PROBLEM-BASED LEARNING IN MEDICAL INTERNSHIP TRAINING

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ABSTRACT

To resolve medical conflicts, Problem-Based Learning uses a variety of disciplines. It is suggested to carry out an evaluation of the pedagogical strategy of problem-based learning in gynecology interns of a university in Guayaquil. Basic, prospective, descriptive, and explanatory research were conducted using a quantitative approach and a non-experimental cohort design was used that was conducted over an extended period of time. affect the neutrality of the behaviors and actions of subjects who are aware that they are being observed.

The community has 500 boarding students, including 150 students who were changing gynaecology and meeting inclusion requirements. The investigation was carried out at the Los Ceibos general hospital in Guayaquil; the problematic situations were raised, and with the observation technique, the participation with hypotheses and resolution of the problem of the students was evidenced.

Although the results of the survey were accepted with an approval of 80%, they were not statistically significant with a P of 0.177 and 0.0 respectively compared to the traditional teaching system, considering PBL as a support strategy for the training of physicians and would not be a replacement for the traditional system that for many years has been training doctors in the scientific world.

Keywords: Learning. Teaching. Medicine. Strategy. Problems. ABP.

INTRODUCTION

Following the legacy of Hippocrates, the training of the doctor by tradition has been focused on transmitting empirical or scientific knowledge from teachers to their disciples who are the aid of the knowledge acquired in contact with the patient in an early and permanent way, acquiring experience through scientific research, whether epidemiological or clinical, thus allowing for years to provide experiences, knowledge, aptitudes and skills that are necessary for professional practice.

This profession demands that we be guardians and followers of human life (John Paul II, S.H., 1995). The training of the doctor has traditionally been fruitful for many centuries and the expansion of knowledge is so great that the sciences have questioned the teaching-learning models, generating controversial debates in the training of the doctor, for this reason many universities propose curricular changes in epistemological aspects that improve the educational process, with practical diction, methodological with the direct work of students and teachers in their classes (Prieto A & Santiago R, 2014)

The Problem-Based Learning (PBL) strategy was created by John Evans in the sixties at the medical school of McMaster University in Canada, together with a group of medical professors who identified with the teaching and research that had the profile of educators, which spread throughout the world this educational strategy (Pallie & Carr, 1987); It was later integrated into an educational model proposed by Harden et al. (1984) and Bates (2003), who followed the SPICES guide (Student-Centered Teacher, Information Gathering Problem-Centered Problem, Integrated Discipline, Community-Centered Hospital, Optional and Systematic Uniform); demonstrating many advantages in the preparation of the doctor with a holistic conception in the person, integrating their disciplines in conflict resolution and that are related to society, in which the student builds cognitive structures conferring a role with the action that the teacher intervenes.

For Reussi, (2018) in Latin America there has been a propensity to rethink medical training in undergraduate and postgraduate studies; following the classic method of Flexner, Vicedo 2002) which resides in: having basic and clinical science bases in the first four years; there is a stimulation in active learning; that avoids rote learning in seminars or symposia; students seek to solve problems, developing critical thinking and not only in fact, and teachers must emphasize that learning is a task forever.

According to Chicaiza & Cragno, (2018) considered that incitement is a key tool of the learning process that must be addressed in the designs of medical careers, it translates into specific identification, promotion, and intervention activities. Obregón, (2016).

According to Roque et al. (2021), in a systematic study carried out at the University of Chimborazo in 1235 students of various careers of the Faculty of Health Sciences; showed that there was no predominance of any learning strategy in the population studied, with a slight predominance of learning goals.

In 2021, the Council of Higher Education (CES) through the Council for Quality Assurance of Higher Education evaluated 6,498 doctors, with an approval of 72% and the 2178 who did not pass, in a second presentation the approval percentage was 32%. (CACES, 2021)

According to the general statute of the academic system of the University of Guayaquil in article 10 about learning and its organization, it plans 3 components: Teaching; practical component or experimentation and the autonomous component, of which the teaching component highlights the activities of teacher-assisted learning; as collaborative learning, which are focused on activities such as the integration of knowledge; reconstruction of models and prototypes, problem solving with learning methodologies that give rise to the use of research and communication techniques (University of Guayaquil, 2018).

Observing the antecedents that occur in our environment, there is no defined teaching strategy in the faculties of medicine of the Universities of Guayaquil, the traditional teaching system has been applied since the creation of the first faculty of medicine in Guayaquil 155 years ago, the participatory role is established by the teacher, there is no construction of cognitive structures; that follow a learning model based on memory directed by the teacher that there is no student participation, causing that graduates in medicine do not have the skills, abilities and knowledge to face the community, considering that PBL is a strategy that allowed reasoning, problem solving supported by research and the interaction of classmates and the tutor. This research work is an academic contribution to improve the teaching-learning methods in students who carry out their pre-professional practices in the medical career of a university in Guayaquil.

According to this reality, I have proposed to pose the following question: What was the effect of PBL as a pedagogical strategy in the learning of gynecology in the students of the boarding school of a university in Guayaquil, 2023?

Research questions based on this problematic situation were raised: What would be the motivation of medical students with the APB strategy in their teaching?; How would socio-critical capacity in medical students be described with the PBL strategy? How did you analyze the skills and abilities of medical students with the PBL strategy? How does the traditional teaching strategy compare with PBL in medical interns at a university in

Guayaquil? and How is a theoretical-practical program designed with the PBL methodology in the gynecology internship?

It should be noted that this learning strategy helps medical graduates to develop professional competencies and solve problems that they address in medical training. The impact of this research helps graduates to solve problems that are linked to society. The practical implications translate into your practical skills and problem-solving skills. The theoretical value is based on analyzing the precepts of knowledge management, allowing to be reflective and critical of the growth of teaching-learning with the traditional teaching method.

The methodological value of this tool allows students and the tutor to be participatory, experiencing one or more problematic situations that improve the graduate's professional profile. In the social context, it helps the graduate to solve problems that affect a social group such as teenage pregnancy, drugs and pregnancy. This research does not contribute economic expenses to the researcher or the university, and is a contribution to academic innovation in the medical schools of the universities of Guayaquil.

The general objective is to evaluate the application of PBL as a pedagogical strategy in gynecology interns at a university in Guayaquil. And as specific objectives is to evaluate the motivation in gynecology interns of a university in Guayaquil; to describe the socio-critical capacity of gynecology interns at a university in Guayaquil; to analyze skills and abilities in gynecology interns at a university in Guayaquil; To contrast the teaching levels with respect to the traditional system in the gynecology internships of a university in Guayaquil and finally to develop a theoretical-practical design with the PBL methodology in the gynecology internship.

Problem-based learning as an educational strategy, according to the null hypothesis (Ho), had a significant impact on the learning of gynecology interns of the medical career at a university in Guayaquil in 2023.Problem-based learning, as an educational strategy, did not have a significant impact on the learning of gynecology interns of the medical career of a university in Guayaquil in 2023, according to the alternate hypothesis (Ha).

BACKGROUND

Learning strategies, despite having a great theoretical basis, their application is insufficient in higher education, particularly in medicine; There are questions that we ask ourselves: What are learning strategies? What can medical education be conceived of?, what is needed for its didactic application?, how can it be evaluated?, will they be ideal for the effective training of the doctor?

The learning strategies related to PBL are Burgess et al., (2018) in Sydney-Australia; who developed a study with 275 students of demonstrated that team-based learning (ABE) replaces PBL by providing resource efficiencies of active learning that foster individual learning that consolidates knowledge, practice peer discussion and curriculum feedback in medicine, provided a standardized approach to large-scale small group learning, and also provided resource efficiencies. Students perceived benefits related to the ABE active learning strategy that encourage individual learning, knowledge consolidation, retrieval practice, peer discussion, and feedback. However, improvements are needed in terms of alignment in pre-reading tasks with the ABE patient, and greater interaction with the facilitator during problem-solving activities.

Zhao et al., (2020) in West China; conducted a study with 254 participants at the Medical College of Sichuan University with residents from the Department of Thyroid Surgery at West China Hospital of Sichuan University randomly assigned in the combined PBL-CBL (Problem-Based Learning – Case-Based Learning) teaching group with a traditional lecture-based classroom group to attend a course on thyroid nodules. The PBL-CBL group's performance improvement was significantly greater than that of the traditional group (increasing from 52.76 to 70.51 vs. 67.03 to 71.97). Concluding that the combined PBL-CBL method is an effective method in improving the achievement of medical students and residents by improving their skills

Fernández & Fonseca, (2016) in Ecuador, in a review carried out with graduate students of family medicine on the importance of teachers improving their skills in responsibility, companionship, personal initiative, teamwork, respect and tolerance; considering that PBL is a strategy in which students acquired knowledge and skills to solve a real problem, enriching the progress in which they were nourished with the experiences accumulated in their professional activity.

In Chile, Sepulveda et al. (2021) used PBL as a learning method in physiatry students, which facilitated and motivated the construction and integration of knowledge for which they used clinical case studies. With this strategy, students developed generic skills that were not achieved with the traditional system, such as teamwork, critical thinking, and learn to learn. Here the students felt empowered and protagonists of the educational process, grounding meaningful learning. There are factors that can influence the development of classwork, such as the mentor, classmates, and the space that is generated by tutorial groups.

Vargas-Vera et al., (2023b) in Guayaquil, Ecuador, demonstrated the satisfaction of PBL's strategy to achieve their knowledge and skill in gynecology and obstetrics with 450

students from the internship of the University of Guayaquil with problems raised, allowing students to obtain active and shared knowledge that is centered on them.

