Shared ambulatory: an innovative methodology for medical education in primary care

Ambulatório compartilhado: uma metodologia inovadora para o ensino médico na atenção básica

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1 INTRODUCTION

The use of active methodologies as a teaching strategy within medical education has been gradually instituted for decades, in face of the perception of several gaps in the traditional biomedical model, particularly regarding the fragmented view of the patient as a set of systems, the high cost of medicine exercised by the medical specialist, the disconnection from the psychological and sociocultural contexts of the patient and community, and the poor result in extending health benefits to populations (LAMPERT, 2002; ABREU, 2009).

Brazil has made marked advances in this field since the creation of the Unified Health System (SUS), particularly with the establishment of the National Curriculum Guidelines for Medicine (BRASIL, 2001; BRASIL, 2014), which establish important changes in the basis of medical training with the promotion of integration of multidisciplinary teams, strong performance in Primary Care and coordination of Family and Community Medicine, and the use of active methodologies focused on the construction (and not mere transmission) of knowledge.

The medical student within SUS, in the context of Primary Care, then acts with a hybrid role, both academic (inserted in the daily practice according to their competencies) and professional (promoting an improvement in patient care and community in the short and long term), within the teaching-service-community axis; several universities already include in their curriculum regular activities within Primary Care (ALMEIDA, 2012; BERWANGER, 2015; MACIAS, 2017).

However, as a historical reflection of the traditional method of health training, we still see a prevalence of fragmented, reductionist transmission based on passively acquired knowledge, especially outside the academic environment, causing a dichotomy between theory and practice (COLARES; OLIVEIRA, 2019; LEITE, 2021). Despite the existence of several theoretical models based on active methodologies, some elaborated below, it is noticeable in the literature a methodological shortage focused on medical practice sufficiently comprehensive to the complexities of such a multifaceted learning environment, particularly within Primary Care (LEITE, 2021).

This article aims to develop the construction of a new pedagogical proposal for medical training in Primary Care, called "Shared Clinic". It is intended to base its construction on the pedagogical principles of teaching called "peer tutoring" (TOPPING, 1996; GILL et al, 2006; BUCKLEY; ZAMORA, 2007), on "Maguerez's Arc" (FARIAS; MARTIN; CRISTO, 2015) and on the capital skills of the *Problem-Based Learning* methodology, or PBL (BARROWS, 1986).

2 OBJECTIVE

To describe the theoretical elaboration of the "Shared Clinic" as a theoretical-practical methodology for medical education within Primary Care.

3 METHODOLOGY

The development of the "Shared Clinic" as a construct is based on two bases: i) the empirical experience of the researchers in their academic-professional practices; and ii) the theoretical basis through a review of current literature pertinent to the theme, which allows its solidification as a concept. Thus, based on the idealization of the "Shared Clinic" and its potential theoretical bases, a literature review was conducted using the following keywords: *problem-based learning*, problem-based *learning,* PBL, Maguerez's bow, problematization, peer-tutoring, *peer-assisted-learning,* PAL, within the electronic databases *Scientific Electronic Library Online* (Scielo) and Google Scholar, where descriptive studies and review articles were sought.

4 DEVELOPMENT

The present article is part of the development of the author's master's thesis that seeks to build and validate the "Shared Clinic" as a methodological tool in medical training within Primary Care. The methodological framework used for its construction is called *Design-Based Research*, a pragmatic investigative approach that seeks the solution of problems in reality and, succinctly, is based on the use of iterative cycles of *design*, application, reflection and *redesign*. Matta and collaborators (2014) delimit four distinct phases of *Design-Based Research*:

- Phase 1: Problem analysis. Includes defining the problem(s) in the praxis of reality, the research questions, the contextualization, and the review of existing literature.

- Phase 2: Design Development. Includes the theoretical construction and the development of the initial intervention proposal. *Design-Based Research* has theoretical foundation as its fundamental principle, and here it is delimited which theories will sustain the research approach.

- Phase 3: Design and application of the iterative cycles. It includes the formation of the research methodology: who will be the participants; how the information will be collected and analyzed; the applications of the iterative processes themselves.

