

## Reflexive and Critical Thinking Developed in Nursing Students: Evidence from a Mexican Public University

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### Abstract

**Introduction:** The development of reflexive and critical thinking is an essential competence in the academic training of professional nursing, every time health care labor demands a quick and effective capacity of response, particularly when providing care, education, research and administration of the professional care.

**Objective:** Analyze the relationship between the formal curriculum of the bachelor's degree in nursing, the teaching methodology and students learning strategies, to develop reflective and critical thinking.

**Methodology:** Exploratory, descriptive and transversal research. Mixed methodological approaches based on the constructivism theory. Population study: Was focused considering the bachelor's degree curriculum, 17 teachers and 300 students. Research instruments: A compiled guided data collection, semi-structured questions for teachers; and students, was used based on an evaluation of reflexive and critical thinking scale and interview guideline.

**Findings:** Formal curriculum is identified explicitly in curricular and pedagogical elements of the reflective and critical thinking. Teacher's testimonies didn't recognize a unique conceptualization of this thinking; teaching strategies were mainly concerned with the simulation of real scenarios and exercises of clinical cases; they accept that this thinking isn't planned or evaluated. For the students the reflective and critical thinking is a new term, but they identify its importance in proving professional care; they show evidence about enough elements to develop and use it in their professional practice.

**Conclusion:** There isn't an obvious relationship between the stated in curriculum, the teaching methodology and what the students learn to relate in reference to reflexive and critical thinking. This allows space for thinking strategies that go down with asymmetry, in favor of achievement of the students and their interaction with patients.

**Keywords:** Thinking; Curriculum; Nursing Students; Teaching; Learning

### Introduction

University education in Nursing currently presents great challenges, such as the generation of new knowledge, the strengthening of ethical, cognitive, disciplinary, humanistic and technological capacities, to point out some, in transversality with the development of practical skills, all with the aim of training human resources in trained, proactive and resolute nursing, encouraging the employment insertion of more conscious, thoughtful and critical professionals.

The prospective education in Nursing suggests the development and mastery of competencies equal to or greater than those determined by the field of work immersed in globalization Which requires a rethinking of the university, to strengthen its essential functions, introducing each generation into the modernity of knowledge [1], seeking balance and consistency between curriculum, educational methodologies and egress profile. Taking the above as a starting point, it should be mentioned that nursing's higher education institutions in Mexico have currently carried out a number of restructuring in the study plans, as well as the implementation of constructivist and flexible educational methodologies, with the main objective of favoring the transversality of the knowledge of the profession, in addition to the fact that the schools and faculties of Nursing have established in the last 15 years an educational model focused on student learning [2]. It should be said that although each of the academic programs establishes a philosophy that underlies, implicitly or explicitly, in the curricular design, the learning of the students has not had the expected, perceived and manifested impact in the labor market. In this sense, Díaz Barriga affirms that "all educational and/or curricular innovation seems more like a verbal declaration than an action carried out by the educational system" [3]. In this regard, Elboj, *et al.* mention that the education that is taught in the different educational systems still has the objective of transmitting the accumulation of information and knowledge [4], which at the time made sense, but currently it is unnecessary to continue only accumulating knowledge, problematic which adds to the multifactorial weaknesses of the education system. Faced with this scenario, one of the objectives that must be positioned is to train people capable of thinking, reflecting and criticizing with a free flow of ideas [5], which requires a curricular design that establishes, implements and evaluates innovative study plans and programs, as well as teaching and learning methodologies and strategies according to the educational needs and expectations of the health labor market; with particular emphasis on Nursing; A condition that requires a flexible and self-programmable educational system to foster meaningful learning conditions, based on analysis, reflection and criticism [4].

