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INTERDISCIPLINARITY AND INTERPROFESSIONALITY: A TEACHING-LEARNING STRATEGY IN THE PARASITOLOGY AREA[1]

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ABSTRACT

This article reports the interdisciplinary and interprofessional experience in the development of an extension course in Human Parasitology conducted by professors of the Federal University of Southern Bahia. The objective is to expose their contribution in the theoretical and practical construction of the course, showing the importance of interprofessional education and work in the health area. The Problem Based Learning Method was adapted and used to build nine theoretical meetings, two laboratory practice classes and one action within the community. As triggers of the discussions, problem-based situations built on local reality led the participants to search for information about the parasite under study. The interdisciplinary and interprofessional vision of the course provided an appreciation and a broadened approach of the theme through different experiences and knowledge brought from the participants' different areas of action.

Keywords: Parasitic diseases. Higher education. Interdisciplinary practices. Interprofessional relations.

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INTERDISCIPLINARIDAD E INTERPROFESIONALIDAD: UNA ESTRATEGIA DE ENSEÑANZA-APRENDIZAJE EN EL ÁREA DE PARASITOLOGÍA

RESUMEN

El presente artículo relata la experiencia de un curso de extensión en Parasitología Humana, con visión interdisciplinaria e interprofesional, conducido por docentes de diferentes áreas de la Universidad Federal del Sur de Bahía. El objetivo es exponer la contribución de esas docentes en la construcción teórica y práctica del curso, mostrando la importancia de la educación y del trabajo interprofesionales en el área de la salud. El método de aprendizaje basado en problemas fue adaptado y utilizado para construir nueve reuniones teóricas, dos clases de práctica de laboratorio y una acción comunitaria. Como disparadores de las discusiones, las situaciones-problema construidas con base en la realidad local condujeron a los participantes a la búsqueda de información sobre el parasito en estudio. La visión interdisciplinaria e interprofesional propició la valorización y el abordaje ampliado, por medio de las diversas vivencias y de los saberes traídos de las áreas de actuación de sus participantes.

Palabras-clave: Parasitosis. Enseñanza superior. Prácticas interdisciplinarias. Relaciones interprofesionales.

INTERDISCIPLINARIDADE E INTERPROFISSIONALIDADE: UMA ESTRATÉGIA DE ENSINO-APRENDIZAGEM NA ÁREA DE PARASITOLOGIA

RESUMO

O presente artigo relata a experiência no desenvolvimento de um curso de extensão em Parasitologia Humana, com visão interdisciplinar e interprofissional, conduzido por docentes de diferentes áreas da Universidade Federal do Sul da Bahia. O objetivo é expor a contribuição dessas docentes na construção teórico-prática do curso, mostrando a importância da educação e do trabalho interprofissionais na área da saúde. O método da aprendizagem baseada em problemas foi adaptado e utilizado para a construção de nove encontros teóricos, duas aulas de prática em laboratório e uma ação na comunidade. Como disparadores das discussões, as situações-problema construídas, com base na realidade local, conduziram os participantes à busca de informações sobre o parasita em estudo. A visão interdisciplinar e interprofissional do curso propiciou a valorização e a abordagem ampliada do tema por meio das diversas vivências e dos saberes trazidos das diferentes áreas de atuação de seus participantes.

Palavras-chave: Parasitoses. Ensino superior. Práticas interdisciplinares. Relações interprofissionais.

INTRODUÇÃO

The Federal University of Southern Bahia (Universidade Federal do Sul da Bahia – UFSB), founded in 2013, is sited in Itabuna and has two other *campi*, located in Porto Seguro and Teixeira de Freitas cities. The university has a *curriculum* composed by cycle courses: the first is formed by Interdisciplinary Bachelors (IB) and Interdisciplinary Degrees (ID), followed by specific professional career training and the postgraduate courses, the second and the third cycles respectively (UFSB, 2014). The IB offer a consistent foundation in the Humanities, Arts, Sciences and Health for students' initial contact with university life, and encourage more interactive and interdisciplinary work, allowing them to choose a safer career (TEIXEIRA; COELHO, 2014).