Luy-Montejo, (2019) in Lima-Peru evaluated the progress of emotional intelligence with the effect of PBL in a university in Lima using the Bar-On test (I-CE) in first-level students in relation to Emotional Intelligence in a pilot test, demonstrating positive influence of PBL for the creation of emotional intelligence in students.

Quispe & Quispe, (2016) in Lima-Peru determined the positive influence of PBL for the acquisition of competencies in a nursing school of a Peruvian university, proving that nursing practices obtained an equivalence of $p < 0.05$ (0.000) with the application of PBL, which was corroborated with the Wilcoxon statistic, obtaining a $p < 0.05$ (0.000) with a significance of 5%.

The medical school of the universities of Guayaquil in the internship program does not have an established teaching strategy, it has always been managed with the traditional system, and with a model of copying in the next generations, particularly in the rotation of gynecology and obstetrics which is a theoretical and practical subject, in which it does not meet the expectations for complete learning and leaving aside reasoning and practical skills. that they are the weapons for the professional future; A clear example is childbirth, curettage and not to mention surgical procedures such as cesarean section that are not allowed to interns in many hospitals, which is a problem for the performance of the future professional, as well as in public health that would not help to meet one of the Millennium Goals of 2015, which is the reduction of maternal mortality. a situation that is seen with professionals in the practice of rural medicine when cases of childbirth occur in their rural year.

PBL is an active teaching-learning methodology for the acquisition of knowledge, progress of skills, as well as aptitudes that are significant, PBL is formed a small team of students with the tutor to discuss a problem indicated for the achievement of learning goals. The question is not to solve problems, but to draw keys for teaching. In other words, plans are made for subsequent study that is carried out individually or in groups. During this content of integration of students to learn and solve the problem, the learning of new knowledge would be achieved rather than memorization, thus promoting the self-learning of the student or the professional, achieving greater knowledge that characterizes him from the most difficult, instead of plasticity; developing their own diagnosis of learning needs, in this way they understand the importance of working as a team that allows them to develop skills, knowledge and conclusions from the information before understanding the learning path (Galindo, 2012)

This strategy is positive when it is carried out in small sessions: it is important to remember that this methodology is worked with groups of less than 15 students administered by the teacher (Navarro Sada & Maldonado, 2007a). The teacher-tutor must guide; It is not a matter of assigning tasks, but letting them define the questions or the "medical problem" and be with them during the process. The importance of working in small groups is because they facilitate the specter of a collective effect among students, who will learn to collaborate with each other and use skills among peers while the content of the problem solving is deployed (Escribano & Del Valle 2008)

PBL is important because it induces the student to acquire and develop the faculty of being autonomous in the process, which allows him to build knowledge with the experiences acquired and thus have immediate application, in this way students retain knowledge for a longer time, which traditional teaching does not allow, emphasizing the course of learning than the transmission of knowledge, providing appreciable practice in the progress of their skills, analysis, demonstration that are necessary in medicine. (Galindo, 2012)

The difficulties are established in real conditions of medical importance based on the academic problems of each career. Research on the problem is the same when a doctor practices his profession. A small consensus in the group decides if they need additional information or if it is enough to understand the scheduled academic content. Those who elaborate the problem must take into account the objectives of the syllabus, so that the group is on track. It is important that the problem to be designed must take into account the previous knowledge of the team, so that they have the motivation in research and self-learning, therefore the problem must contain the following elements: title, medical history and the indications of the students; a brief and neutral description of the phenomena must be made, for which an illustration is required and the teaching must be grouped into a number of subtopics; demonstrating contrasting realities, which will be observed in the reaction in a different way to the event. Sometimes the situation of reality is approved, so the problem will not be elaborated; the degree of accuracy and strength depend on their eminence of the stage (Olivares & Heredia, 2012(

The application of this strategy is established in two contiguous activities, students will have to investigate various points that appear in the debate of the first class; All actions are worked on methodically, that is, to manage a definitive result, this consequence is not the response to the problem but the gain of knowledge and understanding of the area of study. (Vergara, 2015)

The development of the execution of the strategy depends on three stages: First phase: The tutor moves the problem to the students, they will choose a leader and a secretary. The leader acts as the arbiter who examines the problem. The secretary divides the board into 4 sections, where he places the hypotheses or opinions that are presented in the deliberation: Selected incidents, Medical complication, What do we know, What do we not know). The tutor begins with the refinement of the concepts and arguments so that all the members of the team obtain the same basic information; then the leader or referee with the secretary assumes the role with the support of the teacher. With the direction of the leader and the secretary, the relevant facts or hypotheses are added to the board; Subsequently, the showers of opinions begin to find the medical problems that are involved and are registered according to the place that corresponds to them. If the tutor observes that notable events are missing or excessive, he makes the participants ask questions so that they question the need to include or discard certain information. In case the group does not find problems or they do not agree, the teacher guides them to review the syllabus and review the topic of the course again; if, despite all the efforts made by the tutor, they are unable to identify the medical problem, it can be attributed that the situation was poorly programmed; so it is recommended to pilot it or navigate it beforehand with a class delegate or other students outside the course who have the level of knowledge or understanding of the problem. Once the problem or problems have been detected, the team tries to explain with previous knowledge and record with the agreements of the column that we know. If the problem arises, it is time to discuss any hypothesis or argue that it is presented so that it is clarified and well understood; the tutor can also fulfill the function, but ideally it is the students who question or discuss the members (Biggs J., 2008)

It is important to identify what knowledge is needed to understand the problem, it is recorded in the column that we do not know or know. At the end of the meeting, the teacher reviews the column to visibly find the learning goals that the team considers necessary to take during the second stage of development. If it reaches the point that the team and the teacher decide, the research strategy continues to obtain the recorded learning goals (whether these are analysis of articles and diagnoses, research on the website, expert advice, visits to institutions, etc.). Finally, the team evaluates the work and creates recommendations for the best performance. The tutor asks questions about the organization of work, the planning of tasks and refines the facts and events in other aspects; it also creates self-assessment tools such as rubric or checklist (Vergara., 2015)

Second phase: this phase takes place between the first and second classes, that is, it takes place outside the classroom; In it, students must investigate or review what they did

not know in the previous class following the methodology of the last class, to continue with the discussion of the group in the next meeting. (Vergara., 2015)

Third phase: This stage continues in the classroom, in which the students return with different knowledge, to discuss them and make a synthesis and a group evaluation. In this stage, obscure terms and concepts are clarified, defining the problem; instituting opinions, points of view and deepening issues, finally, conclusions are obtained about what has been learned from the group. This presents measures on the problem, which are not always indispensable. It should be reiterated that in all sessions the teacher-tutor acts as a goalkeeper, who intervenes when he considers it necessary to support the knowledge of new concepts, being important to ask before making statements. At the end, the team self-evaluates again to check if the general and specific purposes that were set out in the problem were met and at the same time were solved or if there are situations to approach a new problematic situation, or to start with a new period of independent study with another group. This strategy is repeated throughout the cycle and each problem occupies a space in the study group meeting independent of the team (Vergara, 2015).

Roles played. To carry out PBL, the teacher and the students must assume precise roles. The teacher questions the students by providing them with guides to correct the erroneous consideration; providing resources for research and thus keeping students focused on research, but avoiding being a source of truth. Students assume the following roles: The leader gives the floor and begins to ask the questions that allow him to advance, gathers the information that is recorded on the board, periodically concluding what has been discussed and setting time limits and tasks that are completed in each step. The secretary structures the blackboard into columns synthesizing the definition of the pedagogical problem or issues; it organizes the knowledge they already know and what needs to be learned, that is, the learning objectives. The rest of the students act as peers who learn from others, who actively intervene in team disputes, who are instructed to provide and accept productive criticisms, prepared to accept their knowledge gaps, if they exist, and to meticulously comply with the autonomous work established to effectively favor the activity developed by the team (Labra et al., 2011).

What mistakes should be avoided? The following mistakes should be avoided in classes: Do not elaborate problems that are too long; not giving a degree that exaggerates the student; not adding central questions to the problem, because it is about the student identifying and constructing it; bibliographic references should not be proposed at the end of the problem; not to deal with topics that do not allow us to chant hypotheses based on previous knowledge; not giving results ahead of time. In PBL the teacher always acts as a

tutor, therefore, before answering the proposal, the student shows what are the steps of the movement that led him to the formulation; silences must be avoided, thus allowing these moments that are important for personal deliberation to pass, hiding what is being said or symptom of something; allow the secretary to write on the board what he understands and not what the group has agreed; to prevent the columns of hypotheses from being a "straitjacket", the monitoring of ideology is transversal; you should not intervene more than necessary, before wanting to participate, you should ask yourself: "Will my contribution help students to learn?" and finally never leave students alone, they need guidance so that they continue in an ineffective orientation (Paineán et al., 2012)

How does a problem arise? In the first stage of the introduction of the problem, students are asked to review the syllabus to observe the theme of the week, this instruction serves to follow the steps and prevent the discussion from overflowing and taking place in the central themes of the course planning. The problem is distributed to the students at the time the tutor reviews it. Thus, the demonstration of the problem can be the detail of a situation in a graph, a photograph, a literary report or the talk or quote from a newspaper article or other elements. For example, a problem that can be given to students of the obstetrics course to understand, among other topics, the justification for the use of folic acid and its relationship with pregnancy (Biggs J., 2008)

Once the problem has been presented, the work will be to conduct the discussion. The main learning mechanism in this strategy is the teacher-tutor's ability to demonstrate and clear the obsessions and perceptions that are present in prior knowledge. After the problem is detected, the question is formulated that is taken from previous knowledge, which will be solved without remaining in prejudice, activating a channel for opinions of a correct situation. The medical questions or problems will be defined by the students, and the answers are posed in a dichotomous way (Branda, 2004)

