third level) courses. These criteria were applied according to the following concepts (CEAACES, 2013):

Academy

The Academy criterion refers to the fundamental conditions for the exercise of a quality university teaching, taking into account that the university teaching community must become a true scientific, professional and artistic community, with authority, recognition, legitimacy, dedication and the proper autonomy protection. This evaluation criteria are based on the idea that the quality of education provided in Higher Education Institutions is related to the academic training of teachers, their time of dedication, their institutionalization, the rights of teachers and their relationships with the university. This criterion has three sub-criteria: Postgraduate, Dedication and Teaching Career and in total it has fourteen indicators, which are ranked in the afore mentioned document.

Academic Efficiency

The Academic Efficiency criterion allows evaluators to determine the retention rates and terminal efficiency that Higher Education Institutions (HEI) obtain as a result of the strategies established to support and accompany their students throughout the educational process. This criterion arises from the idea that universities are responsible for the accompaniment of their students from the initial instances until they have completed all their credits and are ready to begin their professional work. The criteria have the following indicators: Terminal efficiency, Postgraduate terminal efficiency, Admission to undergraduate studies, Admission to postgraduate studies and Initial degree retention rate. In the case of institutions

that offer only degree careers, this criterion considers the indicators of: Efficiency terminal degree, Initial retention rate degree and Admission to degree studies; for institutions that offer only graduate programs, this criterion considers the indicators: Postgraduate terminal efficiency and Admission to postgraduate studies.

Investigation

This research criterion, within the institutional evaluation model, allows evaluators to establish the level that the universities and polytechnic schools of the Higher Education System (HES) have reached in the generation of new knowledge through scientific research, which constitutes one of its main activities. In the same way, this criterion allows establishing the impact levels of the publications that this research has achieved. This criterion has four indicators: Research planning, Regional research, Scientific production and peer-reviewed books.

Organisation

In terms of Organisation, the conceptual framework of the present model applied by CEAACES looks to the Institution of Higher Education as a system that interacts with society and perform the activities that are necessary for the fulfilment of the functions of the System of Higher Education (SHE). Regarding the interaction of these institutions with society, this sub-criterion also assesses the students' activities that could help communities to solve social problems. Regarding the legal provisions that define higher education as a right of the people and a social public good (Art. 66 of the Constitution and Art. 3 of the LOES⁴) and that establish that HEI are non-profit institutions (Art. 75 of the Constitution and Art. 161 of the LOES) this criterion requires that universities demonstrate social responsibility in the allocation and use of their resources, in the impact of society relationships

⁴ Higher Education Organic Law

programs, a transparent management of information, quality of expenditure and application of the corresponding regulations. The four sub-criteria associated with these requirements have been determined as: Relationship with the community, Transparency, Internal Management and Regulation, which comprise a total of ten indicators.

Infrastructure

The Infrastructure criterion allows authorities to evaluate the conditions offered by Higher Education Institutions for the performance of academic work. This criterion is focused on the functionality and characteristics of the facilities and the pedagogical spaces considered essential to support teachers and students in the development of teaching and learning processes. The sub-criteria are: Libraries, ICT and Teaching Spaces, and the indicators: Quality of the classrooms and Spaces of Ill-being, allow to evaluate the adequacy of the Infrastructure to the academic needs.

In 2013, higher education's regulators resumed authorisations for postgraduate medical programs after an exhaustive analysis and reform of policies and regulations. Universities and teaching hospitals started to offer these programs in a variety of medical specialties with the attendance of hundreds of medical residents. This situation brought about the need to train medical educators in order to assure the quality of medical programs. The Ecuadorian government's decision was well received by the population as a whole and by medical community, given that the need for such medical specialists was imperative. To illustrate this fact, I will mention that the last medical population census undertaken in 2010 counted 24,000 physicians in Ecuador, among them, 16,500 did not have medical speciality (INEC, 2011). Furthermore, the Pan-American Health Organisation (PAHO) stated that the need of specialists in Ecuador was twenty-six specialists for every 10,000 people but the country currently has only seventeen specialists for every 10,000

people (El Mercurio, 2013). This situation has not been resolved by the authorities, even though there are forty new hospitals that were built in the main provinces of the country and are giving medical attention to the population (Andes, 2017). Having this number of hospitals, the need of specialists increases significantly. The Minister of Health opened a call for 1500 specialists in some medical specialities such as surgery, internal medicine, anaesthesia, paediatrics and others (Expreso S.A., 2017). In response to these needs, medical schools and hospitals are working together in order to train the number of specialists that the country requires for the next ten years. One of this Institutions is Hospital Luis Vernaza, where I work as Director of Medical Education administrating around ten specialist medical programs; one of these is the Intensive Care Postgraduate Program for Medical Residents, speciality that I chose to study the impact of a Resident-as-teacher workshop in residents' perception about their teaching skills. In my investigation I will study twenty-five Intensive Care Residents working in Hospital Luis Vernaza. I will be explaining this program later in in the next chapters.

1.3 Location of the study

This study took place in Luis Vernaza Hospital, situated in Guayaquil, Ecuador and include residents being trained in Intensive Care Medicine under Espiritu Santo University Postgraduate Specialist Program. I decided to make the study in Hospital Luis Vernaza because as Director of Medical Education I have a close view of resident's work and performance; it is also an appropriated place to teach the Resident-as-Teacher workshop planned for this study because being the same hospital where residents are working day to day is easy for them to attend the workshop. The Intensive Care residency program has twelve residents in each of the four Residency Levels (R1, R2, R3, R4). Luis Vernaza Hospital is a teaching hospital with around twelve different programs in medical specialties and two hundred medical residents that are enrolled in three to four years' speciality programs.

1.4 Importance and professional relevance of the research topic

Healthcare and educational process in health institutions involves various actors, one of them is the Medical Resident. This group of “in training” physicians simultaneously develops two different roles, as student of a university’s specialisation postgraduate program and as health professionals employed by hospital institutions. Focusing in the research topic which is related with medical residents’ teaching skills, it is necessary to reflect on the progress and obstacles that medical residents’ teaching role has in the current scenario of medical education and Hospital’s practice. Teaching activities within Medical Residencies have benefits not only for students but also for residents, medical education and residency system. One-third of medical students learning in the clinical setting work with residents who are close enough to them to understand the optimal approach for their learning process. This is also positive for Residents, some researchers report that medical residents that teach during their medical activities, have increased enthusiasm for teaching and greater job satisfaction (Snell, 2011) and also there is evidence that shows that they tend to have better knowledge acquisition and patient’s care performance. Additionally, this author sustains that the system gets benefit from this practice because residents with effective teaching skills may have a positive effect on medical decisions and patients’ safety.

There is a concern related with the possibility that residents do not address all medical students’ learning objectives or that they are not prepared to teach. About this matter, some authors recommend programs that must be included in Medical Schools’ curriculum, to ensure that residents are prepared to teach in all the common content areas and key competencies needed by the students (Marton, et al., 2015); (Fugill, 2005). Under this consideration there is a doubtless importance of teaching for medical residents; consequently, the activities and programs that

have been designed to improve Residents' teaching skills are varied, these will be explained in subsequent chapters.

1.4 Study questions and Objectives.

My central research question was:

- **What is the impact of a Resident-as-Teacher workshop on Intensive Care Medicine Residents' perception of their teaching skills?**

This central research question was further refined into a set of more specific research questions which guided me for the design of the interviews and posteriorly the analysis of themes and categories (see chapter five):

- **What do you know about residents teaching activities? What is your experience in medical teaching?**
- **What could be a way that teaching could improve your medical practice?**
- **How could the resident's teaching influence on patient care?**
- **In what way teaching would influence your communication skills?**

The objectives of my study were:

1. To determine Medical Residents' perception of their teaching skills before and after taken a specialised workshop.

2. To find out if there is a significant difference on Medical Residents' perception of their teaching skills after taken a specialised workshop.
3. To know how Medical Residents' perception of their teaching skills will influence their medical performance during their residency program.
4. To determine the importance of the implementation of a medical teaching workshop in postgraduate medical residency programs.

The answer for the study question and fulfilment of the objectives would be taken from the contextual analysis of the interviews made to the group of residents that would be part of this research. These answers would allow me to have a clear idea of participants' thoughts and feelings about the research topic and to draw conclusions that would help for the implementation of a Resident-as-Teacher program in futures postgraduate medical specialities in Ecuador.

1.5 Rationale

"Teaching is learning twice" (Joubert, 1899)

"Corollary: To teach Ill is to learn twice Ill" (Whitman & Schwenk, 1984)

Before I start explaining the Rationale of my Dissertation, I asked myself the following question:

What do the following scenarios have in common?

- “A second-year (R2) surgery resident performs his first laparoscopic cholecystectomy, and finds that the procedure is more complicated than he/she thought. A third-year (R3) resident on duty, goes to the operating room to support him, lets him continue the surgery under observation and conduct it step by step, explaining the technical details that do not come in the textbook.”
- “A first-year paediatric resident (R1) explains the ventilation procedure with a bag-valve-mask for neonatal resuscitation to an internal medical student⁵, before they both participate in the care of a high-risk delivery.
- “A third-year (R3) emergency medicine resident provides formative feedback to a first-year (R1) internal medicine resident, after a patient complained of not receiving appropriate medical care.”
- “The head of the Urology Department has to leave the hospital for an emergency, and instructs the resident to replace him to give the class to the fourth-year students of the medical school.”

The above scenarios have several factors in common: they often occur in hospitals; they imply that the medical residents play an educational role as teachers; they are varied in terms of context and characteristics of the students; they often occur spontaneously and in an unplanned way. In general, medical residents have not received formal training in teaching, they perform these activities intuitively or imitating their teachers or older residents and can significantly positively affect the quality of medical care, patient safety and clinical outcomes. As a consequence of all these factors it is necessary to explain medical residents' teaching role and

⁵ Internal students are undergraduate medical students that are doing their internship before they could make a postgraduate medical specialisation.

reflect critically on the subject. The medical doctor's educational process is as old as medicine itself, it is implicit in the Hippocratic oath, which in its lines verses:

“...to consider his family as my own brothers, and to teach them this art, if they want to learn it, without fee or indenture; to impart precept, oral instruction, and all other instruction to my own sons, the sons of my teacher, and to indentured pupils who have taken the physician's oath, but to nobody else.” (Mc Master University, 2019).

This is probably the first writing that highlights and formally recognises the importance of physician's teaching activity. There are numerous references in the popular literature regarding the role of physicians as professor and mentor of medical apprentices (Barbado-Hernández, 2007). In the twentieth century, as medical residences were instituted as the way to achieve specialisation, the educational work that occurs in health institutions has fallen largely on medical residents. Medical practice has an implicit continuous learning process along with a constant exercise of communication skills with patients, patient's relatives and other members of medical community. The role of the medical teacher in a medical speciality program is of great importance because teaching represents a significant part of the daily activities that residents do with their lower rank peers and with medical students.

According to (Jarvis-Selinger, *et al.*, 2011):

“Physicians must be effective teachers in order to fulfil their responsibilities of communicating with patients, working in teams, sharing knowledge with the public, disseminating research findings and teaching both medical students and other resident colleagues” (p.3).

On the other hand, residents are the primary teachers of medical students and lower rank residents; they spend approximately 20% of their time in teaching-

related activities. Teaching to junior residents and medical students is a major responsibility of medical residents, however less than 50% of residents had ever received learning or methods of instruction, indeed, teaching or instruction training are generally not included in medical specialities programs, this causes that the extent and quality of their teaching tends to be variable (Ostapchuk, 2010). As a consequence of the above, there is a deficit of formal training in teaching among medical residents. This may be due to a lack of recognition of the significant contribution of teaching to the quality of postgraduate medical training (Armstrong, et al., 2004). Residents who start interacting and creating close relationships with medical students and their peers assume more responsibility for clinical teaching. However, little attention has been directed to the development of effective teaching skills in medical postgraduate residency programs (Jewet, et al., 1982). Two thirds of medical resident report that they have received more than 40 % of their training and learning process from their higher rank peers but these teaching activities are usually performed without a formal instruction (Elliot, et al., 1999). What are Universities doing about this? As I shall see, several education models and tools are being used to enhance effectiveness of teaching in medical programs. It has become clear that resident physicians provide a great deal of teaching for medical students using the informal curriculum (Morrison, *et al.*, 2014).

1.6 Aim

The aim of my Dissertation is to determine the impact of a Resident-as-Teacher workshop in Intensive Care Medicine Residents' perception about their teaching skills. This workshop will offer Medical Residents the opportunity to understand the importance of teaching in their medical residency programs and to handle the tools to enhance their abilities for teaching and to enhance their commitment to be engaged in a Resident-as-Teacher Program.

In this chapter I have reviewed that during Medical Residents training; there is a strong exercise of teaching activity that constitutes an important step to allow Medical Residents to develop their diagnosis and treatment performance and to improve their communication skills and their perception of the needs of their patients improving patients' care results. In the next chapter I will review the literature that has been written about it.

Chapter 2

Literature Review

2.1 Adult Education

2.1.1 What is meant by Adult?

Following the explanations of Knowles (Merriam, 2001) there are at least four viable definitions of adult:

1. Biologically we become adults when we reach the age when we are able to reproduce.
2. Legally we are adults when we reach the age at which the right to vote is acquired, a driver's license is obtained, or it is possible to marry without the consent of parents and others.
3. Socially we are adults since we began to perform adult functions: worker, spouse, father and others.

4. Psychologically we reach adulthood by forming a self-concept of beings responsible for our own life and government.

Of these four definitions, the psychological definition of adult is the one that I will use to investigate the field of higher education at the postgraduate level. It seems that the process of acquiring a self-concept, a self-direction, begins and increases progressively as we mature biologically, when we begin to take our place as adults and take responsibility for our decisions. Since humanity ancient times, adult education has been a reality. It can be mentioned ancient adult teachers like: Confucius and Lao Tse, in China; the Hebrew prophets and Jesus in biblical times; Socrates, Plato and Aristotle in Ancient Greece; Cicero, Evelio and Quintiliano in Ancient Rome. However, until a few decades ago it was scarce thoughts, research and written literature about adult learning.

2.1.2 Andragogy

Although the term "andragogy" was first used in 1833 by the German, Alexander Kapp, and it became popular as a concept in central and eastern Europe, especially Hungary, US scholars such as Malcolm Knowles introduced it to a wider audience from the mid-1960s onwards. Since then, an extensive literature concerning the concept in adult education literature has emerged. Lindeman wrote:

"I conceive adult education as a new learning technique, an essential technique, both for university graduates and for non-literate manual workers" Lindeman, cited by Knowles (2001, p. 43)

The androgynous process helps adult learners become aware of their experiences and evaluate them. To achieve this, the student cannot begin by studying topics in the hope that someday he/she will use that information; on the contrary, it begins by paying attention to the real situations in which he/she is and the obstacles that he/she must overcome to learn theoretically and practically. Facts and information from the different spheres of knowledge are handled not with the purpose of accumulating them, but with the need to solve problems. According to Knowles, *et al.*, (2001), it is necessary to distinguish between the concepts pedagogy and andragogy: pedagogy guides children, assigns the teacher the responsibility of making decisions about objectives, learning contents, methods, the time that is going to employ and evaluations; while andragogy focuses on adult education and is based on the characteristics of adults, in terms of learning adults:

- a. Need to know why they should know something
- b. Maintain the concept of responsibility for their own decisions
- c. Participate in an educational activity with more experiences and more varied than children
- d. Has the willingness to learn what they need to know to effectively face life and profession situations (skills training)
- e. Focus on life by guiding their learning
- f. Respond better to internal than to external motivations.

2.1.3 Basic Assumptions of Andragogy

Lindeman (1989) founded a systematic theory on adult education identifying some key assumptions as following:

- a. Adults are motivated to learn when they experience needs and interests.
- b. Adults experience is the richest learning resource
- c. Adults have a deep need to self-direct
- d. Individual differences increase with age

Alexander Kapp (1833), in his initial formulation, makes a description that has as its origin his thoughts about the elements of educational theory present in Plato and his own experiences in the Academy. At the beginning of the 20th century, the concept is resumed by Eugen Rosenback (1921) to refer to the set of curricular elements typical of adult education, such as: philosophy, teachers and methods. In the sixties is when the concept is applied with some frequency, both in Europe and in North America, to refer specifically to methods, techniques, purposes and in general, to the entire curriculum designed to carry out comprehensive education in the adult population. After Kapp, Malcolm Knowles, in the United States used the term “andragogy”, at the beginning of the seventies. Knowles (2001) pointed out that adults and children learn differently. His ideas were accepted and they gave way to great investigations. This concept has suffered many criticisms, has been described as a set of assumptions (Knowles, 1989), as a theory (Knowles, 1989), as a series of guidelines (Merriam, 1993) or even a philosophy (Pratt, 1999). The disparity of these positions allows us to observe how adult learning is confusing. Merriam and Caffarella in this regard point out:

“It is doubtful that such a complex phenomenon as the adult learning can be explained with just one theory, model or set of principles. Instead, we have the case of the proverbial elephant that everyone describes in its own way according to which part of the animal it examines. Since 1960, adult educators have formulated their own ideas about their subject and, in particular, about what differs from learning in the childhood. Both approaches remain valid. Apparently, we focus on a multifaceted knowledge

of adult learning that reflects wealth and complexity of the phenomenon". (Merriam & Cafarella, 1999, p. 18)

Like any model, it has great criticisms, for instance: it has been said that this model is omitting certain elements that prevents it from being a defining theory of the discipline of education for adults (Hartre, 1984); (Davenport & Davenport, 1985); (Grace, 1996). Grace, for example, reproaches that andragogy focuses solely on the individual and not on following a social project that critics or debate the relationship between adult education and society. This criticism reflects the goals and purposes of adult education. However, the strength of andragogy is that the set of its principles are applicable to all adult learning situations. Andragogy, understood as adult education, constitutes a new paradigm to the extent that the basis for its conceptualisation still continues to receive new contributions, although its history is not so recent. The alleged differences between andragogy and pedagogy have been the subject of a profuse and inexhaustible debate. On the one hand, andragogy has been presented from different notions and different approaches for more than two centuries. Andragogy can be implemented in literacy programs, adult training in different trades, night schools, business training programs, professional training oriented by higher education centres. Andragogy developed by Knowles emerges at a time of rearrangement of the dominant powers of American society, manifested in education. In front of a centralised educational system, governed by external controls or reinforcers, Knowles pointed out the full freedom of each person to govern their destiny, which includes choosing their own way of learning (Knowles, et al., 2005). Knowles takes from Carl Rogers the Aristotelian notion of entelechy, which means, the tendency of each human being to seek the fulfilling of his own potentialities. According to this principle, the human being, in a favourable social climate, will tend to seek and do what is best for him to achieve his own development. Andragogy approach gained strong momentum through the so-called Nottingham Andragogic Group in the 1980s. Within this context, interested in the process of formation and continuing education of

adult men and women, differentially to the formation of the child, UNESCO resumed the concept of replacing the expression of Pedagogy for adults.

In recent times, great importance has been given to androgynous precepts to identify the way in which learning is processed in adult education so that they could reach the self-sustained and integral development that leads them to position as individuals capable of contributing to professional achievements, personal growth and community and social intervention, based on the premise that education, instead of controlling, has to offer opportunities for people to develop integrally. On the other hand, Knowles assumes, from Kurt Lewin (1942), his field theory, derived from Physics. According to this, there is a vital space that includes all the facts and elements that affect human behaviour at any given time. These facts and elements are in the subjective vision of people, and can constitute points of support or resistance to achieve their goals. From the above, Knowles visualises the need for an adequate, stimulating social environment, with clear rules for all. This environment must allow and encourage adult learners to consider their educational purposes and the ways to achieve them. That way, retaking John Dewey, the educational action integrates thoughts/actions and latency/practice (Dewey, 1986). The androgynous proposal looks at the human being in which the vital fullness that can be achieved, and not in the fact of being a piece of a larger system. The need to speak of andragogy, as a different matter of pedagogy, is based on the distinction of the purposes, ends, forms of attention, types of materials and forms of evaluation of their learning. Definitely, the educational process in adults requires taking into account their bio - psycho - social characteristics and their previous, present and future or desirable experiences.

2.2 Teaching in Higher Education

In the practice of teaching, different meanings can be detected within a continuum: from the idea of transmitting information to students to that of

mediation for strategic learning. On education, various trends coexist in the academic environment, both in third level and fourth level studies:

- **Traditional education.** Transplant the education of the European middle ages to the Spanish colonies (University Santo Tomas de Aquino, San Fulgencio, San Gregorio), they consider that teacher knows everything and the student nothing (the student goes to class as "tabula rasa"⁶; see the student as a container in which knowledge must be accumulated; repeat contents that are foreign to the context; exposes theories unrelated to practice, memorial, tax and punitive.
- **Behavioural teaching.**

“Long is the path of teaching through theories; brief and effective through examples” (Seneca, 2 AC-65).

Behaviourism, as a learning theory, can be traced back to the time of Aristotle, who conducted "memory" essays focused on the associations that were made between events such as lightning and thunder. Other philosophers who followed Aristotle's ideas were Hobbs (2016), Hume (1740), Brown (1820), Bain (1855), Ebbinghaus (1885) and (Black, 1995). Behaviourism theory focuses on the study of behaviours that can be observed and measured (Good & Brophy, 1990). These authors see the mind as a "black box" in the sense that responses to stimuli can be observed quantitatively, totally ignoring the possibility of any process that can occur within the mind. Some key people in the development of behavioural theory include Pavlov, Watson, Thorndike and Skinner. This type of teaching is considered as the

⁶Tabula Rasa is the theory that individuals are born without built-in mental content and that therefore all knowledge comes from experience or perception.

control of learning through stimuli. It has certain characteristics as "efficient and effective" following algorithms pre-set by the teacher and taxes on the student. Does not recognise the student's right and need to be critical and creative. The teacher is not related to the internal states of the student, but to the structure of the learning situation so that the rewards generate desirable responses (Knowles, *et al.*, 2005).

- **Social constructivist teaching.** For socio-critical constructivism, teaching must be inserted in the context of cultural heritage; it must be a developer, that is, generate zones of near development (ZDP) in learning, so that "what the individual can learn by himself tomorrow, can learn today with the help of the most capable" (Vigotsky, 1978)

I am, personally, a supporter of socio-critical constructivism, because the teacher fulfills his role as a mediator, as a tutor in front of the student to promote the necessary independent study to acquire skills. The postgraduate Critical Care Medicine's student is multidimensional having physical, biological, psychological, social, political, cultural, historical, health professional, intensivist and other characteristics; therefore, from the perspective of the complex thought of Morin (2005); the tutor must guide the postgraduate medical student as a dynamic whole, in which one must recognise and at the same time interrelate opposite and complementary aspects that interact with each other. In fact, a resident who is trained in Intensive Care Medicine speciality should dialectically combine the certainties with the uncertainties in his attention to the patient, the organ affected with the whole organism of the patient, the organs among themselves, the scientific reason of medicine with the affection that the patient must receive, theory with practice, having in their hands the responsibility of avoiding death and saving life. Consequently, it is necessary that the hospital training and the postgraduate's curriculum could propitiate the acquisition of integrative competencies such as those mentioned above.

2.3 University Teaching-Learning Strategies

The term "strategy" (from Greek *strategós*: general) comes from the military lexicon. The strategist's activity consisted of projecting, ordering and directing military operations in such a way that victory was achieved. In the military environment, the steps that form a strategy are called "techniques" or "tactics" (Fundación Enciclopedia Catalana, 1989). In a given teaching-learning situation, it is not always easy to clearly differentiate what constitutes the learning of a technique or a procedure compared to what really sets up a strategy. Differentiation can be facilitated by focusing on learning objectives. Indeed, when teachers expect students to know and use a procedure to solve a specific task (for example, calculate a measure of central tendency), the proposed activities can simply be aimed at repeating the correct steps of the procedure. But if it is intended to favour the analysis of the advantages of one procedure over another depending on the characteristics of the task to be performed, or the reflection on when and why that technique or that method in question is useful (and for this purpose it is taught to the students to plan their performance, to control the process while solving the task and to assess the way in which this task has been carried out), the process is complicated and the so-called "learning strategies" come into play

2.3.1 Definitions of Learning strategies

A learning strategy is a decision-making process (conscious and intentional) in which the student chooses and recovers, in a coordinated manner, the knowledge he/she needs to accomplish a specific demand or objective, depending on the characteristics of the educational situation in which the action occurs (Knowles, et al., 2005). In the field of pedagogy and andragogy, strategies refer to action plans that the teacher systematically implements to achieve certain learning objectives

in students. In classroom work, techniques can be used more or less mechanically. Strategies, on the other hand, are always conscious and intentional, aimed to an objective related to learning. This means that techniques can be considered subordinated elements to the use of strategies. Strategies are considered as a guide to the actions that must be followed, and which, obviously, is prior to the choice of any other procedure to act (Nisbet & Shucksmith, 2017). After this preparation, the student who uses a strategy starts the task, continuously monitoring the course of the action and making deliberated changes (for example, substitution of one concept or one procedure for another) when deemed essential in order to achieve the objectives of the activity. Finally, once the student considers that the results meet the demand of the activity, or agree with his own objectives, a final evaluation phase is carried out, in which the student analyses his performance, in order to identify the right cognitive decisions to strengthen them in future similar situations, and also the decisions that may have been taken inappropriately or inefficiently, to correct them later.

The conscious and effective application of this system creates a third type of knowledge, called Conditional Learning (Paris & Oka, 1986), which results from the analysis of how, when and why a given strategy is appropriate, allowing to relate situations of concrete learning with certain forms of mental action. In this sense, it can be affirmed that any strategic action would be carried out based on conditional knowledge that the student builds for the occasion, or partially updated if the circumstances have similar elements to those of another situation in which he/she effectively used a strategy. A good example of the use of learning strategies is when the student shows signs of being constantly adjusting his actions according to the changes and variations that are occurring in the course of the activity, always with the ultimate goal of achieving the activity's objective in the most effective way. According to Herrera (2006), a student using strategies looks like a good chess player who analyses his situation and his rival's situation at a given time, as well as the consequences of the next movement (pawn, horse, bishop, tower or other).

These changes or variations can occur within the learning process (correcting the intermediate results obtained, redefine the original objectives, compensate for the loss of time, etc.) or refer to factors that are external to the student (limitations of resources or space, extreme temperature, characteristics of the work group partners, etc.). In any case, the student will introduce the necessary modifications to continue in the desired direction.

2.3.2 Skills and Strategies

Starting from the broader and more generic concept that corresponds to skills, the term is often confused with that of "capabilities" and, of course, with that of "strategies". From the concept of capabilities, Sen (1982) analyses social problems that affect human well-being, such as inequality, poverty, quality of life, lack of human development and social injustice; allowing a new consideration of these problems and evaluating the scope and limits of a truly free society. Sen comes to the concept of capabilities looking for a better perspective of the individuals' advantages, expressing themselves as stated in Rawls' theory of justice around primary goods. This position was sustained in his conference titled "Equality of What?" and published later, in 1982 (Sen, 1982). At this conference Sen introduced for the first time the concept of capabilities, thanks to a sense of equality which he called "basic capability equality". This way, sought to evaluate and assess well-being from the point of view of the skill of a person to do something or reach valuable states: "It is arguable that what is missing throughout this framework is a notion of "basic capabilities": a person is able to do certain basic things" (Sen, 1982, p. 367). In relation to the binomial, "capacity-ability", Sen talks about capabilities referring to a set of provisions of a genetic type that, once developed through the experience produced by contact with a culturally organized environment, will lead to individual skills, as a matter of fact, based on the ability to see and hear with what we are born, we become more or less skilled observers,

depending on the possibilities we have had in this regard. Following this argument and extending it in respect to the distinction between "skill" and "strategy", Schmeck (1988) makes a differentiation when it states that skills are abilities that can be expressed in behaviour at any time, because they have been developed through practice (i.e. through the use of procedures) and what, moreover, can be used or put into play, both consciously and unconsciously, automatically. Instead, strategies are always used consciously. (Monereo, *et al.*, 2000). Therefore, in order to be "skilled" in the performance of a task, it is necessary to previously have the necessary potential capacity and mastery of some procedures that allow the student to be successful in the usual way in carrying out the task. But this statement suggests, at least, a new question: What is a procedure? Different definitions are offered from the educational perspective, all of them are taken as a reference point, but I can conclude that procedures can be defined as "ways of proceeding, of acting to achieve an end" (Dictionary.com, 2019) (italics are mine); and in accordance with the general and broad character attributed to them. The rest of the terms that concern us are included in this category.

2.3.3 Teach to act strategically

It is considered that the quality of learning does not depend so much on an alleged IQ, nor on the mastery of a good set of techniques and methods to study with benefit, but on the ability to examine situations, tasks, problems, and respond in consequence. This ability is rarely taught or encouraged (Monereo, *et al.*, 2000). This teaching method is not only interested in transmitting information on how to use certain procedures, but also that the student builds his or her own knowledge about the proper use of these procedures. This personal construction is closely related to active and conscious reflection about when and why a particular procedure or technique is appropriate, or regarding the demands that both the content and the teaching situation pose when solving the task. In this task the

teacher has a particular action, who must explain their objectives, decide what activities to carry out, clarify what, how and for what purpose they will evaluate and, above all, provide their students with certain mechanisms of pedagogical help, to favour learning of these strategies (Nisbet & Shucksmith, 2017).

A student uses a learning strategy when he/she is able to adjust his behaviour (what he/she thinks and does) to the demands of an activity or task entrusted by the teacher and the circumstances and vicissitudes in which that demand occurs (Falieres & Antolin, 2005). Undoubtedly, this way of learning, through conscious decision making, facilitates meaningful learning (Ausubel, 1963), because it promotes students to establish meaningful relationships between what they already know (their own knowledge) and new information (the objectives and characteristics of the task to be performed), deciding which are the most appropriate procedures to perform said activity. In this way, the student not only learns how to use certain procedures, but when and why he/she can use them and to what extent they favour the task resolution process. All this previous knowledge, defined in the specialized literature as “declarative knowledge” (Gagne, 1985), because it can be communicated or declared through verbal language, would not, however, be sufficient in certain situations. Students need to recover a type of knowledge linked to action or execution: “procedural knowledge” (knowing how to do) to measure distances, to draw objects or to write legends on a plane or on a map. The existence of this knowledge is a necessary but not sufficient condition for talking about a strategic action. To define the orientation that the same procedure can receive depending on the intentionality of each objective, the expression “strategic use of a procedure” seems explanatory (Monereo, et al., 2000); (Valls, 1993). Thus, it is possible to distinguish between using a procedure to replicate or copy data, to personally prepare information, to identify its structure and use it to organize new data or in order to exercise greater conscious control over one's thinking. Valls (1993) establishes the need to have some criteria to classify the different types of procedures. Thus, this author takes into account the number of

components that are required to reach the proposed objectives, the degree of freedom that remains when deciding on the operations to be performed, the characteristics of the rule that underlies the procedure or the type of goal.

This distinction is especially important because it refers to the need for the student to master not only specific procedures to each discipline, disciplinary procedures, but also more general procedures, the acquisition and application of which would be beneficial in diverse areas of the curriculum. This second type of procedures, such as the summary, the different modalities of schemes, the synoptic table, the underline, the annotation techniques or the concept map, among others, have been called “interdisciplinary procedures”, because they must be taught and applied in different disciplines or areas of the school curriculum. In relation with the second criterion referred to, the type of rule that underlies a set of operations, involves distinguishing between two major types of procedures: “heuristic procedures” and “algorithms”, one of the distinctions that will subsequently establish relationships between techniques, methods and the strategies. Two pairs of categories of procedures could be distinguished: disciplinary/interdisciplinary and algorithmic/heuristic. Each pair of these categories may constitute the extremes of two complementary dimensions whose intersection would give rise to a set of fruitful combinations for educational practice. By developing this route, disciplinary procedures would be identified, for a specific area of knowledge, whose orientation is more algorithmic and prescriptive or more heuristic and probabilistic; similarly, interdisciplinary procedures could be classified according to their algorithmic or heuristic nature. An algorithmic procedure is called when the succession of actions to be performed is completely pre-set and its correct execution leads to a safe solution of the problem or task (for example, to make a square root or format in word). On the other hand, when these actions involve a certain degree of variability and their execution does not guarantee the achievement of an optimal result (for example, planning an interview or reducing the space of a complex problem to the identification of its most easily manipulated main elements) we are talking about

heuristic procedures. As for the method, it is conceived not only as a succession of ordered actions, but these actions involve more or less complex procedures, among which are also the aforementioned techniques. Assuming it is a teaching-learning method, it includes sequential prescriptions, which refer to certain actions, procedures and techniques that teachers and students must perform. According to Valls (1993), the characteristic of a method is based on a reasoned guiding principle and that, normally, is based on an ideological, philosophical, psychological, pedagogical conception, etc. (for example, the PBL⁷ method). These nuances allow us to consider that a method may include different techniques, and that the use of a technique, although it may be very complex, is often subordinated to the choice of certain methods that advise its use or not. Relating the algorithmic and heuristic procedures with techniques and methods, it should be noted that these procedures should not be considered in isolation, but constitute the two extremes of a continuum in which the different types of procedures are located according to their proximity or remoteness with respect to each one of them. Due to their normative nature, the techniques should be closer to the end of the algorithms; while the methods in an intermediate position, more or less distant from said algorithms. In many cases an educational method does not usually guarantee certain results, a characteristic that is considered defining a heuristic procedure.

2.3.4 University Teaching Methodology

According to Herrera (2006), the prevalent university teaching methodology is the critical study of principles and norms on the use of teaching-learning methods,

⁷ Problem-Based Learning (PBL) is a teaching method in which complex real-world problems are used as the vehicle to promote student learning of concepts and principles as opposed to direct presentation of facts and concepts.

strategies, techniques and instruments for a given academic context, which encourages the acquisition and training of skills, the same that should link the student's life (self-training), with society (social fabric) and the professional field (productive world). Within the university teaching methodology, the intervention of the teacher is dialectically combined with the intervention of the student, the context issues that the professional must face with the research process, the required competencies and the training modules, the theory and the practice, method and content, knowledge and learning, evaluation and accreditation. In the postgraduate cycle a methodology must be applied in accordance with the characteristics of adults (Knowles, et al., 2005) and androgynous assumptions (Lawrence, et al., 1999); therefore, the methodology must be problematic, participatory, critical, creative, productive and transformative of the person and the professional context. Priority should be given to problem-based teaching methods: Problem Based Learning (PBL), Classroom Project, Case Analysis, Simulation and Role Playing

2.3.5 Teaching Strategies to form Professional Competencies

The didactic strategies to form professional competencies are designed and implemented taking into account competence norms, among them: description of the competencies, elements, quality levels and indicators of achievement. The most important teaching strategies in competency-based training are described below, within the framework of the methodology of meaningful learning:

- **Teaching awareness strategies**

According to (Tobon, 2006), awareness raising is an important activity to guide students to have an adequate disposition to acquire skills, as well as a motivational state appropriate to the task. Teaching awareness strategies can be: stories of

problematic experiences, visualization and contextualization of the benefits of owning skills.

- **Teaching strategies to favour attention**

In these strategies, the teacher's role is to channel attention according to the pedagogical objective. For this purpose, they can use: questions-problems about exhibitions, readings or demonstrations.

- **Teaching strategies to favour the acquisition of information**

The significant acquisition of knowledge requires that the teacher: (1) promote the activation of students' prior learning; (2) help students recognise the value of previous learning; (3) present the new information in a consistent, systematic and logical manner; (4) build substantial links between students' prior knowledge and new knowledge (Mayer, cited by Tobon, (2006). These types of strategies include: enunciation of objectives and graphic organisers.

- **Teaching strategies to promote cooperation**

Teaching strategies of this type are aimed to promote cooperative learning by fostering: trust among students, direct communication, respect, good treatment, friendship and mutual help. In this sense, teamwork can be encouraged to practice all these values in order to reach a goal linked to their learning process.

- **Teaching strategies to favour acting**

The teacher guides the analysis as the resolution of context problems. Can drive in class: simulators, case studies, problem-based learning (ABP) and others.

- **Teaching strategies to favour formative evaluation**

The teacher bridges feedback: strengthens the achievements of students and helps overcome difficulties during learning.

2.4 Bedside Classes (In-Hospital activities and learning)

Until the end of 19th century, medical and clinical teaching was performed through large lectures with almost no contact with patients. At the end of the 19th century William Osler and William Halsted introduced a radical reform of medical education at John Hopkins Hospital bringing the teaching-learning process to the bedside of the hospitalised patients and creating the first medical resident program in the United States (Tutosaus, 2009). Bedside teaching is a teaching method where a group of students from many levels (R1, R2, R3, R4)⁸ receive medical teaching around hospitalised patients. These classes are focused in certain medical cases or topics based in the type of pathology of the patient. This method was incorporated in Ecuador at the end of 1960 starting in Hospital Luis Vernaza, the hospital where I work and where the workshop and this study took place.

Bedside teaching was taken from the medical training organisation of German universities and changed the way physicians were formed. William Osler sustained that young physicians' training should be at the bedside of the patient, his educational methods were rapidly extended through Europe and mainly the Anglo-Saxon world. But the true revolution in medical teaching in USA was conducted by Abraham Flexner (1866-1959) with his publication in 1910 in the Carnegie Foundation bulletin (Flexner, 1910); this publication set the basis for a good quality medical teaching, based on accreditation and standardisation as basic pillars for good clinical practice in hospitals. Romano reported the observation of one-hundred patients at Peter Bent Brigham Hospital, whose physicians had made case presentations during hospital rounds (Romano, 1941), he concluded saying that this method conducted tactfully and systematically is not a traumatic emotional

⁸ Medical Residents are classified by levels starting with level 1 in the first year to level 4 in the fourth year of residency.

experience to patients but instead educates and reassures them with the details and information related to their pathologies. Now a day it seems that there has been a declination in the practice of bedside teaching, principally because there is a perception that patients are uncomfortable during rounds at the bedside. However this can be debatable, for instance: Berwanger, *et al.* (2015) applied a questionnaire to 200 patients from two different health units and two different specialties, the results showed that 98% of patients showed satisfaction to contribute with medical education, 90% informed that they had the opportunity to receive more explanations about their disease, 95% received an educated, respectful and kind treatment and 97.5% said that students introduced themselves and asked for previous consent. The conclusion of the study was that the majority of hospitalised patients are ready to contribute with a teaching-learning process and receive more explanations about their diseases when students are present. Lehman, *et al.* (1997) found that patients whose case presentations were made at the bedside showed more positive feelings related to their hospital experiences and how their physicians care about them than those patients whose case presentations were made in a classroom. Bedside teaching is one of the fundamental scenarios where teaching-learning processes are developed during medical residencies. According to Thibault (1997) bedside teaching represents a student-teacher link that allows them to learn contents that are difficult to acquire in a classroom. Learning in this environment have a lot of strengths; for instance, this type of learning focuses in real problems in the professional context, students are motivated and encouraged to look for the solution to different medical problems. The clinical tools that students use for these activities are offered by teachers and instructors and are based in semiological⁹ and clinical criteria along with algorithms and synoptic tables. (Spencer, 2003), undoubtedly this would enrich Medical Residents' clinical experience, this clinical experience has four components: the

⁹ Semiology is the study of signs and symptoms of a patient related to his body's organs and systems.

clinical learning opportunities, the specific learning activities participation, interaction with teachers and the personal perceptions about clinical education (Henzi, *et al.*, 2006). Fugill, (2005) described three categories of elements within student-teacher interaction: student's behaviour, teacher's characteristics and teaching-learning behaviours. Teaching skills are acquired during internship and medical residence. The activities that most promote this type of learning are: to observe teachers and to assume teaching responsibilities. On the other hand, the activities that least promote such learning are: to read material or to receive instructions on how to teach. Reyes, et al. (2010) stated that teaching is inherent in the role of physicians and that the development of these skills benefits students and patients. The clinical educator needs to acquire a set of teaching skills or improve them observing those who have natural abilities to do so. The characteristics of a good clinical teacher, in addition to the knowledge of the subject are related to two areas: personal skills and teaching skills. Personal skills include: motivation, teaching vocation, empathy and disposition toward the students. Teaching skills include ability to create an environment of safe learning; mastery of teaching and evaluation methods; ability to organize, prioritize and to clearly transmit the contents of the subject and the ability to promote self-learning.