It is valid to remember the concept of interdisciplinarity as structured by Japiassu (1976), which shows the interaction between different disciplines as its main feature, resulting in construction of new knowledge that can be added to various areas. Therefore, interdisciplinarity goes beyond multidisciplinarity, in which there is only a simple juxtaposition of disciplines without the interrelation and formation of new knowledge.

Fazenda (2013, p. 20) considers that "interdisciplinary thinking assumes that no form of knowledge is itself rational. So, try to dialogue with other forms of knowledge, letting them interpenetrate them". For the author, interdisciplinarity should also consider the knowledge of common sense, because it is through everyday experiences that many learnings gain meaning.

Pereira & Nascimento (2016) remark that the watchword in interdisciplinary practice is dialogue, and the way it happens defines the productive or the interdisciplinary problem. Thus, it is necessary to create more adequate conditions for the effective introduction of interdisciplinary practice in Brazilian university institutions.

Already the concept of interprofessionality, according to Batista (2012), is linked to the notion of teamwork, marked by reflection on professional roles, problem solving and negotiation in decision-making, from the construction of knowledge, in a dialogic way, respecting the singularities and differences of the various cores of professional knowledges and practices.

In this context, we introduce the concept of Interprofessional Education (IPE), which, according to the Center for Advancement of Interprofessional Education (CAIPE, 2002), consists of "learning with", "learning from" and "learning about" each profession, among different areas, working together to solve problems.

Frenk *et al.* (2010) state that IPE is part of the third major revolution in Health Education. These revolutions were characterized by important changes in the formative paradigms in health. The first revolution adopted the science *curriculum*, the second focused on Problem Based Learning, and the third introduced Health Based System Teaching focused on prevalent locoregional problems. These authors also highlight the importance of IPE in bridging the gap between the needs of services and the training of health professionals.

Reeves (2016) and Nuim & Francisco (2019) add to the concept of IPE the development of collaborative skills, fundamental for a qualified teamwork that positively impacts the quality of care offered to individuals, families and communities.

Rossit *et al.* (2018), in a recent study, analyzed the perceptions of graduates from six health professions about training, from the perspective of IPE, and highlighted that, for participants, collaborative and interprofessional practice was important for development, construction and to reinforce vocational training in each area, by recognizing the specificities of other areas.

The reorganization of education, both in undergraduate and postgraduate courses, has mobilized important reflections on collaborative practices, teamwork and networks, integrating universities, workers and the community. The gap between teaching and health service scenarios has negative impacts and makes it difficult to train qualified professionals for the Unified Health System in Brazil (*Sistema Único de Saúde* – SUS) (FRENK *et al.*, 2010).

The UFSB was awarded in 2016 by the Education through Work for Health Program (*Programa de Educação pelo Trabalho para a Saúde* – PET-Saúde), GraduaSUS edition.[6] Among the proposals presented in the UFSB Project was the development of activities based on a diagnosis of the health situation in the community, considering the determinants and social constraints of the city of Teixeira de Freitas, in the state of Bahia.

In this way, one of the lines of action chosen was in the area of Parasitology, due to the observation of high parasitic morbidity in adults and children in Teixeira de Freitas. The project, entitled “Keeping an eye on parasitic diseases”, induce the creation of the extension course “Parasitic diseases in an interdisciplinary view”, covering the study of prevalent parasites detected in the results of feces exams, made available by the local laboratory’s management information system in the previous two years.

[6] Program from the Ministry of Education of Brazil that offers funding to proposals that include teaching-service-community integration. The participants of PET-Saúde develop activities in health units and in educational institutions which are linked according to selected projects approved by a Selection Committee.