"Is the use of folic acid in pregnancy justifiable?" As we observe, the problem that has involved an effort in the synthesis of thought is first proposed. Then the answers appear, which are dichotomous or move to extremes. ("yes" or "no", for example), framing the spectrum between the two poles. Third, here is the contribution of clinical management to the benefit of this vitamin. (Branda, 2004)

The assessment of learning. - The assessment of PBL is different from the traditional strategy in some ways, since the student's knowledge and scope are measured with alternative assessment methods. The importance lies in determining the student's achievement in relation to the objectives. In this way, the evaluation by achievements allows us to give a grade to the student, who, despite having low grades, shows us an evolution of

the learning process, that is, he manages to know minimum contents of the course, but for the students who stopped, it is averaged in the traditional way, that is, partial grades that were obtained in the course of the course (Paineán et al., 2012)

Each team should expect the teacher-tutor to observe the preparation, its organization, as well as the contribution of each student in the small group, likewise the students should provide feedback to the teacher frequently. There are criteria that will allow us to evaluate the performance in the PBL sessions of the students, among these criteria to evaluate the performance of the PBL it is important to highlight: critical evaluation, the student could refine, specify and study the problem, establishing the inspection of the hypothesis and identifying the keys to learning; if self-directed learning will use important sources, applying prior knowledge to problems, demonstrating decision and research, in this way knowing that he is instructed for group meetings; if there is group collaboration, building and favoring the team process, responsibility and work must be manifested in this cause, favoring the concord of the group and there must be humanistic qualities, being reflective in their positions and restrictions; the different qualities of each problematic situation are completed by listening to the explanations found in their own work, as well as being tolerant of the problems of the other members. (Paineán, 2012)

In summary, PBL shows the successive techniques: cooperative, collaborative and descriptive; thus allowing the following activities: To induce the active participation of students in the transformation of learning; to bring together the authority that groups have to increase the level of knowledge with interaction between peers; reduce the level of dropout among students; it tries to obtain the purposes of learning and teaching; promote self-directed learning independently; promoting the growth of the ability to reason critically; Allow the development of skills to write clearly; to allow the growth of oral communication skills; increase student satisfaction in learning experiences as well as promote more positive qualities to the field of study; admitting and adjusting the learning styles in the students of today and tomorrow; provide better school performance in mathematics, science and technology; facilitate the preparation of students as people; Helping students develop leadership skills and prepare them for today's world of work. This facilitates the teaching-learning process and the creation of practical activities in health care settings.

Castellano, (2020) presented the PBL questionnaire in secondary education, which is an option that is presented in theoretical-practical training, with a factorial observation, it was validated by evaluating the teacher's training and the execution of PBL in classroom work. Likewise, García & Núñez, (2021), evidenced a significant effect with PBL to achieve competencies in the Database course with generic skills and learning assessment

In 1993, the UNAM medical school included PBL methodology in its undergraduate and graduate program. This achieved the educational objectives of the institution, which follows the system of the Monterrey Institute of Technology and Higher Education (ITESM) in the Social Sciences, Humanities and Medicine. Some institutions have supported this learning strategy, such as the World Federation of Medical Education, the American Association for Medical Education, the Association for Curriculum Supervision and Development, and the National Council for Social Studies, with high-precision competencies of reasoning interacting with other disciplines (Martínez & Melo, 2002)

PBL has constructivist roots that favor the 4 learnings so that the mandates in higher education are fulfilled: it helps to learn how to learn; it benefits learning to do; it benefits learning to understand and inform oneself and executing as a team the help to learn to be, which promotes autonomy, reflection and social commitment (Carretero, 1993).

The "Problem-Based Learning in Bioethics (ABPB)" was proposed by the Universidad Nueva Granada in Spain, which designed it on seven levels: the introduction focused on the education and teaching of bioethics; the progress of the characteristics; the psychopedagogical elements of PBL; main reasons; analysis of epistemological elements; It is necessary to take into account how the design of a bioethics program based on problems and competencies would be created. This was part of a bioethics project HUM-948, from the Universidad Militar Nueva Granada (Garzón & Zárate, 2015)

Students at the University of Botswana's Faculty of Medicine rated the PBL process as "good" and the facilitation as "very good" despite the fact that the sessions were not permanent (Tshitenge, 2017) The demand to perfect the educational process of PBL and teaching by PBL are articulated to emphasize roles, which are assumed by teachers and students for future application (Travieso- & Ortiz, 2018) which allows it to give quality to the institutional support of students

Meza et al., (2019) considered PBL to be a pedagogical methodology that begins with a real problem that promotes a positive mental state in students, which gives way to initiatives to improve understanding and skills that are given back to society

Therefore, learning strategies are aimed at the development of the student, in qualitative change, not only in the use of external factors of the teaching-learning issue as tools but also in motivation, values, cognitive growth; These would generate autonomy and intimate connection with socializing processes of thought in the face of personality learning that addresses the complicated nature of the process and the context, which allows for a degree of satisfaction with the subject and the profile of the graduate

This conception is based on Vigostky's theory, which is generated through strategies with an environment of cooperation and socialization, guaranteeing the help, self-control, and necessary self-regulation of the student by demonstrating his or her personal interest in learning. Allowing the teacher to perceive the potentialities of their students, such as the contents that need to be learned, in order to propose strategies with a focus on the integration of actions. The teacher is considering historical and cultural approaches that associate them with his or her practice, being able to generate learning strategies that reach the educational field, developing acquisitions effectively to learn (González & Recino, 2013)

Thus, this observation would form methodological examples that would help the improvement of teaching skills in students of higher medical training: producing a space to elaborate educational tools and strategies, analyzing the students' previous instructions; Strengthening the complex strategies that could help to learn to complex ones, these strategic demands are not a simple reproduction of programs; they create a space that helps dialogue, perplexity, inaccuracy, direction of other sources of wisdom, discussion "out loud" about speculations; providing metacognition as a symbol of self-control, helps to work in methodological spaces with posed questions; the evaluation of the origin of learning, consider responses to strengths and disabilities that are committed in learning to learn; Helping to develop the pedagogical work that values teaching, the grade is customary in putting together forms of the usual one and creating forms that express the level of advancement of the skills and progress of the students and will also allow the development of the student's knowledge about the scientific dispositions necessary for their work.

Different authors define learning skills from the perspective of understanding as "behavior", "thoughts", "skills", "consciousness", "capacities", etc. According to (Monereo. C., 1994), learning strategies are defined as "the decision-making system that is conscious and intentional in which the student chooses and retrieves them in a coordinated manner, with the necessary knowledge to complete a given objective or demand, that they are dependent on the educational system where the action takes place." (Table 1), so it can be said that the student increases his concentration, whether conscious or unconscious, to an automatic response that would develop over the years if he used a learning strategy; thus, for example, some students use strategies that are not aware of the strategic use as stated (Nunan, 1999). Likewise, Chamot, 2004 says that mental processes are identified with self-reflection since strategies cannot be observed.

Table 1. Evolution of the concept of learning strategies according to years

Strategy as	Appears during	Under a	With a focused didactics
A learning algorithm	Years 20-25	Behaviorist	Prescription and repetition of response chains
A general learning procedure	50s-70s	Cognitivist (computer simulation)	Mental Operations Training
A specific learning procedure	70s-80s	Cognitivist (Experts vs. Novices)	Expert models
An instrument-mediated mental action	The 80s	Constructivist	Gradual transfer of self-regulation processes

Fountain; Monereo. C. (1994).

As we observe, strategies must fulfill important functions when it comes to evaluating significant numbers of students, they ensure their participation; In other words, learning strategies lead to learning how to learn. Table No. 2 presents examples of tools or questionnaires developed and directed.

These questionnaires, which are usually inexpensive and immediately applicable, provide the learning skills that students handle, form the population that allows them to reflect on their own work (Pozo, (2002); Edelstein, (2004). There may be advantages and disadvantages according to the purpose that is applied; for example, the CETA form prepared, designed and approved with the argument of a Spanish university; The LASSI scale has two drawbacks: it is designed for American students and it is old. The EEMA survey has restrictions on the approval of errors in the samples (López-Aguado, 2010).

Table 2. Questionnaires to evaluate learning strategies (EDA)

Authors	Year	Questionnaire Type
Weinstein, Schulte and Cacallar	1983	Escala de estrategias LASSI: The Learning and Studies Strategies Inventory
Pintrich, Smith, Garcia and McKeachie	1991	Motivated Strategies for Learning Questionair (MSLQ)
Román Sánchez and Gallego Rico	1994	ACRA (Acquisition, Coding, Retrieval and Support) Learning Strategies Scale.
Alonso Gallego and Honey	1999	Honey-Alonso Learning Styles Questionnaire (CHAEA)
De la Fuente y Justicia	2003	ACRA-abbreviated Learning Strategies Scale for University Students
Suarez and Fernandez	2005	Scale of motivational learning strategies (EEMA). It explores three areas of college students' motivational strategies: expectations, value, and affection
López-Aguado	2010	Self-Employment Strategies Questionnaire (CETA) for university students

Source: Nunan, (1999).

As Lev Vygotsky puts it, (Ruiz & Rivera, (2010) self-report instruments are inspired by cognitive statements to process information and evaluate points of view and cognitive

representation methods that are based on the socio-cognitive problem, PBL, etc., trying to reform the cognitive form; being important to understand cognitive psychology related to strategic learning, Metacognition and aspects of cognitivist constructivism

The current behaviorism that dominated between the 20s and 60s, which has been displaced by the cognitive model, because the student is qualified as an active agent in the passage of teaching (Sampascual, 2007); The psychology of behaviorism in response to limitations takes teaching as a step and not as a final consequence, where the subject of study are the cognitive systems, establishing relationships of knowledge, providing perception, attention, memory, processes of representation and reasoning. For De Vega, (1984)), learning is a previous step not a final product, the field of study is the cognitive systems comprising the psychological steps for which the subject establishes relationships with knowledge providing a perception of levels, characters, care, evocation and reasoning; Therefore this current operates the mind-computer analogy, foreseeing that the mind is a research processing system that encodes, records and executes with signs and representations.