2.5 Competencies in the Medical Field

Competencies are classified as generic and specific (Tobon, 2006); (Herrera, *et al.*, 2006).

- **Generic or trans professional.** Are those competencies necessary for the exercise of any profession: Communication, use of NTIC's, Study Techniques, Teamwork, second language management and others

- **Specific.** They are typical competencies of a certain profession; for instance: Diagnose the patient in the practice of medicine; Evaluate learning as part of teaching.

One important thing to be considered in reference to medical education is that medical learning is currently based on competencies. The word competence or competency comes from Latin: *competentia*, that means dispute or contest between two or more people about some kind of topic. Also, competency is related with the following meanings: skill, ability, aptitude, suitability to do something or to intervene in certain issue. In 1988 during Higher Education World Conference in UNESCO, it was expressed that there is a need to encourage the longlife learning and the adequate construction of competencies in order to contribute to the social, cultural and economic development of the knowledge society (Argudin, 2005). Therefore, it is interesting that we could define within the medical context the definition of competency. Doing a synthesis of a group of authors I can conclude that competency is the set of knowledge, qualities and behaviours considered to solve work situations (Moliner, 1967); (Argudin, 2005); (Ducci, 1997); (Mertens, 2005).

In the United States a study named SCANS¹⁰ Report, stated that:

- Knowledges, competencies, abilities and values related with a discipline are important aspects that student bring to the work field.
- It is a need that educational institutions and universities agree on forming generic skills and competencies in education and the work filed in order to learn, to think and to create.
- Generic skills based in competencies are always used and renewed during working life.

¹⁰ Secretary's Commission on Achieving Necessary Skills

2.5.1 Origin of Competencies

Tobon (2006) considers that competencies have an antecedent in the philosophical reflection (intellectual competency) of Ancient Greece, which was mediated by a problematic way of thinking about reality asking themselves these questions:

- What is reality?
- What is the original substance of all things?

The interrogation motivated the search for answers (water, the unlimited, atom and others). Greek philosophy also wondered about man and being, within the reflection on identity and difference. Protagoras said:

"Man is the measure of all things; of those that are as they are, and those that are not as they are not". Cited by (Tobon, 2006)

According to Morales, *et al.* (2004), the origin of the competencies is scientific, social and political.

- **Scientific**, as far as cognitive competencies and curricular standards belong to the cognitive psychological current, which has been consolidating since the 1980s.
- **Social**, because in the face of social, economic and political changes in interaction with scientific and technological progress, human beings develop new skills to solve life's difficulties and work's demands in certain contexts. The global knowledge society proposes to professional education the development of skills for a satisfactory performance of the profession.
- **Political**, to the extent that International Banking and the most industrialized countries in the world have influenced the ideological management of competencies, both in the workplace and in curricular reforms

2.5.2 Meanings of the term Competency

In Spanish there are two terms: *competir* and *compite*; which come from the Latin verb *competere* which means to have one thing to meet another (Corominas, 1987). From the 15th century a new term *competer* acquires the meaning of *belonging to*, *corresponding to*, this way the substantive competency and the competent adjective, whose meaning is apt or appropriate is used to denote someone who is capable to perform or to do something in the best way. On the other hand, "competing" is used to express struggling with, rivalling, giving rise to the nouns competition, competition, as well as the competitive adjective. The term competency is polysemic, depending on the communication context or the role of a person, it is used with different meanings: decision power or authority, training, dispute, responsibility, training or sufficiency.

2.5.3 Competency Concepts

There is a wide variety of competency concepts, each one with an emphasis on some aspect. For instance:

"Competency is the effective ability to successfully carry out a fully identified work activity" (ILO, 2005).

"The real capacity to achieve an objective or occupational result in a given context" (Morales Lozano, et al., 2004).

"A set of attitudes, values, knowledge and skills (personal, interpersonal, professional and organizational) that empowers people to perform properly in front of life and work (Galeano, 2003).

"The competencies are the set of knowledge, procedures and attitudes combined, coordinated and integrated in the action, acquired through the experience that allows the individual to solve specific problems autonomously and flexibly in singular contexts" (Tejada, 2001).

According to SCAN Commission, the acquisition of practical competencies will contribute to a better development of working skills and will assure a successful professional career (García-García, et al., 2010). Within the medical field, competencies are defined as the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotion and values that are reflected in daily practice, therefore it is considered that competencies must be a lifelong habit. (Epstein & Hundert, 2002). However, due to the increasing globalization in medical education, and to the interaction between doctors from different nations, it is clear that there is no a uniform definition of what is the core of competencies that doctors require. From a conceptual point of view, competencies in medical education is a habit that develops progressively and continuously. The phases of skill acquisition process are: rookie, advanced beginner, competent, capable, expert and teacher (Miller, 1990).

2.5.4 Evaluation of competencies

In the USA the model supported by The Accreditation Council for Graduate Medical Education (ACGME), it's being applied and some of its foundations is the role that evaluation plays in helping medical students to identify and attend to their own learning needs. In 1997, ACGME proposed the use of the evaluation of the results of

education as an accreditation tool. The first phase of that project identifies the general competencies applicable to all medical students regardless of their speciality, it also states that competencies are contextual, they reflect the relationship between people's abilities and the activities they perform in a particular situation in the real world. Contextual factors include: the site of clinical activity, the local prevalence of diseases, school level of patients, period of time that patients have to see a doctor, patients' health culture, and a series of characteristics of hospitals, doctors and patients (Batalden, et al., 2002).

2.5.5 Complex Thinking and Competencies

Competencies can be imagined as an "orchestra director" who, instead of directing expert musicians in the performance of violin, cello, piano, saxophone or other musical instrument, directs something of an intangible but intelligible nature: knowledge; the same that basically form a complete and complex whole. The competencies mobilize, integrate and "orchestrate" knowledge that serves to solve singular problems that, although they may resemble others, are characterized by being unique and unrepeatable (Tal, 2019). About this, Morin (2005) stated:

"A new paradigm called the paradigm of complexity and a new method of knowledge, complex thinking, are viable alternatives within which people can build competencies for social life." (p. 172)

Promoting complex thinking contributes to the development of high cognitive skills. Complex thinking can also be seen as an engine with which the subject demonstrates their competencies, since they act as organizers of knowledge and always establish themselves in a context, that is, in a specific situation of action or

decision-making. From the perspective of complex thinking, I constructed the following concept with university educational emphasis:

“Competency is an integrated set of knowledge and personality traits acquired through strategic learning, which implies research-theory-practice; what allows to analyse and solve autonomously specific problems of a determined professional situation or of the daily life. According to Tobon (2006), the university postgraduate must develop competencies based on permanent research in the context of the professional speciality, handling English to manage international information and the use of new information and communication techniques” (Note of the Author).

A brief analysis of this concept makes possible to highlight certain essential aspects implicit and explicit in the formation of competencies:

- **Complex Thought Perspective:** It implies the integrated application of the dialogic, recursive and hologrammatic principles; as well as the integration of knowledge, including popular knowledge.
- **Integrated set of knowledge:** Know how to think, know how to do, know how to be, know how to share, know how to undertake
- **Personality traits according to the profession:** in some cases, extroversion is required; in others, introversion, or perhaps sociability, emotional balance, self-control, moral conscience.
- **Strategic learning:** Performance objective, action planning, execution, evaluation, metacognition (self-reflection before, during and after the action)
- **Research-theory-practice articulation:** determination of the information needs to solve the identified problem, handling of the required information (search, selection, organization, critical analysis, synthesis, application, evaluation)

- **Autonomy to solve problems:** Want to do, safety, efficiency, effectiveness, satisfaction of those involved in the problem or task

2.5.5 Critical Care Physician Competencies

According to Cobatrice (2006) a tentative profile of the intensivist physician has been defined. Said profile comprises 12 domains:

1. Resuscitation and initial management of the critically ill patient
2. Diagnosis: assessment, research, monitoring and interpretation of data
3. Disease management
 - Acute disease
 - Comorbidity
 - Organic failure
4. Therapeutic interventions / support systems in single or multiple organic failure
5. Practical procedures
 - Respiratory system
 - Cardiovascular system
 - Central Nervous System
 - Gastrointestinal System
 - Renal / Genitourinary System
6. Peri-surgical care
7. Comfort and recovery
8. End of life care
9. Paediatric care
10. Transportation
11. Patient care and health systems management
12. Professionalism

Intensive Care Medicine (ICM) has a history of practitioners from many different backgrounds bringing skills and competencies into the Intensive Care Unit - these skills are of direct patient benefit and contribute to the construction of a comprehensive team. The GMC's (Good Medical Practice) requires doctors to commit to life-long learning in order to maintain and improve performance; the foundations for this set of attitudes and behaviours must be established during training through aspiration to excellence, manifest by the acquisition of special skills and interests. As such, all trainees in ICM are expected to develop a "special skill" which is directly relevant to ICM (Intensive Care Medicine) practice and of direct benefit to the service and patient care. Up to 12 months of training can be used to develop this special area of expertise - this is the "Special Skills Year" (SSY). During these blocks, trainees must continue to develop their patient-orientated intensive care skills. Trainees should continue with a substantial clinical workload to maintain and develop clinical skills. This should include regular supervised daytime and out of working hours. Following the thought of Sir John Tooke, who in his independent enquiry "Modernising Medical Careers", identified a need to "*Aspire to Excellence*" (italics are mine), advocating "increased flexibility, the value of experience and the promotion of excellence" (Tooke, 2008, p. 6), all these efforts in a medical specialty such as Intensive Care Medicine, are aimed at achieving excellence in patient's care and to assure an optimal Medical Residents' training for their future professional performance. An attempt was made in Ecuador to approach the competencies of intensivists physicians, based on references from the Latin America Tuning Project¹¹, the experience accumulated by those who practice the speciality and postgraduate students references. This project was implemented by CONESUP¹² in 2006, contemplating, at the beginning, some generic competencies such as: communication, management of a second language, use of

¹¹ The Alfa Tuning Latin America project seeks to "refine" the educational structures of Latin America by initiating a debate whose goal is to identify and exchange information and improve collaboration between higher education institutions for the development of quality, protection and transparency. It is an independent project, promoted and coordinated by Universities of different countries, both Latin American and European.

¹² Consejo Nacional de Educación Superior

New Information and Communication Technologies (NTICs), teamwork, complex thinking and ethical life project. Additionally, specific competencies were identified: Pathophysiological diagnosis, pathophysiological monitoring, application of biotechnology and bioethical analysis, before deciding the respective therapy, evaluation of the critical patient and elaborating a proper prognosis. Summarising, it is considered that the critical problem that Intensive Care Physicians must face is *the pathophysiological state of the critical patient who needs vital support* (Italics are mine). To achieve this, it is necessary to develop the following basic competencies to the highest degree of quality:

- Permanent diagnosis of the pathophysiological state of the patient to provide the respective life support.
- Comprehensive management of procedures that allow the monitoring of the pathophysiological state of the patient.
- Application of biotechnology in the integral management of the patient.
- Permanent bioethical analysis of the patient's situation.

2.6 Postgraduate Training in Medicine

A postgraduate student is a professional who is doing his/her fourth level studies (higher diploma, specialist, master's or Ph.D.). In Ecuador a postgraduate in medicine is an adult, with a personal background of third-level academic studies, with experience gathered in rural medicine and, in certain cases, in a hospital residency. Postgraduate academic training¹³ is a necessity for every university professional who needs to continually unlearn, learn and relearn, developing skills to respond successfully to the demands of globalisation, knowledge society, new communication and information technologies, third scientific-technical revolution ,

¹³ This means a specialist program elaborated and supervised by a Higher Education Institution (University).

conservation and protection of the environment, gender equity and other mega trends that contribute to globalisation, that is, to the need for the human being to respond to the requirements of the locality where he/she lives, and at the same time to the challenges of the national and international context.

2.6.1 Adult learning in Critical Care Medicine

According to Knowles (2005), any analysis of a definition of learning must imply a distinction between education and learning. Education is an activity undertaken by one or more agents, in order to produce changes in knowledge, skills and attitudes of individuals, groups, or communities. The term learning highlights the person in whom the change occurs or from whom it is expected to occur. Learning is the act or process by which a change of knowledge, skill and attitudes is acquired (Boyd & Apps, 1980). Made this distinction, some learning theorists argue that it is difficult to define learning. Learning implies a change, it concerns with the acquisition of habits, knowledge and attitudes. For social-constructivism, learning is a process of constructing meanings on an object of study. Learning allows us to understand, interpret, act and transform this object. In general, a person who is an adult has a third level degree and is studying in a postgraduate program as a university adult. The adult learners is a student who, due to his age, studies and experience, is in a position to actively participate in postgraduate programs, this student also may have in some aspects greater competencies than the tutor himself; this means that it is possible to build or rebuild meaningful learning with the support of a tutor or capable and prepared peers.

At present, certain assumptions regarding the learning process of university or postgraduates adults are accepted, for instance: adults are aware of the challenges of globalisation, they study, driven more by internal motivations than by prizes or

punishments participating in an educational activities with more varied experiences than students in basic or college education, also, they are more critical of the tutor's performance than students of lower levels of education and they frequently need to know why they should know something learning on their own responsibility. Adults have a greater capacity for self-direction than younger generations and they seek with learning to effectively face the changing situations of life and profession. The skills developed by adults are used to improve the quality of life, social and professional having a permanent commitment to the human being, in his right to a dignified life (Knowles, et al., 2005); (Raad, et al., 2006); (Herrera, et al., 2006).

2.6.2 Teaching Skills

There is a solid body of literature which address the need of residents' training on teaching skills (Bing-You, et al., 1997); (D'Eon, 2004); (Dunnington & DaRosa, 1998); (Edwards, et al., 1988); (Jewet, et al., 1982); (Furney, et al., 2001). A systematic review of twenty-four studies, was performed by Post *et al.* (2009) who concluded that resident-as-teacher's curricula can significantly improve residents' teaching skills. Nowadays 55 % of medical residency programs include in their curriculum teaching techniques activities during residents' training period (Morrison, et al., 2005). Through this curriculum, universities and teaching hospitals introduce residents to a knowledge base and skills set used when serving in the role of a clinical educator. The use of a longitudinal curriculum for all residents allows them to practice skills associated with topics such as establishing the learning climate, motivating the learner, one-minute preceptor and feedback and evaluation as well as interactive teaching and evaluation. The Royal College of Physicians and Surgeons of Canada and the Accreditation Council for Graduate Medical Education include teaching as one of the skill domains in their competency framework and the North American undergraduate accreditation body requires that institutions work in

programs and resources to enhance the teaching skills of residents. (Accreditation Council for Graduate Medical Education. ACGME, 2016).

In 1984, Greenberg and collaborators published their experience with an educational intervention in a paediatric hospital in Washington. The intervention consisted of an eight hours workshop where residents learned basic principles of teaching, they practiced student-based models and the resolution of clinical problems (Greenberg, et al., 1984). The evaluation of the course's impact was carried out using questionnaires applied by teachers, peers and the students themselves. The results of the study showed a better attitude, greater confidence and better evaluations than participants of the control group. Courses and workshops about this subject proliferated and so their report in the literature. For year 2004, there was enough material to publish a systematic review (fourteen studies were selected for analysis); for 2009, new revisions were published with an increasing number of articles, which showed, that the importance of this topic had increased over the years (Post, et al., 2009).

Other reasons to develop teaching skills on medical residents include that teaching is an essential skill in doctor-patient relationship and an effective way to learn, a great proportion of students would become teachers in the future. In a research undertaken by Reyes *et al.* (2010) with 377 subjects, the perceived importance of having teaching skills was 6.1 +/- 1.2 among residents and 5.7 +/- 1.6 among interns. 78% of 5th year medical students reported to learn more receiving instruction 2.5 hours a week from residents. 59% of residents and 66% of interns reported to teach up to 2.5 hours per week to the same students and both agreed that teaching is an important role for a physician, and that to do it properly they require personal characteristics, along with teaching skills. They also found that the best opportunities to learn how to teach are during practical training.

Medical Accreditation and Certification Institutions are also proclaiming that medical graduates should function effectively both, as a mentor and a teacher. Moreover, the Accreditation Council for Graduate Medical Education (ACGME) and the Liaison Committee on Medical Education (LCME) strongly advocate for a resident's teaching role (Marton, et al., 2015). Thinking about medical practice without teaching denies one of their essential aspects, current medical practices conceived as a continuous teaching and learning practice. Clinical teaching for instance is a way for young physicians to develop their fundamental skills such as medical interview, physical examination, procedures and interventionist manoeuvres, communication skills and medical knowledge application during the bedside teaching process. Regarding the interest in developing a teaching career, there could be residents and interns that may want to learn to teach, but not all of them want to pursue a teaching academic career. It is important to detect students' teaching vocation early and give them opportunities to develop their teaching skills. In Latin American medical schools exist few opportunities to learn to teach. These opportunities are mainly present in the practical rotations where teaching models are crucial. Teaching models could be: students, residents and teachers that are interested and prepared to participate in residents as teacher's programs. These programs must include: design and methodology, educational and motivational techniques and communication with students in order to promote self-learning (Reyes, et al., 2010).

2.6.3 Teaching as part of Universities' Curriculum

The high degree of importance that undergraduate and graduate students give to the acquisition of teaching skills was evidenced by Morrison (2014). Undergraduate students declared that they don't have enough training to teach their patients or to teach other students. This is in accordance with other studies that show that most

students graduate without teaching training (Bulte, et al., 2007); (Dandavino, et al., 2007).

In 1960, the first articles appeared about the role of the residents as teachers in relation with their hospital work and their patients, today the medical residents' requirement of developing teaching skills is unavoidable (Méndez, et al., 2013). Additionally, initiatives of teaching training have not increased significantly in undergraduate curriculum in the last 15 years (Pasquinelli & Greenberg, 2008). In postgraduate medical education the situation is different. In 2000 the association of United States medical professors of North America highlighted the resident training to teach as a priority (Bordley & Litzelman, 2000). In addition, in recent years there have been important advances in postgraduate students' teacher training. For instance, Bing-You, made a survey of directors of Internal Medicine program in USA, and observed that only 20% of programs included formal training for teaching (Bing-You, et al., 1997). In contrast, Morrison, in 2014 made a study with program directors, accredited by the Accreditation Council for Graduate Medical Education (ACGME), and results showed that 55% of these programs offered its residents formal teaching instruction (Morrison, et al., 2014). Finally, there is a consensus among undergraduate and graduate students, about the importance of the acquisition of teaching skills in medical training, both due to its usefulness in patient care as for improving teaching skills. For instance, in Spain, with the implementation of the Bologna Plan, the new Degree Studies and the European Higher Education Area, the teaching role of Family Medicine and Primary Care physicians and residents in university classrooms is becoming a reality. According to the 2012 SESPAS¹⁴ report, the curricular content stipulates the mandatory inclusion of teaching skills in three national faculties, comparatively, in other countries as Germany and Ireland this subject is taught in 4th, 5th and 6th medical school years; in Austria this subject entails 120 hours in total; and in the United Kingdom it is present in 100% of the medical students' clinical training period. The curriculum of University of Granada, for example, includes a compulsory subject in the sixth year,

¹⁴ Sociedad Española de Atención Pública y Sanitaria

called Teaching Primary Care, of nine credits, and another optional subject in the fourth year, aimed at solving health teaching problems, of three credits. In total, if the elective is chosen, twelve credits out of a total of 360, which represents 3.33% of the total credits of the degree plans (University of Granada, 2017). Within this context of enhancing teaching skills in medical residents, I have to emphasise that before starting this study I gave Intensive Care Medicine residents the opportunity to give a seminar to their peers. I proposed the general theme and gave my students absolute freedom when it came to delivering it; the only thing that I asked them was to try to reach their “students” (peers) and make the seminar as participatory as possible. The result was quite satisfactory, because residents showed an evident interest and enthusiasm through all the teaching process.

2.6.4 Peer Teaching and Mentoring

Medicine, according to Lifshitz (2017), is learned according to some precepts such as learning by doing, students with a motivation based on responsibility, activities performed under supervision and advice linking these activities to theory and practice within an academic environment. According to these precepts, research is mandatory as an educational strategy. All these components are part of a strategy with significant results on residents' teaching experience. It is in these moments that teaching process must be strengthened and become more significant to guarantee the training of excellence in medicine, and this could be promoted with mentoring. It is important to distinguish between two moments in the medical student's education: preclinical studies and years of clinical studies themselves. Preclinical studies are the student's first approach to medicine; during this time, in addition to the lessons taught, the behaviour, extra verbal language and attitudes of the medical teacher become important, therefore, the role model, could have both positive and negative influence on learning. During clinical studies years, the student has greater contact with patients and their own aptitudes and attitudes are

better glimpsed; at this stage role models and mentors would be important, as they would help medical students to better define the work area they would chose in their future professional life (Denton & Hemmer, 2010). Is in this point that the need of a method where one student instructs another student in a topic which the first is an expert and the second is a novice, arises. This method is known as **Peer Teaching Method** which was explained in my previous chapter and consist in a strategy that can be defined as the development of skills and knowledge through the support and help of people of the same social group (Ross & Cameron, 2007).

In a study undertaken by Marton, *et al.* (2015), three databases were searched for articles meeting a set of predetermined criteria in order to make a review of teaching skills development programmes for medical students. The inclusion criteria were that all participants must be medical students, must have acquired teaching experience or teaching skills and the study must have had as a primary goal an investigation of the impacts of the study intervention on participant's teaching skills or abilities. 390 potentially relevant articles Were retrieved by Marton and colleagues, of which seventy-five were considered relevant to the project's goals and twenty fulfilled the predetermined criteria. As a result of this investigation, three types of initiative were identified: Peer Teaching Programmes, Teaching Workshops, and Community Outreach Programmes. Self-perceived improvements in teaching skills were noted by participants in most of the reports. Also, there was a perception of increase in organisational skills, knowledge and confidence in giving feedback. Some authors argue that Peer Teaching nomenclature is currently not consistent and different terms are used in literature (Olaussen, et al., 2016); (Linderman, et al., 2018). For instance **Cross Level Teaching** is used when teacher and learner are at different educational levels, **Near Peer Teaching (NPT)** is defined as teaching in which "student teacher" and "student learner" are at the same educational level but separated by one or more years of training, finally **Reciprocal Peer Teaching (RPT)** is defined as peer teaching in which "student teacher" and "student learner" are in the same year of training and the roles of teacher and learner are regularly rotated or interchange

among participants (Marton, et al., 2015). On the other hand, mentoring is traditionally associated with a "vertical" relationship between a person of greater knowledge and one in a learning process. By this, mentors are historically understood as those teachers or doctors already graduated, and most of the time they are specialists. However, a "horizontal" mode - symmetric or peer-to-peer is also possible in which both mentors are in similar situations, one of the mentors can be a student of higher years who meets certain requirements (Manzano, et al., 2012).

Peer mentoring promotes a climate of greater trust and understanding, thanks to the level of equality between the mentor and the partner-mentor or student (both are peers but one plays the role of mentor and the other plays the role of student), as well as the characteristics they share (similar problems and needs, recent academic experiences, empathy with their peers, mutual help, etc.). The mentor may be advised, oriented, motivated and helped in what to do and how to do it, as well as in the development of intellectual work and learning strategies. To do this, the partner-mentor must be a qualified student with time to devote to his mentor. This type of mentoring should be supervised by a more senior advisor or mentor (teacher) who can guide the process properly. Although studies evaluating the effect of mentoring are still scarce and inconclusive, their results are positive. Kukreja *et al.* (2017) reported satisfactory results in a pilot mentoring program aimed at first medical program freshmen; mentors that were part of the study, however, indicated that the program was useful for their teaching and communication skills, in the other hand, students commented that the program helped them emotionally and academically.

Within this context, Fallatah *et al.* (2018) conducted a study that sought to establish the relationship between mentor characteristics and student performance within a clinical skills course, in order to identify those students that required

greater support. They concluded that 83% of the students considered mentoring as an important tool for them, although it did not have a significant effect on their academic performance. The latter could be due to the mentoring time, which lasted only one rotation, as to the fact that there was one mentor for every ten students. This means that time and personalised work are two elements to take into account in the mentoring process. Mentoring could be conceived as a medium and a long-term process, so its results cannot be evaluated in a short period of time; as well as that it must be a personalised work, even individualised, so that there is the opportunity to establish an atmosphere of trust and dialogue between mentor and student and the experience can be mutually significant.

Ho *et al.* (2017), in a study conducted in Korea, concluded that student's satisfaction with mentoring was associated with student's academic year, frequency of meeting sessions and the topics to be addressed. Again, time and personalised work, translated into an appropriate number of frequencies for the student to make him feel motivated and confident, as well as sufficient individualisation of the process so that those topics that are important to the student can be developed according to their needs and expectations. In the aforementioned framework, peer mentoring, properly organized and supervised, can be useful and beneficial for new students (freshmen). Akinla *et al.* (2018), in a systematic review of the results of peer mentoring programs aimed at freshmen, found that mentoring was related to stress reduction, greater ease of adaptation and identification with personal and professional development. It also favoured the development of personal and professional attitudes in mentoring students. Peer mentoring also offers the advantage of being a much more personalised process; on the other hand, as mentioned, this process is also beneficial for the mentor, since it helps him to consolidate his knowledge and medical skills, as well to develop a greater empathy, necessary for teamwork, fundamental in any area of health. In this sense, the establishment of formal programs, with the supervision of a teacher, would be an option to enrich and strengthen the teaching-learning process.

2.6.5 Residents' teaching skill programs

The resident-as teacher activity plays an important role in the clinical development of medical student. This activity, which is supposed to be useful and beneficial for both, has been sometimes few evaluated and has poor academic recognition. Although medical students and other medical residents positively value the instruction that they receive from residents, they do not feel prepared to meet the challenge of teaching themselves. Some programs have been designed to improve resident's teaching skills with good results. I consider that one of the main programs is the **Resident-as-Teacher program** (University of Florida College of Medicine, 2019). The Resident-as-Teacher program is aimed to improve residents' teaching skills, enhancing the educational experience of both residents and medical students. Two additional programs that are useful to prepare teachers are: Urban Teacher Residency United (UTRU) and Supporting Effective Educator Development (SEED), both programs sustain that the single greatest in-school factor impacting student achievement is the quality of the student's teacher (NCCTQ, 2005). UTRU was created in 2007 to codify the model, influence policy, and develop standards of practice for residencies across the country sustaining high quality residencies with the ultimate goal of increased student achievement in areas of highest need. UTRU is the only national non-profit organization devoted to promoting the expansion and quality of residencies. Even Though these two programs are devoted for secondary teachers, its structure can be adapted to a Resident as Teacher program. In the next chapters I will emphasise the Resident-as-Teacher program created by University of Florida College of Medicine.

On the other hand, the association between hospitals and universities is essential to develop and provide academic recognition for these programs, whose financial resources must be shared between both institutions. Internal Medicine must participate in an active way in clinical education and strengthen the figure of the resident as

teacher through training activities that could be adapted to the new times and models of different medical specialities. The Medical Resident (MR) is an important figure within the health system, in whose teaching life also intervenes actively. Teaching activities are carried out especially in those hospitals that have medical speciality programs associated with a university, here the MR usually participates with students and peers in the daily activities of the hospital. MR and students establish a link as varied as complex, where they have a multitude of knowledge, affects, doubts and experiences, which flow in a bidirectional way, facilitated by the short generational distance that separates them and, as I said before, by the common interests in ICTs that allow tutors and students or peers the use of electronic resources for the update of medical information. This relationship is often assumed correctly, but is rarely evaluated, very rarely optimized and almost never recognised. Additionally, the limited training of the MR (Medical Resident) in teaching skills intuitively yields a little reassuring result: the reciprocity between MR and student is heterogeneous, depending on the motivation that both parties show in a given moment. Within this context the questions that arise and need to be resolved are:

- Where do MR get and process the information that is then transmitted to the student? In other words, who has taught him to teach?
- How do students get that information?

It is also important to ask whether a more active interaction between MR and student, under the supervision of the teacher, could report benefits, getting the student to progress in the acquisition of certain practical skills and at the same time allowing residents to develop teaching techniques according to their activities and training model. This would promote a substantial progress in the achievement of teaching skills on the part of the MR and would grant a training and curricular experience that would serve to improve patients' treatment and diagnosis.

2.7 Modern Medicine Scenarios linked with Resident as Teacher activities

2.7.1 Generations and Learning Process

Medicine and medical education of the 21st century have interesting and varied scenarios in terms of generations, ways of working and learning methods. Some studies such as Mohr *et al.* (2011), and Boysen *et al.* (2016), emphasise the fact that current medical education has several generations, different in several aspects: traditionalists, baby boomers, generation X, generation Y or millennials and generation Z or centennials. The former, born before 1945, are described as dedicated, conventional, respectful of order and authority, and altruistic; they conceive medicine more as a vocation than as a job, few are still active, generally directing health departments or as emeritus professors and a reference for the rest of physicians. The latter, born between 1945 and 1964, believe in hard work, arriving early and leaving late, they aim for better financial compensation, consistent with effort and performance, consider that promotions must be earned over time and appreciating recognition and management positions; for this reason, they value the chains of command and can be very critical with different points of view.

Generation X, born between 1964 and 1980, are considered independent, pragmatic and flexible, loyal to themselves and their families rather than to institutions. They do not doubt in labour changes if these offer them better perspectives. They question authority and prefer to be evaluated for their achievements than for the time that they spend at work. Having been born and raised in the middle of the computer boom, they find easier to adapt to technology than to previous generations, they are self-taught and can quickly assimilate changing information, as well as solve problems easily and participate in cooperative learning experiences

(Mohr NM, et al., 2011); (Boysen, *et al.*, 2016). Millennials, born between 1980 and 1999, are optimistic, collaborative, appreciate teamwork and know technology very well. They want fast results, becoming impatient. They have multiple interests besides medicine. They like recognition and reward, as well as being connected with others, especially with their colleagues. They feel committed to global health. They want feedback and have a tendency to expect praise. They have great capacity for organisation and mobilisation, and they are good at teamwork and following rules. They like to express their opinions and that these are taken into account. They expect flexible work schedules that allow them an adequate balance between their personal and work life. Being exposed to technology all their life, they want to have it always at hand and prefer electronic sources to physical sources for their learning. The majority of medical students, residents and young specialists are currently in this group. Centennials, or 2020 generation, born after 1997, are more hyper connected and find it easier to use computers and the Internet than millennials. They have a worldview where technology plays a central role, with expectations for opportunities for global education and learning through experiences and peer work. Their mobile phones help them in all their activities, both personal and educational. They prefer to be connected than to receive a formal education in a classroom. They are the students of the first years of the career, which represents a challenge regarding the forms of teaching to be applied with them (Boysen, *et al.*, 2016).

2.7.2 ICT's and Resident-as-Teacher programs

The description made of each of these generational groups serves to understand that the way of teaching medicine in the last seventy years, since the second half of the 20th century, has changed significantly. From treaties and books, we have passed to electronic journals. The scientific articles that previously arrived by mail are now at a distance of one click. The way of establishing interrelations has also

changed, many young people of the last two generations have come to feel more linked and identified with people who are thousands of kilometres away than with those who share the same geographical environment. This establishes a series of challenges but also the opportunity to enrich the teaching of medicine: not to lose its personal and human essence, but to globalise it, allowing ICTs to take a leading role in their learning process meaning that the current, multifunctional medical students, hyper connected, can learn between tradition and modernisation. It is appropriate at this time to have a clear definition of ICTs which are defined in many ways; for instance, Cabero and Valencia. define ICTs as the tools...:

"... that revolve around three basic means: computer science, microelectronics and telecommunications; but they revolve, not only in isolation, but what is most significant in an interactive and interconnected way, which allows for new communicative realities " (Cabero Almenara & Valencia Ortiz, 2018)

The impact of ICTs in higher education depends on many factors. Nakano et al. (2014) conclude that the incorporation of ICTs requires both the knowledge and mastery of the tools and the pedagogical approach oriented to them, also the level of digital skills of teachers and students. This is important if I consider the generational gaps of medical teachers and current undergraduate students. On the other hand, it cannot be forgotten that Latin America is a land of great inequities that extends to access to ICTs. For instance, in Peru, in the report of the National Institute of Statistics and Informatics of the first quarter of 2018 (Ruiz & Castro, 2018), it is observed that while 70.9% of the population of Metropolitan Lima has access to the Internet, the percentage decreases in the rest of urban areas (55.6%) and in rural areas (13.2%); what must be taken into account when planning an adequate education for current generations of university students.

Considering the above-mentioned studies and facts, I can conclude that mentoring, and especially peer mentoring, is a great opportunity to guide, support and consolidate current medical students in their career's choice and university life. As peer mentors belong to a similar generation and therefore be millennials, they find it easier to interrelate with other millennials and even centennials because they share similar characteristics, analogous abilities and common interests. They also have the possibility of communicating continuously through ICTs, a tool they use on a daily basis, which facilitates individualised mentoring. It also allows them greater ease in terms of supervision by a counsellor. Medical schools should allow computer natives to guide computer natives themselves and facilitate communication between them and generations of migrant's informatics (traditionalists, baby boomers, generation X), who must adapt to an interconnected world understanding that this interconnected world is an active and vital part for the teaching and learning of medicine. This, of course, will be limited to the reality of each medical school and each university, its equipment and its budget; but without doubt, each university and teaching hospital must consider within its educational structure the adequate implementation of ICTs, which together with mentoring can facilitate meaningful learning and learning in the medical career. In my study, the workshop taught and the resources used in the interviews and their coding were carried out with tools linked to ICTs. It is therefore relevant to deepen as it has been done in the previous paragraphs in this important tool. In the following sub-sections, we will see how the activities and perceptions of Medical Resident are closely linked to their performance as a physician and how they improve their ability to communicate with patients and patients' relatives.

2.8 Perception of Teaching Skills

2.8.1 Perception

One of the main disciplines that has been commissioned for the study of perception has been psychology. In general terms, perception has been traditionally defined as:

“The cognitive process of awareness consisting of recognition, interpretation and significance for the making of judgments around the sensations obtained from the physical environment and social, in which other psychic processes intervene among those who are learning: memory and symbolisation.” (Hamlyn, 2017)

Although perception has been conceived as a cognitive process, there are authors who consider it as a more or less different process pointing the difficulties of raising the differences that it has with the knowledge process. For example, Allport points out that perception is:

“...something that encompasses both complex uptake environmental circumstances such as that of each of the objects. While some psychologists are inclined to assign this last consideration to cognition rather than to perception, both processes are so intimately related that is almost not feasible, especially since the theory point of view, consider them in isolation one from another.” (Allport, 1974, pp. 117,118).

Whether or not perception is a type of knowledge, it is a matter for further discussions. However, the characterisation that has been made of it has questionable aspects and even some of them can't be sustained in the light of recent findings. However, perception is not a linear process of stimulation and answer about a passive subject, but, on the contrary, it is involved in a series of processes in constant interaction where the individual and society have an active role in shaping particular perceptions to each social group. In the process of perception, there are experiential mechanisms that involve both the conscious and the unconscious of the human psyche. Against the position that circumscribes

perception within consciousness there are psychological approaches that consider perception as an involuntarily constructed process in which preference selection is involved as well as priorities that produce qualitative and quantitative differences on the individual about what he/she perceives (this process is called preparation); at the same time they reject that consciousness and introspection that are characteristic elements of perception. (Abbagnano, 1986).

Human being is able to have multiple sensations but human brain only repairs on a few becoming aware of them. However, there are feelings that also come to mind and are unconsciously processed. The subliminal perception which existence by far time was denied, currently is an accepted fact. In the subliminal perception what is perceived may be registered in the mind unconsciously without reaching the level of consciousness. González, at odds with some psychological approaches that indicate that what is perceived must necessarily be verbalised and aware; comments that:

... there is a growing number of researchers who (...) have revealed, beyond any reasonable doubt, the existence of unconscious psychic processes, where external stimuli of which the subject lacks knowledge they can affect your observable behaviour ... (González, 1988, p. 19)

Perception is biocultural because, on the one hand, it depends on the physical stimuli and sensations involved and, on the other hand, of the selection and organisation of these stimuli and sensations. The sensory experiences are interpreted acquiring meaning, and are moulded by specific cultural and ideological patterns learned since childhood. Selection and organisation of sensations are oriented to meet both individual and collective needs of human beings, by searching useful stimuli and excluding undesirable stimuli, depending on survival and social living. Human beings have the capacity for production of symbolic thoughts, which is influenced by cultural, ideological and social structures that guide the way social groups take over the environment. Perception depends on

sorting, classification and development of category systems where the stimuli received by the subject are compared, through this process, new experiences are identified, transforming them into recognizable and understandable events within the collective conception of reality (Allport, 1974).

2.9 What do Medical Residents and students think about their role as teachers?

Since Barrow (1966) introduced for the first-time medical students' perception in relation to the resident-as-teacher work, medical literature seems to point in the same direction, highlighting the influence that MR (Medical Residents) can exercise on students. In fact, one third of the knowledge acquired by medical students during their hospital rotation come from residents as part of the educational work during the internship period (Lowry, 1976). On the other hand, the role of "teaching model" that MR acquires and the positive influence it can exert on students and peers in certain situations are transcendent, such as the choice of speciality or future behaviours with patients and colleagues¹⁵ (Bordley & Litzelman, 2000). It is also important to mention that medical residents tend to be better valued as physicians than as teachers, although they recognise the importance of teaching skills acquisition and do not deny that responsibility, this could agree with some studies' results that reveal medical residents' feeling of little preparation to face the challenge of teaching (Durning & Ten Cate, 2007). That perception is probably based on several aspects, such as those related to the training of MR himself (we must not forget his trainee condition) or the difficult reconciliation between knowledge incorporation and the need to transmit to others what they have learned. Residents' perception can also be influenced by factors related to the work environment, which sometimes does not give enough value to the teaching

¹⁵ Up to 38% of students are positively influenced by such models to the time they make the decision to choose medical speciality.

role of residents, which is reflected in that approximately 60% of them believe that their departments should give more importance to their role as teachers (Liaison Committee on Medical Education, 2000).

Despite feeling poorly prepared, the MR allocates a remarkable part of his/her activity to teach. Specifically asked for the percentage of time they spend on education of students and other health professionals (nursing), MR admit an average of 32.3%, growing from 25.8% of the first year of residence to approximately 40% from the third year, proportions that contribute to the growing interest in identifying those factors that influence MR and student in order of deploying a training plan in teaching skills. Medical students believe that despite having greater interaction with R1, they have better teaching relationships with R2¹⁶ since these residents were the best qualified in most of the teaching characteristics. Regarding the time for teaching, in general, Medical Residents considered appropriate the time devoted to teaching (Ledesma & Madinaveitia, 2015), however, per year of residence, it was considered insufficient for R1; this may be due to the overload of care work that affects their teaching function. In this situation it is necessary to define if R1 must developed their teaching activities or they must be assigned only for the R2 and higher-level residents. This will depend on each institution that can propose and follows its own guidelines, however it seems that R2 residents have more facilities and probably more willingness to teach being that they don't have the overloaded work of R1, nor the pressure of being R3 and its responsibilities. This agrees with a study made by Sánchez Mendiola *et al.* (2013) where residents were asked to estimate the knowledge and skills obtained from other residents. Residents agreed that the main obstacle to teach was the lack of time of R1 and R3. On the other hand, Melvin *et al.* (2014) carried out a census of perception of the quality of education provided in the faculties, and they found that the quality of

¹⁶ R1, R2, R3, R4 stand for Medical Resident 1, 2, 3, and 4 according to the year of training.