This experience report proposes to present the planning and development of an extension course in an interdisciplinary view, aiming to: expose the contribution of teachers, with different degrees and teaching areas, for the elaboration of the theoretical- course practices; demonstrate the interdisciplinary format used in the construction of contents; describe a collaborative action with the local community as the culmination of the course and show the importance of education and interprofessional work.

METHODS

The extension course was developed at the UFSB (Paulo Freire *Campus*), using traditional classrooms and an interdisciplinary microscopy laboratory. The course lasted three months, totaling twelve meetings, one per week with four hours/class.

Course Planning

The planning of the course was executed by four professors working in the health field, among which two are graduated in Medicine, one with a specialization in Family Health and a master's degree in Collective Health, and another with residency, master's and doctorate in Pediatrics. One of the other two professors has a degree in Veterinary Medicine with a master's degree and a doctorate in this area, and the other has a degree in Mechanical Engineering with a doctorate in Health Systems Analysis. It was also possible to count on two volunteer monitors, City Laboratory's staff, and graduates in Biochemical Pharmacy, which expanded the group's professional plurality.

The course used the teaching methodology Problem Based Learning (PBL), which stands out among other active methodologies, configuring itself as a method applicable from a current problem situation (FIGUEIRA *et al.*, 2004). The problem situations were constructed through the contributions of the four professors and intended to present one group of parasites per session, as specified in Table 1.

The content of each meeting took into consideration the prevalent parasites detected in the fecal examination results in the two previous years in Teixeira de Freitas city. The first meeting consisted of the presentation and explanation of the activity plan (Table 1), the approach on parasite nomenclature and classification, and the basic conceptualization of intestinal parasitosis (most frequent signs and symptoms).

From the second meeting on, protozoa and helminths were studied through problem situations with an interdisciplinary approach. It was defined that in each meeting the following

topics would be addressed: classification, morphology and biological cycle, pathogenesis, clinical symptoms and signs, treatment, prevention, and laboratory diagnosis.

Each professional linked to the topics according to their expertise and educational practice, meaning that the veterinary professor contributed more intensely with knowledge about the biological cycles of the parasites; the engineer professor provided information related to the environment and prevention actions; and the medical professors presented the clinical implications for children and adults.

Table 1, structured by the professors, summarizes the schedule and structure of each meeting with the contents and parasites studied.

Meeting	Activity Plan / Selected Themes
1	**Why "Keeping an eye on parasitic diseases"?** [Presentation of the project and its history, epidemiology of parasites worldwide, in Brazil, by regions, and in Teixeira de Freitas/Bahia]. **Dynamics**: "Every Jack has his Jill" [Basics in intestinal parasitosis]. **Dynamics**: "Who am I?" [Nomenclature and classification of parasites].
2	**"Nailton and the eternal bellyache"** [*Entamoeba histolytica* and *Entamoeba coli*: classification of amoebas, notions of morphology and biological cycle, pathogenesis, clinical symptoms and signs, treatment, prevention, and laboratory diagnosis].
3	**"Doctor, I can't get off the toilet!"** [*Giardia intestinalis*: classification, morphology, biological cycle, pathogenesis, clinical symptoms and signs, treatment, prevention, and laboratory diagnosis].
4	**"There are roundworms everywhere!!"** [*Ascaris lumbricoides*: classification, morphology, biological cycle, pathogenesis, clinical symptoms and signs, treatment, prevention, and laboratory diagnosis].
5	**"The return of Jeca Tatu[7]!"** [*Ancylostoma duodenale*: classification, morphology, biological cycle, pathogenesis, clinical signs and symptoms, treatment, prevention and laboratory diagnosis].
6	**"A tapeworm in my life!"** [*Taenia saginata* and *Taenia solliun*: classification, morphology, biological cycle, pathogenesis, clinical symptoms and signs, treatment, prevention, and laboratory diagnosis].