-Phase 4: Reflection on the process. It includes, based on the evaluation of the results obtained, critical and constructive reflection on the results, formulation of "*design* principles" to support improvements in the implementation of the solution, and formulation of new practices for *redesign*.

The present article deals with the outline of phases 1 and 2 of the research, which involve the contextual analysis and theoretical construction of the interventional proposal. On these foundations will be built the practical applications of the research, to be carried out later.

Empirical Research Context

Considering the importance of practical application and grounding in reality for the development of a new theoretical construct, it is understood that it is necessary to understand the academic-social context in which the research is inserted.

This paper arises within the practical performance in Primary Care in the city of São Caetano do Sul - SP, which serves as an internship field for students from 1st to 6th years at the Universidade Municipal de São Caetano do Sul (USCS). The students have weekly activities in the Basic Health Units (BHU) of the city during part of the course, and then return during the Medical Internship for an intensive internship of 6 to 7 weeks under the supervision of a specialized preceptor (doctor and/or nurse). In this context, many students from different stages of academic training share space in their activities, not always adequate to the level of competence and complexity pertinent to the student. It can be noticed that the preceptor is in charge of proposing activities, evaluating performance, and the reflective process, often without formal training to do so, who also needs to manage this dynamic with patient care and the productivity demands of the service.

Several Brazilian medical universities follow this model, guided by the New National Curriculum Guidelines for Medicine, which encourage a medical profile "with generalist, humanistic, critical and reflective training" (BRASIL, 2014). Faced with the increasing number of medical schools and the shortage of trained professionals, it is understood that the increase in the number of students per internship field is a natural consequence and should be taken into account for the understanding of the process of building competencies of the future doctor.

Active Methodologies and PBL

The use of problem-based *learning* (PBL) began in 1969 at McMaster University in Hamilton, Canada (ROMÃO; BESTETTI; COUTO, 2020), and the method has been implemented and adapted since then under different (and sometimes contradictory) proposals, depth and evaluation principles. Barrows, in his

article *A taxonomy of problem-based learning methods* (1986), proposed four fundamental abilities or objectives that such a methodology should address, concerned with the importance of standardizing the method: i) the structuring of knowledge for use in clinical settings; ii) the development of effective clinical reasoning process; iii) the development of self-directed learning skills; and iv) the increase of intrinsic motivation to learn. It is a method that has been consistently shown to be more effective than traditional lecture-based methods in the perceived increase in self-knowledge, clinical skills, and the student environment as a whole (ABREU, 2009; QIN; WANG; FLODEN, 2016; ROMÃO; BESTETTI; COUTO, 2020).

In partnership with Neufeld (NEUFELD; BARROWS, 1974), he had already described the fundamental structure of the methodology applied at McMaster, and the core structure of the device as a "process of cognitive, metacognitive and personal development" under the principles of being "student-centered, problem-based, inquiry-based, integrative, collaborative and reiterative" learning (NEWMAN, 2005).

Newman (2005) conducted an extensive comparative study in the literature equating theory and practice, and reiterates that the goals of PBL encompass, among others: forming complex cognitive models of the problems presented; developing a critical sense in emotional, intellectual, and practical senses; broadening a sense of medical enculturation; as well as stimulating a range of other skills, such as strategy, emotional management, creativity, decision making, leadership, and people management, among others. It also substantiates five key universal components within PBL:

1. the teacher as the facilitator of the pedagogical process, assuming different attitudes towards the needs of the group;

2. the use of an explicit process, known as "the seven steps of PBL" (SCHMIDT, 1983);

3. the use of problems and scenarios to stimulate, contextualize, and integrate learning;

4. the use of small groups as a stimulus for cooperation and the management of interpersonal difficulties;

5. the use of evaluative processes as a motivator and educational guide.

A unique addition of Newman was the evaluation of pedagogical techniques pertinent to the facilitator's role, such as the adoption of *personas,* characteristic roles that can be incorporated according to the particularities and needs of each group, or the use of "communicative actions" such as the use of questions with a reflective or stimulating purpose, questioning about feelings or conflicts aroused in the discussion, or even the effective use of silence (NEWMAN, 2005).

