

# Producing research, training, health, and education in the teaching-service-community integration\*

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## Brief explanation and introduction to the text

In 2010, the Botucatu Medical School (BMS) was selected in the public notice no. 24/2010 of the Coordination for the Improvement of Higher Education Personnel (Capes, as per its acronym in Portuguese), in a partnership between this institution and the Brazilian Ministry of Health (MH). This initiative, devised in the scope of the Brazilian Program for Teaching and Research Support in Strategic Areas (PRONAP, as per its acronym in Portuguese), designed a series of policies and inducing actions, carried out by the Brazilian Ministries of Health and Education, to consolidate the Unified Health System (SUS, as per its acronym in Portuguese). This process aimed to promote and expand the training of professors and development of research about teaching in different health areas, in existing and consolidated graduate programs. The proposal of the Pró-ensino na Saúde public notice was inserted in the Brazilian Policy for Health Professionals Training, which began to be implemented in 2003 in the MH. The projects could be suggested by groups of professors and researchers from public and nonprofit private institutions<sup>1,2</sup>.

The projects had to be developed between 2011 and 2016, and their execution should last five years at most. It was assumed that, by encouraging the creation of branches or concentration areas on teaching in graduate programs, it would be possible to improve teaching training in graduate courses, and, consequently, contribute to progressing changes in health undergraduate courses, especially during the expansion in the number of vacancies and degree programs that the country was experiencing.

The public notice took in account that, despite the diversity of topics referring to health teaching, priority would be given to the following thematic areas: health teaching management; curriculum teaching-learning processes in health undergraduate and graduate courses; evaluation in health teaching; teaching training and development in the health field; integration between universities and health services; integration policies between health, education, and science and technology; and face-to-face and online technologies in health teaching<sup>1</sup>.

The selected project "Integration between universities, health services, and communities at the BMS: setting up new training and research practices" had the

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objective to develop and consolidate support to research and teaching in the health field by improving undergraduate and graduate teaching, thus contributing to expanding, strengthening and qualifying the development of research, knowledge production, and training in the “integration between universities and health services” thematic area. The project intended to train masters and doctors involved in the creation of health graduate courses by carrying out studies that problematized their practices in the SUS formation process.

The development of research on undergraduate teaching in primary health care (PHC) was the object of these investigations, and professors, healthcare professionals, and students involved in teaching processes oriented to SUS training challenged themselves to examine the professional training obtained through PHC practice. The initiative was planned to increase the understanding of the insertion of students in basic health units and basic family health units, under the professional supervision of a professor-tutor; curricular integration between medical and nursing courses, and between these and the family health multiprofessional residency program; bonding with local communities, health teams, and social equipment of the areas covered by health units; development of activities with insertion in health work practices; prioritization of activities with social relevance, based on problem-solving, in the context of each territory; expansion of the dialogue healthcare professionals establish with themselves, population, and managers; development of teaching and learning activities to help consolidate SUS; and pedagogical training and innovations coordinated with education through work, changes in BMS teaching practices, and national reforms and proposals, including the relationship with and development of the Brazilian curricular guidelines (BCG).

The objectives of the present paper were to report the experience of BMS in the development of research, knowledge production, and training in health teaching, and present the results of the investigations carried out after the selection of the institution in the Capes Pró-ensino na Saúde public notice.

Authors that dialogue with the following studied themes made up the theoretical framework: problem-solving education in the health field; problem-solving methodology; community teaching; integration between university, service, and community; continuing education of professors and healthcare professionals; and interprofessional education in the health field.

The present paper is a report of an exploratory project, which can be denominated so for bringing up problems with little accumulated and systematized knowledge, such as healthcare workers as professors, interprofessional education in PHC in higher education, and home visits in the training of doctors. The nature of the approach reveals that it is an intervention study, whose main goal was to build knowledge to impact changes in health training, marked by the commitment to propose the investigation of problems identified in the teaching practice to establish actions to tackle the issues in a participative way.

It is important to stress that, although the focuses of the studies were the development and evaluation of a set of implemented subjects, as in a case study, some investigations did not limit their scope to the analysis of this methodological method, and elaborated on other models of PHC teaching and dialogued with Brazilian experiences in the teaching-service integration.