Reflection and criticism stand out as competencies that Nursing professionals must master; however, according to what was stipulated by UNESCO in 2015, for the establishment of quality educational systems it is necessary to promote the development of thought directed by reflection and criticism, in addition to the promotion of basic skills [5], thus justifying that this way of thinking requires a more elaborate or higher-order mental activity, as mentioned by some authors. The Ibero-American Network for Research in Nursing Education (RIIEE) has defined that "reflective and critical thinking (PRyC) is a complex, systematic and deliberate reasoning process, self-directed and action-oriented, whose primary purpose is to choose, with based on intellectual and affective processes (cognitive, experiential and intuitive), the best response options that favor the solution of Nursing problems, in well-defined contexts and in accordance with the ethical postulates of the profession, which allow them to act with rationality and professional autonomy" [6]. This concept makes it essential for the new generations in nursing to learn, understand and apprehend this way of thinking, in order to increase being, knowing and doing timely, effective, efficient and with a high epistemological and sociological impact. The development of PRyC in Nursing students is an educational need that requires institutional attention and intervention, hence the interest in research to improve the academic training of future nursing professionals. This concern has been expressed by different professional and educational organizations, such is the case of the Pan American Federation of Nursing Professionals (FEPPEN), which since 1992 prioritized research in education based on the objectives of the Pan American Health Organization (PAHO), which pointed out as indispensable the impulse of research on training processes of human resources in Nursing. Likewise, the Latin American Association of Faculties and Schools of Nursing (ALADAFE), in 2003, had already reiterated the urgent need to advance in the systematic exploration of academic work, linked to the training of human talent in Nursing in the Ibero-American field [7].

In 2012, the Ibero-American Network for Research in Nursing Education (RIIEE) recognized the lack of research in the field of nursing education practices, requiring projects that study topics such as: educational evaluation, characterization of teachers, students, educational policies, teaching methodology, among others. Based on the recognition of the strengths and weaknesses of Nursing education and with the main objective of innovating pedagogical and didactic processes, through the incursion of new teaching and learning trends [8]; The RIIEE endorsed the study of this type of thinking (PRyC) and has been developing multicenter investigations to know the situation that prevails with respect to the referential framework or state of the art of reflective and critical thinking, the presence of this thinking in the curricula higher level in various educational institutions in Ibero-America, the teaching strategies used by teachers, as well as the ways in which students learn PRyC [6]. As Mexico is one of the countries that belongs to the RIIEE, the content of this article It is part of the collegiate investigative work of the Mexico and the Caribbean region. In this way, the results presented here belong to the evidence, documented and manifest, of a Faculty of Nursing of a Mexican public university. We believe it is important to recognize that in this institution some diagnostic studies have been carried out on PRyC with a quantitative approach, likewise, they have only alluded to critical thinking and not reflective, taking only students as the study population. Therefore, the main innovation and contribution of the study presented here is that three elements or factors of education are reviewed: the academic curriculum, teachers and nursing students; establishing as a general objective "to analyze the relationship between the formal curriculum of the Nursing degree, the teaching methods of teachers and the learning strategies used by students, to develop reflective and critical thinking". The foregoing is intended to contribute, in the first instance, to document, characterize and publicize the existing teaching strategies applied by teachers and that are learned by students, where up to now there is no evidence or reference about them, to develop the PRyC.

This research is based on the assumption that the teaching and learning of reflective and critical thinking in Nursing students are educational processes that contribute to the acquisition of knowledge, leadership and decision-making during academic training, to exercise the profession with autonomy.

### Methods

It is a descriptive and exploratory study, with qualitative type the paradigmatic or epistemic approach refers to critical theory and constructivism; mixed methodology or methodological triangulation was used for the analysis and interpretation of the results.

The universe of study was made up of three educational elements or actors: The curriculum, the professors and the students of a Faculty of Nursing dependent on a public university in Mexico. The curriculum, in its 2004 version, of the degree in Nursing, taking into account that it is considered the formal document that contains disciplinary, pedagogical and methodological elements on the training of the Nursing professional.

The selected teachers were 17, chosen through a stratified non-probabilistic sampling, who represent 10% of a total universe of 169 teachers; 7 are full-time academics and 10 are subject. The selection criteria were: having more than one year of experience in the educational institution, teaching some subjects in the face-to-face Nursing undergraduate curriculum, as well as professors who had professional training in Nursing or other related training, such as medicine, therapy physical, occupational therapy, psychology or gerontology.