Residents' teaching, was perceived as high quality when it was taught by residents of the last level of training (R3, R4) and with formal training in teaching.

In other studies, Morrison *et al.* agree that the impact of teaching is greatest when residents act as teachers after undergoing formal training as teachers (2014). Nevertheless, Residents' perception of the percentage of knowledge acquired from other residents is high, being higher in surgical specialties (50.4%) than in clinical specialties (43.6%) (Sánchez-Mendiola, *et al.*, 2010). The role of the teacher in resident's training to become specialists has some particular characteristics which distinguish it from teaching roles in other fields. There is no consensus on what is the optimal teaching profile in the field of clinical teaching (Ramani, *et al.*, 2003) and what are the most successful pedagogical strategies in this context (Dugan, *et al.*, 1997); this is because, among other reasons, the continuous changes in medical education and attendance forces teachers to have a flexible and dynamic role, with the need to adapt to these changes. The "good clinical teacher" is recognised not only for his teaching skills (teaching in the courses, organization, clarity of the presentation, enthusiasm, stimulate and motivate students, interaction of groups) but also for being a "good doctor" (clinical, competent criteria, professionalism). The clinical teacher must "provide monitoring, guidance, feedback from personal, professional, and educational development aspects in the context of assistance from doctors to patients" (Kilmester & Cottrel, 2007).

2.9.1 Clinical Teaching

A recent systematic review proposes that excellence in clinical education, although multifactorial, transcends ordinary teaching and is characterized by inspiring communication, support and collaboration, and to get actively involved with students (Sutkin, *et al.*, 2008). While supervisors and medical students express that

they want to improve and increase their teaching activities with patients (Ramani, et al., 2003), other studies show that the proportion of time dedicated to teaching during the hospital work, continues to decline associated with the poor preparation of the physicians for this type of teaching (Miller, 1990); (Crumlish, *et al.*, 2009); (Shankel & Mazzaferri, 1986). Various theoretical models can be used to understand the teacher's role in the clinical teaching; classically, medical education was based on the traditional "apprentice" model traditional, where students learned primarily from observing doctors as a model in daily practice. This role model has been widely studied, but it was revised when hospital and health institutions considered that medical residents' training require an active learning and teaching role. This teaching role which favours the active performance of students can be understood in the cognitive model, which provides a theoretical framework for the analysis of the clinical teaching which allows researcher to "decompose" the teaching process in domains (Collins, *et al.*, 1987). Based on the type of learning and in teaching methods, teaching in the cognitive model seeks to make clear the thinking of both the student and the teacher, teaching through the guided experience. According to Collins this educational model consists of six domains:

1. **Role model**, where the teacher offers himself as a model and uses his thinking process while doing a task, thinking "out loud" and explaining their judgments and reasoning.
2. **Supervision**, teachers observe and help students offering feedback during the class activities.
3. **Scaffolding**, in which teachers provide support and assistance in tasks that students have not done yet, diagnose the level of ability and student development and encourage them to increase it, so that they are stimulated to move beyond their level of experience in that particular moment. As they improve their level, they will require progressively less help.
4. **Articulation**, Teachers ask their students to articulate or integrate their knowledge, reasoning or problem solving.

5. **Reflection** that implies that teachers encourage students to observe their own reasoning for problem solving and compare it with other students and experts.
6. **Exploration**, students are encouraged to find their own problem-solving process, in order to promote their autonomy.

All these processes must be carried out in a safe learning environment (Kilminster & Jolly, 2000), the learning environment is defined as the atmosphere in which the teaching and learning processes are carried out, including if it is stimulating and the student can feel comfortable in identifying and reflecting on its limitations (Litzelman & Stratos, 1998).

2.10 How do Medical Residents Learn?

Learning and training in medical residences is the most widespread form of development of professional competition for recent graduates (Coraglio, 2009). Residence is a professionalisation process that involves not only the acquisition of knowledge and skills, but also reflection on attitudes, principles and values (Markakis & Beckman, 2000). This training is exposed to the realities of the health system, where current restrictions on schedules and organisational changes have affected the teaching process in medical residences, and where the influence of the context and organizational cultural values should be considered in learning between residents (Timothy, *et al.*, 2004). There are many approaches to explain how learning occurs in medical residences. Teunissen and collaborators' qualitative research made from focus groups with residents, developed a conceptual framework in which it is proposed that daily activities during the residency work is the starting point for learning. They postulate that it produces a process of interpretation and construction of meaning, which generates the refinement and

expansion of residents' knowledge and skills; this way residents learn by doing (Teunissen & Scheelle, 2007). This type of learning based on the active role of the resident's work, generates certain considerations in reference to patient safety, where ethics and quality of patients' care can be questioned when a non-fully experienced resident assists a patient, being that we must offer a safe patient care minimizing to the maximum the possibility of error and a possible harm to the patient. The key in resolving this tension seems to be the supervision and hence the hypothesis that better supervision can generate a better patient care (Swanwick, 2008).

2.11 How do we evaluate medical teaching? Evaluation Instruments

The evolution of concepts of meaningful learning and skills has led to the obvious need to develop instruments that evaluate the competencies and not only the specific contents, characteristics that are clearly related with the teaching process. The evaluation of the teaching role can be done in various ways using an instrument or a combination of instruments. For instance, there are questionnaires of teacher's self-evaluation and questionnaires completed by students or colleagues. In addition, there are instruments to take "in vivo evaluations". Literature describes the use of these instruments in a varied way (Post, et al., 2009). A systematic review showed that the historically most used evaluation method is the evaluation form completed by the students since they have been the fundamental element of evaluation of the last thirty years (Berk, 2005). In addition, an evaluation resource commonly used for medical teaching is self-assessment (Onyebuchi & B, 2011). Teachers evaluations made by students in appropriate conditions are multidimensional, reliable and relatively valid compared to other forms of evaluation, additionally they are useful to improve teacher performance (Marsh & Roche, 1997). Specifically, in Residents' evaluation, there is an extensive bibliography about the evaluation of teaching competencies. A systematic review made by Coverdale, *et*

al. (2010) studied the tools to assess teaching skills and effectiveness, detecting self-reports, evaluation by students, and structured observations of the performance. The development of OSTE exams (Observed Structured Teaching Evaluation) is proposed as a possibility of valid results to evaluate students, in our particular case, Medical Residents (Zabar & Hanley, 2004). The evaluation of teacher performance can also be considered a source for the diagnosis of learning needs, being a tool, which allows evaluators to detect learning process deficit in order to carry out training and improvement plans (Grant, 2002). Additionally, there are validated questionnaires for the evaluation of teacher's performance in the clinical setting, but they do not consider whether the teacher is a resident or not.

Among the questionnaires for evaluation of teaching performance there is one known as the Maastricht Clinical Teaching Questionnaire (MCTQ). It is an instrument for the evaluation of clinical teachers considered reliable and valid (Stalmeijer & Dolmans, 2010). This instrument presents as an advantage that it was built on a solid theoretical framework which is based on constructivist principles of learning, and it has questions that explore separately the knowledge domains allowing feedback on specific aspects (Reyes, *et al.*, 2010). After using this tool, results showed that as the medical program develops, students and residents begin to function more independently but they still require their teachers' supervision and feedback and also results showed that it seems that medical students prefer to learn using the role model. Students' teaching evaluation presents some difficulties that must be considered. For instance, numerical evaluations about clinical teaching have discrepancies depending if they are made by students or by residents, proposing that the levels of professional development during clinical training can explain why medical students differ with those residents when they assign the importance of various issues in their clinical teacher (Stern & Williams, 2000). Regarding residents' self-evaluation in medical education there is a survey made to residents of the Faculty of Medicine of the Autonomous University of

Mexico (UNAM). This survey was applied to 5186 residents to evaluate their own perceptions as teachers and their learning needs in medical education. A questionnaire developed by a Committee of Experts of the UNAM, which included medical educators, clinical Key Opinion Leaders (KOL) and directors of Residency Programs was used. Results showed that 797 (92.5%) residents recognise their role as educators. They estimated that 45.5% of their learning comes from other residents. Of the total respondents, 4,667 residents (90%) considered that they should train in medical education (Sánchez-Mendiola, *et al.*, 2010). There is also a Chilean work that uses a Spanish version of the METRQ instrument (Medical Education Teaching Readiness Questionnaire) that describes the perception of undergraduate and graduate medical students regarding the relevance of teaching, their teaching skills and how they developed them. In this research residents expressed an important perception of the need to be trained to teach and their feelings to be unprepared to teach and that they spend many hours working as teachers (Cordova-Leon, *et al.*, 2019).

2.12 Teaching Courses / Workshops and Resident-as-Teacher curriculum

Over the last few years, medical residents' training courses have been radically modified because there is a strong medical education community's perception that the clinical content of these courses is not allowing to include teaching and learning technique. For this reason, universities have taken decisions about residents' teaching skills training. For instance, D'Eon (2004) mentions the use of TIPS (Teaching Improvement Project Systems) in the University of Saskatchewan College of Medicine in Saskatoon, Canada. TIPS was designed to improve residents' basic knowledge, skills, and attitudes in crucial aspects of the teaching-learning process. This program has been offered to faculty and residents and has become a regular part of postgraduate training for all medical speciality programs. Another initiative in teaching training is Resident-as-Teacher program (RaT) that is producing

noticeable improvements in the clinical proficiency and teaching skills of residents (Hill, *et al.*, 2009). The Resident-as-Teacher program is aimed to improve residents' teaching skills, enhancing the educational experience of both residents and medical students and it is being used by several higher education institutions as The University of Florida's College of Medicine that defines RaT program's objectives as follows:

- Be effective teachers of medical students, residents, physicians, and patients in a variety of settings
- Be able to quickly determine the learning needs of students and to appropriately select and use teaching methods and didactics that optimally meet these needs.
- Be able to teach in clinical settings.
- Gain an appreciation of the importance of the educational process in medicine

(University of Florida, 2019)

As the evidence of the role of the Resident-as-Teacher (RAT) was collected, efforts began to implement programs that developed Medical Residents' teaching skills. In 1984, Greenberg and collaborators published their experience with an educational intervention in a paediatric hospital in Washington. The intervention consisted of an eight-hours workshop where residents learned basic teaching principles, practiced student-based models and the resolution of clinical problems. The evaluation of the impact of the course was made using questionnaires applied by teachers, peers and students themselves; results showed a better attitude, greater confidence and better evaluations than the control group (Greenberg, *et al.*, 1984).

Afterwards courses and workshops on the subject proliferated as well as the literature reports. By 2004 there was already enough material to publish a systematic review, where fourteen studies were selected for analysis (Wamsley, *et*

al., 2004). In 2009, new reviews were published with an increasing number of articles, which showed, initially, that the importance of this topic had increased over the years (Post, et al., 2009); (Hill, et al., 2012); (Lacasse & Ratnapalan, 2009). Studies that were published were mostly from USA and a minority from Canada, Denmark, Pakistan and Australia. The specialties that were most frequently measured have been Internal Medicine, Family Medicine, Gynecology-Obstetrics and Paediatrics. About two thirds of the published studies were descriptive and not controlled. The teaching skills most frequently included in these courses were: leadership, clinic teaching, procedure teaching, feedback and evaluation (Lacasse & Ratnapalan, 2009).

Table 1 shows the main topics used on these courses:

1	Characteristics of a good teacher, role model, how to be a good tutor
2	Orientation of students, learning styles, learning environment.
3	Teaching at the bedside
4	Learning micro skills. One-minute preceptor
5	Time management, organisational skills, teamwork
6	How to teach when you are not an expert
7	Teaching in small groups, problem-based learning
8	Teaching psychomotor skills
9	Teaching during the patient visit and hospital sessions
10	Doing good lectures, teaching large groups
11	How to give feedbacks

12	Summative learning evaluation
13	How to teach clinical exploration, file management, clinical reasoning, evidence-based medicine
14	The student in problems, harassment, abuse, “burnout” and fatigue in the residence activities
15	How to teach and evaluate ethics and professionalism, communication skills

Table 1. Residents-as-Teacher topics.

The rigor of methods to evaluate the effect of the studies related to resident's teaching courses were refined; at the beginning, the most used instruments were self-perception questionnaires and interviews, there are currently more sophisticated and objective instruments such as video analysis, peer and teacher feedback, checklists, up to the Structured Objective Teaching Exam ¹⁷ (Wamsley, *et al.*, 2004); (Post, *et al.*, 2009). This evolution was presented not only by the search for objective evaluations, but also by the intention to document that residents reach more authentic and relevant levels as a result of the training. In most of the studies evaluation was made immediately at the end of the course, some of them made a follow-up evaluations six months later and they found that knowledge declined over time suggesting reinforcement activities in teaching and education (Edwards, *et al.*, 1988); (Dunnington & DaRosa, 1998). In Nabi's systematic review, workshops were the most used educational modality (Nabi, *et al.*, 2017).

These workshops were from one to eight hours of duration per individual session (median of three hours), from one to multiple sessions over two years. In another systematic review of Residents as Teachers programs; Hill *et al.*, (2009) reported

¹⁷ SOTE for their acronym in English

positive results in the implementation of some program (even when the effect size was small. Due to the large heterogeneity of the studies, a formal meta-analysis could not be performed, although it can be affirmed that implementing a RaT program is better than not doing it. Regarding the research design of the published studies, in a systematic review Hill, *et al.*, found that 24% were randomized controlled trials, 34% non-randomized control group studies, 34% single-group designs (the most with pre-post comparison), and the rest were descriptive case series. It is interesting that in this topic a quarter of the studies that were analysed used the experimental design, although several of them had methodological deficiencies that potentially diminish their validity (incomplete follow-up, concealment of randomisation, among others). On the other hand, Hill sustain that it is not possible to carry out these studies with a double-blind method, due to the nature of the educational intervention. In Marton's *et al.* research (2015), seven articles describing medical student teaching workshops were reviewed, these workshops varied from a single three-hours to a series of workshops over sixty hours. These workshops are often offered for medical graduates that do not receive formal teacher training during or after medical school, introducing basic principles of clinical teaching to newly graduated interns who have no previous teaching experience. The most common objectives of a teaching workshop are:

1. To give residents the unique position of bridging the gap between learner and teacher offering junior colleagues diverse and current teachings while working with them on the wards, in clinics and on call.
2. To help residents to maximize their time and abilities so that, in turn they can pass on important information to junior colleagues, thus ensuring them a successful future in medicine.
3. To instil ownership for the residents in the process of teaching their lower grades' partners.
4. To create a safe learning environment helping residents to understand how much they know.

Hill *et al.* (2012) prospectively investigated the effects of a teacher-training workshop on teaching behaviour of medical interns and on the clerkship learning outcomes of instructed fourth-year medical students. The workshop was implemented on November 2009 and was attended by thirty-four interns from one teaching hospital, afterwards, on February 2010, 124 - fourth-year - medical students rated the observable teaching behaviour of interns during a six week General

Surgery clerkship activity at the intervention hospital as well as at two comparable hospitals serving as control sites. Results showed that “Intern teaching behaviour at the intervention hospital was found to be significantly more positive, compared with observed behaviour at the control hospital” (Hill, et al., 2012, p. 34). Researchers concluded that the teaching training workshop noticeably improved teaching behaviour of surgical interns during General Surgery clerkships. The above noted research studies and literature lead us to the following conclusions (Note of the Author):

1. Residents spent an important part of their time on teaching activities with their peers.
2. Current medical speciality programs do not consider teaching skills in their academic program, however there is a strong predisposition from universities and educators about considering teaching training as part of medical speciality programs.
3. Workshops intended to improve resident's teaching skills may significantly improve teaching behaviour of residents in any medical speciality.

Another study was made by the University of Saskatchewan College of Medicine in Canada in order to determine if a two-day workshop for teachers, including faculty and residents, effectively helped residents to acquire and then use key teaching

skills in real-world situations. They used a randomised controlled experiment with third-party ratings of before and after videotaped teaching sessions done in actual performance settings. There were statistically significant and positive changes in two key areas taught in the workshop and showed slight improvement in a third. This study demonstrates that the workshop made a difference in the teaching performance of the intervention group (D'Eon, 2004). Currently, the teaching training of medical residents is a requirement of many specialization programs such as Accreditation Council for Graduate Medical Education in US (Accreditation Council for Graduate Medical Education. ACGME, 2016) and The Royal College of Physicians and Surgeons of Canada (Frank, *et al.*, 2015). Approximately 50% of residency programs in the United States have a Resident as Teacher curriculum, teacher training courses for residents, formal and longitudinal (Fromme, *et al.*, 2011); (Farrell, 2006). There is still no consensus on the content and design of teacher training programs aimed at residents, and it is recommended to evaluate the programs that are carried out (Jarvis-Selinger, *et al.*, 2011). One method of program evaluation is the Kirkpatrick model, recommended by the Association of Medical Education of Europe-AMEE Guide No. 10628 (Kirkpatrick, 1994). This model comprises four levels:

Level 1: Reaction. Evaluate the degree to which participants find the training favourable, appropriate and relevant to their needs.

Level 2: Attitude and learning. Evaluate the degree to which participants acquire knowledge, skills and attitudes of trust and commitment to what they have received in the course.

Level 3: Conduct. Evaluate the degree to which participants apply what they have learned in the course in their daily practice.

Level 4: Results. It evaluates the degree to which measurable results are met at work, the positive effects on the institution and on the other members of the institution.

Regarding the type of teaching learning that is recommended, in a study made by Melvin *et al.* (2014) the qualities and techniques of teaching in internal medicine in which the students were interested were defined. Of 90 participants, 80 (89%) responded. Respondents found the use of clinical examples (78%, 62 of 80) and repetition of core concepts (71%, 58 of 80) highly useful. In contrast, most respondents did not perceive that giving feedback to residents, or receiving feedback from residents, was useful to their learning. With respect to resident qualities, respondents felt that a strong knowledge base (80%, 64 of 80) and tailoring teaching to the learner's level (83%, 66 of 80) was highly important. In contrast, high expectations on the part of resident supervisors were not valued. These results mean that Medical Residents play a critical role in medical student education through near peer teaching in clinical and didactic contexts, additionally residents value a good knowledge base and practical approaches to teaching from resident instructors and students perceive resident teachers as contributing to their knowledge and skill development, and view resident's opportunities for direct supervision (Note of the Author).

Summarising what was expressed in previous paragraphs, I conclude that teaching activities between one Medical Resident and another have a structural importance in the development of training of medical specialities as well as to improve the perception and confidence of residents in their daily work. Additionally there is evidence of the importance of the application of peer-assisted learning, mentor-assisted learning and residents' teaching skills as a strategy that allows teachers to manage large groups in small workgroups, improving the interaction between participants, being a source of emotional support, and providing help in reflection and construction processes in a framework of non-threatening trust, privileging the "face to face" interaction, favouring the constructive resolution of problems, intensifying student participation, individual responsibility, with an integral perspective and contextual perception of what is learned.

Chapter 3

Trial Study, Methods and Methodology

3.1 Trial Study

Previous to my dissertation, a trial study was made aimed to review and test the methods and methodology; the study question focussed on how I would conduct the trial and how it would function as a pilot study for my dissertation (main study). To make a trial study is an important step previous to a main study in order to ensure that the research procedure will have the results intended, to determine the feasibility of the study, to review and test the methods and methodology, to identify problems with the design of the study and the sampling method and to test and improve data collection instruments (Cohen, et al., 2011). The title of my trial study was: **“General Surgery Residents’ Perceptions of the use of Virtual Reality as a training method”**. The study question focussed on understanding General Surgery Residents’ perceptions about using virtual reality as a training method to improve their knowledge and skills in general surgery. The purpose of doing this trial study was aimed to explain the methods that I will use in my dissertation and the lessons that I learned after finishing the trial study to be applied in my main study. The trial study modelled a similar inquiry process to the main study. It was designed to offer insights into anything that might ultimately challenge the empirical basis, epistemological foundations, methodology, methods, viability, feasibility, rigour, credibility and utility of the proposed main research. The trial study used the same type of participants than the main research: Medical Residents, with the difference that in my trial study participants were General Surgery’s Residents and in my main study they were Intensive Care’s Residents. Another difference with my main study was that participants did not receive a

workshop and that there was only one interview. The trial study's interview questions had a similar essence to the main study, inquiring about the perception of the residents about certain actions or procedures that were related with their professional training and personal development. In my trial study, participants' perceptions were about the use of virtual reality, in my main study, participant's perceptions were about their teaching skills before and after receiving a Resident-as-Teacher Workshop. The sampling method chosen was non-probabilistic purposive sampling. I selected participants from a target population with certain characteristics like being medical residents and being part of the General Surgery Postgraduate Program in Hospital Luis Vernaza and willing to take part in the research (Marshall, 1996). I must acknowledge that because of the chosen subset, there may be some limitations on generalisability beyond Ecuador. However, their characteristics (for example in terms of educational background, gender, socio-economic class) is similar to that found amongst residents in this speciality elsewhere in the world, particularly in Latin America. Hence it was felt that the choice of sample would allow the implications of the research to be extended beyond the particular case.

My target population was thirty General Surgery Residents, 16 females and 14 males; they were young physicians and their age was around 24 to 30 years old, they were from different parts of the country (Ecuador) and they were in different levels of training (R1, R2, R3). The study sample consisted of 5 residents of whom 3 were male and 2 females. The main purpose of using this method was to find out what is "in and on someone else's mind" (Patton, 2002, p. 341), in this particular case in General Surgery Residents' mind about using virtual reality. About this, Patton wrote: "...I interview people to find out from them those things I cannot directly observe' (p. 340)." This was important in order to engage and create a rapport with the interviewees allowing participants to start thinking more deeply about their experiences and perception of the research topic.

I believed and that was my statement at that time, that this method will be useful in my dissertation research being that I will be studying participants' perception of a given situation that includes their meaning of experience and the way that experience impact on their learning process. Using semi-structured interviews in my trial study, allowed me to ask a series of questions, with accompanying queries that probe for more detailed and contextual data, having access to rich, in-depth information that helped me to understand the unique and shared aspects of lives, attributed to participants' lived experiences (Piercy & Cheek, 2004). The main focus of the interviews was to ask participants to describe their experiences, feelings, thoughts and perceptions about the use of virtual reality in their surgical training and also what factors might affect their perception about virtual reality and whether their perception had changed from their earlier years of schooling (and if so why). My trial study served to consider, learn and understand how qualitative methods as interviews and interpretative approach are appropriate to inquire and gather data that will contribute to understand participants' perception about a given issue, and also to uncover the meaning of their experiences, thoughts and feelings. It also allowed me to apply certain changes in my main study such as data collection analysis and the type of questions that I have to use in my interviews in order to capture participants' perception about the topic.

After finishing the trial, the lessons incorporated to enhance the main study were related to the design of the study, the sampling method, the type of interviews and the codification of the interview answers in order to obtain conclusions and explain my findings. My trial study was phenomenographic research that used a qualitative method with an interpretative approach and was aimed to understand General Surgery Residents' perceptions about using Virtual Reality as a Training Method. Qualitative approaches share a similar goal in that they seek to arrive at an understanding of a particular phenomenon from the perspective of those experiencing it (Vaismoradi, et al., 2013). This approach was chosen because it is an in-depth exploration of what participants think, feel or do and crucially the

reasons why they behave or perceive things in certain way. Phenomenography is a qualitative research methodology, within the interpretivist paradigm used to inquire into the way that people experience and perceive something and aims to reveal the different ways in which people conceptualise various phenomena in the world around them (Marton, et al., 2015). It provides a description of phenomena, which not only characterises different conceptions of learning, but also searches for relationships both within and between these conceptions. Qualitative researchers seek to understand human phenomena and experience in their particularities of persons, places, times and cultural and social contexts. An interpretative approach has been used in a number of attempts to describe the meaning of participants' lived experiences of teaching and learning (see for example (Gilgun, 2006); (Creswell & Miller, 2000). Through this method and using semi-structured interviews I attempted, in my trial study, to understand participants' subjective-meaning structures and their relationship to observable learning activities and outcomes (Ramsden, 1993). An interpretative approach and interviews helped me to inquire participants feelings and thoughts about virtual reality in my Trial Study. Research data were collected through open-ended questions in semi-structured interviews that posteriorly were analysed through iterative readings to produce an outcome space (Reid, 1997).

3.2 Methods and Methodology

Research methods can be valued as a set of orderly processes that allow us to discover and explain a truth. Qualitative research uses diverse methods and techniques as a range of strategies that will help gather the data to be used for inference and interpretation, for explanation and prediction. The importance of the method is that it allows to clarify what before was not known (Cohen & Crabtree, 2008). The application of the method does not depend on itself, but on the researcher, who chooses the object of study to investigate, selects the system of

concepts to work and structures the way the research will be conducted. The implication of having a clear method is that the research work is carried out with order and sequence. If the method is a way to apprehend reality, it, therefore, implies working systematically, making possible that the problem studied could be understood in its context. Thus, investigating, discovering and arguing, are activities that can be fulfilled with the use of the method, which implies that the search and production of scientific knowledge is an orderly and conceptual reflection that is essential to understand the research problems and proceed to its explanation (Dicicco-Bloom & Crabtree, 2006). With the use of the method, it is feasible to work not only with normative categories but also through operational concepts that allow measuring facts, situations or events that have been defined as research problems. Connecting the normative field with the empirical field is possible to be achieved with the use of a method. The connection between thought and reality is inscribed in the vision of how the method is applied to generate relevant knowledge. With the use of the method, it is feasible to associate the conceptual and the factual elements that refer to the need to work with empirical data. In this sense, there are two ways of situating the usefulness of the method in the generation of scientific knowledge: one relates to questionnaires, that alludes to a more abstract and logical orientation, related to working at the foundation level and disciplinary structure of a field of study, but without having an empirical approach to reality (Aguilera, 2013, p. 82). This is the case of theories that are characterized by the orderly articulation of universal propositions that have explanatory and predictive value. The second utility of method is related to the production of empirical knowledge that is not only a part of reality but also is related to the experience of a cognitive subject to work with facts or actual situations.

My dissertation is an interpretive study exploring the impact of a Resident-as Teacher workshop in the perception of teaching skills in a group of Medical Residents. The impetus for this study was the result of my own experiences

teaching medicine and being part of groups of medical residents during my 12 years' medical training time in various Hospitals and Universities. Data was gathered from the transcripts of twenty-five residents who were interviewed twice for thirty minutes, over a period of two weeks, in July 2019. The central research question I wanted to investigate was: **What is the impact of a Resident-as-Teacher workshop on Medical Residents' perception of their teaching skills?** This central research question was further refined into a set of more specific research questions which guided me for the design of the interviews:

- **What do you know about residents teaching activities? What is your experience in medical teaching?**
- **What could be a way that teaching could improve your medical practice?**
- **How could the resident's teaching influence on patient care?**
- **In what way teaching would influence your communication skills?**

Identifying areas of interest from these questions assisted me in organising a framework for the interviews in addition to keeping the interviews focused. If scientific knowledge is subject to production, it implies that there are ways to generate it based on reflection. This means that a resource to produce knowledge constitutes a research method, understood as a tool that makes possible to investigate, clarify and categorize segments of reality that have been defined as problems.

At this point, there is a question that arises: Why did I decide to use **perception** as an outcome to be studied in my research and how this perception could influence in participants' behaviour producing a **change in practice** that will positively influence their professional development? As I stated in Chapter Two, one of the aspects that have been privileged in both psychological and philosophical studies on **perception**

is that of making judgments, which is posed as one of its basic characteristics. The formulation of judgments has been treated within the scope of conscious intellectual processes, in a linear model where the individual is stimulated and has sensations, and intellectualises them by formulating judgments or opinions about them, circumscribing perception in the realm of the conscious mind. Through experience, it can be anticipated that throughout the growth of the human being, he/she is learning and has various experiences, which are adopted from the stimuli received. This creates a behaviour, predictable or not, in every person and social group facing a stimulus (Perez Martínez, 1986). According to Laplanche & Pontalis (1996), the human being is like a mirror, it reflects what he/she is: the sum of the lived and perceived experiences. Thanks to conscience and the use of reason, each individual is able to select what to show, what to hide and how to do it. This behaviour is learned throughout the individual's life and adapts to the environment in which they develop. It can be said, then, that this selection mechanism is one of the results of the perception process. Perception is the means by which the human being relates to the external world. And this is because the brain interprets stimuli that come from outside, to turn them into experiences. As an interpretation, it is understood that it is the "deduction, through analytical research, of the latent meaning existing in verbal and behavioural manifestations" (Laplanche & Pontalis, 1996, p. 201). Within perception, this is one of the activities of the process, whereby the world is understood. This interpretation varies from individual to individual since it depends on their previous experiences. These experiences are what differentiate one individual from the other and what substantially conditions the way of seeing the world, and the type of relationship that each individual establishes both with another individual, with objects, and the environment in which it develops. Perception is what causes behaviour, both in an individual and in a social group (Laplanche & Pontalis, 1996). Following Watson (1998), if an individual is going to act differently he/she has to be able to 'see' things differently. This 'seeing' goes beyond the process of visual perception or any sensation or stimuli related to the senses, into a new way of behaving as a result of changes brought about by the reflective process (Brandon & Walker, 2003). Particularly in my study,

after receiving a Resident-as-Teacher workshop, participants were able to voice personal perceptions and - through the development of group dialogue, questions and answers and feedback exercises - to have a reflecting process that according to Platzer, *et al* (2000), can enhance their learning skills as well as produce a significant development in their critical thinking ability and perspective transformations leading to changes in attitudes and behaviour. On the other hand, allowing medical residents to interiorise and reflect on their perception of their teaching practice, offers multiple benefits for the residents leading them to achieve beneficial changes in their medical practice. As an example, in the Busari study, residents acknowledge that performing teaching activities stimulated their critical thinking and reflection on their knowledge, increasing their motivation for continuous learning and self-learning (Busari, *et al.*, 2002). Participants in this study perceived an improvement in their skills to teach more effectively. This improvement in global perception of teaching competence was similar to that reported in other clinical teaching courses for residents, which show a high degree of global satisfaction, improved knowledge of educational principles, positive attitudinal changes towards teaching and more confidence to teach. After a Resident-as-Teacher workshop, participants more frequently elaborated personal objectives to exercise and in this way transfer the knowledge to their context of habitual practice (Reyes, *et al.*, 2010).

My study uses a Qualitative Action Research with an Interpretive Approach aiming to understand the impact of a Resident-as-Teacher workshop on Intensive Care's Residents' perception about their teaching skills. In spite of being in a medical education field where most of research is informed by a positivistic paradigm, qualitative approach is used because it is an in-depth exploration of what participants think, feel or do and crucially why they behave and perceive things in certain way. The use of qualitative research in medical education began in the 1980s as a response for the need of more prescriptive theory, building to complement the dominant positivistic paradigm of controlled experiments (Harris,

2002). Qualitative researchers seek to understand human phenomena, usually human experience, in their particularities of persons, places, times and cultural and social contexts; lived experience is part of diverse types of qualitative research as portraiture, cultural studies, and interpretivist phenomenology (Gilgun, 2006). Also, qualitative research uses a conception of reality and interpretivist techniques that seek to describe and decode a natural occurring phenomenon and is mostly oriented to determine its meaning instead of its quantification. Furthermore, it defends the open relationships and allows researcher to know participants' perception of its reality (Pinero, 2010). This is an ideal scenario for the purpose of my dissertation: to interact with participants through semi-structured interviews in order to create meaning from the encounter between researcher and researched where "how" and "what" are particularly suited for exploration (Ng, *et al.*, 2014). To better understand and apply qualitative research, Fraenkel and Wallen (1996) listed five basic characteristics of this method:

1. The natural environment and the context of the issue is the direct and primary source of data and the researcher's role is being the key instrument of the study.
2. The data collection is mostly oral and not quantitative.
3. Researchers emphasises both processes and results.
4. The data analysis is inductive.

Is interested on "determining how participants think and the meaning of their perceptions about the issue being investigated" (p. 440).

All these characteristics are part of this research; participants interact with researcher, in their natural - working day - environment. Their teaching-learning processes are the primary and direct source of data. The use of interviews makes my data collection mostly oral. The importance of processes such as recording and transcribing interviews, analysing data, re-interviewing and interpreting phrases,

meanings and statements are reflected in my conclusions and results. This research is performed during medical residency activities, allowing me to deeply understand participants' responses, through methods - such as in-depth interviews - for representing "...details of the social and cultural aspects of individuals' lives" (Agee, 2009, p. 431). Action research, the type of research used in my study, is considered an organisational model and a methodological strategy to conceptualise, implement and evaluate practices, behaviours and responses. Action research has been described as a:

“...tradition that links processes of inquiry to the lives of people as they come to grip with the problems and stresses that beset them in their day-to-day lives” (Sax & Fisher, 2001, p. 71).

After taking the Residents-as-Teacher workshop, participants were interviewed with the same questionnaire used before the workshop. Using the same questionnaire in both interviews is a way to avoid bias in participant's answers, this allowed me to determine if there is a difference between their perception of teaching before and after taking the workshop and perceive qualitatively the impact of the workshop on them. This method, according to Sax and Fisher is part of a worldview that “sees human beings as co-creating their reality through participation, experience and action” (2001, p. 72).

3.3 Data Collection

3.3.1 Sampling

Before selecting my sampling method, one of my concerns was to be centred on the scope and nature of the universe to be sampled and what part of that universe must be included to provide a valid representation of it (Luborsky & Rubinstein, 1995). These concerns produced the emergence of the need to think about sampling for meaning, defined as “the process of reference and connotation, undertaken by individuals, to evoke key symbols, values and ideas that shape, make coherent, and inform experience” (ibid, p. 98) and include the selection of subjects in research that have as its goal the understanding of the naturalistic perception of self, society and the environment, in other words, research that takes the insider’s perspective. Two important concepts in the evaluation of the quality of the results of probabilistic sampling-based research are 1. External validity, which refers to the possibility of generalising results to other populations or situations similar to that studied, and 2. Internal validity, which refers to the possibility of making correct inferences about the subjects examined, which depends on the fidelity of the observations reflecting the phenomenon being studied and involves a bias-free measurement (Martinez, 2006). Quantitative researchers are often interested in being able to make generalisations about groups that are larger than their study samples. While there are certain instances when quantitative researchers rely on nonprobability samples (e.g., when doing exploratory or evaluation research), they tend to rely on probability sampling techniques. Qualitative researchers are no strangers to those concerns, but the solution they propose is very different. In this area, the possibility of generalising the results obtained in a certain context to another whose meaning is similar to that of the context studied is based on what is called **transferability** (see chapter 4), which can only be given from the rich and deep description of each phenomenon in its context and is not based in the number

of cases studied (Hidalgo, 2006). In this regard, the generalisation principle, understood as the degree to which the findings of a study are applicable to other samples or populations, requires interpretation from another perspective that assesses the nature of the qualitative research, whose results do not seek to obtain laws or principles, but to comprehensively examine the actors and contexts involved in the subject of study (Arias & Giraldo, 2011).

In a qualitative study, the researcher can be working with a relatively small number of observation units, even sometimes with a case only (although it may also involve a large number of participants: members of a certain ethnicity, people of a certain locality, health workers of an institution). Each unit - or set of units - is carefully and intentionally selected for its ability to offer detailed information and the detailed issue of interest in research. Hence this procedure is known as a **selective or purposive sampling**. The fundamental interest here is not measurement, but the understanding of social phenomena and processes in all its complexity. Many of the questions that arise are about the meaning that these have for participants. For this reason, the place that participants occupy within the social, cultural and historical context of which they form part is something that the researcher must take in consideration in the moment of choosing the sampling method (Marshall, 1996). Decisions that in a probabilistic sampling design would be considered as sources of bias, in a qualitative inquiry are a way to ensure the rigour of the approach. As Mertens points out, the myth of homogeneity is questioned to address the dimensions of diversity in each specific context (Mertens, 2005).

Several of the texts dealing with procedures for qualitative research mention the various strategies one can follow to guide the choice of observation and analysis units, according to the specific purpose of each study (Patton, 2002); (Miles & Huberman, 1994); (Creswell, 2003). As Patton explains, the logic that orients this type of sampling - and what determines its potency - resides in getting the cases chosen to provide as much wealth of information as possible to study the research question in depth. In his presentation on sampling techniques in social and

behavioural sciences, Teddlie and Yu (2007) organise the cluster of alternatives available following the purposes of the study. The purposive designs remain organised, as well, into four subsets. The first includes those who try to find situations or cases that represent others similar to them, and also those who seek to compare different situations; sampling of typical cases, extreme or deviant cases, the case of intensity (cases that, without being extreme, manifest with particular detail the phenomenon under study). The second subset is made up of the designs that focus researchers' interest on the case itself or a specific group of cases; for instance, a critical case (which requires prior knowledge of the dimensions that make it critical), a revealing case, politically important cases, and cases of judgment or complete collection (which seeks to include all those participants who meet a certain criterion). In the third subgroup, they place sequential designs, where the principle of gradual selection prevails, either because the purpose of the study is the generation of theory, or because the selection of the sample is being decided simultaneously with other aspects of the study, as concepts emerge and information is gathered; part of this methods are the theoretical or theory-based sampling, sampling of confirming or contradictory cases (of patterns that emerge from the information collected), sampling of opportunity or emerging cases (those cases that follows the clues that arise during fieldwork with the flexibility that allows us to take advantage of the unexpected), and a snowball or chain sampling (where cases of interest from someone who knows someone who may be a good candidate for participation in the study are identified). In the last subset are placed the sampling designs that include a sort of modalities of **purposive sampling**.

Following the above noted concepts, I decided to use in my study a **Non-Probabilistic Purposive Sampling Method**, I used this method because I was aiming to focus on the particular characteristics of a population that I will mention later in this section.

3.3.1.1 Participants

My target population was Intensive Care Medicine Residents, working at Hospital Luis Vernaza as part of the Intensive Care Medicine Specialisation Program. Participants could be at any level of medical residency (R1, R2, R3, or R4)¹⁸ and had to meet the following criteria to participate:

1. To be resident of Luis Vernaza Hospital
2. To be part of the Intensive Care Speciality Program
3. To understand and speak English
4. Willing to discuss their teaching activity, feelings and perceptions with the researcher
5. Willing to receive workshop training for a weekend.

There were thirty residents training in Intensive Care Medicine. I invited them to be part of the study, previously letting them know that they had the right not to accept the invitation. I explained with details the nature and procedures of the study including the sixteen hours workshop that was intended to be taught during a weekend. My insistence on designating them as "invited to participate" is to emphasise that in this form of work, the acceptance of informants is a conceptually essential and ethically intrinsic element (Lincoln & Guba, 1985). Of the thirty residents that were part of the Intensive Care Medicine Program, **twenty-five residents** met the criteria and agreed to participate in the study and to receive the workshop. Twelve participants were females and thirteen males; they were young physicians coming from different parts of the country, graduated from different medical schools and their age was between twenty-four and thirty years old.

¹⁸ R1, R2, R3, R4 stand for Medical Resident 1, 2, 3, and 4 according to the year of training.