Maguerez's Arc

The arc of Maguerez is a problematization methodology that starts from reflection on the experiences and experiences of the reality of a subject, in search of solutions to the problems encountered (FARIAS et al., 2015). Unlike the formulation of prior pedagogical curriculum-based scenarios as in PBL, Maguerez's arc is based on the real experiences of the participants. Starting from the observation of reality, a survey of hypotheses (or key points) of the causes and correlations of the problem is carried out. This allows for theorizing and theoretical-analytical discussion, designing hypotheses for solutions and, finally, application to reality. The starting from reality to the theoretical counterpoint and back refers to the visual analogy of an arc, hence the name.

Peer-tutoring

Peer-tutoring, sometimes called peer-assisted learning, can be broadly defined as "people from similar social groups who are not professional teachers, helping each other to learn and learning by themselves by teaching" (TOPPING, 1996). *Peer-tutoring* denotes teaching-learning processes among people from similar groups, and has become pertinent due to the shortage of trained teachers in the face of the need to improve academic quality, increase the number of students, and decrease resources (TOPPING, 1996). In medical training, this means the use of strategies such as active methodologies in the pedagogical process among students from different stages of the course.

Although the term "mentoring" points to structured processes such as PBL, in practice it is observed that the term encompasses multiple student-mediated tasks, from flipped classrooms to hands-on activities. Several studies show that academic proximity among students allows better contextualization of knowledge and progressive structuring into a network of wisdoms; *peer-tutoring* brings benefits not only to the students who learn (generally related to academic skills and technical knowledge), but also to the student-tutors themselves, who "learn by teaching" the content, develop an increase in their own teaching skills, and reflect an increase in the viability of engaging in teaching in the future (WALKER-BARTNICK; BERGER; KAPPELMAN, 1984; TOPPING, 1996; GILL et al, 2006; BUCKLEY; ZAMORA, 2007; VIDAL VILLA; CASTILLO DELGADO; GÓMEZ, 2017; VIDAL VILLA; CASTILLO DELGADO, 2019).

Teaching knowledge theory

Lee Shulman, in his capital work *Knowledge and teaching: foundations for new reform* (SHULMAN, 1987), establishes different "categories of background knowledge for teaching," which "constitute a didactic organization of the aspects that should make up the teacher's role" (BACKES et al, 2018). These include the domains of Content Knowledge (CC) - the knowledge itself of the content that is being taught -, and General Pedagogical Knowledge (CP) - the understanding of pedagogical principles and strategies for

managing lessons and rooms. For Shulman, what differentiates a teacher from a specialist is the integration between these domains into what he calls Content Pedagogical Knowledge (CPC)-the specific knowledge that incorporates content and didactics in order to fit the needs of the student, the environment, and oneself, and structure the knowledge in an understandable way.

According to Roldão (2007), Shulman's model converses closely with Donald Schön's reflective model, which denotes the importance of the process of reflection on the practice of pedagogical experience, and states that the knowledge resulting from practice must always be subject to the process of analytical reflection. Associated with the Freirian view that "critical reflection on practice becomes a requirement of the Theory/Practice relationship, without which theory can turn into blah blah blah and practice into activism" (FREIRE, 2021), we can understand some of the fundamental aspects of pedagogical activity that differentiate a teacher from a specialist.

Academic and pedagogical competencies

Fleury and Fleury (2001) define "competence" as a "set of knowledge, skills, and attitudes" mobilized by the individual in a responsible and recognized way, a "know how to act", aiming to add individual and organizational social value.

In a didactic way, based on the works presented, we can discuss the existence of two significant sets of competencies to be developed during graduation: competencies based on Content Knowledge, here called *academic competencies,* and competencies based on General Pedagogical Knowledge, here called *pedagogical competencies*.

Academic competencies, whose development succeeds both traditional and active methodologies, have been the main focus of development in medical training as a whole, and involve the consolidation of theoretical knowledge; the structuring of knowledge for use in clinical settings; the development of effective clinical reasoning; the development of self-directed learning skills; increased motivation to learn; strategy, emotional management, creativity, decision making, etc.