The student population consisted of a total of 300, of which 34 were selected randomly or for convenience, these students were interviewed in depth. Also, through a simple probabilistic sampling, which considered a margin of error of 0.05 and a confidence level of 90%, a sample of 296 students was obtained, who represented 26% of a total universe of 1,135 enrolled in the bachelor's degree. of Nursing, they were applied an assessment scale on the PRyC. The inclusion criteria in both student populations were: be enrolled in the face-to-face plan of the Nursing degree, take one of the semesters of the study plan (2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup> or 8<sup>th</sup>) and that they agreed to participate in the investigation.

Four thematic nuclei or categories of analysis were built, which allowed establishing methodological congruence with the general and specific objectives of the study and guided the construction of data collection instruments. The nuclei were: Presence and conceptualization of reflective and critical thinking.

Teaching of reflective and critical thinking, Learning of reflective and critical thinking, and Evaluation of reflective and critical thinking. Regarding the data collection instruments, we have the following: 1) For the documentary review of the 2004 Nursing Degree Curriculum, a certificate was designed, obtaining information referring to the four thematic nuclei indicated in advance. Subsequently, a critical and interpretive content analysis was carried out, which allowed the information to be related to what was stated by teachers and students, 2) For the population of teachers, a semi-structured in-depth interview guide was developed, which was made up of 12 questions.

Once the interview was carried out, it was literally transcribed, allowing a careful reading to eliminate irrelevant content and codify the testimonies, ordering the content for the construction of analysis matrices, which allowed the teachers' testimonies to be categorized; using content analysis, which favored meta-reflection on education, teaching and training of the new generations, with particular emphasis on teaching and PRyC. In the case of students, a certificate of Semi-structured interview of 10 questions, carried out only to 34 students, while a scale was applied to the remaining 296 to assess the development of reflective and critical thinking, under two indicators of thought: universal intellectual standard and intellectual virtues, which were It was made up of 16 items, weighted from 4 to 0 on the Likert scale (always 4, almost always 3, sometimes 2, almost never 1 and never 0). To review and relate the information from the interviews, content analysis was used, by means of verbatim compilation and transcription, allowing the elimination of irrelevant information, subsequently classifying the testimonies in the pre-established categories. For its part, the statistical analysis used to classify the information obtained from the applied scale allowed to quantitatively complement the qualitative information derived from the interviews.

In the ethical aspect, this research adhered to the provisions of the Law for the Coordination of Higher Education of Mexico, in Article 4 of Chapter I, which states that the functions of teaching, research and dissemination of culture that carried out by higher education institutions, will maintain a harmonious and complementary relationship with each other in a risk-free investigation.

### Results

The presentation of results responds to the order of the four categories built to guide and order the information of the three educational actors: Curriculum, teachers and students; in the search for the existing relationship to develop reflective and critical thinking.

**Presence and conceptualization of thoughtful and critical thinking:** The curriculum identified this term under other denominations, such as skill, ability, reasoning, reflexive and/or critical attitude, complex thinking, clinical judgment, among others. It should be noted that the term thoughtful and critical, is fragmented, that is, reference is made only to criticism or reflection, throughout the document they are not addressed together or as a thought process, in fact it refers to critical, reflective and analytical reasoning as one of the transverse axes to be fulfilled, in the foundation of pedagogy (C, p. 35), also, in all the content of the document it is established that this type of thinking is extremely important for nursing students, as well as for their performance in the field of work. In the egress profile, it is mentioned that the "graduate may establish clinical trials that allow him to make decisions about nursing care in the disease health process". In this same section regarding the attitudes of egress it was identified, "critical openness with regard to the professional functions it performs, modify the professional exercise from the reflection and systematization of his experience" (C, pp. 47 and 50).

With regard to those expressed by the teachers, they do not conceptualize the PRyC in a unique or at least moderately uniform manner, nor instantly, since they took some time to answer this question. Within the testimonies it was possible to find divergent opinions, while some speak of it as an innate process: "It is known that the ability to think of it all, what is done in school is to stimulate it, so that when they show up in an area or in a workplace they know how to act" (P-9); others recognize at first instance that being a mental process requires constant learning and practice: "Sometimes this process has to be taught, but for some other individuals it only has to be perfected, where the disposition of the individual also plays an important role" (P-16).