There are several reflections on educational psychology that gave rise to cognitivist constructivism that were mentioned by (Piaget, 1970), Lev Vygotsky (Moll, 1990); (Ausubel, 2002) and Jerome Bruner (García, 2020), (Araya, 2007) who changed the object of study and its techniques; for example, Jean Piaget proposed that individuals build their knowledge and reach the world, through their experience and reflection, therefore learning occurs when there is an imbalance or a cognitive conflict; in other words, there is a mental collation that a student perceives with his or her training based on a methodological guide mediated by the educator and the beginning of a new methodological practice that is adjusted in the student (Ausubel, 2002), (Ontoria, 1997). The result of reciprocity of transmission and the progress provided by the social, didactic and historical explanation of each person is given by the formation of mental structures with responsible instruction (Moll, 1990)

For Ausubel, (2002), psychologist and pedagogue, concepts possess the person and tend to be clear (correct cognitive organization), since it is essential to unite future concepts. In this way, the theory of meaningful learning studies knowledge of judgment, storage, innovation and research use. One of the skills that can be achieved with these postulates is the ability of the individual to guide to create cognitive scaffolding.

Some higher education institutions in North and South America, particularly Argentina, manage in their plans for some careers, education and teaching processes such as: directed education, cooperative education, organized education in socio-cognitive

conflict, PBL, etc., which seek to "transform cognitive organization" (Lomagno & Llosa, 1999); (Davini, 1995) (Morales & Landa, 2004)

Reiterating that the traditional school system that is in force in many universities that are framed by a historical corporate demonstration of each institution. For there to be a modification of the education system, it implies resistance that will be reflected in institutional policies

The teachings of the university institutions focus on the work of the students according to what the Bologna project proposes, valuing the training that it acquires; Thus, higher education is committed to giving priority to strategic learning, which is based on optimizing programs and skills that accept incessant teaching throughout the student's existence and not only instruct content; this strategic student has scientific instruments to develop in the inconstant context of the present, in the present case the medical profession (Gargallo., 2007), (Morales & Landa, 2004); (Davini, 1995)

One of the institutional purposes of the School of Medicine of the University of Guayaquil is to regulate the collective demands regarding health that are inserted in education, research and extension, which guide research activities for which adjustments are being made to the curricular plan and teaching methodologies, observing the learning methodologies in our students that allow us to improve teaching practices and motivate in the first years to the university student that allows there to be a more dynamic and productive link of understanding

Many authors have sought the best strategy for the education of the physician in the field of gynecology, thus we observe the proposal (Gómez & Zárate, 2011) that the weekly exchange system is important in students, because it awakens the interest and scientific will, thus promoting reasoning and understanding of the topics treated. which allows them to better interact with their tutors in the outpatient clinic, in the room passes, as well as in the operating field.

Rey et al., (2006) proposed the use of simulators as a tool that will allow students to acquire skills in the area of gynecology and obstetrics randomly compared to a group that did not practice it.

In the training of medical professionals, the most crucial mechanism is advancement, learning, and training. The aim is not to accumulate knowledge and skills, but to foster psychosocial awareness, humanism and social engagement. These processes are not only the responsibility of the teacher or tutor and the medical intern, but also of other factors that influence directly or indirectly, such as the environment of the hospitals, the medical care material. The beginning of this process begins with the acquisition of knowledge in

education and the roles of teachers who are the counselors in the investigative, self-formative and critical motivation of the decisions made in a timely manner for their training, leaving aside the traditional system and the imitation of models in the course. not considering the individual and personal characteristics that may arise.

ETHICAL ASPECTS

As a result, the evaluation by an ethics committee was not relevant because the current study used a secondary source of information and the variable was not manipulated directly. The "Survey on the development of academic activity with PBL" was applied to each participant before the application of the instrument.

PBL METHODOLOGICAL PROCESS

The methodological process of PBL that was carried out in the chair of gynecology and obstetrics of the internship of the medical career was achieved in three moments

1. First, the teacher organized the work session, presented the problem, established the rules of the work and identified the times of intervention with PBL.
2. Second, the teacher and students came to an agreement on what to do during the work, such as presenting the problem.
3. The third moment consisted of the activities carried out after the working session, which included information, results, presentation of results and final comments.

Therefore, it was necessary to recognize some processes that became effective with PBL, so it was considered a process open to changes according to the needs of the teacher in their classrooms, as well as the particular conditions of the students. Certain changes were established that depended on the group of students as well as the time they had, objectives they were trying to achieve, resources of the teacher and the educational institution (Morales Bueno P & Landa Fitzgerald V, 2004)

Therefore, it was considered that before planning the application of PBL, two fundamental aspects must be taken into account (Polytechnic University of Madrid, 2008).

1. Previous knowledge of the students that helped to build the new learning that provided the problem.
2. The environment helped students to work as a team autonomously, which allowed them to communicate with teachers, access sources of information, have spaces to walk, etc.

Prioritizing the selection of objectives that were found in the skills or competencies that were developed within the subject of gynecology that was submitted to the strategy, with the aim that students achieve it. The problematic situation was raised where the students worked with the objectives selected by the teacher. What was the content?

- Relevant to the work of the inmates.
- Challenging (but not impossible) for students. As a result, motivation increased and he showed that he was well oriented in his tasks.
- Broad, allowing students to ask questions and address the problem from a joint perspective without demotivating or generating anxiety.

There was no tension, lack of coordination or discomfort among the members because the teacher had to direct work and teamwork rules to control and manage the classroom. When handled properly, conflict benefits group growth. Each student played these roles and actively participated in the group work. Give students time to solve and organize the problem. Depending on the magnitude of the problem, the time can be extended for certain hours, days, or even weeks. Finally, individual and group lessons were created so that students could discuss their concerns, decisions, achievements, arguments, etc. with a supervisor. This space gave the supervisor the opportunity to see first-hand how the activity was progressing and to be able to guide him, encourage him to continue with his research, etc. The study materials provided an excellent opportunity to exchange ideas, discuss problems, and advance problem-solving.

DEVELOPMENT OF THE PBL PROCESS

The work with PBL showed that the activity focused on the discussion of a problem. Therefore, this strategy encouraged self-learning and allowed students to practice in real situations and identify their knowledge gaps. Figure 1 (Guevara, 2010).

This method allowed the development of knowledge and skills that took them away from their awareness and self-development. The information was presented together with the problem, not isolated or fragmented, selecting the need for learning and grouping the contents that the student needed. Thanks to this, he achieved learning outcomes in the study cycle (Guevara, 2010). PBL's work did not begin easily or urgently, but it provided students and teachers with the opportunity to change perspectives on teaching and learning by taking responsibility and carrying out activities that were not common in a traditional learning environment (Guevara, 2010). The problem was posed with a challenging, interesting and motivating cognitive conflict for the student to show interest in looking for the

solution because it was necessary to have perseverance and interest in the work by solving problems to find a solution. (Morales Bueno P & Landa Fitzgerald V, 2004)

Fig. 1 Phases of Problem-Based Learning

Source: García de la Vega Alfonso, (2012)

The problem arises through teamwork and autonomy to achieve the objectives within a set period of time (Polytechnic University of Madrid, 2008), which allows the strategy not to lose its meaning, remembering that this strategy focuses on the student in his or her learning process. Students focused on authentic tasks and activities in the environment used during PBL (Savery & Duffy, 1996).

In their research, several authors, including (Morales & Landa Fitzgerald Victoria, 2004) (Vera Giménez, 2013)(Romero et al., 2008)(B. Hernández et al., 2009),. agreed that the general PBL is a structural methodological proposal that is exciting because it divides the development of the PBL process into eight essential steps:1. Read the problem scenario. In this first stage, the student tried to confirm his understanding of the scenario. The scenario represented a real problematic situation, but it was so unstructured that it was difficult to distinguish the fundamental problem.

Example:

Is it appropriate to take folic acid during pregnancy?

It is widely known that folic acid is given to patients who are pregnant or planning a pregnancy three months before and three months after becoming pregnant.

The goal was for students to understand the working group's argument through discussion. All team members had to understand the problem, so the facilitator was attentive in the group discussions and if any topic needed special attention, it was done with all the groups.

1. After understanding the scenario that would be worked with, brainstorming was carried out in which students presented theories or hypotheses about the problem and ideas to solve it. As the investigation progressed, these were ordered and accepted.

   Example:

Analysis of what is known. An analysis was carried out of everything that the team knew about the problem or the situation, causing many to come to the consultation of the knowledge they have and that could help to solve the problem

Example:

What was known

Prevents chromosomal diseases

Prevents neural tube closure defects.

Helps to strengthen the immune system of mother and fetus.

It helps prevent megaloblastic anemia in pregnant women.

Prevents heart disorders.

Folic acid deficiency can cause mutations in the fetus.

Prevents hypertensive disorder in pregnancy.

2. An analysis of what was unknown about the problem was carried out. An analysis of what was unknown regarding folic acid and what the team considered to be able to solve the problem was carried out, this process allowed the students to be aware of what is not known and what was necessary to do to solve the problem.

   Example:

Yes, as it prevents the formation of chromosomal diseases.