At this point, an interesting question aroused: **Why did I chose Intensive Care Medicine as the participants' speciality for my study?** Why not Internal Medicine or Dermatology or Psychiatry or any other speciality? Medical specialities vary in what refers to the degree and level of complexity of the procedures, criteria and decisions that must be made at the time a patient is treated. Clinical experience suggests that there are substantial differences in patient complexity across medical specialities (Tonelli, et al., 2018). Certain specialities involve a high level of complexity in the processes and tasks that a resident or senior physician must complete. For example, a cardiovascular surgeon, or a neurosurgeon, must perform extremely delicate procedures and actions that include a high risk for the patient if they are not performed accurately and perfectly. In the study made by Tonelli (ibid, p. 11), substantial differences were found in 9 different markers of patient complexity across different types of medical specialists, including medical subspecialists, general internists, and family physicians. These findings have implications for medical education and health policy. The Intensive Care speciality requires selective and delicate procedures that compromise the patient's life, allowing residents the opportunity to have a wide range of topics and themes that could be taught and discussed with their peers putting into action teaching activities between residents and students. Teaching activities performed by residents from this kind of specialities can positively influence on the improvement of skills and abilities in performing these procedures (Zabar, et al., 2004); (Busari, et al., 2002); (Bing-You, et al., 1997).

Despite the fact that the characteristics of the medical speciality that I selected for my study were specifically aimed at the complexity of the speciality and the procedures that are regularly performed in hospital work, the generalisation or transferability of my findings can be extrapolated to medical specialities with similar characteristics or with less complexity of procedures because the practice of teaching activities are common to all of them.

3.4 Ethical Considerations

It is important to mention that some situations that involve ethical issues were considered by me before doing my interviews. One of these situations is my own position of Director of Medical Education in the same hospital where participants are working. I asked myself: Would this be a factor that could affect the Interviewee's answers? Would they feel self-conscious or restrained by my position of Director of Medical Education? About this I will cite some authors that explain that the interviewer must be aware of his own feelings, prejudices, values and expectations, which can be sources of bias. Szymanski (2011) mentions that the interviewer cannot be someone chosen at random and must have the minimum knowledge of the socio-cultural and institutional environment of the Interviewee; the interviewer is fulfilling a cultural role assigned by the society to which he/she belongs. Given the possibility of assuming such a role, the interviewer should ask about the characteristics of the Interviewee, which may (or may not) make the interview a pleasant experience. Likewise, the interviewer must also recognise in itself previous experiences that may contribute to his perception about the Interviewee's answer and if there may be circumstances that may affect, negatively or positively, the interview. Grummit (1992) adds that there is no way to control and plan an interview if you don't have the clarity of where you want to go with it, at the same time, the researcher cannot conclude that the objectives of the interview were achieved if there is no certainty about them. It is also crucial during the preparation of the interview to understand the impact that the interview may have on the Interviewee or that may have a direct relationship with the Interviewee, in addition to knowing who the Interviewee is, when the interview will be given and what is its objective. These assertions have a direct relationship with the fact that as Director of Education I am aware of the residents' teaching needs and the context in which they operate. Taking in consideration all these factors I believe that there is not any ethical conflict within the interviews due to my Hospital's position, at the contrary it would contribute to have a better perception of the residents' thoughts and feelings and would help to understand their answers.

As a study of morality, ethics is a practical philosophy whose task is not precisely to resolve conflicts, but to face them. Neither the theory of justice nor communicative ethics indicates a safe path to a well-ordered society or the ideal community of dialogue they postulate. It is precisely that long stretch that remains to be travelled and in which we are that demands an urgent and constant ethical reflection (Camps, 1992). The exercise of scientific research and the use of knowledge produced by science, demand the researcher's ethical behaviour. Non-ethical conduct has no place in scientific practice of any kind. It must be pointed out and eradicated. Researcher with particular interests corrupts research process, ethics, science and its products, and also corrupts itself. There is a general agreement to avoid unethical behaviour in the practice of science. But the problem is not simple because there are no clear and unquestionable rules. Ethics fully deals with conflict situations subject to moral judgments. Qualitative research shares many ethical aspects with conventional research. Thus, the ethical aspects that are applicable to science in general are applicable to qualitative research. For example, what can be said about the relations of science with the values of truth and justice also applies correctly to this type of research. Scientific practice as a practice of freedom is the same when we conduct qualitative research. However, the problems, methods and communication and dissemination of qualitative research raise some additional conflicts. We can analyse the ethical considerations of qualitative research from some points. For instance, the specific values of qualitative research. Qualitative research recognises the subjectivity of the subjects as a constitutive part of their inquiring process. This implies that ideologies, identities, judgments and prejudices, and all elements of culture permeate the purposes, the problem, the object of study, are involved in any qualitative research, they are even part of the selection of resources and mechanisms used to present and disseminate the results and interpretations of the study. The implications of this condition have great consequences.

Apart from the difficulties already present in other types of research, qualitative research has additional challenges before it. Qualitative research in the human sciences investigates, as I indicated before, the human condition, this means that it builds knowledge while welcoming (and at the same time avoiding falling into reductionism) complexity, ambiguity, flexibility, uniqueness and plurality, considering the contingent, the historical, the contradictory and the affective, among other conditions of the subjectivity of the human being and his social character. Such conditions are characteristic of the object of study in the light of the qualitative approach, while they are also values cultivated during the investigation. They are, to a large extent, the richness of qualitative research depending on how well we have captured and described these conditions in the search for meanings. A special mention must be given to the fact that, from a qualitative approach, we accept that the object of the investigation is an interactive, motivated and intentional subject, who assumes a position in front of the tasks he/she faces. For that reason, research cannot ignore that it is a process of communication between researcher and researcher, a dialogue that takes different forms (Gonzalez Rey, 2000).

Communicative ethics studies many facets and implications of the dignity of the human being as an interlocutor. It indicates that the category of person, a main part of the ethical field, is expressed as a valid interlocutor, whose rights to reply and argumentation have to be pragmatically recognised. And that basic reciprocal recognition is the vital element without which a person would not be able to come to the knowledge of the truth of the propositions and the correction of the norms. From here Gonzalez Rey (ibid, p. 61) builds a theory of human rights and a theory of participatory democracy. In addition, he outlines a notion of extremely fruitful autonomy in various fields of social life allowing individuals to be who, due to their communicative competence, are rationally entitled to participate on an equal basis in the deliberation and decision of the norms to which they must submit (Cortina, 1992). There are no defined rules to study these conditions in all cases. Each

particular study should explore them for the specific case. Qualitative research shares many ethical aspects with conventional research. Thus, the ethical aspects that are applicable to science in general are applicable to qualitative research. For example, what can be said about the relations of science with the values of truth and justice also applies correctly to this type of research. Scientific practice as a practice of freedom is the same when we conduct qualitative research. However, the problems, methods and communication and dissemination of qualitative research raise some additional conflicts. We can analyse the ethical considerations of qualitative research from some points. For this opportunity we will see the specific values it has, some of the main ethical approaches to discuss it and the ethical evaluation of research.

My ethics application was presented to Glasgow University's Ethics Committee before starting the study. The following documents were submitted:

- Ethics application
- Sample Letter
- Plain Language Statement
- Consent Form
- Permission from the Institution where the study will be undertaken
- Interview's themes and questions

Once the ethical application was approved, participants were informed about the purpose of the investigation and the main features of the design. They also received a plain language statement ensuring that identifiable information and the risk of harming someone should be the least possible (Dicicco-Bloom & Crabtree, 2006). Participants had the right to disengage from the research study at any time. It was ensured that all participants understood the risks they may face as a result of being part of the research and the benefits that might accrue to them as a result of participating. They were invited to feel free to make an independent decision to

leave the study without fear of negative consequences. Each participant received a full explanation about the interviews and that subject to their permission this data would be used for research purposes. A debriefing document was given to participants and the informed consent was read by each participant and fully explained by researcher before the study started. It was clearly explained that identifiable information and the risk of harming someone should be minimised and that they had the right to disengage from the research study at any time. All participants were informed that interviews will be recorded and that all the information gathered during the investigation will be destroyed subsequently. This is an important part of the trial, following what Diccico-Bloom and Crabtree (2006) conveys:

“Specific consent for tape-recording will be included in informed consent forms and will be signed prior to the interview recognising that tape-recorded data can be a source of danger for those who are taped because recorded data is incontrovertible. After interviews recorded data will be carefully guarded and posteriorly destroyed” (p. 318).

Using data coming from participants' feelings, experiences and thoughts and interpreting that data to reach a conclusion, made ethical aspects a mandatory part of the study. It is the right of participants to be fully aware of all the processes of the investigation and to receive complete information about the study and what researcher will be doing with the data. During the interviews researcher receives not only simple data, but pieces of information that are part of the truth of other people's lives such as the way that the workshop have impacted on their teaching skills perception. Using this information for researcher's conclusions means - echoing (Brayton, 1997)- “control and power over the research process” (p. 5), these privileges as a researcher, compels me to consider all ethical issues and to fully apply them in my study.

3.5 Interviews

An interview is a face-to-face situation (Taylor & Bogdan, 1984), where there is an intimate conversation of reciprocal exchange, in which the informant becomes in an extension of our senses and assumes the identity of a member of his social group. In this interrelation, the reality of a group is reconstructed and the interviewees are general sources of information, where they speak on behalf of different people providing data about social processes and cultural conventions (Schwartz & Jacobs, 1984). The informants heard, felt, saw, lived situations that the researcher is interested in knowing. This is important since there are many situations in which the investigator cannot participate in the event directly or in which he/she was not present. In these cases, individuals communicate from their own experience and social scientists they only have access to attitudes, perceptions, expectations and anticipated behaviour through direct communication (Cannell & Kahn, 1993). In addition to these situations, there are authors such as Daunais (1993), who point out the relevance from the interview instead of observation; others, who privilege it instead of the survey for more subtle data. Some authors link it to other research techniques: observation, participant observation (Lessard-Hébert, *et al.*, 1990); (Martinez, 2006), while for others, the interview - as a situation - encompasses the same components of daily life (Galindo, 1998).

Individual interviews are probably the most familiar and the most often used form of data collection in qualitative medical education research. The main purpose of this method is to obtain a special kind of information to find out what is in and on someone else's mind (Patton, 2002). In my Dissertation, I chose semi-structured interviews because they allowed interviewer and Interviewees to diverge to pursue an idea or response in more detail (Britten, 1999). Semi-structured interviews have some characteristics such as engaging interviewer and respondents in a formal and systematic process (Cohen & Crabtree, 2008), having a guide of questions and topics that need to be covered during conversation and being able to follow topical trajectories in the conversation that may stray from the guide when interviewer

feels that is appropriate. This conversation - as noted by Dexter (1970) - is a conversation with purpose where participants and researcher have the opportunity to bring over any relevant detail or topic as they develop the issues that are being analysed. Semi-structured interviews also include open-ended questions that allow participants to freely express their understanding, perceptions and experiences about the researched topic.

This methodology also uses an informal conversation that leads the interviewer to discover information that is important to participants but may not have previously been thought of as pertinent by the researcher. Through interviewing all participants (in this case twenty-five), I aimed to have explored the views, experiences and beliefs of these individuals in one specific matter that constitutes the core of my research inquiry, giving me a deeper understanding of the impact of a workshop on participant's perception of their teaching skills. Individual semi-structured audio-recorded interviews were used along with a researcher's journal and a reflexivity analysis process during data collection in order to record recurring themes and to better understand participants' constructions of meaning within the answer's context. The use of contextual grounding is essential to understand the meanings that participants make of their experiences, thus, qualitative researchers can recontextualize their interview-based data by examining contextual issues that may impact the data (Morrow, 1992).

3.5.1 Classification of interviews by structure and design

Structured interviews

In this type of interviews, the researcher carries out a preliminary planning of all the questions he/she wants formulate. Prepare a script with questions done sequentially and directed, the Interviewee may not carry out any kind of comments, nor make appreciations. The questions will be of the closed type and can only be affirmed, denied

or answer a concrete and exact answer about what you are asked. As is logical, these types of interviews are not the most used in research qualitative

Semi-structured interviews

In semi-structured interviews, the researcher before the interview prepares a thematic script about what he/she wants to ask the informant, the questions asked are open so the informant can express his opinions, clarify his answers, and even the researcher can deviate from the initial script thought when emerging issues are glimpsed that needs to be explored. The researcher must keep enough attention to introduce to the Informant questions where the topics are of interest to the study, introducing the conversation to the Interviewee in a natural way. During the course of it the researcher can link some responses of the informant with others that flow in the interview and build new questions linking topics and answers.

Unstructured or open interviews

Although there are nuances and schools, I will understand the unstructured or open interview in the sense that Taylor, et al. (2015), define the interview in depth. These researchers understand the interview in depth as repeated face-to-face encounters between the interviewer and informants, directed towards understanding the perspectives that informants have about their lives, experiences or situations, just like the way that they express in their own words. In this type of interview, the researcher is the instrument of the investigation and not the protocol or interview form. His role involves not only getting answers, but also learning what questions to ask and how to ask them. It requires many meetings with informants, trying to learn what is important for informants before focusing research interests. The life story or sociological autobiography uses this type of interview. And in all cases the researchers establish rapport (relationship of intimacy, attunement or understanding) with the informants thanks to the repeated encounters they have (Taylor & Bogdan, 1984).

3.5.2 Facing an interview. Conditions and materials

Preconditions

When the researcher arrives at the time of the interview it is assumed that the he/she has done three things: 1. Previously select the appropriate informant according to the criteria defined in the study. 2. The acceptance of the informant to participate, so he/she must have been informed with prior to the interview. 3. Have a set of questions to ask, a more or less structured script or theme that would help direct the interview to a good end.

Place and moment

A good interview cannot be done anywhere, at any time. The interview should be conducted in a concerted, quiet, neutral place, where the informant feels comfortable, no noise, quiet. The moment is very important, because the interview requires a concerted time and both the investigator and the informant should not be in a hurry. When the interview starts, it should have all the participant's dedication, they should not have another thing to do. I must adjust to the agreed time and, unless the informant is very comfortable, finish a few minutes before the scheduled time.

Interview Material

The interview material is: Pencil or pen, field notebook or notebook, interview script, thematic script, audio-recorder to make the recording of the conversation and later facilitate its transcription, it may seem obvious but it is not: be it analogue or digital, you have to carry always spare parts of batteries and tapes or enough memory to make the recording.

The moment of the interview

The interview is usually initiated by signing an informed consent or recording it on the recorder. The interviewer must consider that if the subject does not wish to be recorded, the interviewer must write down the content of the interview, being true to the informant's words, if the time has come and the participant declines the interview, the interviewer should understand the situation and avoid value judgments, thanks him for his interest and offers to be available to the informant in case there is a change of opinion in the future. The interviewer's attitude should be assertive, respectful and open, and should favour the communication, the language must adapt to the conditions of the informant, it must be clear, avoiding unnecessary technicalities, ambiguities, bulky phrases, etc. The interviewer's dress should adapt to the context. For example, a dressing gown white can create distancing in the informant or misgivings. Phenomenographic interviews are different from other qualitative research interviews in that their specific purpose is to look for variations in participants' experience or understanding of the topic of the research eliciting the qualitatively different conception of a phenomenon which are seen, experienced or understood by Interviewees (Bruce, 1994).

Research data is collected through open-ended questions in semi-structured interviews that posteriorly are analysed through iterative readings to produce an outcome space (Reid, 1997). The main purpose of using this method is to find out what is "in and on someone else's mind" (Patton, 2002, p. 341). In this particular case in Intensive Care Medicine residents about their teaching skills perception after taking a workshop. About this, Patton wrote: "...I interview people to find out from them those things I cannot directly observe" (p. 340). This is important in order to engage and create a rapport with the Interviewees allowing participants to start thinking more deeply about their experiences and perception of the research topic. According to Seidman, (2006) the use of semi-structured interviews is grounded in the phenomenological tradition designed to question meanings of experience. Seidman ties the core of

phenomenology to the qualitative philosophy (Seidman cited by Dilley, , 2004) arguing that interviews provides access to the context of people's behaviour and a way for researchers to understand the meaning of that behaviour. I believe that this method contributes to study participants' perception that includes their meaning of experience and the way that experience impact on their learning process. Within this context, meaning is perceived as, not just the facts, but rather the understanding one has, that is specific to the individual, taking in consideration what is the relationship between what was said, how it was said, what the listener was attempting to ask or hear and what the speaker was attempting to convey or say. Using semi-structured interviews also allows researcher to ask a series of questions, with accompanying queries that probe for more detailed and contextual data, having access to rich, in-depth information that helps to understand the unique and shared aspects of lives, attributed to participants' lived experiences (Piercy & Cheek, 2004).

The use of open-ended questions granted a deeper understanding of participants' experience, providing the opportunity to verify and interpret answers during the interview, creating an engagement with the Interviewee in a formal and systematic process (Cohen & Crabtree, 2008). Also, open-ended questions were used to allow participants to freely express their perceptions and experiences about the topic in an informal conversation giving the opportunity to clarify any relevant detail or topic as they develop the issues that I was analysing. Additionally, in my research's interviews, a journal as an *aide memoire* (italics are mine) was used; this journal helped me to cover the main topics of the investigation during conversation. This is useful in data collection because it serves to follow topical trajectories in the conversation that may have stray from the guide when interviewer feels that is appropriate. The main focus of the interviews was centred on asking participants to describe their experiences, feelings, thoughts and perceptions about their teaching skills and the impact of the workshop on them, including what - if any - actions they might have taken, for the improvement or positive change of their teaching skills.

Participants were asked to provide an account of their ideas about their teaching skills before and after the workshop, using (among others) questions such as:

- ***What was your previous teaching experience?***
- ***Do you think that this workshop would expand and improve your teaching skills?***
- ***Do you think that this workshop would expand and improve your professional practice?***
- ***What is the importance of teaching skills for professionals and patients? (Italics are mine).***

With these considerations in mind, I decided to interview twenty-five Intensive Care Medicine's residents, two times, one before taking a Resident-as-Teacher workshop and the second time after the workshop. This decision was based on determining if the impact of the workshop had any influence on the residents' perception of their teaching skills and how this impact would influence their activities and professional performance. Each participant had a 30 minutes interview with open questions in a semi-structured interview type. Individual interviews are probably the most familiar and the most often used form of data collection in qualitative education research. Diccio-Bloom and Crabtree (2006) define interviews as a mean to provide access to participants' personal perspectives and relevant experiences on an unlimited number of topics. In-depth interviews and informal conversations allowed me to do a rich and detailed exploration of the research question and to discover shared understandings related to my research inquiry (Morrow, 1992). For (Lincoln & Denzin, 2005, p. 643), taken from Vargas, (2012) the interview is a conversation, the art of asking questions and listening to answers. As a technique of data collection, the interview is strongly influenced by the personal characteristics of the interviewer. This definition, too generic and not very operative, includes any

encounter between two people, a researcher and his Interviewee, in which the researcher asks questions which can range from opinion polls or questionnaires, that is, instruments highly structured, and open interviews where it is possible, even, that the Investigator be asked and questioned by the informant. A qualitative research interview will not be based on some highly structured closed questionnaires, although they can be used, more in open questions whose maximum expression is the in-depth interpretation through a qualitative analysis of data, where not only a conversation with an informant but the meetings are repeated until the researcher, reviewed each interview, has clarified all emerging issues or relevant issues for the study. A researcher who approaches the qualitative perspective will use the interview in their different ways of presenting themselves, but their preferences would be oriented towards the interview in which the Interviewee speaks openly. Within this context, in the next section, I analyse the types of interviews and their uses in qualitative research.

Interviewee's answers were recorded and transcribed and subsequently analysed developing a phenomenographic outcome space. Interviews were conducted during normal residency hours in Luis Vernaza Hospital's Department of Medical Education; they were tape-recorded with participants' permission. Interviews were taken before and after the workshop. Information concerning with the impact of the workshop can be systematically or objectively obtained through these interviews. A researcher's journal during data collection and the analysis process was used to record recurring themes and to better understand participant constructions of meaning within his or her context, through reflexivity.

Researcher's Assistant

In my study, in order to better focus on facilitating the interviews, I used the help of an assistant, solely and exclusively for the time of the interviews. As I mentioned above, individual semi-structured audio-recorded interviews were used along with a researcher's interview journal to writing down recurring themes and participants' constructions of meaning within the answer's context. This journal was posteriorly read through a reflexivity analysis process during data analysis. The functions of this assistant were to observe my interviews, handle the interview journal and manage the tape recorder making sure it worked correctly and that the participants' responses were recorded in their entirety. Participants' recruitment and interviews can be a challenge to researchers, especially for those with limited resources and time. Doctoral students may need research assistants to recruit participants and complete data collection in a timely manner (Xu & Hae-Ra, 2014). The assistant's name and activities were provided to the Ethics Committee of the College of Social Science at the University of Glasgow, and to participants prior to the beginning of the interviews. The assistant's participation allowed me to have a greater focus in the interview while I was observing and taking notes of participants' attitudes and gestures, this way, I was able to "recontextualise the interview-based data by examining contextual issues that may impact the data" (Morrow, 1992, p. 250).

3.6 How do I file the interviews?

To file interviews researcher must create a file for each interview (i.e. your text transcript), and the notes field in another file. Always in the header or on the first page of a group of interviews we must write down the date the notes were taken, place, who took them, who were present and the number of the total note we

made to same Interviewee. (I repeat all this for each Interviewee). Also, it is good to put title to each one of the transcriptions, for example: *1st. Interview Mr. Rodriguez 03-03-12, 2nd. Interview Rodriguez current work 01-05-12*. I have to remember that the titles refer to reminders of situations or actions. They serve to make things easier. This would be a way to archive notes chronologically as they were taken. Other files were built, for example, of thematic form: for instance, *previous experience on teaching (italics are mine)*, this is not about Mr. Rodriguez but we isolate the paragraphs according to the topic we are going to analyse. It is extremely important how we build paragraphs and margins because that will help us to assemble the coding. Each new idea must be part of a new paragraph, in our understanding the margins are fundamental to put commentaries of someone at the time of interview. Sometimes those comments are so extensive that we should put some mark and write them on separate sheets. There is no rule about the extension that the field notes or margin notes should have, depending on the situation can be very short as very extensive, I preferred to create my own shorthand and with a small phrase, an abbreviation what I want to say comes to mind. Therefore, as soon as I finished the interviews it was convenient to clean the notes, especially the comments. As I transcribed the notes I was doing a pre-analysis of each interview. Obviously, the first interviews always carry longer notes since it is in that moment when we are refining what we want to observe. It is essential that the researcher review the notes each time an interview ends so he/she can make the comments that he/she considers relevant, and also takes note of aspects that were not clear, or that were not sufficiently developed, or were not addressed. This will allow researcher to understand and plan how to continue his research. Upon leaving the interview, I took a few minutes to write with key words our last observations. Another important form of registration, is the recorder and / or the camcorder. Researcher could make an oral archive of recordings or one of videos and must think how to store them, sometimes I store them only for the duration of the investigation - this was very common especially when tape or cassette recorders were used - and other times I kept them doing a bank of recordings. They must be recorded and transcribed as texts, leaving enough space for comments.

3.6.1. Storage forms

Researchers have to create files that are easy to identify, I filed in separately the transcripts and the notes, or comments corresponding to each interview. It is important also to have a chronological order of identification of notes and interviews, such it's a good time to make a road map. It's about making decisions on how to store the information so that it could be manageable, since I'm going to gather notes, recordings, videos, photos. To do this I will first have to decide with what types of files I am going to handle information. Plummer (1989) suggests several types of files:

1. Textual and in chronological order, assigning codes for pauses, hesitations, murmurs and confusion. This file, consisting of all interviews is constituted in the main file for constant consultation, it must not be altered under no circumstance.
2. Analytical (changes, cuts, themes) this has undergoing changes as the investigation progresses and therefore the analysis is done in the light of our theoretical readings there is a constant game between interpretations and theory in special of those questions that seem to us more novel. We can constantly change them, that is why the importance of the chronological and textual archive.
3. Personal diary (personal comments) this file is very important, it is related not only to impressions about the Interviewee but also the concerns that arise when investigating.
4. Methodological and theoretical comments, this file is essential since in it I will refer the advances, errors and innovations, especially, from the methodological point of view.

There are certain notes that refer to our reflection, for example, methodological notes, in them I reflect on the strategies I use, the ways in which I save some

inconvenience either of relationship with the Interviewee or of poor formulation of what I want to investigate this helps us how to correct our performance. Also, taking methodological notes is a way to incorporate experience for future interviews or research, we have, for instance to pay attention to those notes in which when a subject is speaking to us and he/she refers us to another interview, or to some theoretical concept, or to some situation observed on another occasion; all this must be registered with detail. At the beginning it will be a note in the margin that makes us later remember what we want to reflect on these notes that usually are part of our mistakes, our successes, our doubts, our uncertainties, our prejudices, or questions suggested by a particular interview, and guide me about what I should rephrase either in content as in action. These notes must be well identified, for example (ON) observer notes, and must be taken as close to the time the interview ended, is what Glaser (2004) call memos. At the same time that I are taking the notes and re-reading them I are starting the preliminary analysis of our material, this is what will allow us to correct directions. In these notes I reflect on several aspects, on the method, on the conceptual frameworks that I choose, about our attitudes, our perceptions about what I imagine and how that changed. What will always be present are the themes emerging and how they relate to our theory and our hypotheses. Despite in many opportunities methodological notes are not given the space that corresponds, I always emphasise the importance of them. Researcher must be careful and write about the strategies used, the difficulties and the facilitators, not only the successes but also the mistakes, this will allow researcher to take decisions and reflect even on the road to new research.

3.7 Study Interviews

Two types of interviews were done in my study: **Pre-workshop interviews and Post-workshop interviews**; for this purpose, the authorities of the hospital were

contacted to provide information about the study and to check the feasibility of conducting the study during participants residents' activities. Official letters were sent to the Chief of the Intensive Care Postgraduate Program, to the Hospital Director and permission to gather Intensive Care Residents was obtained. Before the interviews a meeting with Intensive Care Residents was scheduled. During this meeting the research procedure was explained including the purpose, significance of the study, instruments, data collection procedures and management, consent form, etc. Interviews type and procedure was explained. Workshop purpose and content was shared with residents. It was made clear, to all residents, that participation was voluntary and could be terminated by participants at any time, and that their anonymity would be maintained.

3.7.1 Pre-workshop Interviews

From the thirty residents that formed the Intensive Care Residents Cohort, twenty-five residents voluntarily agreed to be interviewed, special permission for these residents was requested to their authorities. Two interview schedules were prepared for the **Pre-workshop** and the **Post-workshop interviews**. interviews were held in the Hospital's Education Department and interview data was collected and kept in a confidential envelope to maintain data integrity of the responses. All responses were kept in a locked cabinet and data was destroyed after the completion of the study. This was done to ensure confidentiality (via anonymity) of the participants to give them the freedom to express their experiences and disclose sensitive information without fear of identification or negative repercussions (Giordano, et al., 2007). During the interviews, no participant requested subsequent sight of their transcript, but all of them agree to discuss any doubtful topic that could arise, in case that this matter was not discussed during or after the interview, they all had the researcher's email address, mobile phone number and

Hospital Vernaza contact details by the time the interview had concluded in case of a further contact. As expected, each interviewee emphasised the need for careful review and deletion by the researcher of any identifying hospital titles, geographic places or personal names; each participant expected this to be undertaken by the researcher without their oversight. The same questions were asked in both interviews before and after the workshop, the purpose of this was to determine the participant's impact of the workshop on their perception about their teaching skills. After interviews concluded, the researcher usually briefly chatted informally with participants. These interactions were, in a minor way, analogous to feminist stance (Olsen & Mahrenholz, 2000) on qualitative interviewing, where interviewers must step outside the formal role of neutral asker to engage directly with the interviewee in a deliberate and legitimate process of collaboration (Legard, et al., 2003).

These fascinating conversations were never recorded as they contained a biased and significantly directed intervention in which the interviewer's stance was not neutral. During these post-interview chats, the researcher became an informed person, interacting with professional colleagues: interactions were more natural and open, in contrast to the disciplined neutrality displayed during the interviews. Usually participants wanted to know what had happened to other doctors and, sometimes, how others dealt with it. Most importantly however, each wanted to know how things would be made better, for those still in training, as a result of their interview. In these conversations there was further affirmation that the participants' motivation was genuine altruism. The discussions were always in broad terms and avoided specifics and personal topics. Before each interview, participants were emailed a revised standard briefing to explain the purpose of the research and list its conditions. Within both sets of interviews, the duration of each interview averaged thirty minutes. The topic of the interviews was centred in **participants' perceptions about their teaching skills in relation with the workshop received**. As planned, each interview was recorded on an Olympus

Digital tape recorder and audio files located in a new sub folder in the digital memory of the device. Each interview had a prefixed code assigned to it automatically. Initially I calibrated the necessary volume in the tape recorder, to accurately record the interview, and each interview was then transferred as a separate digital audio file onto my laptop after the interview was concluded. I chose four themes for the interview questions:

- 1. Participants previous knowledge and experience in medical residents teaching.**
- 2. Relationship between resident's teaching and professional development.**
- 3. Relationship between resident's teaching and patient care at Hospital Luis Vernaza**
- 4. Influence of teaching on communication skills.**

Within these themes I made five questions:

- 1. What do you know about residents teaching activities?**
- 2. What is your experience on medical teaching?**
- 3. What could be a way that teaching could improve your medical practice?**
- 4. How could resident's teaching influence on patient care?**
- 5. In what way teaching would influence in your communication skills?**

Each tape was reviewed, inaccuracies were corrected, and the transcript modified to conform to the requirements of narrative form. The refined transcriptions were then stored in a separate folder and were coded with interview number and date of interview and a fictitious name for each interviewee. Much of what was discussed between interviewer and interviewee could not be captured on the transcribed tapes. Initially, and even within the organic memory of both interviewer and

interviewee, it would be understood differently. The transcription is based on an audio tape recording of what was said, yet this cannot capture the complete interaction (for example the visual aspects of the interaction or the emotions experienced by either party). It is then interpreted as a written text and further abstracted into key representative phrases or sentences.

Once the tapes had been cleansed of identifying data and the text had been rendered into an intelligible form, data analysis began (see next chapter). Another important issue when working with qualitative interviews analysis is to give each of them different nicknames in order to maintain anonymity and preserve the identity of participants; being advisable that is not a number or an initial but a fictitious name that could well be related with some metaphor that is used in the analysis. Therefore, in order to analyse and interpret and comment the interviews I used fictitious names, as noted in table 2 where I summarised aspects of the participant including the **fictitious name** used in subsequent chapters in discussing their accounts.

Interview	Number	Fictitious Name	Gender ¹⁹	Age	University Degree
1	96553066	James	M	32	Physician
2	96223616	Mary	F	29	Physician
3	96054085	Robert	M	31	Physician
4	95981653	Michael	M	28	Physician
5	95950561	Joselyn	F	34	Physician
6	95926033	Marcus	M	33	Physician
7	95926959	Paul	M	38	Physician

¹⁹ M: Male, F: Female

8	95924849	John	M	29	Physician
9	95924124	George	M	27	Physician
10	95923063	Rita	F	36	Physician
11	95923667	Sara	F	28	Physician
12	95919657	Sandy	F	32	Physician
13	95911295	Rolf	M	37	Physician
14	95874113	Sandra	F	34	Physician
15	95859276	Robert	M	29	Physician
16	95836237	Lana	F	40	Physician
17	95783378	Ana	F	28	Physician
18	95758091	Charles	M	32	Physician
19	95736864	Carole	F	35	Physician
20	95689187	Kathy	F	37	Physician
21	95677985	Christy	F	39	Physician
22	95654539	Rose	F	28	Physician
23	95163970	Randy	M	26	Physician
24	95154221	Liza	F	32	Physician
25	95153091	Seth	M	37	Physician

Table 2. Participants Characteristics

3.7.2 Post-Workshop Interviews

Once residents received the workshop, new interviews were conducted with the same twenty-five participants. The interviews were conducted at Luis Vernaza Hospital, the codes and fictitious names assigned to each participant were the same as those originally assigned in the pre-workshop interviews. The objective of these interviews was to assess the perceptions and attitudes of resident physicians toward teaching after participation in a mandatory "Residents as Teachers" (RasT) workshop in four domains:

1. Setting goals and expectations
2. Use of clinical micro skills in teaching
3. Evaluation and feedback
4. Enthusiasm and preparedness toward teaching.

During the workshop there was a small group practice session, some of the residents felt that it had enhanced their understanding of what was being taught, and that these activities were helpful. The themes and categories used in the data coding of the post-workshop interview were the same as in the first interview: **Teaching Skills, Teaching Experience, Teaching and Professional practice**. Residents' answers did not vary significantly from the first interview.

Chapter 4

Resident-as-Teacher Workshop

As part of my study, participants received a sixteen hours workshop centred on teaching skills. The workshop was given in Luis Vernaza Hospital and was addressed to twenty-five participants, all of them Intensive Care Residents in all the levels of the residency (R1, R2, R3, R4). This workshop was freely taken from University of British Columbia (UBC) (Creative Commons Public License <http://creativecommons.org/licenses/by-nc-sa/4.0/deed.en>). The objectives of the workshop were:

1. To identify principles of teaching and learning relevant to medical education.
2. To select strategies for effective learning.
3. To deliver presentations which is objective-driven, engaging, and uses interactive strategies for deeper learning.
4. To determine the learning needs of students and develop an educational plan.
5. To apply time-saving strategies to teach in a busy clinical setting.
6. To facilitate clinical reasoning/critical thinking skills using effective questions.
7. To use models for teaching clinical reasoning on the run.
8. To practice skills for direct observation.
9. To provide effective feedback.
10. To educate patients effectively.

4.1 Workshop's content

Workshop's curricular objectives were grouped into six educational modules, each module has its own subtopics. the sequence of these topics reflects the increasing teaching responsibilities of residents within their programs (Jarvis-Selinger, et al., 2011).

Module 1. Adult principles of education and how they apply to medical education.

- a. Effective learning
- b. The learning cycles
- c. Stages of competence

Module 2. Information processing theory to reflect on how people learn from lectures and how to facilitate the learning of others when lecturing.

- a. Characteristics of effective lectures and lecturers
- b. Lecture goals, structure, delivery, interactive lecturing strategies

Module 3. How to take an educational history

- a. How to set up an educational plan
- b. Task specific teaching
- c. Teaching with patients
- d. Questions use when teaching students around patients

Module 4. Compare and contrast how experts and novices think

- a. Clinical reasoning definition and framework for diagnostic and therapeutic reasoning
- b. One-minute preceptor/SNAPPS²⁰
Chart stimulated recall

Module 5. How to set up a goal-oriented observation

- a. Principles of feedback
- b. How to give effective objective, specific behaviour-based feedback

Module 6. Patient education strategies

- a. Role of effective patient communication/educational skills and patient adherence.

In table 3, I summarise the topics, objectives and contents of the teaching workshop given to my study's participants.

²⁰ SNAPPS is a learner-centred teaching approach to clinical education

Topic	Core Curriculum Learning Objectives	Specific content
1. Resident as teacher and learner (1 hr)	<p>a. Identify principles of teaching and learning relevant to medical education</p> <p>b. Select strategies for effective learning</p>	<ul style="list-style-type: none"> • Adult principles of education and how they apply to medical education • Effective learning • The learning cycle • Stages of competence
2. Effective presentations (1 hr)	c. Deliver a presentation which is objective-driven, engaging, and uses interactive strategies for deeper learning	<ul style="list-style-type: none"> • Information processing theory to reflect on how people learn from lectures and how to facilitate the learning of others when lecturing. • Characteristics of effective lectures and lecturers • Lecture goals, structure, delivery, interactive lecturing strategies
3. Effective and efficient clinical teaching (1 hr)	<p>d. Determine the learning needs of students and develop an educational plan</p> <p>e. Apply time-saving strategies to teach in a busy clinical setting</p>	<ul style="list-style-type: none"> • How to take an educational history • How to set up an educational plan • Task specific teaching • Teaching with patients • Question use when teaching students around patients
4. Clinical reasoning/critical thinking skills (2hrs)	<p>f. Facilitate clinical reasoning/critical thinking skills using effective questions</p> <p>g. Use models for teaching clinical reasoning on the run</p>	<ul style="list-style-type: none"> • Compare and contrast how experts and novices think • Clinical reasoning definition and framework for diagnostic and therapeutic reasoning • One minute preceptor/SNAPPS • Chart stimulated recall
5. Direct observation and feedback (2 hrs)	<p>h. Practice skills for direct observation</p> <p>i. Provide effective feedback</p>	<ul style="list-style-type: none"> • How to set up an goal oriented observation • Principles of feedback • How to give effective objective, specific behavior based feedback
6. Patient education (1 hr)	j. Educate patients effectively	<ul style="list-style-type: none"> • Patient education strategies • Role of effective patient communication/educational skills and patient adherence

Table 3. Resident-as-Teacher Core Curriculum

4.2 Workshop Development

Topic 1: Resident as teacher and learner

Learning Objectives

After the session, the participants will be able to:

- a. Identify principles of teaching and learning relevant to medical education
- b. Select strategies for effective learning

Time: 1 hour

Overview of content

- Key characteristics of a memorable and effective clinical teacher include: enthusiasm, providing feedback and involving the learner in patient care.
- Stages of competence theory of how learners move from unskilled to skilled emphasizing the value that residents bring to the teacher role (residents are very conscious of the steps needed to perform a specific skill).
- The learning cycle emphasizing that the role of the resident is to help the medical student move through the stages through observing them and giving them specific feedback for deep learning.
- Five principles of adult education and tips on how to apply them.

Session materials

- PowerPoint presentation: Resident as Teacher and Learner (60 minutes including exercises)

Suggested interactive exercises

- Exercises and discussion questions embedded in PowerPoint presentation
 - Your most memorable teacher
 - Principles of adult education

Topic 2: Effective presentations

Learning objectives

After the session, the participant will be able to:

Overall objective - Deliver a presentation which is objective driven, engaging, and uses interactive strategies for deeper learning

Presentation specific objectives:

- Describe how adults learn from presentations
- Identify common presentation mistakes
- Avoid these mistakes through careful presentation planning

Time: 1 hour

Overview of content

- Provide an overview of a model of how adults learn from lectures (See background reading below)
- Identify common mistakes that lecturers make and how these mistakes have an impact on adult learning
- Introduce 3 key steps to plan, develop and deliver an effective lecture

To be discussed: how to structure a talk, why the amount of content should be reduced, how to engage the audience through interactive lecturing techniques

Session materials

- PowerPoint file: Three Secrets to a Great Presentation (90 minutes)
- Active Learning Strategies handout
- Article for pre-distribution & print out table 3 in article for a handout: Mayer RE, Moreno R. Nine ways to reduce cognitive load in multimedia learning. Educational psychologist. 2003 Mar 1;38(1):43-52.

<http://faculty.washington.edu/farkas/WDFR/MayerMoreno9WaysToReduceCognitiveLoad.pdf>

Alternate interactive exercises

- Exercise PowerPoint makeover: Have residents bring a PowerPoint presentation that they have previously developed. After the didactic portion of the session have them pair off and review their presentations and discuss how (1) the presentation could be improved and (2) how they could involve the audience.
- Video of lecturing: Observe a video of a lecture in your area of medicine (5 minutes) and ask the audience to discuss their observations. (Search YouTube for videos)

Before the Session

1. Read through this guide to familiarize yourself with the learning objectives, general structure, and key ideas for this learning session.
 - a. Make notes for yourself that would help the session go smoothly
 - b. What are the key messages for learners to take away?
 - c. Where do you anticipate learners may challenge ideas or struggle with concepts presented in this session?
2. Preview the associated PowerPoint file on the computer you will be using to deliver the session to test system compatibility and to give yourself a chance to see how information will be delivered.

3. Assemble the required materials for the session.
 - a. Print out all handouts (see session materials above)
4. Distribute the following article to participants: Mayer RE, Moreno R. Nine ways to reduce cognitive load in multimedia learning. Educational psychologist. 2003 Mar 1;38(1):43-52.