Within this category, among the arguments it was possible to identify the position that the teacher has to develop this type of thinking in nursing students, finding unanimity in the testimonies how: It is an issue that does not fall within a single unit or a single area, it is something that is up to all teachers and students themselves to develop it, and work permanently (P-5).

Likewise, all interviewees agree that the development of this thinking is not possible to start at the higher level but should be taught and encouraged from basic levels of education, as they identify that some top-level students still have deficiencies in skills such as analysis, reflection, criticism, argumentation, among others. They argue about the importance of these skills, as well as the application of the PRyC, with testimonies such as: For nurses to develop and demonstrate that they are unique and qualified professionals to offer care that no other profession can offer, it must bring this thought into action, because very little can be done if it is only idealized, but as action changes, modifies, creates and even innovates the practice of nursing itself (P-17).

For their part, students referred that the PRyC is a methodology that guides the actions and decisions that they must take in practice or in any scenario, others consider it a fundamental skill or ability to perform care and above all visualize it as a tool of analysis and criticism that underpins each nursing action; They put it this way in the following testimonies: For me this thought is to be aware of how to perform nursing care, but always knowing what we do critically and analyzing it before doing so (E-16); It is the ability we must have to make decisions (E-28). It is important to mention that when questioned about the concept of the PRyC they had a widespread reaction: before giving an answer, they asked how? Thoughtful and critical thinking, at the same time they meant that this term was relatively new to them, because they had only known it as skill, ability and attitude of reflection and/or criticism, but not as a form of thought. Faced with this finding, it was also possible to identify the importance they attach to this type of thinking, as they refer: This thinking can help us to be independent and choose an option, based on previous knowledge (E-20). It is important because it allows me to differentiate and use some knowledge to solve the situation or act, and not only with patients, but when you are in charge of the team, it is also important to create and do research, to provide solutions to other problems (E-23). Although nursing students identified PRyC as something new, they are intuitive in understanding its importance: to be a way to achieve autonomy in the exercise of the profession, as a tool for the application of knowledge and to provide care in practice; not forgetting that they consider it as a tool for the creation of research and knowledge.

Following the approach to the definition and/or conception of the PRyC, teachers were questioned whether they have identified this form of thinking in the content of the curriculum. Some teachers stated that they have not noticed or revised the curriculum; while others commented that it is present, as they refer to it below: Yes, I am sure, because it does not have much time that I reviewed the curriculum and I can tell you that it is within the competencies of egress, where it says the graduate will be able to exercise criticism, self-criticism and reflection, but they handle them as well as skills, but they do not refer to a thoughtful and critical thought (P-2). In this regard, the students were not able to make any arguments, since in their entirety they mentioned not knowing or knowing that there was the Curriculum 2004 of the Bachelor of Nursing arguing that: I don't really know him, and I don't remember teachers or the tutor talking to me about there being one (E-34); I did not know that the school had a curriculum and therefore I do not know if this document refers to critical thinking (E-11).

Derived from these results, teachers mentioned that the PRyC is implicitly found in its teaching practice, although he rarely refers to him in the knowledge he broadcasts: Until now I had not thought about it, I could tell you that he is implicitly and I apply it when I give them my knowledge or by teaching them something that will really serve them in their professional practice, but I have never mentioned them or made it clear, I do not tell them that with such topic or activity they will be critical or reflective (P-1). We found that there were several arguments expressed by the teaching population and that they generated reflections around the presence of the PRyC in their daily educational practice. On their own, the students mentioned that only while they speak do some teachers allude to possessing these thoughtful and critical skills in their exercise as nurses," they referred to it: Sometimes they do mention these skills to you, but not as a thought, moreover, some teachers seem to talk about it, but if you get to know them in practice as workers, such as nurses or nurses in

hospitals, you realize that what they do doesn't look like what they talk to you in the classroom, in fact, some do routines and all those things that if they apply criticism, reflection and analysis shouldn't do (E-23).