Yes, as it helps prevent neural tube closure failures.

Yes, as it strengthens the immune system of the mother and fetus.

Yes, because it helps prevent megaloblastic anemia in pregnant women.

Yes, as it helps prevent heart disease.

Yes, as a lack of folic acid can cause mutations in the fetus.

Yes, as it helps prevent hypertension during pregnancy.

What was unknown

- Did I prevent megaloblastic anemia?
- Does it prevent iron deficiency anemia?
- Does it cause placental abruption?

- Is it the cause of miscarriage?
- Is it a risk factor for bleeding during pregnancy?
- Does it prevent preeclampsia?

3. A list of actions required to resolve an issue was created. The group developed research strategies and a list of steps needed to solve the problem posed.
   Example:
   What did it take to solve the problem?

- Conduct community talks
- Talks at school and in the outpatient clinic of the maternal and child units
- Preconception care
- Prenatal control
- Nutritional counseling

At all times, PBL had as its principle the objectives set, so the teacher and the students presented an important part of what are the learning needs.

4. These learning needs involved the students who had to find a solution to the problem posed, which coincided with the objectives of the program and those of the tutor. In this way, the student made it his own and devoted himself to obtaining them of his own free will, not because the professor proposed them.
5. Define the problem. The definition of the problem consisted of a couple of statements that clearly explained what the team solved, in order to concretely define the solved problem on which their research focused.
   Example:
   Problem definition
   Showing that a lack of folic acid promotes chromosomal diseases
   Folic acid deficiency has been shown to cause neural tube defects.
   Folic acid strengthens the immunity of the mother and fetus.
   Folic acid helps prevent megaloblastic anemia in pregnant women.
   Folic acid helps prevent heart disease.
   This lack of folic acid can lead to mutations in the fetus.
   This folic acid prevents hypertension during pregnancy.

6. Information. The group located, stored, organized, and analyzed the information from the different sources, focusing on individual work, so that each member of the team carried out the assigned task.
7. It is important to recognize that in PBL he created the research process and pursued the search in the construction of knowledge. Research goes beyond searching for or gathering information. The goal of the research was to require and promote the development of thinking strategies and skills, rather than assimilation.
8. Evaluation of the hypothesis. Finally, the team met to reach a consensus and then presented the report of the results by taking up the knowledge and solutions of the problem, creating a document that addresses the most important part of the research work. This paper described the student's thought process for evaluating the results of the final PBL process. (Table 3)

In addition, the results of the team members were presented simultaneously, which was subjected to criticism from the classmates and the tutor. The students had the opportunity to recognize their research and address the results of another member, evaluating how they supported and what solutions they proposed, allowing them to enrich their knowledge and face the solutions in the same scenario.

Table 3 Analysis of the hypotheses and their conclusions

Prevents chromosomal diseases.	Folic acid helps chromosomes to separate from the centromeres in a timely and appropriate manner, it will help the disjunction of chromosomes.
Prevents defects in neural tube closure.	Folic acid, through the enzyme methyltetrahydrofolate reductase (MTHFR), will act on the notochord, acting as an inducer in the formation of the neural plaque and sulcus, until the neural tube is formed. When there is a deficiency of folic acid, homocysteine rises and induction does not occur, thus appearing neural tube malformations.
Prevents heart disorders.	The heart is formed by means of the endocardial tubes, which folds to form the heart loop. A fold forms that allows the myocardium to form the interventricular septum. The membranous septa are formed from the mesoderm of the neural crest that migrate and meet the heart loop and form the membranous structure of the heart. Folic acid acts as an adjuvant for the heart's septum to form. Congenital heart disease has a multifactorial etiology
It promotes the strengthening of the immune system of the mother and the fetus.	Folic acid has been shown to help the mother and fetus strengthen their immune system.
Preventing megaloblastic anemia in pregnant women	Megaloblastic anemia caused by folate and vitamin B12 deficiency can be prevented by folic acid supplementation during the second and third trimesters of pregnancy.
Folic acid deficiency can cause mutations in the fetus	Folic acid deficiency has a well-established teratogenic effect, allowing for increased risk of birth defects
Prevents hypertensive disorder in pregnancy	The decrease in folic acid generates an increase in homocysteine destroying the endothelium that is being formed in the placenta and the uteroplacental circulation, which results in hypertensive disorders during pregnancy.

Source: Vargas Vera (2024)

The process was developed effectively remembering that PBL was essential for students to learn a lot:

The knowledge that the students developed in PBL was not fragmented or isolated, but was directly related to the problem. Students identified their learning needs and created their own methods of acquiring knowledge as part of the interaction process to understand and solve the problem (Romero et al., 2008).

The process was developed effectively by recalling that PBL was essential for students to learn meaningfully:

The knowledge that the students developed in PBL was not fragmented or isolated, but was directly related to the problem. Students determined their learning needs and created their own methods of acquiring knowledge as part of the interaction process to understand and solve the problem.

Once they received the classes with the PBL strategy, an anonymous survey was carried out, the following variables were taken into consideration:

80% of the people who responded that they were very satisfied to feel that teachers constituted a good professional model for their training as doctors. (Graph 1)

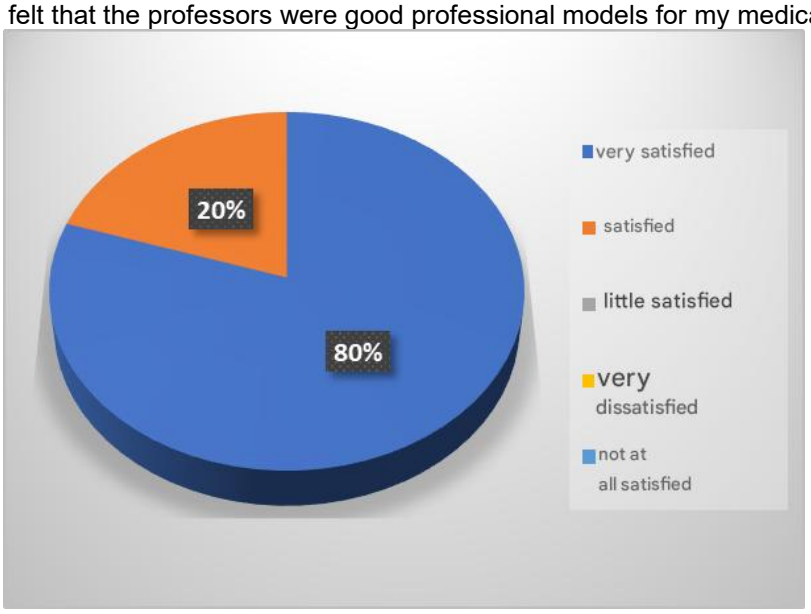
In Figure 2, 80% responded that they were very satisfied with the way in which the teachers understood the difficulties presented (Figure 2)

Therefore, during the learning process, teachers monitored and corrected the skills of the subject's practical procedures, and 80% of students responded that they were very satisfied. (Graph 3)

The professors taught the systematic and extensive use of clinical and epidemiological methods in the treatment of patients with 80% satisfaction as shown in Figure 4. (Figure 4).

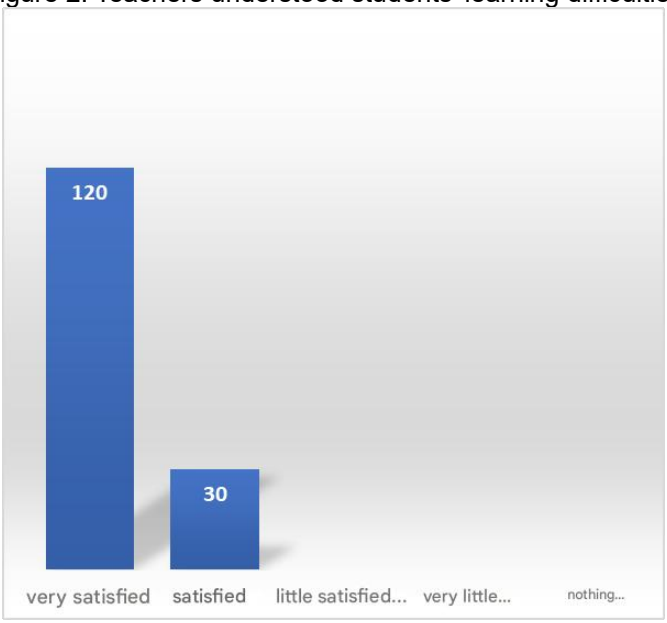
Table 4 shows the standard deviation of 7.79 in the always and almost always variable of 5.59 with a P of 0.177 and 0.0 respectively, considering that the teaching of PBL was not statistically significant compared to traditional teaching.