### **The participation of BMS in Pró-ensino na Saúde**

Since its implementation in 1963, BMS has been involved in questions concerning medical education and its renewal movements, offering an education that values the active role of students in the learning process, with moments of integration between theory and practice. It is experiencing the beginning of the cooperation between teaching and services, with the participation of several departments and subjects.

In the past three decades, BMS has promoted actions to suit its teaching to the health needs of the population, and meet BCG. In 1989, it implemented the undergraduate nursing course, with a curriculum that incorporated the proposal of training in different healthcare levels.

In 2001, the school instituted the Pedagogical Support Center, first to back up the need to change the curriculum of undergraduate medical courses, and later to extend the measure to nursing

courses. The conception of the center presented the following objectives: to formulate a proposal for continuing evaluation of medical teaching, to offer technical support to changes oriented to improve teaching, to promote teaching training focused on the learning of methodological innovations, to develop research on medical education, and to expand teaching spaces in SUS. The idea was to simultaneously support external demands, such as the necessary adaptation to BCG, and internal requirements, for instance a larger academic production on health teaching.

The Secretariat for Work and Education Management in Health, created in 2003, added to the process of curriculum change in BMS by supporting initiatives that aimed to coordinate the management and service network with professional training institutions, focusing on comprehensiveness and continuing education.

An innovative educational activity was proposed in BMS in 2003, as a direct result of the participation in these programs: the University-Service-Community Interaction (IUSC, as per its acronym in Portuguese). Originally implemented as a complementary activity, it became a set of regular and mandatory subjects of the medical undergraduate course in 2007, and of the nursing course in 2008, introducing both degrees in interprofessional training.

The subjects called IUSC I, II, and III are taken from the first to the third year of the course in the medical school and in the two first years of the nursing course. Consequently, PHC pervades the two courses in all their years; in these cases, in the form of interdisciplinary, interdepartmental and interprofessional subjects. In the first year, there is a valorization of territory study and family follow-up, with emphasis on the development of community life, communication and narratives. The second year focuses on dialogic education in communities, and follow-up of the same families, with a focus on their health and community-related questions. The third year emphasizes expanded clinical medicine. The whole project is based on education through work and is developed in small groups of students inserted in a PHC territory.

There are approximately 120 students each year, 90 in the medical course and 30 in the nursing one. To develop activities, they are split into two mixed groups, under the supervision of a professor-tutor.

The activities of these subjects take place in partnership with the Botucatu Municipal Health Secretariat and community leaders, and have been offered with the participation of professors from BMS and professionals from the PHC network, designated professors-tutors, who have different backgrounds in the healthcare and education areas. This deliberate choice had the objective to provide students with the interprofessional interaction in different teaching scenarios. Consequently, professors and PHC professionals work together in teaching, in a process of continuing education. This outline underwent several restarts and reviews during the work developed in the subjects, and prompted the need for constant negotiation with BMS and the Botucatu Municipal Health Secretariat.

Despite the importance of the expertise and variety of professionals in the board of professors-tutors of IUSC, it is undeniable that these facts rose reflection and conflict at BMS since the implementation of the subjects.

The design of these subjects, and the need for a critical and reflective look at them and similar experiences in other higher education institutions made clear the necessity to carry out studies, knowledge production, and training in health teaching in the interface between universities and health services at BMS.

Following this path, a group of professors-researchers saw the Pró-ensino na Saúde public notice as an opportunity to promote the valuing of research on PHC teaching. Concurrently, it was noticed that the project could boost new studies about pedagogical training, teaching practice, and quality of teaching in PHC.

Systematizing and socializing the present manuscript resulted in knowledge and appropriation of this know-how, this way to ponder the routine of health teaching and education through work, originating questions, and creating and improving collective constructs between professors, students, workers, managers, and users. Given this scenario, the authors of the present study invite readers to read, criticize, assemble, and disassemble the products of this research project.

## Pró-ensino na Saúde at BMS: producing research, training, education, and health

The project discussed in the present paper belonged to the Development and Analysis of Technologies and Processes for Training of Healthcare Professionals line of research of the graduate program in collective health of BMS.