To conclude this category, we can say that there is a tension between the three elements of nursing education; evidence between the formal curriculum, the real and the hidden, in relation to the presence, teaching and learning of the PRyC.

### Teaching thoughtful and critical

With regard to teaching methodology, curriculum 2004 states that "teachers will promote in the student their capacity for critical thinking, autonomous judgment, social reflection" (C, p. 99). The teaching strategy that most refers to the development of this type of thinking is the workshop, mentioning that it is "the way of work that favors and strengthens attitudes and values of development of complex and creative thinking in students" (C, p. 99).

The educational methodology established in the curriculum refers to a flexible curriculum, by competencies, based on constructivism, which promotes pedagogical thinking, self-learning and learning to learn, to develop the skill and attitudes around reflection and criticism. On the different teaching activities that teachers apply to strengthen or develop this form of thinking, they expressed that they mostly employ the simulation of real-world scenarios, the approach of clinical cases, socratic methods and problem-based learning, as specified by some teachers: The learning that encourages this type of thinking should be based on problems, I usually put clinical cases on them, where they reflect on the condition of the patient, and thus propose a solution to the problem or situation that the person is suffering, but at the same time I ask them to externalize how they are rated the case. The dynamic I choose to develop the clinical case is through questions, to induce students to participate and propose, as well as to analyze, which allows for purposeful participation, where someone else can disprove and argue otherwise, which establishes a discussion (P-5).

Some teachers testified to the use of other teaching strategies to obtain meaningful learnings, referencing brainstorming, commented readings, research, discussions, some sociodramas and continuous guidance, in the case of practical learning units; in this way they stated: Activities, as I initially told you, reading and research of the first instance... through direct questions, students participate and argue what I am exposing. Another that also works very well are sociodramas, besides that the rehabilitation unit lends itself quite well to make sociodramas, where they act, a scene where they have to provide care for a fracture, for example, and also perform the right therapy, using the right means or the topic we are seeing and it is a participation of teams, where students have fun and learn, which I consider important, it is also taken into account that they are young adults, but it is never more than the classes are fun and where the student participates help many to their learning (P-17).

Although several teachers use clinical cases and problem-based learning, planning and driving techniques are different, as their experience in education has changed and transformed their application, as most states; I have to modify my strategies according to the personality and needs of the group, also taking into account the achievements and progress we have in the program and the students themselves and in their learning that they are reflecting with their attitude (E-6).

Faced with these testimonies, teachers refer that students implicitly learn to apply this thinking. It is important to note that among the oral evidence analyzed, there is a greater allusion to developing skills or acquiring knowledge, but they do not clearly express the way in which they teach and promote the PRyC, it is also prudent to mention that when questioned, they had to remember those strategies that had a certain inclination to develop processes of analysis, synthesis, reflection and criticism, without necessarily being those strategies that they apply in the daily life of the class.

In relation to this category, students refer that only on some occasions do teachers during classes they mention that as nurses they should be critical and thoughtful, as well as apply a clinical judgment to decision-making and actions on care, as the following argument

demonstrates: I think it has only been on occasion and few teachers speak of these capacities, most have not; it's common to hear that we should no longer do the routine and break the mold, stop following directions and that sort of thing. Specific could be the case of the nursing process, where we use clinical judgment (E-31).

Among the shared by students, they also refer to the that only a few times and in some learning units teach this thought, when they do research, reading analysis, when solving problems, clinical cases, in the laboratory or also when the teacher asks direct questions: They teach me to think when questioned, they make me analyze... for example, in lab practice they ask you why? of everything you do (E-7). Some teachers teach, but more than that it seems that we should only apply those skills... I could tell you that I haven't had any teachers to say, in this class we're going to use the analysis or criticism, but I think they're trying to do it when they let us investigate or when we solve clinical cases in the classroom (E-2). Expressions that reveal that although the PRyC is a competence demanded by teachers, it is not taught systematically and cross-cuttingly.