[7] Character created by Brazilian writer Monteiro Lobato. Jeca Tatu is a very humble man living in poverty in the countryside of Brazil. The lack of a basic sanitary structure where he lives is reflected in his health, as he contracts the hookworm infection, known in Brazil as "*amarelão*" ("yellowing"). After Lobato's story, the disease came to be popularly known as "Jeca Tatu's disease".

7	**"After the river bath…"** [*Schistosoma mansoni*: classification, morphology, biological cycle, pathogenesis, clinical symptoms and signs, treatment, prevention, and laboratory diagnosis].
8	**"From the sample to the microscope! (Part 1)"** [Sample Processing and Laboratory Diagnosis] [**Practice**: Microscopic identification of cysts, eggs, larvae and adult forms of major parasites (protozoa and helminths)].
9	**"From the sample to the microscope! (Part 2)"** [**Practice**: Microscopic identification of cysts, eggs, larvae, and adult forms of major shellfish parasites].
10	**Project workshop developed by course participants** [Division of the class into three groups and proposal of an intervention project on the course theme by each group. Activity guided by professors since the first meeting. Moment of alignment of projects under the guidance of teachers].
11	**Project Presentation** Presentation of the projects built by the course participants in the classroom and definition of community development.
12	**Educational practice with the community**, with the theme "Keeping an eye on parasitic diseases".

Table 1 – Distribution of meetings of the extension course "Parasitic diseases in an interdisciplinary view"

Case elaboration (problem situations)

The problem situations were elaborated with the purpose of portraying the local reality and arousing the curiosity of the participants from common sense stories. We used names of literary characters, scenarios and titles with everyday terms, including the use of humor in order to increase the interest of the class for new knowledge about the parasite in question (Table 1).

It was necessary to adapt the Problem Based Learning method, considering that for the original PBL, the student has an extra-class period to study the content and present it in the next class. In this course, the introduction and the closure of the problem situation occurred at the same meeting. The main point conserved was to stimulate the student to use their previous knowledge on the reflections about the problem situation and, at the same time, to add new information to the existing ones, making the participant a builder of their learning.

Practical classes in the laboratory

The practical classes took place in the interdisciplinary laboratory. The participants were organized in pairs, and each pair was designated for one microscope. They were also given anatomical parts and slides for practice. In the first period of the class, participants received guidance on sample processing and techniques used for laboratory diagnosis. After that, at the benches, participants were encouraged to associate the knowledge they had acquired in the classroom with what they observed macro and microscopically. It is noteworthy that part of the schedule was reserved for collective discussion on practices to make participation more collaborative. These classes were supervised by a professor and assisted by the monitors.

Course Development

After planning the classes, choosing the themes and elaborating the problem situations, the organization of each meeting was designed to give visibility to the interdisciplinary and interprofessional attributes of the course. The program had the presence of four professors in all meetings and a period of intervention with the participants. Each meeting of the course was structured in four moments:

1. In a first moment, the problem situation was presented as a trigger for questions about the subject, and the participants were divided into small groups for study.

2. Then, the groups started the study by searching for nomenclatures, biological cycle, parasite pathogenesis and intermediate hosts, with the help of the veterinary professor. To understand the most common clinical forms of the diseases in children and adults, the diagnosis, treatment and prevention, the participants were guided by medical professors, and the approach on environmental and health promotion issues were guided by the engineer professor.

3. In the third moment, the participants presented what they were able to research, assimilate and integrate of knowledge.

4. The final moment occurred with the closure of the problem situation and the collective discussion, conducted by the professors.

Thus, the content scheduled for the meeting was closed, with the professors' integrated participation, as observed in the flow chart prepared by the authors (Figure 1).