Pedagogical competencies, in turn, were repeatedly pertinent only to the tutor/facilitator, but are progressively being recognized as fundamental in the health training process, and bringing palpable benefits to students (DANDAVINO; SNELL; WISEMAN, 2007; BENÈ; BERGUS, 2014). They encompass the stimulation of interest; the formulation of reflective, engaging and thought-provoking questioning; the ability to coordinate and support the knowledge formation of others in an organized and theoretically appropriate manner; the aid to individual and interpersonal management, among others.

The joint structuring of both competencies opens a window for the development of Pedagogical Content Knowledge (SHULMAN, 1987), which, in theory, would be able to lead to the formation of professionals who are ethical, reflective, humanistic, and engaged in the transmission of knowledge.

**Building the theory of the "Shared Clinic**

One of the assumptions of the present research is that, within medical education, both academic and pedagogical competencies should be stimulated during graduation: the emphasis on academic competencies, built by the experiences lived during training, should be progressively replaced by an emphasis on the formation of pedagogical competencies, which are fundamental for empathic professionals, motivators and perpetuators of this cycle (figure 1). New competencies are then incorporated into the previous ones, in a structure of cumulative construction on the previous foundation; the scheme of the Russian doll, or *matrioska*, as seen in figure 2, is illustrative of this process.

Figure 1 - Progression of skill emphasis in undergraduate medical education
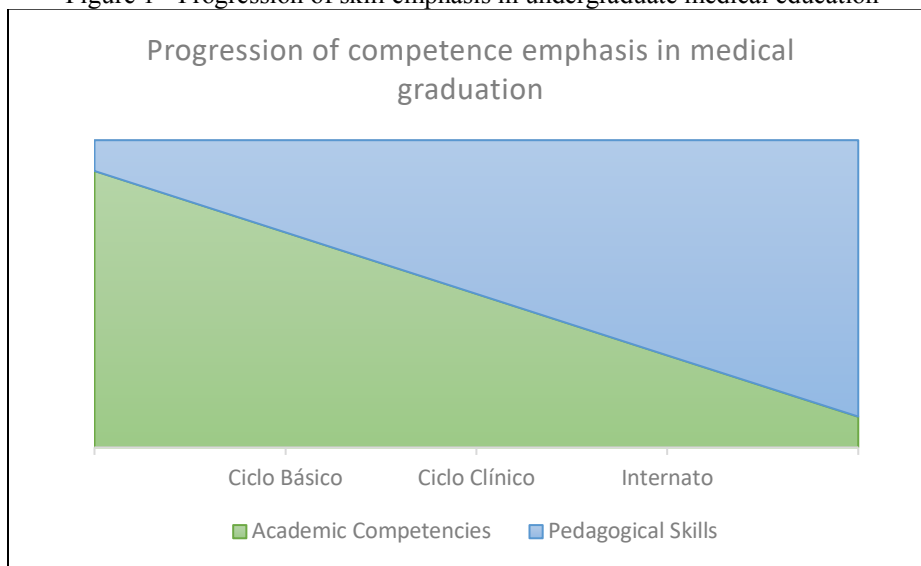
Source: Prepared by the author

Figure 2 - Schematic of the "Russian doll" about competence building
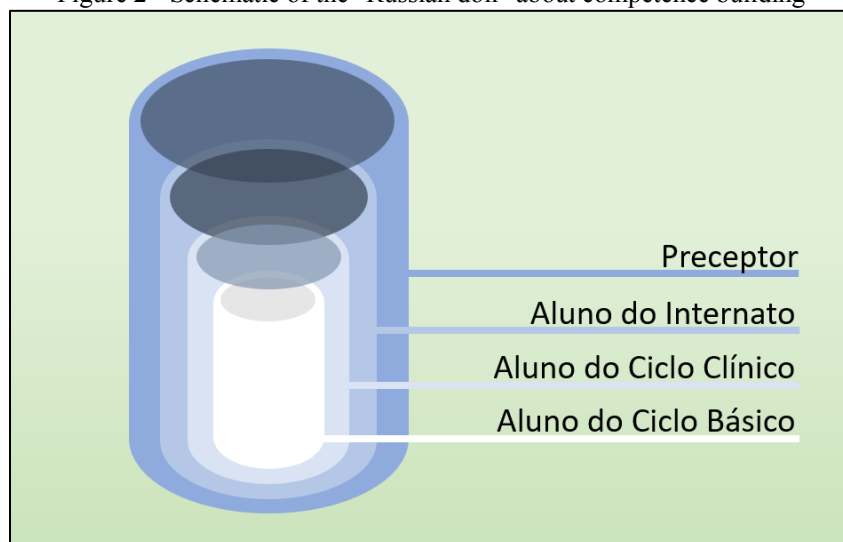
Source: Prepared by the author