### Learning thoughtful and critical thinking

The Curriculum 2004 mentions that by applying a constructivist methodology focused on learning, the student is the protagonist of the learning process. It is from this consideration that this study identified the learning styles and self-learning skills they possess in order to develop a PRyC during their training.

In relation to learning styles, skills such as assumption analysis were valued, where 52.70% of students almost always do so, while 23.99% of them always do; for reasoning ability with evidence, 51.01% almost always do so, but stresses that 1.69% almost never do; in identifying central ideas of a topic or problem 58.11% of students almost always do so and only 23.31% always do so; in goal and goal planning 52.03% almost always do so, while 31.04% always do so (this is the highest percentage obtained from all skills). As for the relevant elaboration of questions on a topic or discussion, 45.95% almost always do so, 34.80% only a few times and 3.38% almost never do so, this skill being rated with the lowest scales almost always than ever before. All these skills are elementary to the development of this type of PRyC.

According to the percentages represented, in relation to each element, they favor the inclination towards a learning style, where the identification of assumption analysis, reasoning with evidence, identification of core ideas and goal planning obtained the highest percentage in almost always doing so, setting a trend towards more strategic learning, referenced by some testimonies, which combine styles of superficial and strategic learning, since students mention that they often only study the topics that will be rated in the assessments, or in many cases, only learning is to obtain approving and/or higher notes that allow them to exempt some courses: To learn something, I think many times I do it by heart to be able to pass or exempt, but when I am already in the clinic and I have to use it, I no longer remember it very well, then, I have to go back to review for now know better (E-19).

Among the results it can be seen that with low percentages, there are the elaboration of relevant questions on a topic or discussion, behavior justified by the following testimonies, which refer that when asking questions to teachers, on most occasions it generates different attitudes, from those that give the student successful answers, to generating discomfort or letting the student investigate on their own to solve their doubt: With some teachers, depending on how they are, you can ask them and help you even if the doubt has nothing to do with the subject matter that is giving, in other subjects, for example clinical, if you ask, most of the time to the coordinators, it is a task that we have to investigate, but there are some that the next day and after you have read help you understand the case or doubt (E-32). I hardly ask in class, because if I do, of course, depending on the teacher, some get upset, as they say that then I was not paying attention when he explained, and in clinic we know that if questions is one more task we have to do, which means more work to do (E-3).

Fact that shows that students have to be responsible for building their knowledge, making use of self-learning, they share it this way: I think that teachers no longer teach or give classes as they did before, now the classes give them among ourselves, in most cases we have to expose different topics in almost all subjects. I believe that we must now learn on our own (E-12).

As for the aspects valued in the survey, the results were: For the search for information for their -- own motivation, 52.36% almost always do so, while 27.70% always do so; in terms of being clear and thoughtful in the conclusions of a topic or problem, 54.05% of students refer to it, while 26.01% sometimes do so and only 19.26% always do so; in exploring different points of view, as well as explaining core ideas, 57.43% almost always do so; in the use of acquired information, 50.68% almost always do so and 30.07% always do so; finally, in terms of verifying the accuracy of the information, we have that 52.70% almost always does, while the 23.69% always verify the information obtained.

Based on the results, it is observed that the student population, in a range of 30 to 53%, uses information search to build their own learning. The testimonies of the interviewees on how to acquire thoughtful and critical thinking autonomously, they refer that they do so through the search for information of their own motivation, the understanding and analysis of the problem they face: It could be when I seek my own knowledge, not only because it is a task or exams, but because I am interested in knowing more and understanding the topic, it could also be when I seek the answer to my concerns with teachers or nurses in the hospital (E-31).

This commentary allows us to understand why elements such as the exploration of different points of view, the use of information and be clear and thoughtful to a problem obtained high percentages, compared to other elements, since as referred to by nursing students, they are looking for information and solutions to the situations they face in their daily practice. Within the testimonies it was also possible to identify how and where students apply a thoughtful and critical thought, finding coincidence in most comments, which refer to exercise it during practice, clarifying that it is not something constant and that can sometimes be forgotten: Here at school, when we have clinical cases to solve, by doing the nursing process in all clinic practices and in subjects... I think it should be all the time, but sometimes we do not think or analyze the consequences of our actions and forget this thought (E-13).