Graph 1. I felt that the professors were good professional models for my medical training



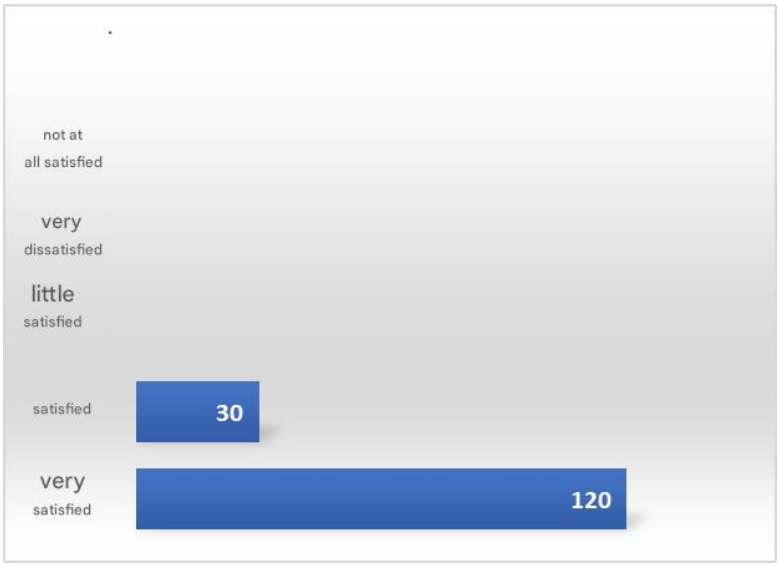
Source: Vargas Vera, (2024)

Figure 2: Teachers understood students' learning difficulties



Source: Vargas Vera, (2024)

Graph 3: The teachers observed me and corrected me in the process of learning the subject and practical procedures



Source: Vargas Vera, (2024)

Figure 4: Following their example, the professors taught me how to systematically and comprehensively use clinical and epidemiological methods in the treatment of patients

Source: Vargas Vera, (2024)

Table 4: Statistical analysis of the survey

	Medium ST	Standard deviation	Average ABP	Standard deviation	Mean difference	Standard deviation	Standard Error Mean	t	Sig. (bilateral)
always	135,22	12,42	137,72	7,79	-2,500	14,65	1,83	-1,36	0,177
almost always	41,50	7,84	32,97	5,59	8,531	9,77	1,22	6,99	0,000
sometimes	14,41	7,10	13,84	3,83	0,563	8,18	1,02	0,55	0,584
almost never	2,53	2,74	7,94	3,56	-5,406	4,37	0,55	-9,89	0,000
never	0,34	0,84	1,53	1,74	-1,188	2,13	0,27	-4,46	0,000

Source: Vargas Vera, (2024)

In the statistical analysis we observed that the mean in the slogan was always 135.22 compared to 137.72 for the traditional strategy and the PBL respectively with a standard deviation of 12.42 and 7.79, which indicates that the means are very far from the data, and a standard error of 1.83 and a p of 0.177 which shows that the strategy is not statistically significant.

DISCUSSION

To meet the objective of the research to evaluate the application of PBL as a pedagogical strategy in gynecology interns of a university in Guayaquil, the results of the research were analyzed in depth and it was found that the learning of gynecology interns has a significant relationship with the resolution of medical problems related to women. This demonstrates the effectiveness of adequate training to introduce research.

Based on specific objective 1; to evaluate the motivation of gynecology interns of a university in Guayaquil.- The evaluation of the motivation of gynecology interns was observed in its compliance; motivation is an essential component in the learning process, observing the drive of students to learn helping educators adapt their teaching strategies to better engage their students; student motivation can be intrinsic as well as extrinsic; Self-efficacy and goal orientation were designed to identify students' strengths and weaknesses in terms of motivation, allowing for the creation of personalized educational plans that meet the unique needs of each student. There was an inherent desire to learn, such as getting the best grade; demonstrate for equality among all, autonomy over the process that guaranteed the success of their studies. This approach involved an inclusive classroom environment, feeling valued and supported by both peers and the teacher. Teachers were able to incorporate active learning approaches, in group work or problem-based learning, into their lessons.

In objective 2; To describe the sociocritical capacity of gynecology students at the University of Guayaquil. - This research provided students with an opportunity for social critique; with a self-reflective character, building knowledge for the interests and needs of the group with rational and liberating autonomy through training for social transformation. As Bórquez Bustos (2006) puts it, they followed the strands of the new sociology such as phenomenology and interactionism, which was focused on the processes of work developed with the production and construction of knowledge in the group.

The sociological critiques as Mc Laren P, (1994) says, try to exercise power in a given society with the organization of the debates and hypotheses that were socialized within the classes. Although for many authors these positions have failed, in our research they demonstrated a significant value in this socio-critical interaction as proposed by Freire P, (1975) considering that these theoretical aspects leave a problem formulated that was developed in a non-linear or instrumental way; when we refer to the relationship between culture and power.

Goal 3; to analyze skills and abilities in gynecology interns at a university in Guayaquil. - It is known that people do not succeed in life because they do not know where

they want to go, but we know that we all have a series of important talents and skills that excel in the professional field. Many of these skills and abilities are innate, and others begin to develop in childhood and continue to develop throughout life; To identify the skills and abilities and identify them of what guides them the most and what we choose to do during our free time, it was possible to demonstrate that the students through these strategies felt motivated to undertake and learn about many skills and abilities in the delivery room, operating room, ward services and in research tasks.

The variable is related to the pedagogical trend of constructivism, which is based on the theory of knowledge, according to which students should be given the necessary tools to build their own ways of working (Carretero, 1993). This paradigm sees the teaching process as a dynamic, participatory, and interactive thematic process that transforms knowledge into an authentic and functional construction. Lev Vygotsky and Jean Piaget are key people in these currents. Therefore, according to Jean Piaget, intelligence is made up of two main things: experience and adaptation (Hernández Rojas & Díaz Barriga, 2013) Its scientific basis for the results achieved in this study focuses on socio-constructivism by Vygotsky is a process where the individual and the environment interact, based on society and culture, obtaining learning by discovery, experience and realities, communication and real approach to build knowledge. The theory of constructivism has its origin with Piaget, which allows the identification of a problem and the search for answers to that conflict; however, the reality of a traditional or rote education focused on curricular content or meshes decreases the participation of the student and places limits on their learning.

This learning strategy is also related to positive or positivist philosophy, since it positions an epistemological alternative from empiricism to rationalism as it is proposed (Navarro Sada & Maldonado, 2007a) since knowledge is genuine or positive that is derived from the experience of phenomena, whether analytical, tautological or sensory experience that is interpreted by logical reason. its creator being Auguste Comte (Navarro Sada & Maldonado, 2007) Therefore, there are several factors in the fundamental construction within academic training: the classroom environment, previous knowledge of the student, detailing the objectives of the class, placing the inmates in a group, coherently stating the problematic situation to be carried out and its structure, monitoring the group effectiveness to obtain the solution to the problem.

In the fourth objective, to compare the educational levels with the traditional system in the case of gynecology students at the University of Guayaquil, it can be shown that the traditional training model makes medical students more passive, because the teachers give knowledge and the student is the recipient. In this way, the student's creativity is reduced

because the teacher provides everything necessary, the evaluation is graded and focuses on the result of the grade, self-discipline and mechanical learning are emphasized, it has been questioned by current technology; what did not happen with PBL, here the inmates felt very motivated, they sought the solution of problems with technological means and were always guided by the teacher.

In the statistical analysis, we observed that the mean in the slogan was always 135.22 compared to 137.72 for the traditional strategy and the PBL with a high standard deviation of 12.42 and 7.79 respectively, which indicates that the mean is very far from the value, and a standard error of 1.83 and a p of 0.177, which shows that the strategy is not statistically significant (Table 4.2). This indicates that PBL is a support for the traditional education system, it is not considered as a way to displace the aforementioned system.

The fifth objective is to develop a theoretical-practical design with the PBL methodology in the gynecology internship. - For this objective, a study program was designed applying PBL, it was followed in the development of the thesis of this doctorate, it is made up of 4 units and 15 subunits with a duration of 10 weeks, which were taught 12 hours per week, each subunit had a problem of discussion in classes (See proposal)

In summary, Ecuadorian universities, particularly medical schools, must exchange learning strategies as the Mc Master university did with the innovation of the PBL system, which has allowed doctors from several universities in the world to apply the academic system, allowing future doctors not to see the patient as a patient but to know and study their entire problematic environment. Therefore, an adequate theoretical training in the individual by through PBL, in the medical schools of Guayaquil will be focused on innovating their resources, infrastructure, curriculum, teacher training and technology. Based on these factors, the student will be able to use resources optimally, allowing them to obtain competence, skills and abilities for their professional practice.

CONCLUSIONS

In summary, the medical internship approach at ABP offers a series of images, documents, clinical cases, and publication articles so that students have a prior understanding of the field of study. Similarly, it is capable of generating a variety of concerns, although only one of them concerns resolution. Gynecology has been used as an excuse to introduce oneself to the knowledge of medical internships, something that can be found in many disciplines. Learning to solve new problems that encourage critical thinking based on knowledge allows us to make reasonable judgments about our environment.

Taking these reflections into consideration, the following conclusion is made:

First: The training of the doctor has followed a traditional system of teaching for many centuries, and that teaching in the medical internship or pre-professional internship is a theoretical-practical training, where the student is the manager of his own learning. The problem-based learning methodology responds to the challenges faced by the student and allows them to develop social skills, collaborative work, critical thinking, and social skills in a variety of disciplinary fields. Teaching-learning didactics prioritizes strategies from the social context that are directly related to the problem-based learning methodology. These learning strategies should be included in the curriculum of the medical internship, and it is crucial to train teachers to adapt to the PBL methodology.

Second: Teaching-learning currently has a new theoretical-practical construct in the training of doctors, which are mediated by technological advances, so new teaching strategies are structured such as PBL that is applied in face-to-face demonstrating their skills that allow them to develop skills to face the real world in their comprehensive training; students are involved in generating new interactions and regulations that allow them to generate their own autonomy accompanied by the teacher or tutor, as proposed by Quispe & Quispe, (2016).

Third: The theoretical construct of PBL implies that all students must strive to participate and face the challenges that lead them to pose problems related to a pathology. Knowledge of planning helps teachers to train themselves in the organization by creating proposals, especially in the field of gynecology, adapting and contextualizing them in such a way that challenges are posed that allow them to be competent and mobilize the capacities that are required to build learning using didactic and pedagogical strategies that have a direct impact on the construction of learning.

Fourth: It is necessary to train the teachers of the medical internship to use the appropriate methodology, since it is necessary to create a problem and a strategy that responds to the competency-based approach that the higher education council is implementing.