<http://faculty.washington.edu/farkas/WDFR/MayerMoreno9WaysToReduceCognitiveLoad.pdf>

During the session:

1. Prepare the learning environment to best suit this session.
 - Consider the physical layout of the space as well as optimal seating arrangements in relation to the activities to be completed during the session. Would this session run best with learners arranged as individuals, in pairs, or in groups? Where would you mainly locate yourself to facilitate the group?
2. Write the session title and agenda on an easily visible surface in the room.

Topic 3: Effective and Efficient Clinical Teaching

Learning objectives

After this session, the participant will be able to:

- Take an educational history from a learner
- Use the history to develop an educational plan for the learner
- Prepare your learner to learn meaningfully through patient care

Time: 1 hour

Overview of content

- The focus on this session is to introduce the resident to teaching principles and practical teaching tips. Residents need to “tailor” their teaching to the learning needs of the medical students. Taking an educational history and identifying what *skills* need practice is an important first step; then setting up a clear educational plan with specific goals for the learner will ultimately help to save time.
- Task specific teaching will focus the resident on developing a medical student’s skill set.
- Teaching in the patient’s presence is an effective time management tool and should be discussed in the context of the specific medical discipline (e.g., internal medicine bedside teaching).

Session materials

- PowerPoint Presentation: Teaching in a Clinical Setting

Before the Session

1. Read through this guide to familiarize yourself with the learning objectives, general structure, and key ideas for this learning session.
 - Make notes for yourself that will help the session go smoothly
 - What are the key messages for learners to take away?
 - Where do you anticipate learners may challenge ideas or struggle with concepts presented in this session?
2. Preview the associated PowerPoint file on the computer you will be using to deliver the session to test system compatibility and to give yourself a chance to see how information will be delivered.

During the Session

3. Prepare the learning environment to best suit this session. Consider the physical layout of the space as well as optimal seating arrangements in relation to the activities to be completed during the session.
 - Would this session run best with learners arranged as individuals, in pairs, or in groups?
 - Where would you mainly locate yourself to facilitate the group?
4. Write the session title and agenda on an easily visible surface in the room.

Topic 4: Clinical reasoning/critical thinking skills

Learning Objectives

After this session, the participant will be able to:

- Define “clinical reasoning” - diagnostic vs. therapeutic
- Identify the steps involved in diagnostic and therapeutic reasoning
- Compare how experts and novices think
- Apply questioning strategies such as the one-minute preceptor and SNAPPS, to facilitate the reasoning skills of learners

Overview of content

- The session introduces a definition of clinical reasoning. The clinical reasoning process that students are taught is paralleled with the hypothetic-deductive reasoning process. The focus is on diagnostic reasoning as residents will in general focus on facilitating this skill in medical students. (Faculty should focus on using questions to facilitate the therapeutic reasoning skills of residents).

- It is useful to highlight the difference between “experts” and “novices” as faculty often do not “role” model hypothetic-deductive reasoning.
- Residents should avoid using “what you know” questions with learners. Residents should focus on using questions to facilitate the application of knowledge and the reasoning skills of learners. A number of questioning strategies are available. The one-minute preceptor and SNAPPS are two common strategies that can be taught to residents.

Session materials

- A PowerPoint presentation “Teaching Learners How to Think - Diagnostic Reasoning”

Suggested interactive exercises

- Videos demonstrating the questioning strategies are available:
- The one-minute preceptor (source: Practical Prof)
- SNAPPS (source: Practical Prof)
- Interactive exercises: Have residents pair off. Choose a medical case that is appropriate for your speciality. One resident presents the case and the other applies a questioning strategy. The pair then switch roles and chooses a new case and applies a different strategy.

Participant Handouts

- Tip sheet for questioning strategy

Background reading and further resources

- Chart Stimulated Recall video by Practical Prof
<https://www.youtube.com/watch?v=flxj4tiRbOE>
- Chart Stimulated Recall Worksheet (U of Alberta, Dept. of Family Medicine)

- One Minute Preceptor
- Groopman J. What's the trouble? The New Yorker magazine 2007 Jan 29

<http://www.newyorker.com/magazine/2007/01/29/whats-the-trouble>

- RIME Evaluation Framework (by U of Illinois, College of Medicine)
<https://www.med.illinois.edu/facultydev/evaluation/rime/RIMEEvalModel.pdf>
- Differences Between Learning Methods

Before the Session:

Read through this guide to familiarize yourself with the learning objectives, general structure, and key ideas for this learning session.

- Make notes for yourself that would help the session go smoothly
 - What are the key messages for learners to take away?
 - Where do you anticipate learners may challenge ideas or struggle with concepts presented in this session?
3. Preview the associated PowerPoint file on the computer you would be using to deliver the session to test system compatibility and to give yourself a chance to see how information would be delivered.
 4. Assemble the required materials for the session.
 - Print out all documents needed to run the session (see Participant Handouts above)

During the Session:

5. Prepare the learning environment to best suit this session.
- Consider the physical layout of the space as well as optimal seating arrangements in relation to the activities to be completed during the session.

- Would this session run best with learners arranged as individuals, in pairs, or in groups?

- Where would you mainly locate yourself to facilitate the group?

6. Write the session title and agenda on an easily visible surface in the room.

7. Open the PowerPoint file and have the first slide projecting as learners enter the room.

Topic 5: Feedback that Helps

Learning objectives

After this session participants will be able to:

- Know the key steps in giving feedback
- Apply specific tools that can facilitate feedback
- Practice creating & delivering feedback

Time: 1 hour

Overview of content

- The rationale for observing learners and providing feedback to them as a critical step in their learning.
- The importance of taking specific notes of what is observed to ground your feedback
- Principles of feedback - based on observation, identify and label specific behaviours, limit feedback on 2-3 behaviours.
- Helping the learner to improve requires clarifying the performance goals and providing an opportunity to practice.

Session materials

- PowerPoint presentation: Feedback that Helps!

Suggested interactive exercises

- Discussion about “observation”. Video demonstration of “good” and “bad” observation technique. Have residents view example of poor observation and discuss the example. Residents can share their own experiences being observed and or observing others.

Videos: ABIM-NBME Faculty Development Program Rater Training

Case 1: <http://youtu.be/BQIhwcuLU-A>

Case 3: <http://youtu.be/OmqaTce1ahg>

- Practice recording observations: Resident can view a performance and then after the video discuss what information they would give the student to improve his/her performance. Then you can discuss methods to record observations and then repeat the exercise and see if the information provided to the learner is more specific when notes are taken during the observation.
- Practice goal setting (SMART goals): Video demonstrations of various levels of clinical performance of: history taking, clinical examination, counselling skills (ABME Direct Observation of Completion Training). Residents can identify what behaviour needs to be improved and what advice they would give to the student to improve the performance.

Video sources:

(1) ABIM-NBME Faculty Development Program: <http://bit.ly/1LmMGKB>

(2) Psychiatry teaching scenarios https://youtu.be/t_vL_3iG_74

Participant handouts

None for this session though each participant will need paper for a writing exercise.

Background reading & further resources

Miller A, Archer J. Impact of workplace-based assessment on doctors' education and performance: a systematic review. *BMJ*. 2010 Sep 24;341:c5064.

Telio S, Ajjawi R, Regehr G. The “educational alliance” as a framework for conceptualizing feedback in medical education. *Academic Medicine*. 2015 May 1;90(5):609-14.

Pre-Session Preparation:

1. Read through this guide to familiarize yourself with the learning objectives, general structure, and key ideas for this learning session.
 - Make notes for yourself that would help the session go smoothly
 - What are the key messages for learners to take away?
 - Where do you anticipate learners may challenge ideas or struggle with concepts presented in this session?
2. Preview the associated PowerPoint file on the computer you will be using to deliver the session to test system compatibility and to give yourself a chance to see how information will be delivered.
3. Assemble the required materials for the session.
 - Print out all documents needed to run the session (see Participant Handouts above)

On the day of the session:

1. Prepare the learning environment to best suit this session.

- Consider the physical layout of the space as well as optimal seating arrangements in relation to the activities to be completed during the session.
 - Would this session run best with learners arranged as individuals, in pairs, or in groups?
 - Where would you mainly locate yourself to facilitate the group?
2. Write the session title and agenda on an easily visible surface in the room.
 3. Open the PowerPoint file and have the first slide projecting as learners enter the room.

Topic 6: Effective patient education

Learning Objectives

After this session, the participant would be able to:

- Identify 4 steps in good patient communication using the 4Es model Engage, Empathize, Educate, Enlist
- Identify the steps and behaviours involved in giving information to patients

Overview of content

- The session outlines the rationale for effective patient education. The critical role education can have in motivating patient adherence. Patient education is a skill like other clinical skills. The deliberate practice of this skill would make residents better doctors. This session provides a model of patient communication and a template for observing and guiding giving information to patients.
- It is useful to highlight the similarities between “teaching” medical learners and “teaching” patients and transferring information that was discussed in other sessions to the doctor-patient scenario.

Session materials

- A PowerPoint presentation “Effective patient communication”
- Framework for Information Gathering and Giving

Suggested interactive exercises

- Videos demonstrating a resident counselling a patient -I have recommended the ABME series and in particular using the 3 vignettes of a resident starting a patient on high blood pressure medications. Each vignette demonstrates a different level of performance the questioning and provides a good starting point for discussion.

You can access the video series here: <http://bit.ly/1LmMGKB>

Here are the 3 videos:

(level poor) <http://bit.ly/1iD74QX>

(level satisfactory) <http://bit.ly/1O69Efc>

(level excellent) <http://bit.ly/1OHJWur>

- Brainstorming activity (As outlined in the presentation, slide. 11) - In this activity the residents should reflect on their own experience counselling patients and observing other clinicians counsel patients. The content of this session will emerge from this informal discussion with the 4Es²¹ model and the framework providing some structure for their own experiences.

²¹ **Enable** – making it easier: provide people with the support they need to make responsible choices (e.g. by building food waste champions, and providing cookery courses).

Encourage – give the right signals: understand and offer the benefits to change which are as important as providing regular feedback (e.g. using members of the public as case studies, providing food waste diaries to record progress, prize draws and equipment trials).

Participant handouts (DO NOT GIVE OUT BEFORE SESSION)

- Framework for Information Gathering and Giving - to be given out after Slide 11

Background reading and further resources

- Braddock CH, Edwards KA, Hasenberg NM, Laidley TL, Levinson W. Informed decision making in outpatient practice: time to get back to basics; JAMA; Dec 1999; 22-29; 282(24):2313-20.
- Lane JL, Gottlieb RP. Structured clinical observations: a method to teach clinical skills with limited time and financial resources; Paediatrics; Apr 2000; 105(4 Pt 2):973-7.
- Tongue JR, Epps HR, Forese LL. Communication Skills for Patient-Centred Care. Research-Based, Easily Learned Techniques for Medical Interviews

Pre-Session Preparation:

1. Read through this guide to familiarize yourself with the learning objectives, general structure, and key ideas for this learning session.
 - Make notes for yourself that would help the session go smoothly
 - What are the key messages for learners to take away?
 - Where do you anticipate learners may challenge ideas or struggle with concepts presented in this session?

Engage – get people involved: involve people early on so that they understand what they need to do – help them develop a sense of personal responsibility. Work with the grain of lifestyles and through trusted partners and intermediaries to develop ‘social norms’ (e.g. printed media and PR, and using businesses as intermediaries to host events).

Exemplify – local authorities need to lead by example: Review internal policies and take action to ‘exemplify’ the same behaviour (Defra, 2011)

2. Preview the associated PowerPoint file on the computer you would be using to deliver the session to test system compatibility and to give yourself a chance to see how information will be delivered.

3. Assemble the required materials for the session.

Print out all documents needed to run the session (see Participant Handouts above)

On the day of the session:

1. Prepare the learning environment to best suit this session.

- Consider the physical layout of the space as well as optimal seating arrangements in relation to the activities to be completed during the session.
- Would this session run best with learners arranged as individuals, in pairs, or in groups?
- Where would you mainly locate yourself to facilitate the group?

2. Write the session title and agenda on an easily visible surface in the room.

3. Open the PowerPoint file and have the first slide projecting as learners enter the room.

Chapter 5

Analysis

Analysing means making good use of the information. The way to analyse the information is related to four fundamental issues:

1. **Internal and external validity** that means that the technique used is valid and trustful. Validity test can be performed, for example, giving the text to some colleague to read it critically, or contrast it with official documents or with other informants. Obviously, the important thing is to know what I intend to know.

2. **Representativeness** is one of the most criticised aspects of qualitative research, it immerses the reader in the eccentric world of the atypical. It is a great effort to expose clearly the findings of a small population sectors.

3. **Theorisation**, conceptualisation issues. About this issue, Plumer (1989) exemplifies through the cases of (Thomas & Znaniecki, 2004) and (Carey, 1975), who, through their investigations, showed the importance of sociological theorization (and the symbiosis between theory and method).

4. **Reliability**, that has to do with the technique and consistency in the sense that anyone who performs the same study reaches the same conclusions. This is a very controversial point since it is obvious that there are some issues that will be the same for whoever does the study but there are others that would do the interpretation according with the conceptual frameworks of the researcher.

The analysis is a creative process that make us go beyond the data, that is, I ask them questions, I think of new interpretations, I try to expand my conceptual frameworks, and why not to generate theories. Coffey & Atkinson (2005) say that data reduction is not the main analytic purpose but rather should be thought essentially as a heuristic task.

Completing the data coding task does not mean that they are ready to be interpreted, researcher always have to transcribe part of the context to help in the interpretation. I create links between codes, variables and concepts. It is good to indicate where the data was taken from. Another fundamental issue of the analysis is to pay attention to the way some testimonials are recorded, since it is almost natural for people to respond in a different way depending on the presence of certain subjects, especially when they work in an institution. This is not only because of the context in which the interview is taken and in front of whom It is said, but the temporal context, that is, to see what happened before and what can happen after the interview. In Cortazzo and Schettini (1997) when discussing issues related to violence against women, it is mentioned that women would keep silence or change their speech if they are in presence of other people, in this case is essential to know what had happened to them and thus explain them what they would face if they talk about it in front of other people. Therefore, it is necessary to observe what is said alone of what is said in presence of others.

A concern to keep in mind, and that is quite ignored in the common methodology manuals, is the effects produced by the researcher on the topic of the interview, being that there is a very large distance between the subject's perception and understanding of the situation being studied and the one that the researcher has. In part because the researcher does not have the same interests than the subjects and in the other part because what the researcher do is to build a certain theoretical corpus on the studied situation. It is adequate to mention, also, the risks of generalizations, and the risk to believe everything the subject tell us and everything we observe. Sometimes the investigator is "fenced" or "copied" in such a way by his informant that ends up having a biased vision making the researcher to observe practically what the informant imposes on him. Additionally, it is important to distinguish between what was said by one or two people and what was said by a group and this must be carefully analysed in order to clearly communicate our findings. Despite of the method that I use to analyse my data, there would always be an interpretation of what has been analysed. When analysing I

isolate portions of speech, I make a particular selection of the information that possibly another researcher would not do, moreover, I infer the unsaid; my phrase selection relies not only on my life experience, my sociocultural world but also in my intuition and, fundamentally, in my objectives and hypothesis. I must, therefore, analyse, sharpen my senses since, most of the times, I will be doing it from my sociocultural framework which, in general, is not the same of those with whom I conduct my research. It is important to see the social position that people occupy, both researchers and the subjects I work with, since, on the one hand, the researcher selects portions of speech and interprets them not only in function of their conceptual frameworks but from their position and that of the actors.

5.1 Analysis of an ethnographic study

Ethnography²² or ethnographic research is according to Wood (1987) the description of the way of life of a group of individuals. Ethnography is a systematic process of approaching a social situation, considered globally in its own natural context. The fundamental objective that is orienting this entire research process is the empathic understanding of the phenomenical object of study (Bisquerra & Alzina, 2004). Ethnographic research is defined by Rodríguez Gómez et al. (1999) as the research method by which you learn the way of life of a concrete social unit, this being a family, a class, a faculty or a school. This method is interested in what people do, how they behave, how they interact. It is a method proposed to discover beliefs, values, perspectives, motivations and the way in which all that develops over time (Bisquerra & Alzina, 2004). The origin of ethnography is found at the end of the nineteenth century and appears linked to two traditions: on the one hand, cultural anthropology of British origin started by Boas and Malinowski (Boas, 1966);

²² From Greek, ethnos, "tribe, people" and grapho, "I write"; textually means "description of the peoples"

(Malinowsky, 1965) that conducted a study with the natives of the western part of New Guinea, after which the researchers lived with them for a while, as members of their community. On the other hand, the Chicago School, started by Park and Burgess, that conducted a set of studies on poverty and marginalization giving great importance to the human dimension. These studies are based on obtaining data from the experiences of first hand, through interviews and photographs of their social context (Atkinson & Coffry, 2002); (Bisquerra & Alzina, 2004). The characteristics of ethnography as a form of social research, indicated by Del Rincon in 1997, in Bisquerra & Alzina (2004) are the following: It has a phenomenological or emic²³ character which means, "from the inside", it means that the researcher describes social phenomena from the point of view of the participants. It assumes a relatively persistent permanence, within the group to study in order to obtain their acceptance and trust. Once this is achieved, we are able to understand the culture around them. This feature tries to go a step further in research in such a way that the ethnographer lives in first person the social reality of the group, this way he/she would be able to observe how things happen in their natural state and understand the different behaviours that occur in a certain context. Additionally, ethnography is holistic and naturalistic: it gathers a global vision of the social field studied from different points of view from a domestic perspective, the members of

²³ The emic / etic debate invented by linguist Kenneth Pike, centers the indoor / outdoor discussion as it refers to cultural anthropology. Take the term linguistics based on the distinction between phonemics (phonology) and phonetics (phonetics). Pike argued that this type of distinction based on the interpretation of the subject (phoneme) against the acoustic reality of a sound (phonetic) should be understood social behavior. The terms they were reused in social anthropology by Marvin Harris, from which he becomes interested in redefining methodological of the new ethnography of the '50s. It refers to the so-called views that simulate the internal (emic, significance and meaning for the actor) and the points of view that prioritize the external (etic, significance and meaning for the observer) (Delgado and Gutierrez, 1999; pp: 151-152).

the group. From an external point of view, the interpretation of the investigator. Ethnography also has an inductive character, is a research method based on the experience and exploration, taking participant's observation process as a main strategy to obtain information. This method, allows the establishment of models, hypotheses and possible explanatory theories of the reality under study. In respect to the procedure of the analysis of the information collected, the ethnographic studies do not differ in their treatment of qualitative studies in general. Even authors as Bisquerra & Alzina (2004) cite Glaser and Strauss when pointing out as the ethnographer categories should build or develop a systematic understanding of the context studied from the terms and words of its members.

5.2 The writing of ethnographic content

The originality of ethnographic work is presented at the time of writing the report because the researcher should be able to include descriptive details that allow the reader to recognise and to feel immersed in the observed social situation (Del Rincon, 1997); (Bisquerra & Alzina, 2004). This wording should not forget the audience to which it is intended to handle the practical details or conceptual density as appropriate. Ethnography considers writing as nuclear part of the ethnographic project; and writing problems different to method problems or field work. This tendency that understood the writing excised from the field work collaborated with the construction of a writing technology that becomes the know-power site of the investigator; this was the territory that cultural studies occupied (Clough, 1998): in (Denzin & Lincoln, 2011).

5.3 The analysis in the research process: Research blocks and moments

The task of analysis is not strange to the research process as a whole. How I have been exposing the analysis begins at the same moment I am thinking about the problem, in the techniques of information gathering, in the recording of the notes. It cannot be reduced to one stage or another step of the investigation. It is important to identify poles or blocks in the research process to the extent that it is a process that does not follow a sequence of steps (Bruyne, et al., 1997). The idea of steps indicates a logical and chronological sequence that makes the proposal rigid. The existence of a set of research and planning experiences allows researcher to summarise a series of poles, blocks or moments that act, alone, as a guide for the process of investigation. For the elaboration of these moments the experiences were taken into account and proposals by (Bosco Pinto, 1978); (Le Boterf, 1980); (UNESCO & UNICEF, 1976, 1977); (Fals Borda, 1977); (Cortazo, 1985) with the objective of adapting the diversity of procedures recommended to the specific characteristics that the researcher will have to face in the study. In qualitative research as Cottle says (2007) it is important to try to make participants see that the investigator seek their words and their responses, and not material for the creation of something that ultimately transcends their words and, therefore, their lives.

According to (Plummer, 1989) when facing an investigation there are four groups of problems that I must consider and that are present at all times, that is, before, during and at the end of the investigation: 1. Scientific / social that refers to justification and the reasons. It revolves around epistemological arguments, 2. Technical / practical that refers to practical issues: the sample, the techniques, the validity, how it happens, 3. Ethical / political, political justification and ethical dilemmas that arise during it, 4. Personnel, the impact of the researcher's personal life on the investigation. In the other hand, the same author points out that in all

social research, work field includes five processes that must be taken into account: 1. The preparations, 2. Entry to the field and information gathering, 3. Data storage, 4. Data analysis, 5. Presentation of the data. In the preparation, at first, the entrance to the field, has to do with the permission to enter that space that does not belong to us; how we enter will depend on our research. This is a delicate moment regardless of the place chosen. Field work is extremely complex and although it seems an easy task it is not, so; in principle I observe the immediate situation and the context; it makes us not to lose the view of the theoretical orientation that accompanies the entire research process. The choice of the place, the clear definition of the problems to investigate and the task that I am going to carry out is an arduous task. Our task is continuous and there is a constant negotiation at stake and what I intend to obtain is something difficult to achieve. These preparations include to know the information that is necessary, thinking about the problem that I want to investigate and the motivations that led me to think about that problem, to determine the population to be studied; how to choose, who to choose? This involves two types of strategies: 1. Randomly, where the subject is not chosen but emerges from a broad context (of either way - at some point - I must specify certain criteria), 2. Formal, trying to explain theoretical or methodological criteria for your choice.

Another important aspect is the search for key informants. I must track among trusted people who know the land where I intend to work to contact for this step. How to start that contact? It can be formal, through a request in which the researcher must not only show up but also indicate what he/she intends to do, how he/she would do it, in what this would benefit the subjects and what are the scope of the research. Or, informally, the researcher will resort to acquaintances, to some member of the community and he/she should be very clear in the explanation of his objectives. This type of approach is very fruitful since whoever introduces us will have to explain who we are and our good intentions. Additionally, I must emphasise the importance of the selection of the best instruments that would allow

us to obtain the information that we need. The researcher must accommodate the role by entering, remaining and withdrawing the interview place, leaving the subjects free, trying not to interfere with their activities. After leaving the field we should take notes that allow us to establish the relationship between what we have seen and what we have heard, with the theoretical referential in a coming and going, in a spiral shape, where thinking categories are reformulated, re-signified and refined. In this round trip we should not forget the gestures, the relationships between subjects, verbalizations, the location of people, networks. In the other hand, we must consider several aspects when starting our interview work. In first place, the relationship with the subjects, giving participants a clear explanation of what we are looking for, including the motivations for which we are interested in working with them. Also, we have to remember the way we access them, thinking about the others as subjects that implies respect for the other, understanding, avoiding prejudices. Subjects must feel comfortable, not invaded, researchers should remain unnoticed, avoiding making subjects to feel like objects. Researchers should agree with the subjects how the data will be recorded, that is, if they will record, film or simply if they will make a written record. Also, we have to carefully comply the time of the interview, days and hour of meetings, we must consider that the schedule has to be convenient for subjects with whom I intend to work. While in the interview, researcher must listen and strive to create trust situations, guaranteeing confidentiality, discerning between public and private; what it is confidential or a secret.

5.4 Coding

Facing the task of analysing qualitative data means assuming both, academic and ideological positions and faces challenges and difficulties of its nature. The great amount of information, the unrepeatable phenomena, the proximity to common sense, the need to achieve analytical richness and narrative depth, make the

analysis a task that presents itself as an exciting challenge. Discussions and positions about how to analyse qualitative data are numerous; there are those who use computer packages, others who prefer speech analysis; there are those who consider pragmatically that there is no need to go deeper into epistemological issues; or those that - like Miles and Huberman (1994)- are closer to the confluence of diverse theoretical perspectives, others consider that the theoretical framework must precede the analytical and there are those that sustain the combination of the great theory associated with computer techniques; this last posture has been extended profusely - especially - in the United States. I believe that strict systematization is not possible beyond a general orientation and that analysis begins at the same time that researchers are thinking about the problem to be investigated, the techniques to be used, in what to ask, who and how to choose the places, and even at the same time that I plan how to record the notes (Author's Note). Notes are also constructions that allow even reorienting research. The idea of not separation of actions but of overlapping tasks, supposes that the analysis cannot be reduced to a stage or step of the investigation; analysis is present in all process. It is clear that the challenges and difficulties are related to our perspective, which is based on the understanding of the subjects involved in the investigation; this is the point where the network of relationships between subjects and society is highlighted, between the particular facts and general explanations. Analysing qualitative data is fascinating since it involves discovering the depth of what has been said, of the unsaid, of the expressed, of the gestural, is to make sense of the materials from the most diverse sources; experiences obtained by the researcher during his permanence in the research premises, the documents that are produced by the different actors (visual, written, acted). Thus, different expressions, different situations, like pieces of a puzzle that come together, articulating one by one, in the search for understanding and interpreting the data. One of the most important decisions of qualitative analysis is manifested when the Information obtained must be condensed in order to think about meanings, themes, categories and, finally, conclusions. The information presented is infinite and

therefore It must be stored, pre-encoded, encoded, cut, added, examined and considered.

Individual semi-structured audio-recorded interviews were used along with a researcher's journal and a reflexivity analysis process during data collection in order to record recurring themes and to better understand participants' constructions of meaning within the answer's context. The use of contextual grounding is essential to understand the meanings that participants make of their experiences, thus, qualitative researchers can recontextualise their interview-based data by examining contextual issues that may impact the data (Morrow, 1992). The storage of information, in the case of quantitative research, is relatively simple, it does not present great difficulties, but the same does not happen in qualitative research where a bad location in the coding system created can totally change the meaning of the information. The researcher interprets chasing meanings from the stored findings. On the other hand, I understand that the foundation of the exercise itself cannot be separated from the investigative task. Thinking about the activity that is carried out is part of that activity; decide the most appropriate methodological strategy, the theory that includes the case or which will be It is also necessary to ask about the object of study and the position to be adopted when perform the interpretation. I also deduce that this object is not predetermined, it means that it is science that creates the object of study. As Bourdieu states:

“An object of investigation, no matter how partial and partial, may not be defined and constructed but based on a theoretical problem that allows submit to a systematic review all aspects of reality put into relationship by the problems that are raised” (Bourdieu, 1975, p. 47)

But in a sense, the theoretical problem, is subject to ideological political currents in which scientific communities are immersed, both national and globalised. I agree

with Becker (1993) when he states that researchers should “feel free” to invent methods and strategies that allow them to unveil the problems which pose to investigate.

“It is like ordering to build your own house. Although there are general principles of construction, there are not two architects that work the same way and there are not two owners with the same needs. In this way, the solutions to the problems of construction must always be improvised” (p. 258)

The readings that I make in my codifications are cuts, interpretations, possible readings. About this, Okley says (1994: 32, in Valles, 1997: 340)

“... writing and analysis comprise a movement between the tangible and the intangible, the cerebral and the sensual, the visible and the invisible”.

During reading, re-reading and interpreting the collected material, I was rediscovering the text along with the meeting of a note that allowed me to reorient the investigation. Own comments are the constant auxiliaries of the researcher remembering places, dates, circumstances, I open more and more paths and lead us to new interpretations. To analyse is to decode words, meanings, senses, gestures, movements, expressions and in decoding I “over coded” as Barthes said (1994) since that over coding no longer deciphers but produces. That is, I understand the theory as a toolbox, and this is very different from understanding it as the signifier. The analyst must perform a microanalysis that is a thorough study of the data. This implies a first interpretation. At this moment the theoretical sensitivity of the researcher is very important to extract the essence of the data, to develop concepts and to establish relationships between them. The data speaks for themselves, the researcher must perform questions such as: How could I interpret

what the Interviewee is saying? What is there in this material? Is it important to know what meaning this word has or what it could mean? This microanalysis includes an open coding and an axial coding (Andréu Abela, et al., 2007) and is aimed at finding the meaning of the data.

Open coding

Open coding is an analytical procedure by which data is fractured and opened to bring to light the thoughts, ideas and meanings that they contain in order to discover, label and develop concepts. Discover categories and name them with a code is done in the first moments of the investigation. Inductive steps are followed, such as putting categories to the data without preconditions, establishing a line-by-line analysis, which means not making a panoramic approach but a microscopic one, matching the context where the coding categories or paradigm manifest; this would allow me to rank the categories.

Axial coding

Axial coding occurs when establishing hierarchical relationships with subcategories - properties and dimensions - around a category taken as the axis. You get a scheme that better facilitates the understanding of phenomena and provides a path to configure the central category.

At this point, I must emphasise that coding is not synonymous of analysing. Coding is grouping information into themes and categories that rely on similar concepts and topics. I code from transcripts, documents, testimonies, putting a code outside the

paragraphs however some researchers consider easier to number them. Even if I find negative data it must be encoded. A Researcher must procure - constantly - to refine the encodings either suppressing or redefining them. Many times, as in quantitative research I must build a codebook, those codes must be defined, clear and mutually excluding, this allows, when there is more than one researcher, that everyone interprets the same or in the same way; in any case they are tentative codes that - as the analysis progress in the successive reads - are acquiring a greater permanence.

Miles and Huberman (1994) pointed out that there are three types of codes:

1. **Descriptive**, that require little or no interpretation.
2. **Interpretive**, which supposes greater interpretation and knowledge of the data.
3. **Inferential**, that are explanatory codes and refer to causes and causal links.

Codes must conform to the data and not the data to the codes. Before interpreting them, I proceeded to separate the data in the respective variables, I cut the testimonies, the transcriptions, all the materials and I placed them in the same sheet or file. The different fragments can be marked with numbers, with keywords in the margins, highlighted with colours and filed in several ways; codes serve to identify and sort the data.

5.5 Storage of information

The storage of the data is something that should be carefully considered because in qualitative research we find few cases but a lot of information turning this stage into a very difficult situation. This must be considered from the beginning of the

investigation. One of the central forms of registration is the field notebook, in it we register absolutely everything that happens in the field work, this is perhaps the most important input for the analysis, it is the raw material that the researcher has at the time of the analysis. In the enthusiasm of collecting information the researcher sometimes takes unnecessary notes and could be careless with the collection of information. Attention must be paid in order to avoid mistakes and file the information in the place that corresponds. The objectives and hypotheses of the investigation will indicate the files that should have. Every time I went out from the field when I return I wrote about the observations, interviews I did, recording everything that happened, I make descriptions of the people, places, situations, activities. Also, the researcher does his own notes on his impressions, his reflections on what he/she has heard and seen and his methodological notes. Although I recorded the interviews, the notes are always fundamental since the recordings do not show us the movements, gestures and the context in which the interview occurred, the impressions and everything that does not appear in the recordings; expressions, context, smells, and what was said before and after the interview. This allows researcher to see how the work plan is affected and become aware of how we are influenced by the interviews. As the work progresses, the researcher perceives the importance and what is the contribution of the participant, speed and quality is acquired, they are written when running from the pen (they are in turn a good writing exercise). Let us think that what I find in the fieldwork is the source of the report and analysis.

The first thing I do is a detailed description of the subjects, this means a description of how they behave, the type of language used (what they say and how they say it); during the research I will meet several times with the population under study, hence I must record the changes that occur in the subjects as this will help in the analysis. I must record what is spoken most reliably using the quotes for textual expressions, if there are difficulties for textual record I must try to make the synthesis as reliable as possible so it is necessary to pay attention to the

details. I must always leave a margin for my comments, if we are not sure of what we are writing down we must point it out with some sign that we remember later. As Bogdan & Biklen (2003) say, the notes consist of two types of materials: a) description material that gives us a picture of the situation, b) reflective material that means to write in researcher's words the situation. The descriptive notes in general are extensive and must be very precise; the investigator must strive to be able to reflect what he/she is observing, this implies making decisions about what to register, it is about being explicit using the exact terms (do not use abstract words). For instance, if in our research we have detected the presence of a leader is not enough to point it out but we must explain what is that makes us consider him a leader. What we record could not complete but expresses what we propose. What do we want to mean? Instead of being synthetic we must describe situations; instead of saying for example the population is active, we could say the population of the 20th district that has (certain characteristics; describe the characteristics) is very active since it is part of..., etc. Abstract words should not be used as they would take away from our research what the subjects are doing or saying, neither should I adopt an evaluative posture.

5.6 Validity, Credibility, Transferability and Reliability

There is not a consensus on quality criteria for qualitative research (Creswell & Miller, 2000). There is however a general concord that qualitative researchers need to demonstrate that their studies are credible using criteria not based on scores, instruments, or research designs but based on the views of people who conduct, participate in, or read and review a study. To determine the validity and credibility of a qualitative study, researchers use their particular lens, determining "how long to remain in the field, whether the data are saturated to establish good themes or categories, and how the analysis of the data evolves into a persuasive narrative" (Creswell & Miller, 2000, p. 25). Validity in qualitative research refers to something

that has already been tested, therefore it can be considered as a true fact, the same that can be applied in daily life, in the social sciences, and give a valid fact allowing to consider as the best possible option among others. Some authors agree on this, (Corral, 2009) wrote that the validity of an instrument is that it measures what you have to measure proving its authenticity, some procedures to be used to achieve this are to ask groups of experts, to measure predictive validity through checking behaviour and using and cross-check-questions contrasting previous data. Martinez, (2006) mentioned in the broad and general sense, that an investigation will have a high level of "validity" to the extent that its results "reflect" an image as complete as possible, clear and representative of the reality or situation studied. In the same way regarding the validity in the investigation. Camarillo (2011) mentioned that in qualitative research, the understanding of reality is the fundamental purpose, according to this, what makes a case study, for example, to be considered "scientific" is not the generalization of its results, but the ability to explain the phenomenon in depth, this is basically achieved through the criticism of the researcher in the context of the occurrence of phenomenon under study as well as through the triangulation of information sources. Sandin (2000), agrees with this criterion when referring that an invalid investigation is not true. An invalid investigation, has no credibility and is not considered good research. Regarding validity, Moral Santaella (2006) stated the problem about whether reality can be captured or not, whether the results of qualitative research are an interpretation of reality and how to include the individual contribution made by the researcher to achieve valid and rigorous investigations.

The researcher who works in qualitative studies is responsible for understanding, observing and perceiving the reality of the individual participating in the study. Camarillo (2011) mentioned that the researcher who works in a qualitative study tries to capture reality, such as that perceived by the subjects participating in the study. It is not interesting to capture the reality "that exists" but the reality that is perceived and that ultimately is what it exists for the participants. According to

Lincoln and Guba, (1985) the reality is a set of mental constructions of human beings. this means that the researcher will shape reality according to what the participating subjects state. Hidalgo (2006) mentioned some validity criteria that are parallel to those related with internal and external validity used in the positivist paradigm referring to credibility and transferability. To assure validity of this study, I focused on participants, assuming that reality is socially constructed and it is what participants perceive it to be. There is also a revision of how accurately participants' realities are represented in data analysis, actively involving participants in assessing whether the interpretations accurately represent them. For this purpose, a systematically followed process was applied for interviews and data analysis attempting to capture different perspectives from participants using reflexivity as a mean to understand the influence of researcher's experiences and perception of the world toward the analysis of the collected data and to integrate reciprocity into the creation of knowledge by considering researcher's social role and that of the interviewee (Patton, 2002); (Dicicco-Bloom & Crabtree, 2006); (Morrow, 1992). One important aspect of this method is the use of open-ended questions, that required more than a yes/no answer, these questions are carefully made to be neutral, sensible and understandable (Gill, et al., 2008). This method is useful to inquire participants' perceptions and experience about their learning process before and after the workshop.

On the other hand, reflection allowed me to understand and connect with interviewees creating a mutual influence that benefits "not only the interaction during interviewing but also the phases of interpretation, writing and publication" (Atkinson & Coffry, 2002, p. 377). Before starting the study, interview questions were carefully revised. During this process, I asked myself: "*Would I manipulate or lead the participant?*" or "*Would I ask too broad or structured questions?*" (Italics are mine). These questions drove me to assure a "continuous reflection to ensure validity" (Satu, et al., 2014, p. 4) and are evidence of the statement that trustworthiness of data collection is one aspect that supports a researcher's

ultimate argument concerning the trustworthiness of a study, ensuring the credibility of conclusions. The validity of my study was proved, the instruments used on kit, interviews and codification of answers using categories and themes allowed me to measure participants' perception about the topic I was researching.

My study has descriptive validity that is the one that is related to the initial stage of the investigation. It usually involves data collection. The main result is information that describes what was seen and experienced. The interpretive validity was proved because the certainty in the participants' interpretation can be confirmed or recognised through feedback and low inference descriptors²⁴, observations that are as concrete as possible accounting what people say (Seale, 1999). The theoretical validity, related to the physical and mental immediacy of the studied phenomenon and my own constructions and theoretical frameworks was proved through the extensive literature that built the interpretation of the data collected. The generality is a validation that refers to the degree to which the explanation is accepted to be generalizable. Even though my research is qualitative, generalisation of my findings is possible and feasible. Finally, my study proved evaluative validity because the results and findings are supported by evaluation instruments used in qualitative studies already described and mentioned above.

Credibility is obtained when the researcher, after having collected the information obtained from the experiences and answers of the participants through ethnographic interview techniques, recognise as a truth the information given by the participants, considering it close to what they have manifested. Hidalgo (2006) mentioned that the level of consensus between different observers of the same reality elevates the credibility deserved by the significant structures discovered in a

²⁴ Low-Inference Descriptors seek to record observations in terms that are as concrete as possible, including verbatim accounts of what people say.

given environment, as well as the certainty that the level of congruence of the phenomena under study is strong and solid, therefore, the task of the researcher is to obtain quality of the information in the best possible way through versions of individuals, this credibility requires criteria in the results, completeness, patience, perseverance and continuous evaluation to point out the results of the investigation. Credibility was also proved in my study with the satisfaction of participants once reviewed their answer in their interviews.

Transferability in qualitative research, is the bridge between external validity and generability, referring to socialising the results to other populations. The audience or the reader of the report determines whether the information can be transferred or shared. Hidalgo, (2006) in table 4, shows the parallelism of the validity criteria attributed to both paradigms, which are detailed below.

Aspect	Positivism	Naturalism
Accuracy	Internal Validity	Credibility
Applicability	External Validity	Transferability
Consistency	Reliability	Dependence
Neutrality	Objectivity	Confirmability

Table 4. Comparison of validity criteria between paradigms. Taken from (Hidalgo, 2006)

Finally, reliability refers to the credibility that an individual can project to others, which allows confidence to be reflected, which will be strengthened through the actions carried out. The concept reliability is applied to provide a degree of security in the individual. Camarillo (2011) mentioned that reliability refers to the possibility of finding similar results if the study were replicated. To procure this,

researchers conducting positivist studies isolate and control variables, however, social reality is unrepeatable and the complexity in the interactions of variables we find leads to questioning a simplistic view of an artificially isolated phenomenon. In social sciences no absolute replicability is possible; the vision of a holistic and complex reality does not encourage isolation of variables. Reliability refers to stable, safe, predictable and congruent results, that stay the same and equal in different times. Reliability is considered external when other researchers arrive at the same results under equal conditions, and internal when several observers agree on the findings studying the same reality, (Alvarez-Gayou, 2003). From qualitative research, reliability is in charge to reduce the measurement error to the minimum possible. This author considered that in qualitative research, measurements are not made, so this element would be cancelled; however, some authors seek to have in qualitative research an equivalent of reliability, but predominantly referred to the cases in which the interpretation of the data obtained is performed. So far, I asked myself: how to trust the results of a qualitative investigation? I strongly believe that the researcher is responsible for providing the results, is the one that responds for the investigation.