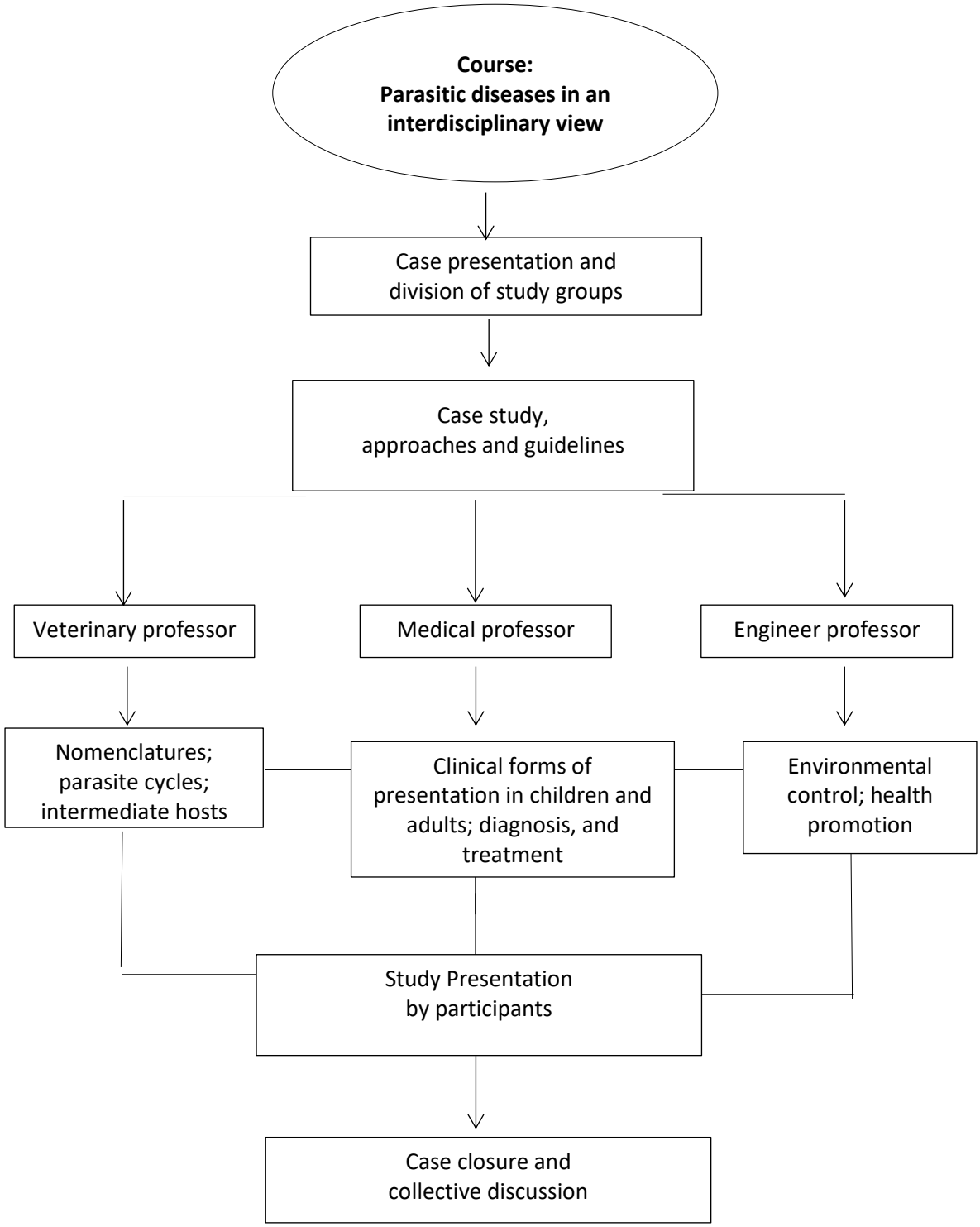

Figure 1 – Flowchart of the meeting at the extension course "Parasitic diseases in an interdisciplinary view".