For their part, teachers mentioned that some students have memoristic learning, while expressing concerns about the development of PRyC learning, such as unification in teaching the Nursing process, students' mastery of expected competencies in clinical practice, integration between concepts from different learning units, and the weak relationship between theory and practice, among others. Right away, some of the demonstrations: My biggest concern is to make students learn... make a relationship to complement their learning... the biggest problem is when students do not find the usefulness of the knowledge they are acquiring in the classroom (P-3). I identify that the problem in student learning may be that the knowledge is applicable to the real environment where they will face each other, because you may have seen it in theory, but the lack of technical skill limits its development in a professional field (P-15).

The comments above seem to expose a fragmented educational context, which is at the same time as opposed to the objective of the curriculum, which refers to comprehensive, constructivist and learning-focused training, which is on the 2004 curriculum of the bachelor's degree in Nursing.

### Assessment of thoughtful and critical thinking

Curriculum 2004 refers to the evaluation being carried out on the basis of a theoretical-practical basis. To evaluate the student's performance suggests that it may be through: the explanation of the phenomenon, method to gather information, method to integrate it, decision method for therapeutic intervention and method to evaluate results. The form of evaluation in the different subjects may be: diagnostic, formative and summary; which include traditional evaluations, assignment of research papers, trials, case studies, elaboration of the Nursing process, debates, clinical cases, checklist, among others. It stipulates that any evaluation shall be carried out by means of



a numerical system of a scale of 0 to 10, specifying that the minimum rating shall be 6 points; in a schooled education system. The evaluation stages for students will be: entry, promotion and egress. The curriculum, in turn, states that teachers will be able to make use of the oral exam, self-assessment, co-evaluation, content integration, as well as the creativity and ability of the student to solve problems. It also specifies that the evaluation of clinical practices will be holistic, integrating skills, knowledge and skills, under various evaluation methods based on the Nursing Process. Within the evaluation activities applied by teachers to assess the development of the PRyC, two types of responses were distinguished: those who accept that they do not evaluate this thought process, because it is not being evident from teaching; sharing it as follows: Honestly it is not evaluated and I can tell you that a large majority of teachers do not evaluate it, and it is really by time, by the number of students that I detect as first obstacles, so I need to establish strategies, first of all teaching, because I cannot evaluate something that I am not encouraging or developing (P-11).

Second, those who agree to continue using written exams and their limitations on the assessment of the development of this thought. Students refer that when teachers evaluate them, they mostly apply written exams in theoretical subjects and oral exams in clinical practice subjects, they mention that it is only to assess what they know, but that sometimes they seem to be of capricious questions or where it seems that all the answers relate to the questions: The exams are always the same in all subjects, always the multiple choice and the true or false, only some teachers rate us with projects, for example in research (E-18).

Likewise, recalling the constructivist context of the education of nursing students, they must have independence, both in the construction of learning and in the form of evaluation; therefore, when questioned in relation to the use of self-assessment, which also it is a suggestion of the curriculum, they stated that this form of evaluation is not a common thing, except for some learning units that value development through a self-assessment: Generally self-assessment is not something that is applied very often, I can tell you that only in matters such as human development, tanatology or occupational therapy do we do a process of self-assessment (E-26).

In this category of analysis, elements for the development of self-assessment were questioned, understood as a process that allows to reflect and criticize the decisions made by the student, actions that together feed back and enrich vocational training. In this way, error recognition and the search for truth were valued, where 44.93% almost always do so and 34.80% always do; for the identification of consequences 49.32% expressed that they almost always identify them and 29.73% always do; in the acceptance of views, 62.16% always do so; when it comes to the recognition of what you don't know, 55.74% always do; results that show the acquisition of elements of self-assessment, in addition to definitively matching arguments such as: Generally self-assessment is not something that is applied very often, I can tell you that only in matters such as human development, tanatology or occupational therapy do we do a process of self-assessment (E-11).