Camarillo (2011), in relation to how the reliability of the results, published that the researcher does not only face a changing and complex reality, but is the research instrument, and becomes the mediator between social reality and knowledge. In this sense, in qualitative research, the researcher is the main actor that provides reliability based on the different methods, procedures and strategies used in the investigation. Martinez (2006) commented that the qualitative researcher, to facilitate the corroboration of the structural process, has two valuable techniques: the triangulation of different data sources, theoretical perspectives, observers, and methodological procedures, and audio and video recordings, allowing researcher to observe and analyse the facts repeatedly and with the collaboration of different researchers. It can be mentioned that validity and reliability can be applied in qualitative research, according to the valuation instruments used. As well as in

quantitative research the qualitative one is exposed to controls and statistical mediations in order to provide validity and reliability, through the analysis techniques used. Martinez also agreed with and adequate collection and management of qualitative data, which ensures a high level of validity and provides the basis for a certain form of reliability or replicability of research.

The method chosen to analyse the interview's transcripts was **Thematic Content Analysis**, a method to identify, analyse and report patterns within data; it also interprets various aspects of the research topic (Boyatzis, 1998). In my research, Thematic Content Analysis allowed me to use different strategies to analyse my interviews' scripts through a systematic coding and categorising approach; exploring textual information and determining trends and patterns of words, their frequency, relationships and the structural nature of discourses of communication (Vaismoradi, et al., 2013). Through this analysis I was able to describe the characteristics of the content, examining who says what, to whom and with what effect, aiming to analytically examine narrative materials from participants' life experiences by breaking the text into small units of content that are then submitted to description. Following Piercy & Cheek (2004), I defined a theme as a statement of meaning that runs through all or most of the pertinent data and carries heavy emotional or factual impact. Some questions aroused during this data analysis; one of them was about how to categorise data or themes.

Considering that a theme captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set, I reflected whether I should consider a theme focusing on prevalence across the entire data set. On this reflection, I asked myself: Do the more instances of the theme across the data set necessarily mean the theme itself is more crucial? About this matter, Mayring's posture (2004) is that in qualitative analysis, there is no an easy answer to the question as to what proportion of the data set needs to display evidence of the theme for it to be considered a theme. A theme might be given considerable space in some data items, and little or none in others or it might appear in relatively little

of the data set. The importance of a theme is based on whether it captures something important in relation to the overall research question. Mayring insists that researchers have not agreed about the conventions for representing prevalence in thematic analysis; some use for instance “the majority of participants”, others use “many participants” and some researchers prefer “a number of participants”, see also (Meehan T. & C., 2000); (Taylor & Ussher, 2001); (Braun & Clarke, 2006). Once a researcher has a clear concept of the prevalence of a theme, he/she should determine the type of analysis he/she wants to do; this could be a rich thematic description of the entire data set, and may give the reader a sense of important themes. An alternative thematic analysis is to focus on one particular theme within the data, in most cases this is related to a specific question or area of interest within data. In my study, one of the themes that captures an important element of the impact of a workshop on participant’s perception of their teaching skills is the way this workshop contributes to improve teaching skills. Consequently, in my data analysis, prevalence of a theme was counted at the level of the data item considering if it appeared anywhere in each interview or each individual occurrence of the theme across the entire data set (Riessman, 1993).

5.7 Inductive Model

An Inductive Model was used to analyse my data. The inductive approach is a process of coding data without fitting them within a coding frame or preconceptions. It has as a main purpose to allow the findings to emerge from the frequent, dominant or significant themes inherent in raw data, without the restraints imposed by structured methodologies (Thomas, et al., 2002). Using an inductive approach allowed me to understand the meaning of complex data using summary themes from the raw data. The inductive analysis uses a methodological route that is related more to discovery and exploration than to verification or confirmation. Qualitative inductive methods are interested in determining how

participants think and the meaning of their perceptions about the issue being investigated (Galeano, 2003). David Hume, Scottish philosopher, economist, and historian, held that the human reasoning of the facts was based on experience and empirical observation where investigative induction processes predominate. For him “success can only be expected by following the experimental method and deducing general maxims from the comparison of particular cases, is what it is known as the empirical-inductive method” (De Salas & Matín, 1998, p. 181); therefore, everything that can investigate and know about nature must emerge from the previous experience, that is, inductive reasoning. Thus, qualitative studies are characterized by be focused on the subjects and their adopted behaviours, the inquiry process is an inductive type and the researcher is in constant interaction with the participants and with the data, to find the centred answers in social experience and what is its meaning in the life of people. In research with a qualitative approach, the quantification of reality is not relevant, but understand and reveal the deepest of social structures; that is, the subjective aspects of people like their motivations and attitudes, to explain their behaviour in reality (Escudero & Cortez, 2017).

5.8 Steps taken to analyse data.

Using Creswell’s criteria (2003), data analysis includes: transcription, organising the data, identifying emerging themes and thematic coding.

Transcription.

According to Dortins (2002), transcription is explored as a transformative process, a bridge between interview and analysis across which the data, as well as the interviewer-researcher, are re-orientated towards the process of analytical reading. The method used to transcript the interviews was the Intelligent Verbatim

Transcription using also an Edited Transcription method, omitting fillers such as “you know” and irrelevant sentences without changing the meaning of the story.

Organising the data.

Normally, in qualitative research and in particular in interviews, a large amount of information is provided, being necessary to select the relevant data that is intended to be carried out for the research (Cohen, et al., 2011). This is called data reduction and what other authors such as Parlett and Hamilton (1976) call progressive focussing or progressive focus. That is, the researcher starts analysing data from a wide angle and progressively goes selecting the concepts that he/she finds most relevant in order to obtain relevant conclusions to its objectives. Miles and Huberman (1994) also believe that the graphic presentation or exposure of these data implies in itself a way to reduce data. From the individual interviews, my study had accumulated a total participant's contact time of 750 minutes: there were 250 pages of text data, approximately 100,000 words. Data reduction refers to the process whereby the mass of qualitative data you may obtain - interview transcripts, field notes, observations etc. - is reduced and organised, for example coding, writing summaries, discarding irrelevant data and so on (Miles & Huberman, 1994). At this stage, I tried and discarded all irrelevant information, but do ensure that I have access to it later if required, as unexpected findings may need me to re-examine some data previously considered unnecessary. I then performed a two-step, iterative process to reduce the data from being highly rich in detail, but unwieldy and intertwined in context (Ritchie & J., 2003), to a manageable load of fractured data.

Identifying emerging themes and thematic coding.

Emerging themes were identified after carefully reading the interviews transcripts and identifying codes line by line, in order to the development of themes and furtherly the creation of categories and sub-categories. During this stage of data

analysis, I based my analysis in my research questions and objectives, analysing how the residents' answers and perceptions could better allow them as practitioners to understand the meaning of their teaching roles and to implement the teaching activities in their training and hospital activities.

Thematic Coding.

To analyse interviews, Thematic Content Analysis, a method for identifying, analysing and reporting patterns within data was used; this method also interprets various aspects of the research topic (Boyatzis, 1998). Thematic Content Analysis allowed me to use different strategies to analyse my interviews' scripts through a systematic coding and categorising approach; exploring textual information and determining trends and patterns of words, their frequency, relationships and the structural nature of discourses of communication (Vaismoradi, et al., 2013). Through this analysis I was able to describe the characteristics of the content, examining who says what, to whom and with what effect, aiming to analytically examine narrative materials from participants' life experiences by breaking the text into small units of content that are then submitted to description. This is a continual process, rather than just one to be carried out at the end of the data collection. In qualitative research, data analysis is not a phase of the research process but a process in continuous progress, dynamic and creative (Taylor & Bodgan, 1986), which occurs simultaneously with the collection, coding and the interpretation and narrative writing of the data. Understood in this way, the analysis is a process that includes coding as one of its parts, that in which the data is segmented and reorganized by means of codes or categories that support the interpretative work with the data. Thus, coding is understood as a particular analytical procedure (Coffey & Atkinson, 2005); (Strauss & Corbin, 1998). (Coffey & Atkinson, 2003) consider that

“...the analysis is a cyclical process and reflexive activity; the analytical process must be broad and systematic but not rigid, the data is fragmented

and divided into significant units, but a connection with the total is maintained; and the data is organized according to a system derived from them. As a whole, analysis is an inductive activity guided by data.”

Regarding coding, this definition indicates that the categories that are elaborated must fit the data and not vice versa, so that concepts are not used in a static and definitive way that force the data to “fit” in them. Likewise, this inductive research model assumes a certain role of theory in qualitative analysis. In general, it can be said that in qualitative research the theory or theoretical framework is not something that pre-exists in a closed and definitive way but is built throughout the investigation (Creswell, 2003). Therefore, during the analysis the theory works more as an interpretive guide than as a prescriptive and static conceptual framework. That is why it is said that one works rather with sensitive or sensitising concepts. These concepts usually have a lower level of specificity than the definitive concepts, and serve as a guide for the analytical approach to empirical data. According to the creator of this denomination, “while the definitive concepts provide prescriptions about what is seen, the sensitive concepts merely suggest directions to where to look” (Hammersley & Atkinson, 1994, p. 197). But it is necessary to mention that I must also take into account the type of qualitative research design in question and the research objectives to understand the place of theory in the analysis. If it is an exploratory or descriptive study, it is very likely that the theory occupies a secondary role, since the focus will not be on the interpretation and conceptualization of the object of study but on its elucidation and description. This happens, for example, in some ethnographic studies that carry out the investigation and analysis of the most deprived of theoretical assumptions possible (which does not mean that the data is not interpreted and organized by the researcher).

Other designs whose objectives are not simply descriptive but aim to achieve some interpretation and theorizing about what they study - and even those works that

have as their objective the development or verification of sociological theory, such as some ethnographic works and the research that they apply analytical procedures of grounded theory and analytical induction - they usually give the theory participation in the analysis of the data. Thus, except for research that seeks to understand reality in the actors' own terms (for which they often use only native concepts), sensitising concepts that help to formulate initial questions are often used; that is, flexible theoretical concepts that allow us to open the inquiry rather than constrain it. You can also put together typologies as a form of analysis based on certain theories, or think about interrelations between categories from some previous conceptual framework, although always looking for support in the empirical material. That is, always supporting an inductive logic, in qualitative research there must be a reciprocal relationship between the data and the theory during the analysis:

“...the data must allow generating propositions in a dialectical way that allows the use of theoretical schemes a priori, but without that particular scheme becomes the receptacle where data must be poured” (Creswell, 1994, p. 12)

This means that the theoretical concepts that are formulated in the interpretation of the data are constructed in the process of analysis itself. In this sense, in studies that aim to generate theory, it would emerge and develop during the collection of information and its analysis. Likewise, the use or non-use of theoretical concepts during the analysis is related to the type of coding used. For example, it can be coded inductively or openly, where the emergence of codes is encouraged multiple and indeterminate depending on what appears as relevant in the data (that is, inductively), in which case they can be used codes *in vivo* or codes arising from the vocabulary of informants (although this type of inductive coding does not imply that the researcher does not use his theoretical background to code); or use concepts already worked in previous research to organize the information (that is, use

theoretical concepts of the conceptual framework in coding and analysis). Obviously, different coding strategies can be combined in the same study (Ruiz Olabuénaga, 2003, pp. 68-70). What has been said so far makes possible to characterise coding in qualitative research as a dynamic process whose purpose is to link different segments of the data with concepts and categories based on some common property or element (Coffey & Atkinson, 2003, p. 32). It can be thought of as a heuristic procedure, which aims to “break” the data and reorganize it into categories in order to be able to compare the different pieces of data within each category, compare different categories to each other, establish relationships between categories, and integrate categories in concepts of greater generality in order to contribute to the development of theoretical concepts (Maxwell, 1996). Basically, categories are taken as tools for thinking, which are developed as you work with the data (Coffey & Atkinson, 2003). On the other hand, codification in qualitative research can be characterized as a classification procedure, which consists of:

“The application of a set of pre-established categories to the data, according to explicit and accurate rules with the main objective of quantifying the frequency of the items in each category”(Maxwell, 1996, p. 13).

To understand this idea, let's think about the logic of a qualitative research design. Following a deductive procedure, I started from a series of explicit propositions and hypotheses about what I wanted to investigate, which would be empirically tested. To do this, the variables and their respective attributes (or categories) are defined on which empirical information would be relieved. After the data collection - carried out based on the indicators that were established for each variable under study -, it would be necessary to carry out the codification of the categories by means of symbols - usually numerical values - and then proceed to the statistical analysis of the data. To exemplify the coding procedure in qualitative studies, let's consider the treatment of structured data from a survey. Once the survey has been

applied, if the answers have not been pre-coded, a code or number is assigned to each of the response options (categories) and, if there are, the open responses are closed (that is, the responses are regrouped in a closed system of categories). Then, I proceed to the development of the code manual and the coding of the surveys. Here, the coding ends up being a rather mechanical operation of assigning a code or number to the data, so that it is a pre-analysis procedure that can be performed by a person other than the researcher himself.

This has a classification and non-heuristic or interpretive purpose since the data is ordered in only one of the pre-established categories for each variable, to then make comparisons between categories. This classification allows the quantification of cases by category and the subsequent statistical treatment of the data. For this, remember that it is necessary to prepare a data matrix, where the codes or values adopted by each unit of analysis are recorded in the different variables studied (Hernández Sampieri, et al., 2010). Thus, I observe that each segment of the information collected for each of the cases is assigned a single category, unlike the coding process in qualitative research where there may be multiple coding of the same text fragment. In turn, the category system is closed and hardly changes (unless, for example, variables are re-categorised, but this is always an activity after data collection and does not alter the closed nature of the coding system). In the other hand, I have said that the categories used in qualitative coding are analytical or conceptual and not classificatory, and that they arise and rework as data is collected and analysed. In this type of study, a code manual can also be prepared to initiate the coding of the data, but it will be used as a tool that organizes the coding and establishes relationships between categories and their subcategories, but does not determine the coding (keep in mind that in the codification of qualitative studies, numbers can be used to identify categories and subcategories, a fact that often favours the individualisation of the categories in the text). Therefore, the code manual undergoes changes as the material is codified and re-read, categories and subcategories are opened, categories are

joined, etc.; there is always a discovery in progress of new interpretations and lines of inquiry of the data and the system of codes and concepts is not static. Such is the dynamics of coding in qualitative research: add, delete, expand and redefine categories in order to refine the category system.

But so far I have only mentioned the process of reduction / de-contextualisation of the data that operates in the codification of qualitative investigations: thus, I indicate that the first step of the analysis process begins with the reduction of the voluminous information that is collected in the field from its codification, where it is a question of breaking down the data and grouping them into different categories, properties, themes or groups that give the data a certain significant unit (Coffey & Atkinson, 2003); (Creswell, 2003). On the other hand, Strauss and Corbin (2002) -exponents of the grounded theory- point out that the coding process cannot only be thought of as a reduction of the data but must also be seen as a complication of the same, in the sense of try to open them in order to interrogate them, to think creatively with them, to rehearse concepts, identify their properties and dimensions. This is what they call "open coding," where categories and subcategories emerge. But this interpretative work requires the re-contextualisation of them (Coffey & Atkinson, 2005); (Creswell, 1994); (Tesch, 2013). This means that of the segmented data from its codification in different categories and subcategories, it is necessary to pass to a significant data to proceed to its interpretation. By this I am referring to the reflective and creative work of connecting data, of thinking about different relationships between concepts in order to have a total image of the data. Again, thinking of the terms used by the grounded theory, axial coding and selective coding can be mentioned as two analytical procedures that allow for interpretation (Coffey & Atkinson, 2003, pp. 54-55). Thus, while axial coding refers to the work of grouping categories with their subcategories, relating the properties and dimensions that were identified within each of them, selective coding is the process of integrating and refining categories for the purpose of constructing theory. This last type of codification implies

discovering the central categories of research. Once the central categories have been identified, a network of concepts is built around them as a way of integrating the categories and generating theory (Strauss & Corbin, 2002).

Obviously, not all qualitative research aims at generating theory, as is the case in grounded theory. It is according to the analytical purposes of each study that the complexity of the system of categories that is elaborated and the levels of generality and abstraction that are reached in the codification are established. In any case, it will be a systematic way to develop and refine the interpretations of the data. My first coding action was to highlight significant hard copy texts within printed transcripts. Initially a manual process was used on printed paper of colour highlighting or unitising important text, (Saunders, et al., 2003) and annotating it in the margin with a grouping category. This highlighting was done through electronic means.

Six steps were followed to start the Thematic Content Analysis of the data:

1. Read the transcripts

I accessed my transcript files as digital files in the cloud and I started by browsing through them and making note of my first impressions. Then I was able to identify common themes and establish variable and categories. Reading through each transcript carefully allowed me to make that evidence of themes becomes stronger, helping me to hone in on important insights. It's critical that researcher could be able to identify bias during this step. Biases can appear in the data, among the interviewees, and even within researcher's objectives and methodologies. Researchers should acknowledge preconceived notions and actively work to neutralize them at this early step (O'Leary, 2019).

2. Annotate the transcripts

Annotation is the process of labelling relevant words, phrases, sentences, or sections with codes. These codes help identify important qualitative data types and patterns. Labels can be about actions, activities, concepts, differences, opinions, processes, or whatever the researcher think is relevant. Annotations helps researcher to organize my data for dissemination. I procured to be generous with my annotations I knew that later I will have an opportunity to eliminate or consolidate my data.

3. Conceptualise the data

Conceptualising qualitative data is the process of aligning data with critical themes that will use in his published content. I had the opportunity to identify many of these themes during my initial review of the transcripts. To conceptualise, I created categories and subcategories by grouping the codes I created during annotations. In this stage is possible to eliminate or combine certain codes rather than using all the codes that Were created. I kept only the codes I deemed relevant to my analysis.

4. Segment the data

Segmentation is the process of positioning and connecting data categories. This allowed me to establish the bulk of my data in a cohesive way. I started by labelling categories, then describing the connections between them.

5. Analyse the segments

I started by determining if there is a hierarchy among categories. Researcher must determine if one is more important than the other, or draw a figure to summarize the results. At this stage, researcher could also align qualitative data in order to stablish themes and categories.

6. Write the results

When the analysis of the content is complete, researcher is ready to start the transition of the findings into the real body of the content. In this moment I had to use my insights to build and verify theories, to answer key questions in the field, and get back to aims and objectives. Researcher will describe categories and how they are connected using a neutral, objective voice.

5.9 Themes and categories

At this point is very important to differentiate the meaning of themes and categories. A theme is a meaningful “essence” that runs through the data. This was achieved through a prolonged familiarisation with the interview data (each interview was listened and read several times); in effect the researcher learns individual’s unique story and draws conclusions from the mass of data (Morse, 2008). This author states that:

“Analytic strategies for categorising and theming differ. Categories are developed using content analysis, in which similar chunks of text are ordered or placed proximally. They are separated from the interview or document itself; they are positioned so that example after example of the same thing may be examined, and the major commonalties may be identified, coded, explicated, and described. If a category becomes large (i.e., it contains a lot of examples), it may be separated into smaller units or subcategories. To identify a theme, the researcher reads the interview or document paragraph by paragraph, asking, “What is this about?”, and thinking interpretively.” (Morse, 2008, p. 727)

A category, on the other hand, is a collection of similar data sorted into the same place, and this arrangement enables the researchers to identify and describe the

characteristics of the category. This, in turn, enables the category itself to be defined, and then compared and contrasted with other categories, or if broad in scope, to be divided into smaller categories, and its parts identified and described.

Miles and Huberman suggest that a good display of data (1994), in the form of tables, charts, networks and other graphical formats is essential. There is an inductive approach for Thematic Content Analysis which means that the themes identified are strongly linked to the data themselves (Patton, 2002). The procedures followed were 1. Preparation of raw data files. 2. Formatting the raw data files in a common format. 3. Carefully reading of text to be familiar with the content and understand the themes and details of the text. 4. Creation of categories, identifying themes. I used a word processor to mark text segments into each category, each category was marked with a different colour. Interviews' transcripts were read several times to identify themes and categories; for this purpose, a coding frame and categories was developed. These categories were later conceptualised into broad themes that were categorised as: *previous experience*, *benefits* and *professional impact* (italics are mine). To understand the meaning of a code, I used Strauss and Corbin's (1998) definition:

“Code is a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (p. 3).

This data came from interview transcripts, participant's observations, field notes and journals. Through coding I was able to analyse my collected data and to give meaning to my qualitative research. After coding, I looked for patterns which are codes that are used repeatedly throughout, for instance participant 'A', 'C' and 'D' could mention that the workshop impact “part of their learning”, this pattern allowed me to form categories such as: “Learning Process” and “Previous Learning”

that are the base for the meaning and interpretation of qualitative data. When categories are compared with each other and consolidated, the reality of data is achieved and researcher could progress to a conceptual interpretation.

5.9.1 Themes

In this section, I will begin by substantiating the choice of the themes to analyse the results of my interviews in this research. At this point I must explain how my data analysis led to the emergence of themes. The categories and themes were identified as I mentioned in previous paragraphs, after a careful reading and analysis of the transcription of the interviews, line by line, coding the categories and themes that emerged from the participants' responses. Once a theme was identified through line-by-line coding, it was then organized into tabs related to each thematic area, which made up the narrowed thematic codes. By the end of the rounds of coding, the data were narrowed into three overarching themes, which were related to my research questions:

- 1. What do you know about residents teaching activities?**
- 2. What is your experience in medical teaching?**
- 3. What could be a way that teaching could improve your medical practice?**
- 4. How could the resident's teaching influence on patient care?**
- 5. In what way teaching would influence your communication skills?**

The selected overarching themes were:

- 1. Previous teaching activities during medical training**
- 2. Teaching training and teaching courses**
- 3. Patient care.**

The first and the second overarching themes are related with research question number 1 and 2, the third theme is related with questions number 3, 4 and 5. The

three themes are strongly related to each other and emerged from overarching themes found and analysed in the interviews transcript as is explained above and in table 5.

Overarching Themes	Preliminary Codes	Thematic Codes
Previous teaching activities during medical training	Resident as teachers Peer teaching and learning	Teaching Experience
Teaching training and teaching courses	Am I prepared to teach?	Teaching skills
Patient Care	Resident professional development	Professional practice

Table 5 Themes Selection

Teaching Experience

Teaching experience is a situation that would facilitate the activities of residents as teachers and would improve medical students learning results. A controversial issue has been the way in which the Medical Resident acquires experience in medical education. One of the questions that always arises here is: what is the best strategy to train residents to teach during their residency work in the hospital. Teacher training programs for residents arise in response to the tension between training in teaching and time dedicated to it, with evidence that residents' teaching skills are not good (Wilkerson, et al., 1986). These programs vary in educational strategies, including expository classes, small group discussions, games roles, simulations, debriefing sessions of videos that show Residents' teacher

performance. These programs have different modalities and variable duration between one day' workshop and courses that could last for months (Lawson & Harvil, 1980); (Wipf & Pinsky, 1995); (Wamsley, et al., 2004) and focus on different medical specialties (Lacasse & Ratnapalan, 2009). Programs of this type have been shown to improve residents' self-confidence in their teaching role, as well as favouring the use appropriate teaching strategies by residents. Besides, the evidence indicates that teacher training for residents improves assessments of the teaching performance carried out by the students (Hammoud, et al., 2004).

Teaching Skills

The theme Teaching Skills is fundamental to know in depth the previous knowledge and experience of participants in terms of use of teaching and its influence in the professional field and the repercussions or impact of such skills and experience in the benefit of the patient. There is much information available in the medical literature about the role that medical residents have in medical teaching and how to obtain the maximum benefit from this process (Zabar, et al., 2004); (Busari, et al., 2002); (Bing-You, et al., 1997). Several studies show that resident physicians are often the primary professors of medical students and interns or residents after their admission and sometimes spend up to 20-25% of their time in teaching activities (Schwenk, et al., 1987); (Morrison, et al., 2005). Some surveys report that 2/3 of the residents are receiving more than 40% of their education by fellow residents (Elliot, et al., 1999). Part of this informal learning curriculum occurs during the nights and weekend guards when the base doctors do not they are present. Importantly, these teaching activities are often carried out without any formal instruction despite their critical role as educators. Studies of different specialties indicate that despite intense time pressures, resident physicians in general like to teach and value their role as teachers, perhaps one of the motivations for this, is that through this process they improve their clinical

knowledge, their skills, their esteem and develop their own learning method (Borleffs, et al., 2002); (Busari, et al., 2002). There are studies that indicate that some of the medical residents would even like to increase their commitment to teach, however they do not do so due to different factors, such as lack of time, but there are other reasons such as the lack of confidence in their teaching skills lack of clinical knowledge and insufficient training in teaching techniques (Paukert & Richards, 2000). It is necessary to understand the difficulties in supervising and educating medical students, interns or other residents at the same time than learning and also taking care of patients sometimes in difficult health situations.

Teaching and Professional practice

The third theme has a characteristic that is implicit in the future performance of the medical resident. Those who teach have increased enthusiasm for teaching and greater job satisfaction (Morrison, et al., 2005). In addition, residents who are more successful or higher-rated teachers tend to have better knowledge acquisition (Dandavino, et al., 2007). There may thus be some truth to Joseph Joubert's adage "to teach is to learn twice" (Weiss & Needlman, 1988). Residents with effective teaching skills may also have a positive effect on patient care. Resident involvement in teaching activities has been shown to have a positive effect on the resident's communication skills (Bulte, et al., 2007) and good patient communication skills have been associated with better clinical outcomes.

5.9.2 Categories

The first level of descriptive categorisation or coding begins with an exploratory phase in which predominantly descriptive categories appear. Gibbs (2012) points

out that it is the “assignment of codes that simply refer to superficial characteristics of people, events, environments, etc.” (p. 190). These arise from the first contact of the data collected and allows a logical understanding of this information, reducing the number of analysis units. In this first system of categories, the units of analysis are called raw or descriptive codes, and these, in turn, can be of two types: Live codes, where textual expressions of the participants are used and substantive codes, which correspond to names created by the researcher but supported by the data collected in the research. The second level of categorisation arises from the previous one, is of a relational type, which is generated from a process of conceptualisation of the data obtained. In other words, the descriptive categories that present a link with other observed data will give way to the categories related to the implementation and management of qualitative social research processes, which are theoretical. These new categories will be called axial or relational. The third level of categorisation or selective coding includes an empirical and conceptual purification, which consists of applying techniques such as the analysis of negative cases, triangulation and/or contrasting with informants, among other techniques; to give rise to the selective coding process, which will result in several core categories, which will allow the entire system of categories built during the research to be articulated. According to "selective coding is the process that guides the researcher in the selection of code as the central variable" (Carrero, et al., 2012, p. 49) or core category. For the construction of core categories, it is necessary to use methods that help to examine the magnitude and quality of the relationships between the categories. This categorisation process must be rigorous; therefore, it is essential to be in permanent confrontation with the data until the problem under study has been clarified and verified.

Qualitative data analysis is traditionally a slow process, generally requiring more time to process and sort data than to collect it. Also, there are a diversity of perspectives for the study of qualitative information as a consequence of the degree of commitment and skills of the researchers, the different social

environments, the selected methodologies, as well as the purposes sought by the study. Coffey & Atkinson (2003) point out that qualitative researchers present quite different research styles, not to mention their different talents and qualities so that standardisation of methods would only limit and even slow down the greatest efforts of social researchers. Álvarez-Gayou (2003), Kornblit & Beltramino (2007) and Báez & De Tudela (2009) establish in general terms the basic guidelines on the qualitative data analysis process that is summarized in the following steps or phases:

- Get the information. Includes the data collection stage through the systematic recording of notes or field diaries, the review of documents from various sources, interviews, observations, among other techniques.
- Transcription and organization of information. All the information collected, in the different means used to capture and record it (audio and/or video recordings, notes on paper, original or photocopied literary material, photographs, etc.) must be transcribed in an intelligible and detailed way in a format, which is usually the text form. The text, made up of words, is susceptible to a systematic examination, offering the opportunity to question and seek answers and concepts that only appear at the time of writing (Icart, et al., 2006).
- Codify the information. It consists of grouping the information obtained and transcribed into categories that bring together the ideas, concepts or themes discovered that have similar characteristics according to the researcher's vision.
- Coding makes it possible to provide meaning to the information in the form of labels, that is, it helps to identify and mark the specific topics of the transcribed text.

In practice for coding, the researcher needs to have coloured markers. The steps are as follows:

- The text should be read carefully, pointing out the parts that it considers relevant with the coloured marker. Additionally, in this first reading, the abbreviations of the codes can be written in pencil, which at this time would be provisional. In this way, the data is organized into topics.
- The identification of topics or topics contributes to establishing the index of the report or book, as well as the labels for a filing system.
- Next, we proceed to underline with a marker of another colour, the parts that can be used as textual quotations in the final report and that are about the codes or categories already indicated.
- Other readings are carried out to achieve a full understanding of the text, annotations and coding.
- Finally, with these readings it is possible to adjust and determine the formal coding of the qualitative information.
- Once the material has been encoded, it is advantageous to put together the parts of the text that correspond to the same code or category, to have an overview of the information, and if it is necessary to open one or more categories or sub-categories that contribute to the understanding of the phenomenon or situation of study.
- Integration of information. This step focuses on relating the categories obtained in the previous step, with each other and with the theoretical foundations of the research. Here the objective is, once the individual concepts and themes have been found, to be able to elaborate an integrated explanation.

Themes are linked to categories because they refer to the field related to the questions and answers. A category is an abstract name that represents the meaning of similar themes. Themes can belong to more than one category. This is because the content of a theme may have various connotations or implicit meanings. For instance, experience and previous knowledge are part of one category named “Previous knowledge” and the future performance of residents depending on their

teaching activities is part of another category named “professionalism”. I have also considered other categories such as “communication skills” and the “ability to solve problems” within the hospital activity. Even though the descriptions of the previous experience and teaching knowledge narrated were varied there is a common line for all participants, all of them have had previous knowledge about teaching activities of medical residents during their medical studies or their hospital activities. Taking into consideration the themes mentioned above: Teaching Experience, Teaching Skills, Teaching and Professional practice. Categories then will be sub-divided between others in: Previous knowledge; Improving Teaching Skills; Patient’s Safety; Learning Process; Decision Making as we can see in Table 6.

Themes	Categories
Teaching Experience	Previous knowledge, learning process, teaching courses
Teaching Skills	Improve teaching skills, previous training, teaching practice, peer-learning
Professional Practice	Communication, Patient care, Patient safety, decision making, professional development.

Table 6. Themes and Categories

Chapter 6

6.1 Findings

Before starting the development of this section, I would like to reflect and deepen in the characteristics of the data gathered in qualitative interviews and the way they are analysed and interpreted. Certainly, the investigation based on interviews does not fit in the classic positivist assumptions, from which the evidence can be "manipulated" in any case but never falsely manufactured. Indeed, in research based on interviews the evidence is "done", in the sense that it is the result of the subjective discourse of the interviewee guided in turn by the issues raised subjectively by the interviewer. The evidence didn't exist until it was recorded. Even after being recorded it undergoes through new alterations. First in the transcriptions, then in the treatment of the information (creation of categories, codification, relationship building, etc.) and, later, in the publication, since the information that was transmitted through speech is not the same than when it is presented in writing. The translation is never absolutely faithful (Raleigh, 1994, p. 4).

Within the textual data Gibbs (2012) differentiates between data with a realistic approach, in which the descriptions and explanations of a reality, with its different degrees of precision, they are real, correct and independent of the person and although they cannot be seen or felt directly, its effects can be seen or felt; and data with an idealistic approach or constructivist who reflect that everything that is said and experienced is done based on constructs and ideas, the reality described being a human construct. The same author indicates that in practice the analyses are not usually purely realistic or idealistic, but that the usual thing is to try to "portray as accurately and faithfully as possible what people said and to what extent they are realistic" (p. 27). Objections to interview-based research have less

and less weight. Social Sciences ceased to be in the old scheme that distinguished a true world from a false world and recognise the need for alternative heuristics referents. In that context, Bourdieu's and Foucault's proposals emerge stating that "behind what we know and are there are no linear evolutions or destinations, there is no truth, but the exteriority of the accidents." (Foucault, 1988, p. 28). The researcher must make that the history of the concepts used as events can emerge in "the theatre of methods" (ibid, p. 42). Within this context, a reflective question that I made myself is: Would the interview, due to its particular staging, be especially suitable for that dramatisation of contradictions and of the tensions that are drawn and blur in the memory of interviewed? However, the complex phenomenon of the desacralisation of science and its repercussions for methods, and in particular for the interview is also linked to the problems raised by social and cultural change in recent decades. The quintessential presupposition for interview is the subject's identity. A researcher interviews identifiable subjects, assuming an identity defined as the basis of certainties.

The analyses of the results are presented including the following topics: **Previous experience; Improving Teaching Skills; Patient's Safety; Learning Process; Decision Making.** These topics are closely related to my research question: **What is the impact of a Resident-as-Teacher workshop on Intensive Care Medicine Residents' perception of their teaching skills?** Furthermore, they are linked to into a set of more specific research questions which guided me for the design of the interviews:

1. What do you know about residents teaching activities?
2. What is your experience in medical teaching?
3. What could be a way that teaching could improve your medical practice?
4. How could a resident's teaching influence on patient care?
5. In what way teaching would influence your communication skills?

6.1.1 Previous Experience

In the **Pre-Workshop Interviews (Interview 1)**, participants were asked about how their teaching skills would influence their careers. The majority of residents reported having a novice or beginner level teaching proficiency and no prior training in teaching during residency. Some of subjects had spent all their activities as residents only receiving specialised instruction but had not been assigned to teach their lower rank peers. Their academic activities in which they could interact with their peers and professors were only clinical case presentations and class lectures.

“The Medical Residents’ learning process never ends, from the first year I began to polish our undergraduate knowledge or what I have learned empirically, in the second year I was a little more entrenched but with fear, and it is in the last year where I can already transmit teaching to our peers from the experience gained in these three years.” (Joselyn, Interview 1)

“The resident of Critical Medicine, should focus primarily on the continuous updating of knowledge among classmates and instructors in addition to improving skills in communication and teaching processes, being the clinical environment the ideal place for teaching-learning of such competences.” (Rose, Interview 1)

“I have presented clinical cases and scientific topics in addition to participating in updating talks”. (John, Interview 1).

“Residents’ learning starts from the first year, in that stage I began to polish my undergraduate knowledge or what I have learned empirically, in the second year I are a little more trained but still I are cautious and insecure, it is in the last year where I can already transmit teaching to other residents from the experience gained in previous years.” (Carole, Interview I)

Another issue found in these pre-workshop interviews was the difficulty of some residents to successfully combine their hospital activities with teaching their peers. This happened, according to the interviewees, because some residents did not have the available time to do so or simply did not have the will or desire to teach. The majority of the residents in the present study reported that they had not received prior instruction in clinical teaching while in residency, and most indicated that they were not familiar with common clinical teaching models. Some residents reported a lack of proficiency and low to moderate comfort levels when teaching prior to the session. Interestingly, residents in their fourth year of training, with more clinical experience, reported comfort and proficiency levels similar to those of residents in their first year of training.

These findings are important because they strongly suggest that educational programs such as the one in the present study would allow residents to become more familiar with common clinical teaching models and develop more confidence and proficiency in their teaching skills.

In the **Post-Workshop Interviews (Interview 2)**, participants remain perceiving that previous experience was important for their development of teaching skills and that they as medical residents are in a unique position to make effective clinical teaching because they have more contact time with students, they can emphasize the practical aspects of patient's care and can better understand the needs of the students.

“I had a regular experience, because as I have mentioned before, our senior residents taught us what they have read and have practiced, their experiences and/or mistakes that they have had so that we could be able to avoid them. However, this teaching process wasn't continuous and didn't come from all residents; there were some residents who only insist on fulfilling their duties. They didn't feel that teaching was part of their duties nor have the will to teach.” (Lana, Interview 2).

“The teaching activities of a resident with more experience constitute a fundamental aspect in learning and training, both the practical part and the theory.” (Rolf, Interview 2)

“Residents' teaching activity has the same importance than a senior physician or a postgraduate teaching because in order to know the patient's pathologies, in all its context, residents must receive this knowledge from experienced subjects. At the beginning medical resident starts with the basics; such as the interpretations of laboratory values, developing procedures and taking quick and accurate decisions in order to safeguard patient's life. Later we would be able to transmit this knowledge to other residents through studying the case, the criteria, the guides, etc. At the end comes the guidance and teaching of senior physicians and instructor in order to make decisions.” (Sandra, Interview 2)

“The experience gained in this workshop is important, we have reviewed clinical cases among residents of different years and we have discussed how to transmit this medical knowledge with a good teaching technique.” (Rita, Interview 2)

“In my experience, during the first and second year I was able to strengthen my knowledge learned in the medical career and work practice, thanks to many of my senior residents and trainees who knew how to guide me, in this last year of my postgraduate course, I will try to make an effort to transmit the same knowledge to new residents. This workshop had helped me a lot on this task, it is part of the teaching.” (Lana, Interview 2)

These answers sustain what was stated by Morrison (2005) and Busari, *et al.* (2002) in the sense that residents recognise that teaching stimulates their critical thinking and reflection on their own knowledge, increasing their motivation for continuous learning and self-learning, but there is a perception of lack of preparation to teach before and after the study workshop.

6.1.2 Improving Teaching Skills

In the **Pre-Workshop Interviews (Interview 1)**, participants were asked about their teaching skills, the conversation in the interviews was intended to inquire whether they believe that the workshop will improve their skills to share and transmit their knowledge to their peers and medical students. The majority of residents also expressed an interest in learning teaching skills. Conceptually, this interest in learning how to teach suggests that teaching training programs would be well received by residents who are motivated learners, thus enhancing the opportunity for the programs to successfully meet their objectives. These are some of their thoughts on this matter:

“The teaching experience that we had during our activities as residents was to explain our patients the details of their pathologies and try to transmit them in the right and easy terms their diagnostics next to the patient's bedside, guided by senior residents and by the treating doctors I expect that with this workshop I would be able to improve my teaching skills.” (Sandy, Interview 1)

“The contribution of this workshop in my teaching knowledge would serve us for better therapeutic management.” (Randy, Interview 1)

“During my second year of residence, it has been characterised by mutual teachings between myself and other residents with lower or higher ranks, this workshop will produce an updated level of knowledge, clinical skills and diagnosis behaviour that would help us to improve our patients' care and have good decisions that are consistent with those responsibilities.” (Ana, Interview 1)

“In my experience, during the first and second year I was able to strengthen my knowledge learned in the medical career and work practise, thanks to

many of my senior residents and trainees who knew how to guide me, in this last year of my postgraduate course, I try to make an effort to transmit the same knowledge to new residents. This workshop will help me a lot on this task, it is part of the teaching.” (Lana, Interview 1)

In the **Post-Workshop Interviews (Interview 2)**, after completing an educational session (Resident-as-Teacher Workshop), the residents that participated in this research reported feeling more prepared and more likely to teach. Medical residents considered that taking this workshop gave them valuable tools to transmit their medical knowledge to their peers. In addition, many of them expressed not having had a similar preparation during their student and resident years.