The "Shared Clinic" is a methodological construct that aims to provide a theoretical and practical environment of joint care between students from different academic stages, where each participant has responsibilities and duties related to their own development and the peculiarities of each group, in order to stimulate the necessary skills within their current academic progression and in relation to their peers. Such a structure forms an intersubjective network, where each student has roles and responsibilities pertaining to his or her own competencies, those of other colleagues and of the preceptor-tutor.
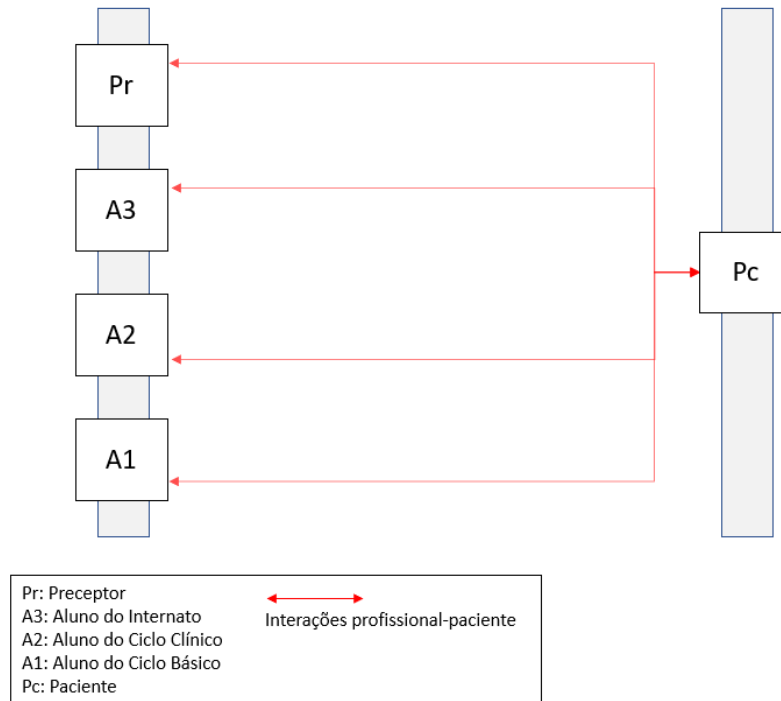
One of the fundamentals of the research is the integration between students from different biennial cycles of the medical course. Medical courses in Brazil are composed of six years of training, and can be didactically divided into two-year cycles: the first two years (commonly called *basic cycle*); the third and fourth years (herein called *clinical cycle*); and the fifth and sixth years (usually integrating the *internship*). Several medical courses follow different organizations - even the university of the research participants changed its structure during the course - but, regardless of each nomenclature, this didactic organization is capable of encompassing groups of students with similar competencies.

At first, the ideal structure of the "Shared Clinic" is the presence of three students, each one belonging to a two-year cycle within the medical education, together with a medical preceptor, acting complementarily and collaboratively in care, as shown in figure 3. It is understood that, in practice, this tripartite structure is subject to a number of changes and nuances, and may not always have the idealized configuration. Although we believe that slight changes in this structure - for example, the presence of two or four students instead of three, or the presence of two students from the clinical cycle and one from the internship, among other possibilities - do not change the pedagogical proposal of the methodology, the research will follow the assumption of one student per two-year cycle. From this, there will be room for further investigations, with alternative configurations.