### Discussion

**Presence, conceptualization and importance:** It is important that objectives, content, learning experiences, resources and evaluations carried out in academic and administrative legitimacy [9] are recorded on the curriculum. From planning it is imperative that thoughtful and critical thinking is explicitly present. The results revealed that this type of thinking appears fragmenting and disengaging from other curricular and pedagogical elements, leading to a rupture between the planned and application [10]. The PRyC is not defined in any section of the curriculum, teachers and students have various ideas and conceptions about this thinking, that is, it is a multivocal concept, usually referred to as a skill or ability. However, within the conceptualizations of teachers and students, it is possible to recognize some elements that have been used in the definition proposed by RIIEE. By its nature and characteristics it should be a knowledge that is taught permanently and transversally [11]. The importance of this thought in all dimensions of the curriculum is fully recognized and endorsed as the basis of autonomy and in the creation of new knowledge, an idea that is shared by the teaching and student population.

**Teaching:** Teaching in higher education should change the way students understand, experience or conceptualize the world around them, maintaining a close relationship with the management of the contents and methodological techniques that the teacher proposes [12]. It

seems that the constructivist, flexible and competency methodology proposed by the Curriculum 2004 allows students to develop autonomy and independence as fundamental elements for the development of thoughtful and critical thinking. It is clear that the teachers interviewed have the initiative to plan new strategies that respond to the need to develop thoughtful and critical thinking in Nursing students, however, they are sporadic and unplanned, limiting their results in student learning. These strategies listed in the results obtained by the testimonies of students and teachers are consistent with the teaching strategies to develop the thoughtful and critical thinking proposed by Pimienta Prieto, in decorating or activating prior knowledge and promoting understanding through the organization of information [13]. Given the results found, it is appropriate to state that “the forms of teaching appear to be guided even in the one-way transmission of knowledge, where students tend to copy and repeat in a relatively blind way” [14], a reality that is still present in the teaching that Nursing students receive on a constant basis.

**Learning:** Each element discovered in student outcomes favors the inclination towards a more superficial and strategic learning style, where according to Newble and Entwistle, surface learning is identified by the attempt to memorize mechanically or repetitively, without seeking connections between their learning, limiting it only to content that will be evaluated, as well as strategic learning: where the student assumes an attitude of competence, seeking the assimilation and conception of knowledge, as well as obtaining good grades [15], confirmed that behavior by the arguments of the teachers. Students, through their testimonies, simply by performing a learning process, are promoting transformation and instrumentation, where specific tasks, such as problem solving, are emphasized, thus determining in their learning a meaning, as mentioned by Elboj, *et al.* which is not only about learning, but also about reasoning and judging the information or knowledge that is being acquired [4], these elements being necessary for the learning of the PRyC, as well as the awareness of being responsible for the construction and independence in the face of the acquisition of knowledge.

**Evaluation:** There is no defined evaluation strategy; in most cases, no planning, development and evaluation of how to teach, develop and promote PRyC is carried out. The teachers interviewed argued that the evaluation is quantitative and memoristic, which is similar to Diaz-Barriga’s claim, where the evaluation, from his vision it favors in some way that the student loses or become aware of himself and his own situation, since the important thing is to excel, win others and get the maximum score, creating a false myth about learning, basically referring to a number where the highest ranking means that he has learned, the non-approval rating means that he does not know [9]. Qualitative evaluation is still an under-established form, which does not fully respond to the new culture of knowledge, where, in the assessment of higher-level students, more than banking knowledge must be measured, assessing the development of skills to think and participate, noting that the student who learned is the one who is aware of their knowledge and how he applies them in his professional practice. There is a concordance in the absence of an explicit approach and development of thoughtful and critical thinking, however, each educational element recognizes the importance of it within professional positioning, especially the importance of assuming autonomy in decision-making and problem solving.

### Conclusion

There is a tension between the curriculum, the way teachers teach, and how students learn about PRyC. The training of the new generations of Nursing professionals should emphasize a new way of teaching, which allows to respond to the manifest needs of care, in any field of work, favoring a link of personal interaction of Nursing-society, promoting professional autonomy and the commitment and responsibility of graduates in Nursing, under a cross-cutting teaching of thoughtful and critical thinking.

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