“After this workshop I have had good experience in the medical knowledge transmission from senior residents and learning the techniques to transmit that knowledge myself to other residents.” (Sandra, Interview 2)

“This workshop has been very interesting and interactive because there are case analysis and teaching models that improved our novel teaching knowledge, also the teaching protocol review would allow us to transmit our knowledge to other residents.” (George, Interview 2)

“My second year of residency has been characterised by mutual teachings between myself and other residents with lower or higher ranks, this workshop produced an updated level of knowledge, clinical skills and diagnosis behaviour that would help us to improve our patients' care and have good decisions that are consistent with those responsibilities.” (Ana, Interview 2)

“This workshop will contribute to improve the skills and increase the knowledge of residents, I feel that my previous knowledge about teaching was reinforced and at the same time that new personal knowledge was achieved.” (Liza, Interview 2)

Some of the residents indicated that strengthening their teaching skills with the workshop had increased their confidence in transmitting their medical knowledge to their peers and also facilitated their ability to communicate with patients. All of them indicated that the educational session met the goals and objectives outlined and that the teaching module was very helpful for their training. Continued training of this type, throughout residency, could encourage and promote higher quality teaching by residents. Providing residents with the necessary skills to teach effectively is an important component of residency education. This demonstrates that after a teaching workshop, residents reported feeling more prepared and more likely to teach. Residents also reported an increased understanding of how to give effective feedback and indicated that this type of training session was valuable to their residency education. The establishment of clinical teaching courses for residents is intended to prepare them to efficiently perform a role that is inherent in their work with patients and students, while promoting their clinical learning. This function is complementary and is not aimed to replace the work that clinical teachers must do. The teaching role of medical residents has been recognised by academics, residents and students (Morrison, et al., 2005); (Busari, et al., 2002). In a paper published by Reyes and collaborators in 2010, medical residents assessed the importance of having teaching skills, while 5th graders year valued the importance of the teaching role of residents with $6.1 \pm 1,221$ (Reyes, et al., 2010); (Ten & Durning, 2007). Residents are in a unique position to make effective clinical teaching because they have more contact time with students, they can emphasise the practical aspects of patient's care and can better understand the needs of the students. On the other hand, teaching practice offers multiple benefits for residents who exercise it (Kurtz, et al., 2003), for instance in the study of Busari (2002), residents recognise that teaching stimulated their critical thinking and reflection on their own knowledge, increasing their motivation for continuous learning and self-learning.

Despite the above, it has been described that there is a medical residents' perception of lack of preparation to teach (Bordley & Litzelman, 2000); (Frank, et

al., 2015) (Mann, et al., 2007); (Dunnington & DaRosa, 1998). In Reyes work the self-perception rating of preparation to teach residents was of 4.3 ± 1.6 on a scale of 1 to 7, while fifth year students and interns evaluated the Residents' teaching competencies with a value of 5.2 ± 1.6 on the same scale (Reyes, et al., 2010); (García-Huidobro, et al., 2006). Likewise, Morrison in an evaluation done using Structured Objective Examination of Teaching (OSTE) found a low level of baseline competition of residents to teach (Morrison, et al., 2005). In conclusion it is a fact that medical residents need training to teach. In addition, most residents expressed interest in programs that provide them with skills to be better teachers. These findings suggest that a standardized training program for residents as educators would be well received if developed before or during residency training. In Reyes' study, 77% of residents and 66% of interns pointed out that the skills to teach are acquired during the medical school classes and that the activities that more promote this learning are: to observe how teachers teach and assuming teaching responsibilities. On the other hand, the activities that least promote such learning are: reading material or receiving instructions on how to teach. Only 6% of residents declared to have followed some program to learn to teach, highlighting that in said program what contributed most to his learning were the practical activities and classes. Residents and interns recognise that to acquire teaching skills, observing models and assuming teaching responsibilities are the activities that helped them the most. Both groups indicated that the training of these skills should be formal and include aspects such as goal definition and method learning teaching, feedback, evaluation and skills communication.

Within this context, Medical Schools and Teaching Hospitals must include in their curriculum, programs that prepare residents or students to teach. These curricula consider: a) knowledge of teaching and learning; b) teaching strategies and skills and c) attitudes towards teaching (Dandavino, et al., 2007); (Bulte, et al., 2007); (Ten & Durning, 2007); (Bordley & Litzelman, 2000) (Durning & Ten Cate, 2007). These programs are delivered with various methodologies: progressive training

during medical training, workshops, elective courses and in-service learning, etc. The evaluation of these programs shows a high level of satisfaction and good learning results in the participants when comparing the teaching they do with experts in education (Pasquinelli & Greenberg, 2008). Even when residents and interns point out that learning general teaching skills -applicable to patients and other students- is important and should start at medical school, it is not clear yet what would be the best space, time and minimum content necessary for residents teaching training. Residents assume many and varied responsibilities during their graduate medical education. One important resident role is teaching junior residents, medical students, and patients. They are also traditionally expected to develop teaching skills as they progress in their medical training with little to no instruction on how to teach effectively (Alaen & Gisondi, 2006). Edwards et al. (1988) found that in various specialties residents who receive formal training in teaching techniques have better teaching skills and provide higher quality education than residents who receive no instruction. In addition, teaching courses for residents have been shown to improve teaching confidence and are linked to improved student evaluations of residents (Wamsley, et al., 2004). Further, these acquired teaching skills are found to decline if not reinforced periodically throughout residency (Edwards, et al., 1988). Senior residents have always played a critical role in the education of junior residents, medical students, and patients. Recently, however, there has been an increased interest in the training and evaluation of residents as teachers.

6.1.3 Patient's Safety

“I will establish the regime of the sicknesses of the way that are best used according to my faculties, and avoid any anomaly and all injustice.”
(Hippocratic Oath)

Despite the expectation that physicians must have a diagnostic and therapeutic reliability of 100%, the reality is that the human condition is linked to error in any activity and the practical exercise of medicine is no exception; it is an imperfect science, and the expectation of perfection is neither realistic nor possible. This does not mean that nothing can be done to reduce the frequency and mitigate the consequences of medical errors, which are estimated to be the third leading cause of death in the United States (Makary & Daniel, 2016). At the end of the 20th century, cognitive psychologist James Reason, a professor at the University of Manchester, and a recognised expert in the study of human error in high-risk technological systems, described human error as the unintended execution of an incorrect plan to achieve an objective or the inadequate execution of a planned action (Reason, 1990). This means that the plan may be appropriate, but the actions associated with it are not produced as planned or that the actions are carried out as planned, but the plan is not sufficient to achieve the desired result.

To understand the way in which errors happen and how they compromise patient safety (SP), Reason proposes to study human error from two approaches (Reason, 1995): 1. Focused on people or classic personal model, 2. Focused on systems or systemic model. The people-centred approach, whose premise is that people are the cause of errors, is the one that has traditionally been accepted and understands that errors are the cause of adverse effects. Errors are perceived as unsafe acts derived mainly from incorrect mental processes, such as memory lapses, lack of attention, lack of motivation, carelessness, abandonment and recklessness. The action strategy to prevent and treat errors from the approach people-centred is to blame and punish (Name, Blame & Shame): the primary response of the human being when an error happens is to look for the guilty and record it. According to a survey conducted in 2016 by the United States Agency for Healthcare Research and Quality, 55% of hospital staff members believe that their institutions respond to errors in a punitive manner (Famolaro, et al., 2016). However, blaming or punishing someone does not ensure that a similar situation of harm to an individual is not

occurring simultaneously in another clinical setting or that the same error will not be repeated, even in the near future in the same institution. The complexity of health organizations and the processes of Health has led us to consider that, in order to guarantee the quality of care and patient safety, new training models for health professionals are necessary. In the current situation. Patient Safety is one of the new challenges that medical education must face in both undergraduate and postgraduate. In 2016, González-Formoso demonstrated, through a single-group experimental study of two groups (control and intervention), carried out with tutors and residents (2016), that an educational intervention is effective to improve patient's safety. He stated that resident physicians intend, during their training period, professional and humanistic attitudes, values and behaviours, that they learn by observing and working with other professionals, who have long hours of work, who are under a greater risk of presenting incidence of errors and that, as their training progresses, their Patient's Safety Culture (PSC) is increasingly fragile, concluding that good medical training is important to avoid mistakes that might seem obvious.

During **Pre-workshop interviews (Interview 1)** residents expressed the following thoughts regarding Patients' Safety:

“The teaching activities of a resident are as important as those of a senior physician or a postgraduate teacher because to know "the pathology that afflicts a patient in all its context" you must start with the most basic; such as the interpretations of laboratory values, monitoring values and procedures that are so important for the development of the resident's skills in order to make accurate decisions to safeguard patient's life. After that it is helpful to study the case, the criteria, the guides, etc. Then comes the guidance and teaching of senior physicians when making decisions.” (Sara, Interview 1)

“If there is a good communication and teaching method from one resident to another, the good management of the patient and the risk of making an erroneous decision is decreased. From my point of view, I have met residents

who believe that they know enough and they don't need to ask for the opinion of the rest, this behaviour depends more on personality rather than knowledge. Although I had a previous intensive therapy training I was always willing to receive constructive criticism from my peers. At the end we must know how to discern between right and wrong since we are all exposed to make involuntary mistakes.” (Charles, Interview 1)

“The resident's teaching activities are as important as those of a senior physician or a postgraduate teacher because in order to know the pathology that afflicts a patient in all its context" you must start with the most basic; such as the interpretations of laboratory values, monitoring values and procedures that are so important for the development of the Intensive Care resident's clinical abilities allowing him to make quick and accurate decisions in order to safeguard the patient's life. At the same time the medical resident and his peers should study the case, the criteria, the guides, etc., related with the pathology of the patient. At the end, senior physicians will propitiate a consensus between residents and instructors.” (Rose, Interview 1)

“The contribution of this workshop in my teaching knowledge would serve us for better therapeutic management.” (Randy, Interview 1)

In the **Post-Workshop Interviews (Interview 2)** participants expressed the following:

“Since there are ways to approach a patient described in medical literature, this information usually produces a little confusion on freshman residents, through the peer teaching coming from higher rank residents according to each patients' pathology, younger residents would be able to make the right decision in relation with diagnostic criteria or patients' treatment, providing this patients security and certainty that the decision is correct.” (Lana, Interview 2)

“It allowed me to acquire responsibility in front of the patient and in front of society, in addition to providing security when performing procedures on each of the hospitalised patients”. (Rolf, Interview 2)

Others talked about the interaction with patients in order to develop their communication skills and also how teaching activities improve physician-patient relation and patient safety.

“Teaching activities during residency are mainly based on implementing knowledge acquired with patients, which are based on teacher-guided classes in the hospital and university, presentation of clinical cases, discussion of cases among residents in the guards and review of guides More interpretation of articles.” (Paul, Interview 2)

Analysing these responses in both, interview 1 and interview 2, we can conclude that residents consider necessary to reinforce their teaching skills so that this contributes to the care of their patients improving and, in the same way, patient safety. Within this context and taking into account these considerations in both interviews about the convenience of teaching activities as a tool to improve patient care and patient safety, I consider necessary to make in my recommendations the proposal to include the Patients' Safety among the competencies that medical resident must acquire and that through the peer teaching process exercised during their training these competencies would be improved. The educational strategy on Patient's Safety must force professionals to reflect on their practice, for which the use of simulation of the error as a learning method is proposed.

6.1.4 Learning Process

Residents' perception about what they have learned and developed in teaching skills is strongly influenced by the academic degree that they have. The tasks assigned to each resident are not fulfilled in the same way by R1 residents (First year of training) by comparison those with a superior degree of training (R3 or R4. Third or fourth year of training). Those at the beginning of the residence, medical

residents will focus their learning more towards basic sciences and emergency management than to clinical and surgical activities. However, core competencies must be encouraged and developed in all residents to the same level (Zamora-Navas & Carpio-Elías, 2008); it is shown that a high percentage of residents are developing auxiliary skills, and a minimum percentage develops central competences. Educational practice has in a traditional way been influenced by a predominantly objectivist paradigm that, in general, has denied the individual differences of students and teachers. It has thus guided educational practice that meets the needs of training from an "egalitarian" viewpoint in a standardized way. (Jerónimo-Montes, 2006).

Increasingly aware of the role of the medical school as a social institution in charge of leading the formation and integral development of future physicians, current medical educators, have been more sensitized to the idea of considering the student as an active pole of the learning process, knowing in advance that any attempt to perfect teaching has to irremediably transit through a clearer and more comprehensive understanding of learning and what would be learned. (Venturelli, 1997); (Rogers, 1982); (Viniegra-Velázquez, 1998). In practical reality and despite the conceptual progress found in pedagogy in favour of the consideration of the student, teachers still find it difficult to articulate diversified responses, and they are not likely to meet the different needs of students, even though they have a theoretical-referential framework that provides instruments of analysis and reflection on educational practice, which allow then definitively to understand how students learn. (De la Torre, 1993); (Coll-Salvador, 1994); (Bravo, 1991).

Among the different ways of conceiving the learning process, the theories that stand out are those that contribute to cognitive processes, which focus on how students learn; they support a constructivist postulate where the subject builds his knowledge of the world from action. Learning is considered not as a passive process

and receptive; it is not a mere copy of reality but a complicated task that gives meanings, an interactive and dynamic process through which external information It is interpreted and reinterpreted by the mind that progressively builds increasingly complex explanatory models; therefore, it is an active process. (Viniestra-Velázquez, 1998); (De la Torre, 1993); (Coll-Salvador, 1994); (Oxford, 1989).

Regarding the problem of learning and in particular the ways of learning of each individual, educational psychologists agree that people have different “learning styles” and these are substantially responsible for the various ways in which students learn. The importance of considering learning styles as a starting point in the design, execution and control of the teaching-learning process, have been referred by numerous authors, such as Coll (1994), De la Torre (1993), Oxford (1989) and Viniestra (1998), providing evidence that suggests that accommodating teaching methods to students' favourite styles, can bring greater satisfaction and improvement in academic results. However this theory has some criticisms, especially when it comes to the experiential learning of David A. Kolb (1984), for instance, Stephen Brookfield (1983) has explained that at the time of naming the professional exercise with the term “experiential”, two opposing senses emerge from its conception. On the one hand, the term is used to describe the type of learning performed by participants of an accompanying process in an immediate and relevant environment and on the other hand it is understood that what learning by experience means a "meeting with the phenomena of socio-process and psychoprocess, not only based on the realisation of a practice as a fundamental axis of a meeting” (Borzak, 1981, p. 9) quoted in (Brookfield, 1983).The interpretation of stages or steps for the application of the Kolb model, reveals that there is a sequencing problem in the way that Experiential Educators use this model in a simplistic way. As Dewey (1933) said in relation to reflection, a number of processes can occur at once, the stages can be skipped.

On the other hand, Kolb focuses on the processes of the individual mind, rather than seeing learning as an immersive process, additionally, David Kolb, suggests that "learning has to do with the production of knowledge as a result of the combination of capturing the experience and transforming it" (1984, p. 41). Taking into account these problems, Experiential Educators would have to pay attention to how they interpret Kolb's vision of experiential learning, about this, Tennant (1997:92) pointed out, "the model provides an excellent framework for planning teaching and learning activities and cannot be used as a guide for understanding learning difficulties, organizational/institutional reality and much less group and individual."

Although the concept of "learning style" was first used in the decade of the 1950s, it acquired particular sense with the discoveries in the field of neurology during the 1960s from works related to hemispheric brain specialization, which provided scientific evidence about, for example, the performance of the left hemisphere of the brain in functions related to language, logical reasoning, abstraction, and the right hemisphere, in functions referred to concrete thinking, intuition, imagination, spatial relationships and recognition of images, patterns and configurations. These results were added to others, generating a broad movement of curricular reforms that called for qualitative transformations in the sector, with a view to the renewal of traditional methodologies and the rescue of student as an active pole of the teaching-learning process. (Alonso CM, 1994); (Witkin, et al., 1977); (Garger & Guild, 1984).

In the **Pre-workshop Interview (Interview 1)**, participants stated:

"The fundamental learning is mainly in daily practice together with the patient based on pathophysiological knowledge that is discussed among postgraduate residents which induces continuous reading in order to have

updated knowledge. Ultrasound management in our intensive therapy has become the fifth pillar of semiology after inspection, palpation, percussion, auscultation.” (Sandy, Interview 1)

“Teaching should be daily and didactic with scientific support given by all residents of different years in order to improve and reinforce the knowledge that is being acquired” (Sara, Interview 1)

One resident indicated that she “would had liked more time to practice teaching models and give and receive more effective feedback during my training as a medical student.” (Mary, Interview 1).

Some resident’s answers were focused on time management and teaching. Other responses included learning more teaching models, learning how to do case presentations, and discussing high-yield topics to teach students. The hospital work and “on call” duties were also part of answers, as an important scenario for enriching teaching and knowledge:

“Teaching activities are carried out both in the hospital rounds and in the emergency room when facing the various clinical cases that enter the ICU room, activities carried out by postgraduates of different years, which enriches the knowledge”. (Sara, Interview 1)

In the **Post-Workshop Interview (Interview 2)** participants reported feeling more prepared to teach than they were prior to the session and that their learning process in teaching has improved.

“From the beginning of the postgraduate course, we have the supervision of elderly residents to carry out each medical procedure until we demonstrate an

adequate level of expertise, I feel that now I am prepared for the discussion of clinical cases during admission to the guards with review of articles related to them. classes aimed at residents of lower rank by senior residents.” (Marcus, Interview 2)

Other answers indicated that they understood better how to give effective feedback and that the format of the module was appropriated for the content presented.

“My current experience is the daily application of clinical practice guides together with my senior residents, discussion of clinical cases, use of diagnostic imaging guides such as ultrasound, in order to understand a pathology or reach a diagnosis. Actually, I have been teaching my lower rank peers for two years and this workshop would help me a lot to improve not only my teaching technique but also my understanding and self-confidence in my medical performance.” (Seth, Interview 2)

“By interacting through the teaching activities in the analysis of clinical cases, knowledge is achieved and the spectrum of diagnostic and therapeutic possibilities is broadened, which in the end improves clinical practice and communication skills”. (George, Interview 2)

“I really enjoyed the workshop, it was very interesting and helpful. The teaching activities constitute a fundamental aspect in learning and training for medical residents, both the practical part and the theory” (Kathy, Interview 2)

6.1.5 Decision Making

In the practice of medical profession, making decisions acquires capital importance. The fundamental approach of this category is the consideration of the essential professional skill character of decision making for the basic integral general practitioner. Professional skills are those that allow the human being to interact

with the object of the profession in this particular case the medical profession. These skills are the mental or practical actions that the subject executes to transform the object of the profession, to give solution to the particular problems that arise in a certain branch of human culture, and that are given specifically in the areas of action of the employee. Professional skills are explicitly declared in the general objectives of the medical career, and university teaching practice dedicate its main efforts to achieve this goal. The consideration of decision making as an essential professional skill character for medical residents comes from the analysis of the logic of action of this professional to carry out the medical attention during his hospital or ambulatory work. This analysis allows educators to identify the need to take decisions as an essential feature, the professional mode of action of the medical Resident (Corona Martinez & Fonseca Hernandez, 2010).

The Resident-as-Teacher workshop was intended to develop Residents' teaching skills. These teaching skills are expected to be used in independent practice and patients' care. Residents who develop excellent teaching skills frequently provide better care to patients through better patient education and effectively engaging their patients to share right medical decisions improving residents' decision-making ability (AAFP, 2019). Residents with strong teaching skills can also be more effective team leaders, with the ability to give and receive feedback, and to assess and address team members' learning needs.

Pre-Workshop Interview (Interview 1)

Before receiving the workshop, Robert, a second-year resident and Sandra a third-year resident expressed the importance of resident's socialisation with the patient and how it would influence in decision making:

“This workshop would encourage me to socialise with my patients about their diseases, treatment, diagnosis and principally to share with them the decision-making process in order to look for the better actions that will help them to recover their health, I would achieve this using educational talks and comparative case analysis.” (Robert, Interview 1)

“Interaction, and sharing knowledge among resident doctors is the best way to learn, and gain experience and ability to take decisions, where one person teaches other the two of them learn.” (Sandra, Interview 1)

Christy, on the other hand in the **Post-Workshop Interview (Interview 2)** suggested to make some changes in the workshop content and management regarding decision making process:

“I liked this workshop but I think there should be greater coordination from instructors and curriculum authorities about talks and protocol management, because decision making will be improved not only supervising postgraduate students but also those making a follow up of their medical decisions and applying feedback in order to make changes and corrections if necessary.” (Christy, Interview 2)

Kathy expressed that her experience during her residency and the interaction that she has with her peers produced decision-making improvement and she stated that this improvement is based on continual practice that usually comes from teaching during residency, John attributed teaching practice as an important factor to improve clinical practice and decision-making processes.

“I believe that I will improve my decision-making from the experience gained based on mistakes and new learning by interacting in the analysis of clinical cases and discussion with my peers and instructors.” (Kathy, Interview 2)

“Through these teaching practices, knowledge is achieved and the spectrum of diagnostic and therapeutic possibilities is broadened, which in the end improves clinical practice and decision-making processes.” (John, Interview 2)

I believe, after analysing these results that the development of residents' teaching skills would favour academic respect and collaboration, in which the resident can feel and perceive that he/she is part of a true team. The impact of the Resident-as-Teacher Workshop on the participants was that of building self-confidence to reinforce and acquire teaching skills. Additionally, the understanding that through peer teaching the impact on patient care, patient safety, communication with the patient and the ability to make decisions will be improved, which will have an impact on improving professional development and medical care in hospitals and health care centres. These strategies can be established from the beginning of the course, with a new scheme of personal relationships between all members of the group. It is known that it is not easy to work as a team, but it is very important to teach how to acquire a commitment as a group, with common objectives that are above the particular interests of each one. This educational vision is based on the values and rights of each person as respect, solidarity, justice, honesty, creativity and critical thinking. The ideal is to form a physician who generates confidence to the patient and to his colleagues, giving the patient security and comfort of staying in front of him (Rores & Medrano, 2008).

Additionally, it was observed that there are three main factors that act negatively for the development of teaching competencies, expressed by residents during interviews. The first is described as the poor attitude of senior physicians, their lack of availability for teaching and poor interpersonal relationship between residents and them. Second, residents considered that they expend excessive time in performing hospital activities and external consultation in attention to problems and non-academic activities, with the consequent reduction of available time to

teach. Third, the lack of organization, coordination and communication between university, the head of the service and the professors (doctors attached to the Intensive Care service) for the application of strategies that promote and motivate the development of teaching skills.

Chapter 7

7.1 Conclusions and Implications

In this concluding chapter I review my key findings, concerning both the perception of medical residents regarding their teaching skills and the impact that the medical teaching workshop had on them, focusing on their communication ability, their diagnostic ability and their ability to react to difficult situations related to their patients. In addition, I acknowledge the limitations of the study. I then revisit and update the current state of Resident-as-Teacher program in Ecuadorian Universities before concluding with a reflection on options for future research. Residents as clinical teachers of other residents and students in Intensive Care in a Hospital are characterised by being able to have a satisfactory role model and creating an appropriated learning climate. Nevertheless, performance is conditioned by their previous experience and acquisition of teaching skills, that are not part of all medical schools' curriculum. Another conclusion is that Residents as Teachers do not give consistent feedback and they don't offer their students enough opportunities to perform activities independently; hence students are not encouraged to formulate or meet their own learning objectives.

Additionally, is evident from this research, and is supported by literature that Residents spend a lot of time teaching and recognise that a great percentage of their learning is provided by other residents (Ostapchuk, 2010); (Jarvis-Selinger, et al., 2011); (Elliot, et al., 1999); (Morrison, et al., 2014). I also have to mention, listening to the interviews, that as years of residence pass, dedication to teaching increases and the main motivation is to help other students and peers to learn better. One important limitation is that they recognise the lack of time as I mentioned before. When comparing residents of the lower years (R1, R2) with those of higher years (R3, R4), freshmen Residents (lower years) perform better as a teaching role model and adjust better their teaching to the level of experience of the student. By contrast, those of the higher years demonstrated better performance in articulation, using appropriate questions to increase the level of understanding of their students. All Residents generate a good learning climate. This research has offered witness to the experiences and perception of young doctors and the impact that a teaching skill workshop had on them. This study engaged twenty-five participants, from a first-year resident at one extreme, through a range of critical care Residents of varying years of training at the other extreme. Through their narratives, their interviews have offered a first glimpse of how these Residents, on an individual level, processed experience and perceive their own teaching skills before and after receiving a specialised workshop. It has recognised the significance of the experience and knowledge to these doctors, how they felt at the time, how they reflected on and then understood it afterwards. It has added to the existing research on Residents-as-Teachers which has been until now very limited in Ecuador. Through their answers to my questions regarding all the implications of a teaching activity during their medical residency, concerns were raised by the participants in this study around the status attached to how universities' authorities and hospitals' teachers will incorporate in medical career's curriculum appropriate material to enhance students' teaching skills, emphasising how this academic tool will improve the physicians' ability to treat, diagnose and communicate patients. (Puhl, 2017). Additionally, other features of the teaching process were mentioned as resident's medical performance during their hospital's

duties, Residents' teaching skills before and after taking the teaching workshop, and the relationship with patients and patients' relatives after improving their teaching and communications skills. It emerged that intrapersonal self-esteem and interpersonal professional relationships were improved in relation with the instructor-student, peer-to-peer and mentor-mentor / mentor-student teaching activities. The benefit of academic preparation aimed at giving medical residents teaching skills and the inclusion of this material in the curricula of medical schools and teaching hospitals was evidenced by the responses of participants who agreed that many aspects of their performance as Residents improved significantly especially in terms of their ability to diagnose complex pathologies and the speed with which ideas and knowledge regarding difficult clinical cases allowed them to solve problems related to the treatment of patients. Similarly, communication with patients and their families was significantly improved as expressed by some participants in their responses. The most relevant result obtained in my study, was to observe after the workshop how the Residents as teachers, highlight their ability to favour a safe learning environment and serve as a role model for their students. Residents demonstrated how to perform clinical skills consistently, create enough opportunities for students to observe them in their performance and to a lesser extent offer themselves as role models of the doctor they would like to become. As I explained in my literature review, Residents play a fundamental role in the development of professional attitudes in students, becoming a strong model for them and for some of their peers (Jarvis-Selinger, et al., 2011). However, this work brings new results when evaluating the performance of Residents in this role model. These results can be interpreted in the context of the daily task, where there are many established opportunities for demonstration of specific skills by Residents in the same care task, without need to generate a protected space for teaching.

Swanwick, (2008) describes this learning from specific tasks, with a teaching role simultaneously with assistance, where Residents perform the assistance tasks and a younger resident watches how they do so. Another interesting finding was that

Residents adjust their teaching style according to their level of experience, considering that Residents and students formed very heterogeneous learning groups, with students and Residents at different times of their training and with different learning needs, this teaching style adjustment allow Residents and students to form groups according to their learning level and to get benefit of resident's experience. Chapter 7 (Discussion) links the findings from the research to the existing knowledge base and to explore where tentative extensions of current understanding may be suggested. It links this research principally, but not exclusively, to significant qualitative studies made all over the world at different times (Barbado-Hernández, 2007); (Barrow, 1966); (Berwanger, et al., 2015); (Bing-You, et al., 1997); (Bordley & Litzelman, 2000); (Farrell, 2006); (Fallatah, et al., 2018). Additional literature is compared where themes identified have been mentioned earlier. It will align the accounts to the chosen experiential teaching and learning findings of Reyes, et al. (2010); (Snell, 2011) and the emerging important concepts of evaluation in Clinical Teaching (Stalmeijer & Dolmans, 2010) and tie these to the development of professionalism and Residents' performance (Timothy, et al., 2004).

7.2 Discussion

This section has the purpose of interpreting the findings related with the research question and the proposed objectives of my study. Also, I will discuss the findings in relation with the literature raised in the theoretical framework (Bernal, 2006) specially as regards to **perception and the theory of Andragogy**.

The objectives of this study were:

1. To determine Medical Residents' perception of their teaching skills before and after taken a specialised workshop.
2. To find out if there is a significant difference between Medical Residents' perception of their teaching skills after taking a specialised workshop.
3. To know how Medical Residents' perception of their teaching skills would influence their professional performance.
4. To determine the importance of the implementation of teaching training in Medical Schools

In Chapter 1 (Introduction), the rationale for this research was to investigate the Resident-as-Teacher workshop's impact on Residents' perception of their teaching skills considering their answers after a pre-workshop and a post-workshop interview (Reyes, et al., 2010); (Snell, 2011); (Spencer, 2003). The study focussed on the importance of their teaching activity during the medical residency as training to improve communication skills and patient care, as well to form an academic environment in hospitals where medical residencies are held. This study was developed as the research question denoted in earlier chapters: **What is the impact of a Resident-as-Teacher workshop on Medical Residents' perception of their teaching skills?** The purpose of the study was to interrogate the subjective meaning of the impact of a Resident-as-Teacher workshop about teaching skills in twenty-five Intensive Care Residents. As discussed earlier in the introduction of this study, individual perception about teaching skills in medical Residents significantly influences their performance and their ability to transmit their knowledge to their lower-ranking peers. One of the basic characteristics of studying individuals' perception about some topic is related with the aspect of "making judgements". In this particular case my findings led me to discuss the conscious intellectual processes, in a linear model where the individual is stimulated and has sensations

and intellectualises them by formulating judgments or opinions about them, circumscribing perception in the realm of the conscious mind. Within the factors of experience, it can be anticipated that throughout the growth of the human being, he/she is continuously learning at the same time that he/she lives various experiences, which are adopted from the stimuli it receives. This creates a behaviour, predictable or not, in every person and social group facing a stimulus (Perez Martínez, 1986). This behaviour is learned throughout the individual's life and adapts to the environment in which it develops. It can be said, then, that this selection mechanism is one of the results of the perception process. Within the perception, this is one of the activities of the process, whereby the world is understood. This interpretation varies from individual to individual since it depends on their previous experiences. These experiences are what differentiate one individual from the other and what substantially conditions the way of seeing the world, and the type of relationship that each individual establishes both with another individual, with objects, and the environment in which it develops.

Having in consideration the above noted concepts, I will consider for discussion the following topics and I will be linking them to my previous concepts of **perception and andragogy** as the framework theory that guided my research:

1. Participants' previous knowledge and experience in teaching.
2. Importance of Resident-as-Teacher activity for professional development.
3. Relationship between Residents' teaching and patient care and communication skills.
4. Inclusion of teaching skills in Residents' medical school and residency training.

The topics that I considered for discussion were linked with the objectives, for instance, participants' previous knowledge and experience in teaching strongly

influenced in Residents' perception about their teaching skills. This situation was evaluated in both moments before and after the Teaching Workshop and is linked with objective 1 and 2. My second and third topic for discussion about the relationship between Residents' teaching and their professional development, patients' care and communication skills is related to objective number 3 stating the influence of Residents' perception of their teaching skills on their professional performance. Finally, the inclusion of teaching skills training in universities and medical school's curriculum links with my objective number 4.

Regarding Previous Knowledge and Experience all participants expressed in the **Pre-Workshop Interview (Interview 1)** that the training process that they received during their careers was an important part for the development of their teaching skills as a group of participants said:

“Our resident training process gave us an important experience, because as I mentioned before our senior Resident teach us what they have read and have practiced, their experiences and / or mistakes they have had so that I do not commit it again; However, it does not come from everyone, as well as other Resident who only insist on fulfilling their duties and thereby teaching us not because they do not feel obliged to do so.” (Paul, Interview 1)

“From the beginning of the residency training, the supervision of senior Resident is carried out to perform each medical procedure until I demonstrate an adequate level of expertise, also there are academic and moderated discussions of clinical cases during patients' admission that include review of articles and specialised literature, related to topic. Additionally, I receive classes aimed to prepare lower rank Residents given by senior Residents.” (Sara, Interview 1)

“My experience has been satisfactory for the reason of having an adequate learning curve that begins from the first year of residence and is optimized in the third year, a fact that helps us to be able to transmit in a staggered way

knowledge based on the pathophysiological and medical updates.” (Carole, Interview 1)

The above answers confirm some authors studies and findings; for instance, Marton et al. (2015) made a study searching in three databases for articles meeting a set of predetermined criteria in order to make a review of teaching skills development programmes for medical students. They concluded that self-perceived improvements in teaching skills were noted by participants in most of the reports. Also, there was a perception of increase in organisational skills, knowledge and confidence in giving feedback. Regarding the key assumptions identified by Lindeman (1989), within andragogy, adults experience is the richest learning resource. This experience, included in the andragogy type of learning, constitutes an important source for learning, forms a basis for sustenance for new learning which consolidates more significantly. Furthermore, it creates an appropriate context for the acquisition of knowledge and skills.

In the analysis of the results related to **Professional Development**, I found in the Post-Workshop Interview (Interview 2) that various participants' answers that confirm the importance of teaching during medical residencies for better knowledge acquisition and professional performance. Snell (2011) states that residents who teach during their medical activities, have increased enthusiasm for teaching and greater job satisfaction and tend to have better knowledge acquisition. Additionally, the system gets benefit from this practice because residents with effective teaching skills may have a positive effect on patient care.

“Analysing clinical cases during the workshop, we acquire new knowledge improving diagnostic and therapeutic possibilities, which in the end improves clinical practice and of course on patient care.” (Rose, Interview 2)

“Interaction, and sharing knowledge among resident doctors is the best way to learn, where one person teaches two learn the one who teach and the one who listen and learn. Peer teaching favours medical and professional development by raising awareness in the resident that a multidisciplinary work accompanied by scientific knowledge is essential in the management of a critical patient. Peer teaching can improve your medical practice in a very favourable way since through other people’s experience they can transmit their knowledge and I can improve my skills.” (Christy, Interview 2)

The above answers confirm what was said by García-García, et al. (2010) that the acquisition of practice competencies would contribute to a better development of working skills and would assure a successful professional career. Within this matter, Knowles takes from Carl Rogers the Aristotelian notion of entelechy, which means, the tendency of each human being to seek the fulfilling of his own potentialities, according to this principle, the human being, in a favourable social climate, will tend to seek and do what is best for him to achieve his own development. In recent times, great importance has been given to androgynous precepts to identify the way in which learning is processed in adult education so that they could reach the self-sustained and integral development that leads them to position as individuals capable of contributing to professional achievements, personal growth and community and social intervention, based on the premise that education, instead of controlling, has to offer opportunities for people to develop integrally.

Patient Care is also linked with the answers and findings of my study; during the years of clinical studies, the student has greater contact with the patient and their own aptitudes and attitudes are better glimpsed. At this stage the role models and mentors would be key, as they will help them to better define the work area they would want to follow in their future professional life (Denton & Hemmer, 2010). Akinla et al. (2018), in a systematic review of the results of peer mentoring programs aimed at freshmen, found that mentoring was related to stress reduction, greater ease of adaptation and identification with personal and professional development. It also favoured the development of personal and professional attitudes in mentoring

students. This was illustrated by the following Residents' narratives both in Pre-Workshop Interview (Interview 1) and Post-Workshop Interview (Interview 2):

“The Intensive Care medical resident, should focus primarily on the continuous updating of knowledge among colleagues (Residents and junior physicians) and senior physicians in addition to improving skills in invasive processes, being the clinical environment the ideal place for teaching-learning of such competencies.” (Robert, Interview 1)

“Bedside teaching and peer teaching is essential, if you make daily visits and at least twice a day you are refining details that are important for the management of the critical patient, there are nemotechnics or basic concepts that are learned from resident to resident daily.” (Charles, Interview 2)

“I, as medical resident of the last year are in a moral obligation to teach everything I know to our minor Residents since a misinterpretation of examinations or a lack of radiological clinical correlation can put a patient's life at risk.” (Michael, Interview 2)

“Something important is knowing that not all Residents grasp things in the same way, I must be patient but still pressuring minor Residents.” (Lana, Interview 2)

Regarding **Communication Skills**, participants' answers confirm the importance of communication with patients and patients' relative. These answers were coincident in Interview 1 and 2 before and after the workshop.

“By increasing our scientific knowledge through teaching among Residents, I also achieve greater security and facilitate communication between Residents, patients and their relatives, significantly improving our communication skills.” (Robert, Interview 1)

“Teaching and learning among Residents allows us to have a higher level of trust when sharing hospital duties with a more experienced physician, which allows Residents to have more fluid communications” (Sandy, Interview 1)

“The fact of the experience gained during the years that I spend in the ICU, and the medical education that I receive in our “on call” work in the hospital give us skills and appropriate ways to approach critical patients and their relatives when giving medical reports.” (Rolf, Interview 2)

“The practice of peer teaching contributes to the improvement of our skills in the patient’s approach allowing us to investigate the most important aspects to be able to solve patient’s problems” (Kathy, Interview 2)

“Interacting with junior and senior Residents and heads of hospital’s departments allows us to strengthen our knowledge and lose the fear of communicating with doctors of greater hierarchy, with patients and their relatives.” (Carole, Interview 2)

“When I make the decision to teach, our communication skills will improve exponentially. Every day you would see the changes in your communication skills and medical reasoning. Listening to our peers who read and give their opinion about a specific case, its lexicon, its pronunciation, the way of summarizing and expressing different medical situations and cases, make us consider that the more I teach, the greater the trust and communication I acquire.” (Marcus, Interview 2)

These answers confirm earlier research that states that medical practice has an implicit continuous learning process along with a constant exercise of communication skills with patients, patient’s relatives and other members of medical community. The role of the medical teacher in a medical speciality program is of great importance because teaching represents a significant part of the daily activities that Residents do with their lower rank peers and with medical students. According to Jarvis-Selinger (2011).

“Physicians must be effective teachers in order to fulfil their responsibilities of communicating with patients, working in teams, sharing knowledge with the public, disseminating research findings and teaching both medical students and other resident colleagues” (p.3).

Clinical teaching for instance is a way for young physicians to develop their fundamental skills such as medical interviews, physical examinations, procedures and interventionist manoeuvres, communication skills and medical knowledge application during the bedside teaching process. Kukreja et al. (2017) reported satisfactory results in a pilot mentoring program aimed at first medical program freshmen; the mentors however indicated that the program was useful for their teaching and communication skills, the students who had helped them emotionally and academically. Fallatah et al. (2018) conducted a study that sought to establish the relationship between mentor characteristics and student performance within a clinical skills course, in order to identify those that required greater support. Residents with effective teaching skills may also have a positive effect on patient care. Resident involvement in teaching activities has been shown to have a positive effect on the resident's communication skills (Bulte, et al., 2007) and good patient communication skills have been associated with better clinical outcomes. Regarding the teaching characteristics carried out by Residents, findings reveal that teaching among Residents has similar characteristics to what is reported worldwide in terms of time dedicated to teaching, desire for training and self-perception of competencies. The time they recognise dedicated to teaching is very high and increases significantly over the years, similar to what is pointed out in the literature (Thibault, 1997); (Gonzalo, 2010); (LaCombe, 1997).

Finally, about the **Inclusion of teaching training in Medical Schools' curriculum**, this is a topic extensively discussed previously in my literature review. For instance, “near-peer teachers” (NPT) is a program mentioned before where resident-teachers are

ideally placed to pass on their knowledge and experience to more junior learners. Within this context the unique relationship between one resident and another in NPT was defined by Bulte *et al.* (2007) as a trainee who is one or more years senior to another trainee on the same level of medical education training. These researchers concluded that near-peer teaching during medical training appears to be an important curricular consideration. This coincide with Snell (2011) who argues that the impact of effective resident teaching goes beyond medical students and includes effects on patients but has particular benefits for the Residents themselves and the systems in which they work and learn. Some Residents have received training in medical education. It should be noted that this training did not occur in the field of residence, but probably in the framework of teaching assistants who have some medical schools. The main motivation for Residents to receive teaching training was “Help my partners in their professional training”. In respect to obstacles in teaching training, the majority of Residents considered that the main obstacle would be time mostly occupied with hospital work. As I mentioned in previous chapters, there is a consensus among undergraduate and graduate students, about the importance of the acquisition of teaching skills in medical training, both due to its usefulness in patient care and for improving teaching skills. In some countries, such as Germany and Ireland teaching skills as a subject is taught in 4th, 5th and 6th medical school years; in Austria this subject entails 120 hours in total; and in the United Kingdom it is present in 100% of the medical students' clinical training period. The curriculum of the University of Granada, for example, includes a compulsory subject in the sixth year, called Teaching Primary Care, of nine credits, and another optional subject in the fourth year, aimed at solving health teaching problems, of three credits. In total, if the elective is chosen, twelve credits out of a total of 360, which represents 3.33% of the total credits of the degree plans (University of Granada, 2017).