Activity with the community

The last two meetings were planned to elaborate an action with the community in order to bring together professors, health professionals and students from the local community; consolidate the knowledge built during the course and portray a collaborative work. The construction of this activity took place gradually through meetings between the participants and teaching orientations. Preparations for the action were divided into presentation of food and hand hygiene techniques, exposure of environmental control measures, playful preparation of the main parasites studied for exposure and explanation of signs and symptoms resulting from these parasitic diseases, as well as guidance on other measures. Informative materials about prevention of diseases were used, such as posters, folders and plates, as well as models in three-dimensional format of the parasites. All the material made was produced by the students, with the guidance of the professors.

RESULTS

Thirty participants attended the course, including students from the Medical School, the Interdisciplinary Bachelor of Health at UFSB, and from the external community – a group of professionals from various areas that work in the municipal health network –, creating an audience that favored the construction and the sharing of information knowledge in a collaborative way. For the action with the community, other students from UFSB and members of the other groups of PET-Saúde were also present, resulting in forty participants in this activity.

The interactions between the professor made possible the integration of knowledge in the course planning process. That way, the constructions on the subject transcended the specific areas of expertise of each one of them, and the different professional competences were fundamental in the step by step guided classes by problem situations. Throughout the course development, the dialogue between professors and students, and within the students, that approached each of the problem situations allowed to enlarge the horizon of knowledge on the subject and to experience an environment of teaching, learning and interdisciplinary work.

Practical classes

The laboratory practices, that ocurred in two meetings, helped to consolidate the knowledge of the vital cycles of the studied parasites correlated with the clinic, with the indication and the interpretation of the main complementary exams in the Parasitology area, maintaining

the interdisciplinary format of the classes. In addition, these experiences favored the observation of good laboratory practices.

Action within the community

There were guidelines and demonstrations of hand and food hygiene, including commonly purchased products at fairs. The ludic feature was the highlight of this intervention, as was shown that it is possible to educate and make the population aware of small attitudes to prevent some diseases, as well as being a way to get closer to their reality.

This extension action of the course took place in the Municipal Market of the city that has a free fair in the same space. Saturday was chosen as a day of greater flow of people in the market due to the fair. The location allowed reaching the community of various neighborhoods that goes to the fair and the market, as well as the establishment's workers.

The proposed activities were carried out from the assembly of a circuit with points for each type of educational action. As planned, all professors, monitors and course participants attended the site and showed the importance of disseminating knowledge and actions related to parasites in an interprofessional view, strengthening teamwork and collaboration.

The community received the actions with great satisfaction, which could be observed by the large number of people circulating among the stands and attentive to the guidelines. The ludic part also contributed to the greater involvement of the community, and the interest in learning hygiene techniques, as well as to know the form and behavior of parasites in the human organism.

This experience was reported in the *Comunidade de Práticas* (Community of Practice), a virtual platform that enables the establishment of experience exchange communities between workers and managers of the three spheres of Brazilian government of the *Atenção Básica à Saúde* (Primary Health Care) service. This was done with the intention that these spaces interaction could result from collaborative and creative practice (BRAZIL, 2017).

This action corresponded to the last meeting of the course, and the participants were supervised, and their performance was graded by the professors, considering that this practice corresponded to the evaluative activity of the course.

DISCUSSION

interdisciplinarity is the meeting of different disciplines for the construction of a new knowledge, either in the pedagogical or epistemological perspective. In other words, it is a product by the intersection of different knowledges and disciplines. An interdisciplinary view must be present both in theory and practice, whether in the practice of social, pedagogical or research intervention (GATTÁS, 2006; NUIM; FRANCISCO, 2019; TEIXEIRA; COELHO, 2014).

In this context, it was possible to observe that the extension course “Parasitic diseases in an interdisciplinary view” promoted the encounter of different professors of Sciences and Health area to compose a program that covered several domains of knowledge in Parasitology. Interdisciplinarity and interprofessionality were also observed in the participants of the course, which consisted of undergraduates of Interdisciplinary Bachelor in Health and Medicine and health professionals, that were represented by doctors, nurses and pharmacists.