Fifth: It has been concluded that the PBL strategy provides students with a well-rounded education. It allows them to relate the knowledge acquired throughout their career in their training with the environment, which allows them to respond to a problem of a pathology, thus promoting significant learning of pathologies related to women.

Sixth: This learning strategy is based on positive or positivist philosophy, which opposes empiricism and rationalism (Navarro Sada & Maldonado, 2007a). It is based on the theory of knowledge and applies to students the need to receive the necessary tools to develop their own skills (Carretero, 1993). A balance is proposed between the current use

of the knowledge acquired in the first semesters, where theoretical knowledge is available. Problem-based learning proved to be a technique that encourages discussion, reasoning, discussion and evaluation from knowledge, always respecting and valuing the perspectives of others. The inmate supports the cognitive processes it fosters, such as observation, identification, and association.

Real clinical career scenarios are excellent learning situations for PBL development. Similarly, boarding schools share other PBL traits, such as interdisciplinarity and meaningful discovery learning. The boarding school creates peer-to-peer learning situations through a flexible small group dynamic that encourages teamwork. Therefore, including PBL in the programming of gynecology interns could be an appropriate educational situation.

Although the results of the survey were accepted with an approval rating of 80%, they were not statistically significant compared to the traditional teaching system, it is considered that PBL would be one more support for the training of doctors, and not a way to displace the traditional system that for many years has been training doctors in the scientific world.

RECOMMENDATIONS

First: It is important that medical teachers know different teaching strategies that allow them to innovate learning in students of pre-professional practices with various hypotheses, PBL is an alternative and innovative strategy of the traditional system as demonstrated in the research

Second: Universities and medical careers should introduce these learning strategies in the curricula, PBL allows an orderly and group planning, demonstrating interest in research and being a collaborative work seeking solutions to problems, allowing learning to be reinforced.

Third: In the gynecology and obstetrics internship, establish interlearning groups on specialized topics to exchange learning experiences, methodologies and utilities. Discuss the benefits of the PBL strategy. seeking to strengthen the competencies of teachers so that students learn.

Fourth: It is important to socialize these strategies in different chairs and careers of medicine or other areas of health, trying to give the value of the problems to reach an appropriate diagnosis and therapy that will be aimed at the learning of the students.

PROPOSAL

The Problem-Based Learning strategy seeks to strengthen students and teachers in learning about problems related to women. To this end, we worked on a syllabus, in which a problem is posed to be solved in each thematic unit to be discussed in classes, prior to the seminar that is presented by the students.

Introduction: In the subject of Gynecology and Obstetrics of the Rotating Internship, the student begins by learning to observe what happens in women from fertilization to the moment of reproduction. Thus, they develop continuous hypotheses and draw precise conclusions, with permanent fixation of what they have learned. This also allows them to develop their capacity for research or observation, since the learning process is implicitly based on following the scientific method with all rigor.

Finally, students will learn to recognize and identify the physical, biological, human, and social determinants that help assess women's sexual and reproductive health. . In this way, they will acquire knowledge about embryology, epidemiology, genetics, clinical, gynecology, obstetrics, pediatrics, diagnosis, therapeutics, prevention and control, building the necessary skills in each chapter, and, ultimately, with respect to all pathologies of women and pregnancy.

Theoretical Contributions; The Gynecology and Obstetrics course of the Internship is a pre-professional training subject, which is developed in a theoretical and practical way; it provides the student with knowledge and skills for the care of women, prevention of breast and cervical cancer, reproductive health, prenatal control, diagnosis, conduction, evaluation and care of pregnancy, normal and abnormal delivery, Identify the newborn and the mother.

Methodological contribution: In 2002, the London Council of General Practitioners recommended revising and strengthening medical school curricula with modern educational theories that promote curiosity through self-learning, integration of theory with practice, information-seeking ability, and the ability to find information to self-assess what has been learned. Problem-Based Learning (PBL) is the best system because it allows students to observe what's going on in their environment, formulate ongoing hypotheses, and draw quick conclusions while focusing on what they're learning. In addition, it allows them to develop their capacity for research or observation, since the process implies following the scientific method with all rigor. In PBL, self-evaluation plays a very important role

General objective: The boarding school student will be able to identify and resolve the various pathological processes of women and pregnancy, the multiple factors that determine their maternal-fetal morbidity and control and prevention measures.

Conclusion: This academic proposal in the gynecology cycle of the medical internship will allow future medical professionals to learn to recognize pathologies within the clinical approach and covering the environment where women are involved, therefore, the PBL will propose the learning of a sequence of images, documents, clinical cases and publication articles allowing the student to be autonomous, critical in their learning and decision-making.

REFERENCES

1. Amaya León, H. (1968). Sexual steroids. Revista Colombiana de Obstetricia y Ginecología, 19(5), 353–357. Available at: https://doi.org/10.18597/rcog.2480

2. Araya, V., Alfaro, M., & Andonegui, M. (2007). Constructivism: Origins and perspectives. Laurus, 13(24), 76–92.

3. Ausubel, D. P. (2002). Acquisition and retention of knowledge: A cognitive perspective. Paidos.

4. Barell, J. (2007). Problem-based learning: An investigative approach (M. Pérez Rivas, Trans.). Ediciones Manantial. Available at: https://www.worldcat.org/title/aprendizaje-basado-en-problemas-un-enfoque-investigativo/oclc/881058134

5. Biggs, J. (2008). Some examples of teaching. In Quality of university learning (2nd ed., pp. XX–XX). Narcea. Available at: https://www.redage.org/publicaciones/calidad-del-aprendizaje-universitario

6. Bórquez Bustos, R. (2006). Critical pedagogy (1st ed.). Editorial Trillas. Available at: https://sitraiemsorg.wordpress.com/wp-content/uploads/2019/11/borquez-pedagogia-critica.pdf

7. Branda, L. A. (2004). Problem-based learning in health sciences education. In Problem-based learning: A tool for a lifetime (pp. XX–XX). Agencia Laín Entralgo. Available at: https://campus.usal.es/~ofeees/NUEVAS_METODOLOGIAS/ABP/abpcienciassalud%5B1%5D.pdf

8. Burgess, A., et al. (2020). Team-based learning replaces problem-based learning at a large medical school. BMC Medical Education, 20(1), 492. Available at: https://doi.org/10.1186/s12909-020-02362-4

9. Carretero, M. (1993). Constructivism and education. Aique. Available at: https://pdfcoffee.com/carretero-constructivismo-y-educacion-pdf-free.html

10. Castellano, R., Rodríguez, J., & Ortiz, A. M. (2020a). Validation of a PBL questionnaire in secondary education: Analysis of training and classroom implementation. Educación, 41(39), XX–XX.

11. Castellano, R., Rodríguez, J., & Ortiz, A. M. (2020b). Validation of a PBL questionnaire in secondary education: Analysis of training and classroom implementation. Educación • Education • Educação, 41(39), XX–XX. Available at: https://www.revistaespacios.com

12. Chamot, A. (2004). Issues in language learning strategy research and teaching. Electronic Journal of Foreign Language Teaching, 1(1), 14–26. Available at: https://e-flt.nus.edu.sg/v1n12004/chamot.pdf

13. Davini, M. C. (1995). Teacher training in question: Politics and pedagogy. [Publisher not specified].

14. De Vega, M. (1984). Introduction to cognitive psychology. Alianza Editorial.

15. Díaz Garcés, G., et al. (2019). Painting as an alternative pedagogical strategy to improve school coexistence. Universidad Cooperativa de Colombia. Available at: http://hdl.handle.net/20.500.12494/7403

16. Edelstein, G. (2004). Problematizing the what and how in teachers' relationship with knowledge. [Publisher not specified].

17. Esquivel Cruz, J., Rodríguez Nieto, M. C., & Padilla Montemayor, V. M. (2009). Approaches to learning, motives, and strategies of nursing, engineering, and sports management students. Pedagogía, 30(87), 309–331. Available at: http://ve.scielo.org/scielo.php?script=sci_arttext&pid=S0798-97922009000200005&lng=en&tlng=es

18. Fernández Lora, L., & Fonseca Montoya, S. (2016). Problem-based learning: Considerations for family and community medicine graduates in Ecuador. MEDISAN, 20(9), 2150–2163.

19. Freire, P. (1975). Pedagogy of the oppressed. [Publisher not specified]. Available at: https://fhcv.wordpress.com/wp-content/uploads/2014/01/freire-pedagogia-del-oprimido.pdf. Accessed on February 19, 2025.

20. Galindo Cárdenas, L. A., et al. (2012). How does problem-based learning (PBL) transform the educational meanings of the University of Antioquia's medical program? Iatreia, 24(3), XX–XX. Available at: https://doi.org/10.17533/udea.iatreia.10553. Accessed on February 19, 2025.

21. García Díaz, B. L., & Núñez Lira, L. A. (2021). Problem-based learning for achieving database competencies at a state university. UCV.

22. García Túnez, P. (2020). History of education: Jerome Bruner's thought. Families in school. [Publisher not specified].

23. Gargallo López, B., Suárez Rodríguez, J., & Ferreras Remesal, A. (2007). Learning strategies and academic performance in university students. Revista de Investigación Educativa, 25(2), 421–441.

24. Garzón Díaz, F. A., & Zárate, B. (2015). Problem-based learning of bioethics (PBLB): A new pedagogical approach. Acta Bioethica, 21(1), 19–28. Available at: https://doi.org/10.4067/S1726-569X2015000100003

25. Gómez-Azcárate, G., & Zárate, B. (2011). Teaching gynecology and obstetrics at the Military Medical School. Ginecología y Obstetricia de México, 79(3), 170–173.