Figure 2 - Members of the "Shared Clinic

Pr: Preceptor
A3: Aluno do Internato
A2: Aluno do Ciclo Clínico
A1: Aluno do Ciclo Básico
Pc: Paciente

Interações profissional-paciente

Source: Prepared by the author

Based on the peer tutoring theory, it is understood that the inclusion of students from different biannual cycles allows an academic proximity that facilitates the theoretical-practical contextual understanding, besides allowing more advanced students, with a greater cumulative construction of competencies, to "learn by teaching", consolidating their academic knowledge and exercising their pedagogical knowledge, as shown in figure 4.

Figure 3 - *Peer tutoring* in the "Shared Clinic
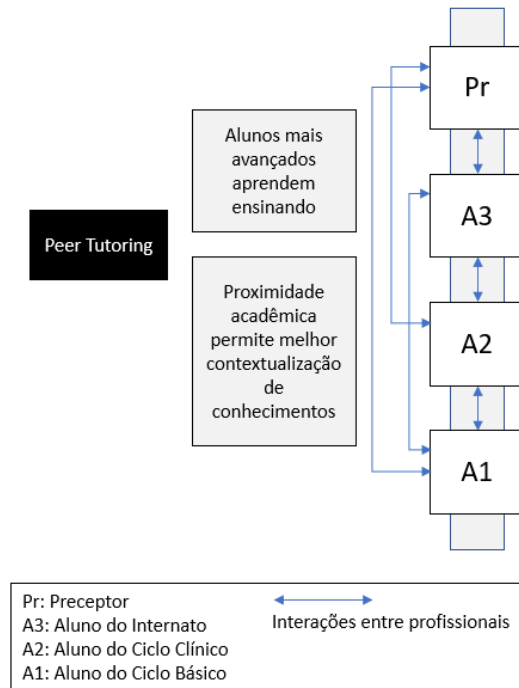
Source: Prepared by the author

The theory of Maguerez's Arc allows us to extract, from the observation of the patient's reality, the key points of his problems and, from the theorization pertinent to the previous knowledge of each member, to formulate solution hypotheses that will be reapplied in reality. Figure 5, adapted from Maguerez's Arc, allows us to apply it to the context of the members of the "Shared Clinic". It is interesting to note that, as in a traditional medical service, sometimes the previous knowledge or the available information is insufficient to reach an adequate solution to the patient's problem; thus, the need for complementary exams, referral to specialists, or even the need for further individual study and research, expanding the theorization beyond the knowledge available at the time of the consultation, also become solution hypotheses.

Figure 4 - Maguerez's Arc in the "Shared Clinic
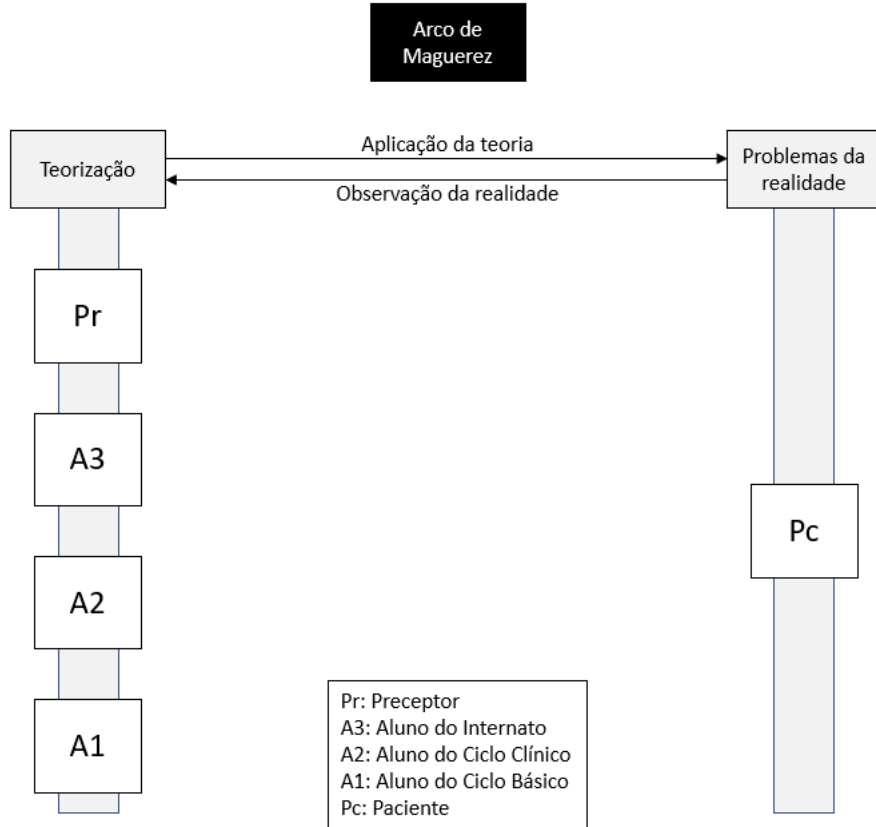
Source: Prepared by the author