I can conclude in this matter that the Medical Residency Program is a fundamental element in the healthcare-educational process of health and university institutions and that it is necessary to promote the professional development of this facet of Resident as

Teachers. It is also necessary to develop educational interventions on the subject and design instruments to assess their impact, in order to further address my fourth objectives that determine the importance of the implementation of a medical teaching workshop in postgraduate medical residency programs.

7.2 Study Limitations

This study looked at the impact of a workshop concerning Residents' perceptions about their teaching skills. The results were of revealing; however, this study might be affected by the following limitations.

- The present study sample of twenty-five Intensive Care Residents was selected from those Residents that accepted to be part of the study. The total population of Intensive Care Residents was thirty. One limitation could be the sampling method that was a non-probability voluntary sample. This method is one of the main types of non-probability sampling methods. A voluntary sample is made up of people who self-select into the survey. Often, participants that accept to be part of the study have a strong interest in the main topic of the survey. In contrast to random sampling, voluntary sampling yields a response bias as members are self-selected. The responses received through this type of sampling are commonly biased towards a particular topic.
- A second limitation was the short time that Residents had to take part in the workshop and interviews; this situation was mainly due to the intense hospital work that they had in their duties. This produced some delays in the time of the interviews and the occasional absence of the Residents for interviews.

During the workshop, although a weekend was dictated, it was difficult to get all the participants to be completely involved in the group workshop work.

- A third limitation that personally surprised me was the difficulty that the participants in the interviews had in expressing what they wanted to say regarding their teaching skills. It seems that having spent some years sharing their knowledge with their classmates, they had not realised that what they were doing was teaching. When the interviewer asked them something about teaching they took considerable time to give their answers.

7.3 Implications for practice and policy

Findings from this study have theoretical and practical implications with regard to leadership and educational organisations. These implications are related to the inclusion of teaching skills courses for students and Residents starting from universities and medical school. Regular teaching training activities would be useful in strengthening the teaching abilities of medical Residents. There are serious concerns in medical Residents around the status attached to how universities' authorities and hospitals' teachers will incorporate in the medical curriculum appropriate material to enhance students' teaching skills, emphasising how this academic tool would improve the physicians' ability to treat, diagnose and communicate patients (Puhl, 2017).

The Medical School's curriculum must include programs for medical students and Residents that prepare them to teach. These curricula should consider: a) knowledge of teaching and learning; b) teaching strategies and skills and c) attitudes towards teaching (Dandavino, et al., 2007); (Bulte, et al., 2007); (Ten & Durning, 2007);

(Bordley & Litzelman, 2000); (Durning & Ten Cate, 2007). There is a wide range of educational interventions that have been used to promote the role of Resident as Teacher, each with different thematic units, different educational models and sometimes dissimilar conceptual frameworks. These interventions in our country must be consistent with the need of teaching and learning activities in our hospitals. Some experts propose homogenisation, which means establishing a kind of central curriculum and standardise the effort dedicated to it (Post, et al., 2009).

University and medical school policies in Ecuador do not include the educational training of the medical student and Residents. Isolated workshops and courses are organized that suggest an incipient training of the resident in education. The purpose of this study is to strongly suggest to university authorities the integral preparation of medical students and Residents in the teaching process; this would influence positively, as we have already seen, the professional and patient care of the future physicians.

7.4 Recommendations

There are a wide range of educational interventions that have been used to promote the role of Resident as Teacher, each with different thematic units, different educational models and sometimes dissimilar conceptual frameworks. Some experts propose homogenisation which means to establish a kind of central curriculum and standardise the effort dedicated to it (Post, et al., 2009). The homogenization would have operational advantages, but it presents the risk of not considering the particularities of each speciality and medical care unit, the culture of each society inserted in their respective country, as well as the resources available in the different environments. I believe that curricular inclusion is important to take into

account the variety of options, their advantages, disadvantages and the possibility of adjusting them to each context.

Once formal curricular inclusion is achieved, it is necessary to verify that the planned activities are carried out, in order to prevent them from being part of the null curriculum, absorbed by the hidden curriculum. Another interesting area to implement is the means of instruction: can the same results be achieved with the use of information and communication technologies as with face-to-face interventions? The answer to this question would show a range of possibilities, especially in scenarios with limited resources, poor teacher professionalization or geographical barriers. One of the teaching competencies that has shown the most consistent results is feedback, given that it enhances the communication skills between the health team and the patient; therefore, it is a competency that I propose to be implemented in any Resident as Teacher intervention.

The positive effect of the interventions to develop the role of the Resident as Teacher in the resident himself has already been described; however it is convenient to expand the evidence of the results of these interventions in other characters, for example, the Residents of early years, the students of undergraduate, interns, organizational culture of the institution, paramedical staff or about the clinical outcomes of patients (Post, et al., 2009); (Thomas, et al., 2002).

Appendix 1: Letter for Participants

[Date]

Dear **[Name]**

I am currently undertaking a research degree with the University of Glasgow which examines the Impact of a Resident-as-Teacher workshop on Medical Residents' perception of their teaching skills.

I am contacting you as you are part of these program and I would be interested in finding out about your experiences and thoughts about this topic.

If you are willing to contribute to this research, please send me a mail to r.farfan.1@research.gla.ac.uk

The interviews will last a maximum of thirty minutes and all information will be confidential. You can withdraw from the interviews at any stage without giving a reason.

Your comments are essential to the success of my research and I appreciate your support with my studies.

Kind regards

Rodolfo Farfan

Appendix 2: Access Declaration Form

Access Declaration Form

Thesis/Dissertation Access Declaration for the Degree of PhD, MPhil & EdD

Candidate: Rodolfo E. Farfan

Student ID: 2056362f

Thesis Title: Resident-As-Teacher workshop impact on Intensive Care Medicine Residents' perception of their teaching skills

Subject: Education

School: Education

Principal Supervisor: Michael Osborne

Second Supervisor:

Third Supervisor:

Grant number/references:

IMPORTANT NOTES

In the interests of scholarship, theses of the University of Glasgow are normally made freely available, for example for consultation in the University Library, or within another Library, immediately after deposit.

Electronic copies are normally made available online to increase the access to, and visibility of, the University's research.

Candidates should consult <http://theses.gla.ac.uk/restrict.html> and talk to their supervisor before completing and signing this form to establish whether there is likely to be a valid reason for restricting access to their thesis for a limited period.

The Freedom of Information (Scotland) Act 2002 ("FOISA") and the Environmental Information (Scotland) Regulations 2004 ("EI(S)Rs") ensure access to any information held by the University of Glasgow, including theses, unless an exemption or exception applies.

Reasons for restricting access to a thesis should be derived from exemptions under FOISA or exceptions under EI(S)Rs. Further restrictions, as described below, can be applied to online availability of the electronic version.

Candidates should consult any sponsoring organisations that may hold intellectual property rights in a thesis before completing this form.

Candidates will be required to declare at the point of electronic deposit that the copy being deposited is the same in all respects as the print copy with the exception of any 3rd party copyright material removed because permission for its inclusion has not been granted.

Does any organisation other than the University of Glasgow have an interest in the intellectual property rights to your work?

- Yes (please specify the organisation and nature of their interest)
- No

Candidates who believe there is a valid reason to restrict access to both the hard copy and the electronic copy of their thesis should consult the list of exemptions permitted by the Freedom of Information (Scotland) Act 2002 and the list of exceptions permitted by the Environmental Information (Scotland) Regulations 2004 available at <http://theses.gla.ac.uk>. Please provide details of the relevant exemption/exception and why an exemption/exception is necessary:

Please select one of the following two options:

- No exemption/exception requested – make the thesis available immediately
- Exemption/exception requested (please provide details)

The following reason may be applied to the electronic copy only. Please tick the box below if applicable.

- The thesis contains material whose copyright belongs to a third party and the gaining of approval to publish the material electronically would be onerous or expensive; and the removal of the copyright material would compromise the thesis.

RCUK expect a PhD thesis to be available within 12 months of the award. In other circumstances any thesis to which access has been restricted will be made available within three years, (this does not apply to theses restricted for reasons of copyright) Candidates who believe access to their thesis should be restricted for more than three years should state their reason here:

Please note that the University of Glasgow may be required to overturn any request for restricted access to any thesis.

Student Declaration

Please complete this section in clear, block capitals if handwriting this form.

I confirm that the information I have given on this form is complete and accurate

Signature: Rodolfo E. Farfan

Home address: Villa Italia, Etapa Florencia, Mz 9 V 27, Guayaquil, Ecuador

Email Address: refarfan@gmail.com

(please provide an alternative email address to your GU student email)

Date:

November 20, 2019

Supervisor Declaration

I confirm that I agree with the decision indicated on this form by the author of the thesis with respect to access to the thesis.

Signature:



Date:

22 Nov 2019

Once completed, please return this form to the Graduate School (gradschool.socsci@glasgow.ac.uk)

Appendix 3: Ethics Application

Staff and Postgraduate Research Application Form**College Ethics Committee for Non-Clinical Research Involving Human Subjects**

Before completing this form, you should refer to the guidance notes available at:

<https://www.gla.ac.uk/colleges/socialsciences/students/ethics/forms/staffandpostgraduateresearchstudents/#d.en.473063>

And

<https://www.gla.ac.uk/colleges/socialsciences/students/ethics/informationforapplicants/>

This application form should be typed and submitted electronically along with supporting documents via the Research Ethics System: <https://frontdoor.spa.gla.ac.uk/login/>

Applications should be submitted **at least 6 weeks in advance** of the intended start date for data collection to allow time for review and completion of any amendments that may be required.

Please note that applications that require PVG Clearance or permissions to access participants will not be approved until the applicant can provide evidence of this.

1 Applicant Details

Staff Research Project	<input type="checkbox"/>
Postgraduate Research Project	<input checked="" type="checkbox"/>
Project Title	
Resident-As-Teacher workshop impact on Intensive Care Medicine Residents' perception of their teaching skills	
Name of Applicant	
Rodolfo E. Farfan	
School/Subject/Cluster/RKT Group	
School of Education/Dissertation	

Student ID/Staff Number 2056362f
Programme Title (PGR Applications only) Doctorate of Education

2 Ethical Risks

This section **must** be completed and signed (in some form) by the appropriate parties, commenting on the research ethics risks involved in this project. **The application will be returned if this section is not fully completed.**

PGR Applications – Supervisors must complete and sign this section, approving submission for ethical review.

Staff Applications – Applicant must complete and sign this section, confirming submission for ethical review.

It should be clear from the comments provided that the potential risks have been considered and information provided on what they are, with evidence of what is to be implemented to mitigate these. You are advised to refer to the Risk Guidance at:

<https://www.gla.ac.uk/colleges/socialsciences/students/ethics/forms/staffandpostgraduateresearchstudents/#d.en.473063>

This is a low risk project because it involves conditions where the risks of harm are not greater or more likely than those encountered in everyday life. Semi structured interviews using a conversational format will be undertaken. Interviews will not be undertaken at participants' homes or at isolated places; they will take place during participants' at a time of their choosing without as far as possible little or no disruption of their working or domestic responsibilities. Questions will not intentionally involve any sensitive aspects of participants' lives and should they have any concerns they will have the right to end the interview. This will be made known to them at the outset. In any form of interaction with a human subject there is a risk that, despite there being no intention to do so, a participant will feel concerns about the process. In advance both in writing and verbally participants will be informed of their right to withdraw. It is possible that interviews can be intrusive on working and domestic time, and be conducted in unsuitable environments. All interviews will be held in an environment of the participants' choosing and at times that cause least disruption.

Signed:



Dated: 23/2/2018

3 All Researcher(s) including research assistants and transcribers (where appropriate)

Title	First and Surname	Telephone	Email (<i>usually UoG</i>)
Doctor	Rodolfo Farfan	593-9-92271164	r.farfan.1@research.gla.ac.uk

All Supervisors, Principal first (where applicable)

Title	First and Surname	Telephone	Email (<i>usually UoG</i>)
Professor	Michael Osborne	0141 340 3401	michael.osborne@gla.ac.uk

4 External Funding Details

(NB: If this project is externally funded, please provide the name of the sponsor or funding body.)

Not Applicable

4a Is this application being submitted to another Ethics Committee, or has it been previously submitted to another Ethics Committee?

Yes

No

(If yes: please provide name and location of the ethics committee and the result of the application.)

5 Project Details

Start Date for Data Collection: 28/06/2018

(NB: This refers to data collection for the research covered in this application. This should be at least 6 weeks from the date of application submission.)

Proposed End Date of Research Project: 26/11/2018

(NB: This date should be when you expect to have completed the full project and published the results e.g. date of award of PhD, journal article publication, end of funding period.)

6 Justification for the Research

Why is this research **significant** to the wider community? **What might be the impact** on your practice or on the practice of others? **Please outline the reasons** which lead you to be satisfied that the possible benefits to researchers, participants and others to be gained from the project justify any risks or discomfort involved.

This research is significant to the medical education community because through it I seek to gain richer data and explore themes related to medical Residents' perceptions about their teaching skills in medical education. The impact of these findings will be associated with how medical Residents make sense of their experiences in light of receiving a workshop 'Residents as Teacher'. I believe that the methodology that I will be using with interviews could provide an affirming environment where the accounts of other students'

similar experiences might promote disclosure of relevant anecdotes without any risk or discomfort involved.

Furthermore, any risk or discomfort that could be part of the research would be justified by the benefits to researchers, for instance: in-depth conversational exchanges between participants and researcher offer an opportunity to hear not only what participants are thinking and feeling, but also the details about circumstances through which meaning has been constructed, contributing to understanding and explaining the meanings, beliefs and cultures that influence the participants' feelings, attitudes and behaviours towards a specific topic such as their teaching skills and their experiences during and after the workshop.

7 Research Methodology and Data Collection

7a. Method of data collection (Tick as many as apply)

<p>Face to face or telephone interview</p> <p><i>(Provide a copy of interview themes. This does not need to be an exact list of questions but does need to provide sufficient detail to enable reviewers to form a clear view of the project and its ethical implications.)</i></p>	<input checked="" type="checkbox"/>
<p>Focus group</p> <p><i>(Provide details: themes or questions. This does not need to be an exact list of questions but does need to provide sufficient detail to enable reviewers to form a clear view of the project and its ethical implications.)</i></p>	<input type="checkbox"/>
<p>Audio or video-recording interviewees, focus groups or events</p> <p><i>(Ensure that permission is evidenced on the consent form. Details should be provided, either in theme/question information or separately.)</i></p>	<input checked="" type="checkbox"/>
<p>Questionnaire</p> <p><i>(Provide a copy of at least indicative questions, final questions must be submitted as an amendment if not provided in initial application)</i></p>	<input type="checkbox"/>
<p>Online questionnaire</p> <p><i>(Provide the web address/ or electronic copy if not yet available online)</i></p>	<input type="checkbox"/>
<p>Participant observation</p> <p><i>(Provide an observation proforma)</i></p>	<input type="checkbox"/>
<p>Other methodology</p> <p><i>(Provide details – maximum 50 words)</i></p>	<input type="checkbox"/>

7b. Research Methods

Please explain the reason for the particular chosen method(s), the estimated time commitment required of participants and how the data will be analysed. Ensure that you include reference to methods of providing confidentiality as you indicate below in section 8a.

Semi-structured audio-recorded interviews will be used in my Dissertation; this method includes a clear set of instructions providing reliable and comparable qualitative data. In these interviews I will be using open ended questions; this will give me the opportunity to encourage a full and meaningful answer using the participant's own knowledge and/or feelings and to follow relevant topics that might emerge during the interview and also identify new ways of seeing and understanding the research topic (Cohen and Crabtree, 2008)

The way of recording interview data will be audio recording and taking notes. I will be interviewing 20 participants for 30-50 minutes. The sampling method will be opportunistic, with voluntary participation. Medical Residents doing their postgraduate studies on Intensive Care Medicine in Luis Vernaza Hospital of Guayaquil, Ecuador will form the population. The analysis of the data will be based on a full transcription of interviews, and using a coding system that seeks terms and categories of significance.

8 Confidentiality & Data Handling

8a. Will the Research Involve:

**You should select all options that apply to your (different) research methods (insert the name of the method in shaded box at top of each column, e.g. interview / questionnaire) and make clear in section 7b above how these will be applied.*

Degree of anonymity	(insert method)	(insert method)	(insert method)
	Interviews		
De-identified samples or data (i.e. a reversible process whereby identifiers are replaced by a code, to which the researcher retains the key, in a secure location?)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anonymised samples or data (i.e. an irreversible process whereby identifiers are removed from data and replaced by a code, with no record retained of how the code relates to the identifiers. It is then impossible to identify the individual to whom the sample of information relates?)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Complete anonymity of participants (i.e. researchers will not meet, or know the identity of participants, as participants are part of a random sample and are required to return responses with no form of personal identification)?

Use of Names

Subject being referred to by pseudonym in any publication arising from the research?

Participants consent to being named?

Any other methods of protecting the privacy of participants? (e.g. use of direct quotes with specific, written permission only; use of real name with specific, written permission only):

provide details here:

Any publication arising from this research will be using direct quotes with specific written permission only and no real names will be used but pseudonyms.

Participants being made aware that confidentiality may be impossible to guarantee; for example, in the event of disclosure of harm or danger to participants or others; or due to size of sample, particular locations etc.?

Participants being made aware that data may be shared/archived or re-used in accordance with Data Sharing Guidance provided on Participant Information Sheet?

8b. Which of the following methods of assuring confidentiality of data will be implemented

(NB: The more ethically sensitive the data, the more secure will the conditions of storage be expected to be.)

<p>Location of Storage</p> <p>Storage at University of Glasgow</p> <p>Stored at another site</p> <p><i>(Please provide details here, including address)</i></p> <p>Data will be stored at Hospital Luis Vernaza in Guayaquil - Ecuador, Julian Coronel Street and Loja Street. At the offices of the Department of Continuing Education of the hospital in a locked and secure place.</p>	<p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/></p>
<p>Paper</p> <p>Data to be kept secure in locked room/facility/cabinet</p> <p>Data and identifiers to be kept secure in locked room/facility/cabinet</p>	<p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p>
<p>Electronic</p> <p>Access to computer files to be available by password only</p>	<p><input checked="" type="checkbox"/></p>
<p>Other</p> <p>Any other method of securing confidentiality of data in storage:</p> <p><i>(Please provide details here)</i></p>	<p><input type="checkbox"/></p>

8c. Access to Data

Access by named researchers and, where applicable, supervisors, examiners, research assistants, transcribers

Access by people **OTHER** than named researchers, supervisors, examiners, research assistants, transcribers

If applicable: provide details of others who will have access; and if relevant, of data management and sharing policy or protocol

8d. Retention and Disposal of Personal Data *

Explain and as appropriate justify your proposals for retention and disposal of any PERSONAL data to be collected.

It is intended to destroy the personal data collected. It is normally appropriate to destroy the personal data at the end of the research project

* "(personal data means data which relate to a living individual who can be identified –

(a) From those data, or

(b) From those data and other information which is in the possession of, or is likely to come into the possession of, the data controller, and includes any expression of opinion about the individual and any indication of the intentions of the data controller or any other person in respect of the individual." Data Protection Act 1998 c.29 Part 1 Section 1

Further Information on the Data Protection Act (1998) is available on the webpages of the Data Protection and Freedom of Information Office: <https://www.gla.ac.uk/myglasgow/dpfoioffice/>

8e. Retention and Disposal of Research Data

Explain and as appropriate justify your proposals for retention and disposal of RESEARCH data to be collected. Please consult Data Management Support pages for guidance:

<https://www.gla.ac.uk/myglasgow/datamanagement/>

It is intended to retain research data for 10 years after completion of the project. This will be so that I can continue to analyse the data for possible publication beyond the end of the doctorate. I am also considering doing follow-up work with sample at a later stage (subject to their consent to be approached again). I may also wish to compare the data gathered with that from future cohorts.

For Postgraduate and Staff research University of Glasgow Research Guidelines expect data to be retained for 10 years after completion of the project. Please see University Code of Good Practice in Research for guidance,

<https://www.gla.ac.uk/research/ourresearchenvironment/prs/pgrcodeofpractice/>

9 Dissemination of Results

9a. Results will be made available to participants as:

(NB: Intended method of dissemination ought normally to take account of the age, capacities and situation of participants.)

Written summary of results to all if requested



- Copy of final manuscript presented if requested (e.g. thesis, article)
- Verbal presentation to all (e.g. information session, debriefing)
- Presentation to representative participants (e.g. CEO, School Principal)
- Other or None of the Above

(please provide details here)

9b. Results will be made available to peers and/or colleagues as:

- Dissertation
- Thesis (e.g. PhD)
- Submission
- Journal Articles
- Book
- Conference Papers
- Written summary of results to all if requested
- Other or None of the Above

(please provide details here)

9c. Datasets suitable for future re-use will be:

- Openly available via a data repository (eg. UKDA, Enlighten, Research Data)
- Available via a data repository but with restricted access
- Available from the researchers by personal request
- Other or none of the above

(please provide details here)

- None of the data from this study will be suitable for future access and re-use

10 Participants

10a. Explain how you intend to recruit participants. Provide as much detail as you can, including what age/type

of group will be used for each research activity involved (e.g. Interviews)

The sample for the interviews will be 20 participants. The sample method will be opportunity sample, given that the population number is small (36) and the participation will be entirely optional and voluntary. The population is formed by Intensive Care Medicine postgraduate Residents; their ages are from 23 to 30 years old, all of them are from Ecuador, 15 women and 21 men. The gender of the sample will be aleatory because the 20 participants will be the first 20 people enrolled in a participants' list. The dates for enrollment will be the same for all thirty-six Residents, and all of them will have equal opportunity to be enrolled.

10b. Target Participant Group

- Students or Staff of the University
- Adults (over 18 years old and competent to give consent)
- Adults (over 18 years old who may not be competent to give consent)
- Young people ages 16-17 years old
- Children under 16 years old

If you require information on the age of legal capacity please refer to the Age of Legal Capacity (Scotland) Act 1991 available at: <http://www.legislation.gov.uk/ukpga/1991/50/contents>

10c. Incentives

If payment or any other incentive (such as a gift or free services) will be made to any participants please specify the source and the amount of payment to be made and/or the source, nature and where applicable the approximate monetary value of the gift or free service to be used. Please explain the justification for offering payment or other incentive.

Not Applicable

10d. Number of Participants (if relevant give details of different age groups/activities involved)

There will be 20 participants in my Dissertation. All of them are Residents of a Postgraduate Medical Program on Intensive Care Medicine from Luis Vernaza Hospital, the age of participants are between 23 to 30 years old, men and women. The Population is formed by thirty-six Intensive Care Medicine postgraduate Residents, their ages are from 23 to 30 years old, all of them are from Ecuador, 15 women and 21 men. The gender of the sample will be aleatory because the 20 participants will be the first 20 people enrolled in a participants' list. The dates for enrollment will be the same for all thirty-six Residents, and all of them will

have equal opportunity to be enrolled. The sample method will be opportunistic and the participation will be entirely optional and voluntary. The gender considerations will be the same as that for the interview sample.

10e. Dependent Relationship

Are any of the participants in a dependent relationship with any of the investigators, particularly those involved in recruiting for or conducting the project?

(For example, a school pupil is in a dependent relationship with their teacher. Other examples of a dependent relationship include student/lecturer; patient/doctor; employee/employer)

Yes

No

If Yes: Explain the relationship and the steps to be taken by the investigators to ensure that the subject's participation is purely voluntary and not influenced by the relationship in any way.

10f. Location of Research

University of Glasgow	<input type="checkbox"/>
<p>Outside Location</p> <p><i>(Provide details here of outside locations, including as much information as possible.)</i></p> <p><i>Location of research will be Luis Vernaza Hospital at Guayaquil - Ecuador, located at Julian Coronel Street and Loja Street. Participants, are Residents of a Postgraduate Medical Program on Intensive Care Medicine. Luis Vernaza Hospital is the largest not-for-profit, full service private hospital of Ecuador, and despite not being state-owned, its doors open to all who need it. It was founded in 1564 and is recognised as one of the oldest in South America. It was built in its current location between 1922 and 1930, and named it in honor of Luis Vernaza who was Director of the Welfare Board from 1920 to 1940. The Hospital Luis Vernaza is an authentic teaching center, where doctors work and conduct scientific research.</i></p>	<input checked="" type="checkbox"/>

11 Permission to Access Participants

11a. Permissions/Access

Permission is normally required to gain access to research participants within an organisation (e.g. Private Company; school; Local Authority; Voluntary Organisation; Overseas institution, Academic institution, including UofG.)

Is this type of permission applicable to this application?

Yes

No

If No: Explain any reason why you do not require permission to gain access to research participants.

If Yes: Is evidence of this permission provided with this application?

Yes

No

If evidence is not provided, please explain why. Note that it must be forwarded to the ethics administrator as soon as it is available.

11b. Does this application involve contacting University of Glasgow students directly (specifically either via email or within classes) for the purpose of your research?

Yes

No

If Yes: *Separate permission to survey students* needs to be obtained prior to any such survey being undertaken. Normally this permission should be sought from the appropriate authority after ethical approval has been granted.

See <https://www.gla.ac.uk/colleges/socialsciences/students/ethics/informationforapplicants/>

(NB: Once obtained, a copy of this permission must be forwarded to the Ethics Administrator.)

- **If applicable: list the students** that you intend to contact (*e.g. 30 students from X course*)

12 Informed Consent

The **Participant Information Sheet** is written information in plain language that you will provide to participants to explain the project and invite their participation.

(You must consult the guidance at the Forms and Guidance Notes section of the College ethics website: <https://www.gla.ac.uk/colleges/socialsciences/students/ethics/informationforapplicants/> for information that you are **required** to provide in this.)

12a. Have you attached your Participant Information Sheet (alternative name: Plain Language Statement) for participants?

Yes

No

If No: please explain:

12b. Please note that a copy of this information should be offered to the participant to keep unless there are

specific reasons for not doing so. These must be clearly explained below.

A copy of this information sheet will be offered to the participant.

12c. Are any participants likely to require special consideration in the preparation of the Participant Information Sheet, (alternative name: Plain Language Statement) to ensure informed consent?

(Eg. the use of child friendly language, English as second language)

Yes

No

If Yes: Provide details here:

12d. How will informed consent by individual participants or guardians be evidenced?

(NB: In normal circumstances, it will be expected that written evidence of informed consent will be obtained and retained, and that a formal consent form will be used: a copy of which should be provided for review.)

Signed Consent Form

Recorded Verbal Consent

Implied by Return of Survey

Other

(please provide details here)

Justification if written evidence of informed consent is NOT to be obtained and retained:

Not Applicable

13 Monitoring

Describe how the project will be monitored to ensure that the research is being carried out as approved (e.g. give details of regular meetings/skype/email contact).

I will personally be the recording the steps in this research in detail. The process will use steps that will made it explicit; these steps will be declared, in my own journal, which can form the basis of a 'learning journey' to review the analytical journey such that there is little or no "mystique" surrounding how the researcher went from a pile of transcripts to a list of conceptual or thematic categories (Klag and Langley, 2012). I will also have periodical meetings with my supervisor at least once every 3 weeks using conference calls with emails at other points. All steps in the research process will be discussed with my supervisor, and data and analysis made available to him periodically.

14 Health and Safety

What are the potential issues of personal safety for you, other researchers or participants involved in the project and how will you manage them? *(Other than lone field work – refer to Section 15 for this)*

There won't be any potential issue of personal safety for me, other researchers or participants involved in the project

15 Risk

15a. Does the activity involve lone field work, lone working or travel to unfamiliar places? (E.g. Carrying out interviews alone and off-campus) *NB: This does not apply to working within an institution such as a school.*

(You should refer to the Risk Guidance at:

<https://www.gla.ac.uk/colleges/socialsciences/students/ethics/forms/staffandpostgraduateresearchstudents/#d.en.473063>

Yes

No

Give details of arrangements to minimise risks pertaining to this.

Not applicable

15b. How will you ensure that you minimise any possible distress caused to participants by the research process?

The risk of potential disruption or negative consequences to the participants may not be obvious and you should consider this carefully as distress could be emotional, social or economic.

Interviews will be using open-ended questions, giving participants the liberty to express their perception and experiences with the objective of not causing distress. Clearly it still possible that they may be distressed and in advance both verbally and in writing they will be told that they may withdraw at any time from interview or focus group. As an experienced medical practitioner myself I am aware from many years of experience of signs of distress and will ensure that I look for these signs of any concerns amongst participants during the research and be pro-active in checking if they are concerned.

15c. What procedures are in place for the appropriate referral of a study participant who discloses an emotional, psychological, health, education or other issue during the course of the research or is identified by the researcher to have such a need?

In the hospital there is a Social Wellness Department where this kind of problems can be addressed.

15d. Does this research involve any sensitive topics or vulnerable groups? You should refer to the Risk

Guidance at:

<https://www.gla.ac.uk/colleges/socialsciences/students/ethics/forms/staffandpostgraduateresearchstudents/#d.en.473063>

Yes

No

If Yes: Give details of arrangements to minimise risks pertaining to this

16 Insurance

Does this research come under the exclusions to the University insurance cover for research?

Yes

No

If Yes: Explain and detail how you intend to cover the insurance needs for this research

The University insurance cover is restricted in certain, specific circumstances, e.g. the use of hazardous materials, work overseas, research into pregnancy and conception and numbers of participants in excess of

5000. Please refer to the Insurance and Indemnity advice on the website given below. Advice or authorisation given must be included with this application.

Information may be available at this link:

<https://www.gla.ac.uk/myglasgow/finance/staffsections/insuranceandrisk/>

If you have a problem accessing this link, please try a different browser e.g. Firefox instead of Internet Explorer.)

17 Protection of Vulnerable Groups and Disclosure

Does this project require Protection of Vulnerable Groups (PVG) clearance?

Yes

No

If Yes: Evidence that this has been obtained **MUST** be provided with this application.

If PVG registration is held, provide **details** here:

The Protection of Vulnerable Groups (Scotland) Act 2007 came into effect on 28 February 2011. This replaced the previous Disclosure Scotland checking system for individuals who work with children and/or protected adults. The University is a Registered Body under this legislation.

Please consult the University Protection of Vulnerable Groups Scheme webpages for guidance:

<https://www.gla.ac.uk/myglasgow/humanresources/mgrs-admin/mgr-guidance/pvgscheme/>

Further guidance is available from:

<https://www.mygov.scot/disclosure-types/?via=http://www.disclosurescotland.co.uk/> (mygov.scot - Disclosure Scotland)

18 UK and Scottish Government Legislation

Have you made yourself familiar with the requirements of the:

Data Protection Act (1998)

<https://ico.org.uk/for-organisations/guide-to-data-protection/>

Freedom of Information (Scotland) Act 2002 <http://www.itspublicknowledge.info/Law/FOISA.aspx>

Yes

No

If No: Explain here:

See Application Guidance Notes available from:

<https://www.gla.ac.uk/colleges/socialsciences/students/ethics/forms/staffandpostgraduateresearchstudents/#d.en.473063>

for further information.

In addition visit: <https://www.gla.ac.uk/myglasgow/dpfoioffice/> for University guidance on Data Protection.

The **Freedom of Information Act 2002 (FOI)** provides a general right of access to most of the recorded information that is held by the University. The Act sets out a number of exemptions/exceptions to this right of access.


Declaration on next (last) page must be signed in some form and dated. The application will be returned if it is not.

19 Declarations by Researcher(s) and Supervisor(s)

The application will not be processed if this section is blank or incomplete.

- The information contained herein is, to the best of my knowledge and belief, accurate.
- I have read the University's current human ethics guidelines, and accept responsibility for the conduct of the procedures set out in the attached application in accordance with the guidelines, the University's Code of Conduct for Research and any other condition laid down by the University of Glasgow Ethics Committee and the College of Social Sciences Ethics Committee.
NB: Full details of the University's ethics guidelines are available at:
<https://www.gla.ac.uk/research/aims/ourpolicies/ethics/>
- I and my co-researcher(s) or supporting staff have the appropriate qualifications, experience and facilities to conduct the research set out in the attached application and to deal effectively with any emergencies and contingencies related to the research that may arise.
- I understand that **no** research work involving human participants or data collection can commence until I have been granted full ethical approval by the College of Social Sciences Ethics Committee.

This section MUST be completed to confirm acceptance of Code of Conduct. If there is no scanned signature then please type the names (or use GUID) and date into the boxes below.

	Signature	Date
Researcher	Rodolfo E. Farfan	25/1/2018
(All applicants)		
Principal Supervisor		29/1/2018
(Where applicable)	Michael Osborne	

For Supervisors – Please note that by submitting this application the supervisor confirms that:

- The student is aware of the College ethics requirements.
- The topic merits further research.
- The student has the relevant skills to begin research.
- If interviewing, the student has produced an appropriate information sheet for participants.
- The procedures for recruitment and obtaining informed consent are appropriate.

Applications should be submitted electronically as follows:

Upload the completed form, along with any other required documents by logging in to the Research Ethics System at: <https://frontdoor.spa.gla.ac.uk/login/>

NB: PGR students are required to upload their application which is then forwarded to their named supervisor for approval and submission to the Research Ethics Committee.



College of Social
Sciences

Appendix 4: Ethical Approval

17/07/2018

Dear Rodolfo E. Farfan

College of Social Sciences Research Ethics Committee

Project Title: Resident-As-Teacher workshop impact on Intensive Care Medicine Residents' perception of their teaching skills

Application No: 400170114

The College Research Ethics Committee has reviewed your application and has agreed that there is no objection on ethical grounds to the proposed study. It is happy therefore to approve the project, subject to the following conditions:

- Start date of ethical approval: 17/07/2018
- Project end date: 26/11/2018
- Any outstanding permissions needed from third parties in order to recruit research participants or to access facilities or venues for research purposes must be obtained in writing and submitted to the CoSS Research Ethics Administrator before research commences. Permissions you must provide are shown in the *College Ethics Review Feedback* document that has been sent to you.
- The data should be held securely for a period of ten years after the completion of the research project, or for longer if specified by the research funder or sponsor, in accordance with the University's Code of Good Practice in Research: (https://www.gla.ac.uk/media/media_490311_en.pdf) (Unless there is an agreed exemption to this, noted here).
- The research should be carried out only on the sites, and/or with the groups and using the methods defined in the application.
- Any proposed changes in the protocol should be submitted for reassessment as an amendment to the original application. The *Request for Amendments to an Approved Application* form should be used:
<https://www.gla.ac.uk/colleges/socialsciences/students/ethics/forms/staffandpostgraduatesearchstudents/>

Yours sincerely,

Dr. Muir Houston
College of Social Sciences Ethics Officer

Muir Houston, Senior Lecturer College of Social Sciences Ethics Officer

Social Justice, Place and Lifelong Education Research
University of Glasgow

School of Education, St Andrew's Building, 11 Eldon Street
Glasgow G3 6NH

0044+141-330-4699 Muir.Houston@glasgow.ac.uk

Appendix 5: Plain Language Statement



College of Social
Sciences

Plain Language Statement

Study title and Researcher Details

Resident-As-Teacher workshop impact on Intensive Care Medicine Residents' perception of their teaching skills

Dr. Rodolfo E. Farfan – Postgraduate Taught Student – Doctorate of Education – University of Glasgow

'You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this:

Purpose of my study

The central aim of my Dissertation is to interpret and understand participants' perspectives and way of thinking about the impact of a Resident-as-Teacher workshop on Intensive Care Medicine Residents' perception of their teaching skills.

Why have I been chosen?

You have been chosen because you are part of the group of Intensive Care Medicine Postgraduate Medical Program's Residents.

Do I have to take part?

No, it is your option to accept or reject participation. Your participation is completely voluntary and you will have the right to withdraw at any time without prejudice and without providing a reason. In case of withdrawing your personal and research data will be destroyed.

What will happen to me if I take part?

Anything that could harm or injure your physical, mental or psychological integrity, research will be based on interviews methodology and questions won't include any sensible or personal information. You will be interviewed for 30-50 minutes based on a semi-structured interview with open-ended questions. You will benefit from your participation because you will be reflecting upon a Resident-as-Teacher workshop that will influence on your teaching skills.

Will my taking part in this study be kept confidential?

Yes, you will be part of a group of Residents that will be personally informed about their participation on this study; interviews will be personal and confidential. Confidentiality will be respected unless there are compelling and legitimate reasons for this to be breached. If this was the case I would inform you of any decisions that might limit your confidentiality.

What will happen to the results of the research study?

Results of the research study will be published without using names of real identities of participants. Data collected will be stored for 10 years. Participants' personal details will be kept confidential by allocation of id numbers and pseudonyms.

Who is organising and funding the research?

Not Applicable

Who has reviewed the study?

The University of Glasgow School of Education Ethics Committee and supervisors of the research.

Contact for Further Information

Rodolfo E. Farfan - r.farfan.1@research.gla.ac.uk

If you have any concerns regarding the conduct of this research project, you can contact the [College of Social Sciences Ethics Officer Dr. Muir Houston](#) email: [<Muir.Houston@glasgow.ac.uk>](mailto:Muir.Houston@glasgow.ac.uk)

Appendix 6: Consent Form



Consent Form

Title of Project: **Resident-as-Teacher workshop impact on Intensive Care Medicine Residents' perception of their teaching skills**

Name of Researcher: Rodolfo E. Farfan

Name of Supervisor: Michael Osborne

I confirm that I have read and understood the Plain Language Statement/Participant Information Sheet for the above study and have had the opportunity to ask questions.

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

I consent to interviews being audio-recorded.

I acknowledge that participants will be referred to by pseudonym.

I acknowledge that participants will not be identified by name in any publications arising from the research.

I acknowledge that any publication aroused from this research will be using direct quotes with specific written permission only and no real names will be used but pseudonyms.

- All names and other material likely to identify individuals will be anonymised.
- The material will be treated as confidential and kept in secure storage at all times.
- The material will be retained in secure storage for use in future academic research
- The material may be used in future publications, both print and online.
- I agree to waive my copyright to any data collected as part of this project.
- I understand that other authenticated researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.
- I understand that other authenticated researchers may use my words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form

I agree to take part in this research study

I do not agree to take part in this research study

Name of Participant Signature

Date

Name of Researcher Signature

Date

Appendix 7: Interview Themes and Questions

DISSERTATION

STUDENT 2056362F

RODOLFO FARFAN

Resident-as-Teacher workshop impact on Intensive Care Medicine Residents' perception of their teaching skills

INTERVIEW THEMES AND QUESTIONS: (There will be five open questions that will be audio-recorded, permission for audio-recording is stated in the Consent Form)

5. Participants previous knowledge and experience in medical Residents teaching.
 - a. What do you know about Residents teaching activities?
 - b. What is your experience on medical teaching?
6. Relationship between resident's teaching and professional development.
 - a. What could be a way that teaching could improve your medical practice?
7. Relationship between resident's teaching and patient care at Hospital Luis Vernaza
 - a. How could resident's teaching influence on patient care?
8. Influence of teaching on communication skills.
 - a. In what way teaching will influence in your communication skills?

Appendix 8: Institution Permission for Investigation



Guayaquil, 12 de abril de 2018

Por la presente autorizo al Dr. Rodolfo Farfán Jaime para que realice una entrevista a los residentes de postgrado de Medicina crítica en el contexto de su Tesis de Doctorado en la Universidad de Glasgow.

Dr. Jorge Hurel Prieto
Director Técnico (e)

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