26. González, S., & Recino, U. (2013). Learning strategies in higher medical education. EDUMECENTRO, 5(3), 212–224.

27. Guevara, G. (2010). Problem-based learning as a didactic technique for teaching recursion. Revista de Las Sedes Regionales, 11(20), 142–167. Available at: https://revistas.ucr.ac.cr/index.php/intersedes/article/download/1019/1080

28. Hernández, B., Moreno, J., & León, G. (2009). Problem-based learning and project-based learning. In III Orientation Conference for Counselors and Teachers (pp. XX–XX). Cartagena. Available at: https://www.calameo.com/books/00540159447adab97852d

29. Hernández, C. (2015). Analysis of the learning of two groups of researching teachers using the PBL-OP methodology. Universidad Uniandes.

30. Hernández Rojas, G., & Díaz Barriga, F. (2013). A psychoeducational look at learning: What we know and where we are going. Sinéctica, Revista Electrónica de Educación, (40), 1–19. Available at: https://www.redalyc.org/articulo.oa?id=99827467003

31. Labra, P., et al. (2011). The PBL approach in initial teacher training at the University of Atacama: Impact on teaching practice. Estudios Pedagógicos (Valdivia), 37(1), 167–185. Available at: https://doi.org/10.4067/S0718-07052011000100009

32. Lomagno, C., & Llosa, S. (1999). Didactic strategies II. In Teacher Training in Health Series (Module 8). Subsecretaría de Planificación de la Salud.

33. López-Aguado, M. (2010). Design and analysis of the Autonomous Work Strategies Questionnaire (CETA) for university students. Revista de Psicodidáctica, 15(1), 77–99.

34. Luy-Montejo, C. (2019). Problem-based learning (PBL) in the development of emotional intelligence in university students. Propósitos y Representaciones, 7(2), XX–XX. Available at: https://doi.org/10.20511/pyr2019.v7n2.288

35. Martínez Viniegra, N., & Melo, A. (2002). Problem-based learning. Revista de la Facultad de Medicina UNAM, 45(4), XX–XX. Available at: https://www.medigraphic.com/pdfs/facmed/un-2002/un024h.pdf

36. McLaren, P. (1994). Critical pedagogy and predatory culture. Aique. Available at: https://www.terras.edu.ar/biblioteca/5/5PDGA_Mc_Laren_Unidad_7.pdf

37. Meza Morales, S., Zárate Depraect, N., & Rodríguez, C. (2019). Impact of problem-based learning on human health students. Educación Médica Superior, 33(4), XX–XX.

38. Moll, L. C. (1990). Vygotsky's zone of proximal development: A reconsideration of its implications for teaching. Infancia y Aprendizaje, 13(51–52), 247–254. Available at: https://doi.org/10.1080/02103702.1990.10822280

39. Monereo, C. (1994). Teaching and learning strategies: Teacher training and classroom application. Graó. Available at: https://www.researchgate.net/publication/270158776_Estrategias_de_ensenanza_y_aprendizaje_Formacion_del_profesorado_y_aplicacion_en_la_escuela

40. Morales Bueno, P., & Landa Fitzgerald, V. (2004). Problem-based learning. Theoria, 13, 145–157. Available at: http://www.ubiobio.cl/theoria/v/v13/13.pdf

41. Navarro Sada, A., & Maldonado, A. (2007). [Review of the book Research methods in education (6th ed.), by L. Cohen, L. Manion, & K. Morrison]. British Journal of Educational Studies, 55(4), 469–470. Available at: https://doi.org/10.1111/j.1467-8527.2007.00388_4.x

42. Nunan, D. (1999). Second language teaching and learning. Heinle and Heinle Publishers.

43. Olivares Olivares, S. L., & Heredia Escorza, Y. (2012). Development of critical thinking in problem-based learning environments among higher education students. Revista Mexicana de Investigación Educativa, 17(54), 759–778. Available at: http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1405-66662012000300004&lng=es&tlng=es

44. Ontoria Peña, A., Molina Rubio, A., & Luque Sánchez, Á. (1997). Self-awareness of cognitive conflict in methodological innovation in initial teacher training. Revista Electrónica Interuniversitaria de Formación del Profesorado, 1, XX–XX. Available at: http://www.uva.es/aufop/publica/actas/viii/edprima.htm

45. Paineán Bustamante, Ó., Aliaga Prieto, V., & Torres Torres, T. (2012). Problem-based learning: Evaluation of a curricular proposal for initial teacher training. Estudios Pedagógicos (Valdivia), 38(1), 161–180. Available at: https://doi.org/10.4067/S0718-07052012000100010

46. Pallie, W., & Carr, D. H. (1987). The McMaster medical education philosophy in theory, practice, and historical perspective. Medical Teacher, 9(1), 59–71. Available at: https://doi.org/10.3109/01421598709028981

47. Piaget, J. (1970). Piaget's theory. In Carmichael's manual of child psychology (3rd ed., Vol. 1, pp. XX–XX). Wiley. Available at: https://www.scirp.org/(S(i43dyn45teexjx455qlt3d2q))/reference/referencespapers.aspx?referenceid=1716835

48. Platow, M. J., Grace, D. M., & Smithson, M. J. (2012). Examining the preconditions for psychological group membership. Social Psychological and Personality Science, 3(1), 5–13. Available at: https://doi.org/10.1177/1948550611407081

49. Pozo, J. I., & Crespo, M. C. (2002). Strategic learning: Teaching to learn from the curriculum. Santillana. Available at: https://dialnet.unirioja.es/servlet/libro?codigo=10213

50. Quispe Loayza, M., & Quispe Morales, R. (2016). Problem-based learning and competency acquisition in practical training for nursing students. [UCV]. Available at: https://hdl.handle.net/20.500.12692/19274

51. Rekalde, I., Vizcarra, M. T., & Macazaga, A. M. (2014). Observation as a research strategy to build learning contexts and foster participatory processes. Educación XX1, 17(1), 201–220. Available at: http://www.redalyc.org/articulo.oa?id=70629509009

52. Rey, G., Visconti, A., Balager, E., & Martínez, J. (2006). Use of simulators in gynecology and obstetrics: Experience in undergraduate teaching. Educación Médica, 9(4), 229–233. Available at: http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1575-18132006000500005&lng=es&tlng=es

53. Romero, J., Rodríguez-Castillo, A., & Gómez Pérez, J. (2008). Evaluation of scenarios for problem-based learning (PBL) in high school chemistry. Educación Química, 19(3), 195–200. Available at: https://repositorio.unam.mx/contenidos/53971

54. Ruiz Carrillo, E., & Estrevel Rivera, L. (2010). Vygotsky: School and subjectivity. Pensamiento Psicológico, 8(15), 135–146. Available at: https://www.redalyc.org/articulo.oa?id=80115648012

55. Ruiz Olabuena, J. I., & Ispizua, M. A. (1989). Methods and models of social research. Universidad de Deusto.

56. Sampascual, G. (2007). Psychology of education. UNED.

57. Savery, J. R., & Duffy, T. M. (1996). Problem-based learning: An instructional model and its constructivist framework. [Publisher not specified]. Available at: https://silo.tips/download/aprendizaje-basado-en-problemas-un-modelo-instruccional-y-su-marco-constructivis

58. Sepulveda, P., et al. (2021). Problem-based learning: Perception of the teaching-learning process of preclinical sciences by kinesiology students. Educación Médica, 22(2), 60–66. Available at: https://doi.org/10.1016/j.edumed.2019.01.004

59. Travieso-Valdés, D., & Ortiz-Cárdenas, T. (2018). Problem-based learning and project-based teaching: Different alternatives for teaching. Revista Cubana de Educación Superior, 37(1), XX–XX. Available at: http://scielo.sld.cu/pdf/rces/v37n1/rces09118.pdf. Accessed on [insert access date].

60. Tshitenge, S. T., Ndhlovu, C. E., & Ogundipe, R. (2017). Evaluation of problem-based learning curriculum implementation in a clerkship rotation of a newly established African medical training institution: Lessons from the University of Botswana. Pan African Medical Journal, 27, XX–XX. Available at: https://doi.org/10.11604/pamj.2017.27.13.10623

61. Universidad Politécnica de Madrid. (2008). Problem-based learning. Servicio de Innovación Educativa de la Universidad Politécnica de Madrid. Available at: https://innovacioneducativa.upm.es/sites/default/files/guias/Aprendizaje_basado_en_problemas.pdf

62. Vargas-Vera, R. M., et al. (2023a). Problem-based learning: A curricular experience with gynecology internship students. Investigación en Educación Médica, 12(47), 91–97. Available at: https://doi.org/10.22201/fm.20075057e.2023.47.23517

63. Vargas-Vera, R. M., et al. (2023b). Problem-based learning as an educational strategy for medical students. Revista Minerva, 4(6), 110–130. Available at: https://revistas.ug.edu.ec/index.php/minerva/article/view/2230

64. Vera Giménez, J. (2013). Introduction to problem-based learning: A guide for students. [Publisher not specified]. Available at: http://uvadoc.uva.es/handle/10324/1524

65. Vergara Ramírez, J. J. (2015). I learn because I want to: Problem-based learning (PBL) step by step. Ediciones SM. Available at: https://aprenderapensar.net/wp-content/uploads/2015/05/159466_Aprendo-porque-quiero.pdf

66. Zhao, W., et al. (2020). The effectiveness of the combined problem-based learning (PBL) and case-based learning (CBL) teaching method in the clinical practical teaching of thyroid disease. BMC Medical Education, 20(1), 381. Available at: https://doi.org/10.1186/s12909-020-02306-y