Finally, it is understood, based on what has been said about the theory of teaching knowledge, that different competences are assigned to each member according to their academic progression. Students in the basic stages of education are ideally more stimulated in their academic competences, and will progressively work on their pedagogical competences throughout their education. The theoretical basis of PBL allows us to understand the skills that are pertinent to each group. A fundamental point is that these competencies are not fixed to certain members, but are flexible according to the particularities of each group: for example, one group may give the interview to the clinical cycle student, while another gives it to the internship student. Figure 6 schematizes the adaptation of this structure to the "Shared Clinic".
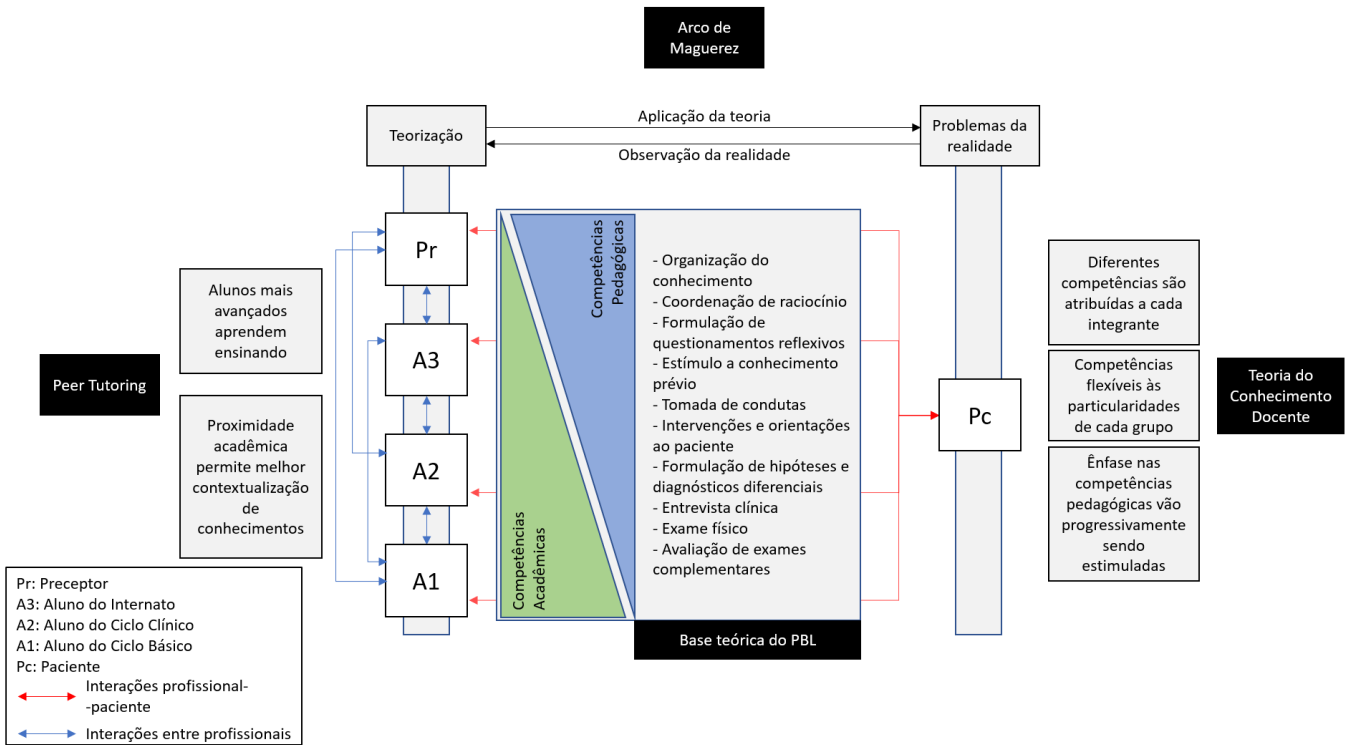
Figure 5 - The Teaching Knowledge Theory in the "Shared Clinic
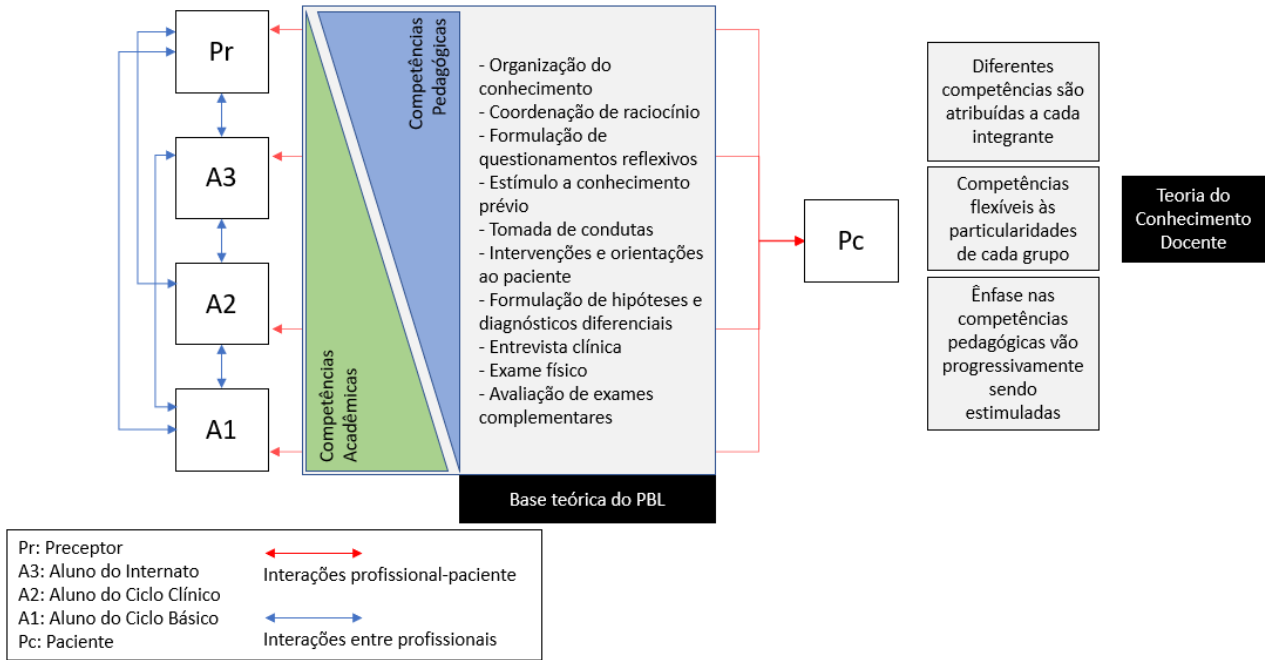
Source: Prepared by the author

From the union of these principles, the theoretical foundation of the "Shared Clinic" is understood as a construct, as seen in figure 7.

Figure 6 - Conceptual basis of the "Shared Clinic

Source: Prepared by the author

As previously mentioned, this is part of a master's thesis that seeks not only to build the theory of the "Shared Clinic", but also to validate it through a qualitative-quantitative field study with simulated student attendance. The intervention and data collection will be carried out later, and its results will be disseminated.

5 CONCLUDING REMARKS

The "Shared Clinic" has a solid theoretical foundation, and has the potential to serve as an important tool in the preceptor's arsenal within Primary Care, and potentially in other specialties. Given the importance of the theoretical foundation, it is understood that its validation and necessary adaptation will be fundamental to understand its effectiveness and functionality as a praxis.

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