From this perspective, it was observed that the construction of knowledge, from different areas of formation and performances, favored interdisciplinary and interprofessional integration, especially with the sharing of this knowledge between professors, students, health professionals and the community.

It is necessary to emphasize that interdisciplinarity and IPE in Health courses in higher education are necessary for the transformation of the concepts and practices that guide the process of academic and professional formation. For this, it is important to reduce the fragmentation and the excessive specialization of knowledge, resulting from the isolation of the disciplines, which is such a common practice in most Higher Education Institutions (HEI) and questioned by some authors (BISPO; TAVARES; TOMAZ, 2014; GUIMARÃES; MAGALHÃES, 2016; TEIXEIRA, 2007).

It is known that, in a traditional format of Health Education, for a student to acquire all knowledge about parasitic diseases, he or she must attend at least three subjects and at different moments of his or her academic career: Basic Parasitology, Clinical Parasitology, Semiology and Practice in the Community with Health Situation Analysis. The course provided content learning, in an integrated and meaningful way, by the combination of professors’ knowledge in these different areas, in the same space and time. According to Japiassu (1976), interdisciplinarity refers to a level of cooperation that leads to interaction itself, that is, produces reciprocity in exchanges, meaning that at the end of the interactive process, each discipline comes out enriched.

The experience gained in the planning and execution of this course shows that, despite the challenges encountered, interdisciplinary actions in the teaching-learning process can be practiced in higher education since there is a guideline in the pedagogical project, a teaching team committed to methodological innovation, and institutional managers committed to effecting change (SOUZA *et al.*, 2012).

Peduzzi *et al.* (2013), analyzing the context of the training of health professionals in Brazil, reports that this is a characteristically uniprofessional training with small and punctual IPE initiatives. Multiprofessional actions focus on *lato sensu* undergraduate and postgraduate studies and extracurricular initiatives such as PET-Saúde.

In addition, active learning means knowledge, as it requires reflective attitudes committed to this process, in contrast to passive student attitudes commonly identified in traditional teaching classes (FELDER; BRENT, 2009; PRINCE, 2004). The extension course favored the discussion and the search for answers by the participants. Starting from situations of local reality, were generated questions that demanded research, reflection and the construction of new knowledge. The diversity of teaching practice areas and health professionals favored the enrichment of the discussions that were overwhelmed by the protagonism of the participants.

According to Ebling *et al.* (2012), extension actions in underserved areas are a priority for the humanized training of health professionals. With these actions, it was possible to verify that there is a lack of information on parasites and that basic Health Education actions are simple and accessible measures for the whole population, regardless of socio-cultural and economic conditions. Considering the skill with which the group conducted the experience with the community, it was concluded that the lessons learned in the classroom were significant and resignified.

According to Anastasiou (2002), in "teaching strategies",[8] the process of teaching and learning requires a working environment that one can "taste" the knowledge in question. The author also reinforces that the taste is perceived by the students when the professor teaches a certain area that he or she also tastes, in professional daily life and/or research, and socializes with their partners in the classroom.

[8] Free translation of the term "*ensinagem*".

FINAL CONSIDERATIONS

The idea of the formation of this extension course was born from the need to establish the expertise of each professor regarding their experiences with interdisciplinarity and the use of active methodologies. The results of this experience have shown that it is possible to transform a traditional course or class into a meaningful learning process for both academics and health professionals, who are little used to long theoretical classes.

The results achieved also reinforced the need to include interdisciplinarity and interprofessionality in the undergraduate *curriculum* components and in extension and postgraduate courses as an alternative to reduce the fragmentation of knowledge, still present in HEI.

The UFSB has interdisciplinarity present in first cycle courses and as one of the guiding principles of its Pedagogical Political Project. However, it is necessary to encourage professors to participate even more in IPE, especially in vocational courses, corresponding to the second cycle.

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