Taking into account that PHC teaching practices deal with an ethnical-technical-political project to train professionals to work at SUS guided by care comprehensiveness and teamwork, Chart 1 lists the objectives and main findings obtained in investigations resulting from Pró-ensino na Saúde, followed by excerpts to illustrate their potentialities.

**Chart 1.** Objectives and main results of the studies carried out in Pró-ensino na Saúde, Botucatu, 2018.

Reference	Objective	Results
3	To understand the meanings, conceptions, and perceptions of professors-tutors regarding their work at [N. N.: cut off for peer review purposes], and to elucidate the contribution of this experience to their training.	Professors evaluated that the exchange of experiences and the collective planning of the activities strengthened the subject. The difficulties spotted to develop activities at [N. N.: cut off for peer review purposes] were related to the problem-solving methodology and the insertion in teaching activities in outpatient SUS settings.
4	To analyze the tensions and potentialities of the interaction between undergraduate students from a public university and workers in the PHC routine.	Promotion/prevention actions and the exchange of knowledge between students and professionals were identified as positive aspects by the latter, but they also pointed problems that have to be overcome: limitation of time and space in the units, and of coordination with the people involved. Primary healthcare settings have become a fundamental domain to train healthcare professionals that meet SUS principles.
5	To know the profile of families that received home visits by freshmen and sophomores of medical and nursing courses as an assignment of the [N. N.: cut off for peer review purposes] subject at [N. N.: cut off for peer review purposes].	Analysis of results enabled to know the characteristics of the members of the household, the conditions of the family life, the environment and how these people lived. It was found that there were no significant differences between the selected families in two consecutive years.
6	To understand the experiences and perceptions of students about the subject; to identify, describe, and analyze the main addressed themes; to inspect journals considering them as potential instruments to evaluate students' training	The "student journal" proved a powerful instrument in the teaching-learning process, covering the emotional, pedagogical, cognitive, and communicational spheres. It allowed to monitor students' apprehension of the aspects related to expanded clinical medicine in the [N. N.: cut off for
7	To explore and recognize the meaning of health teaching practices considered problematizing according to the view of medical and nursing professors and students.	The theory/practice relationship of activities with communities and the use of problem-solving methodologies were evaluated positively by professors and students. The latter recognized values and postures of problematization in the training process, and tutors admitted its application beyond the subject. The study brought up tensions, such as the difficulty to deal with heterogeneity in problematization.
8	To analyze the process of teaching and learning in home visiting in the medical undergraduate course, from conceptions of professors that work at medical schools that participated in PROMED and/or Pró-saúde and in incoming medical residents at [N. N.: cut off for peer review purposes].	Home visits inserted in PHC are shown as a privileged training setting, valuing SUS principles, and contributing to expanding health care in a social context. According to the professors, home visits provide the establishment of more horizontal relationships and exchanges between students, professors, workers, and families. The residents' perspective emphasized visits as opportunities to guide on care, with normative actions and unidirectional communication.

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Chart 1. continuation

Reference	Objective	Results
9	To analyze how the training proposal of medical undergraduate courses is seen regarding the interaction between universities, services, and community in pedagogical projects, through statements of coordinators of medical courses and coordinators of subjects whose practice setting is primary care.	The study reported the perception of the pedagogical-political project as having structural and pedagogical problems concerning the understanding of the proposal itself, which affects the role of teaching in PHC. Although PHC is considered extremely important in the training process of future doctors, it is still seen in an isolated and out-of-context way in the professional dynamics of professors, which impacts the training of students in these institutions.
10	To evaluate the preference and satisfaction of medical and nursing students in the use of different technologies in higher on-site education in the [N. N.: cut off for peer review purposes] subject, regarding the learning style of the students.	Regardless of the course (medicine or nursing) or gender, there was a predominance of the reflective learning style among students. Different learning styles did not reveal disparities in the preference for the use of distance education tools, but there was a preference for and a higher satisfaction with Facebook in comparison with Moodle.
11	To understand the perception and experience of interprofessional education in the [N. N.: cut off for peer review purposes] subjects among students from medical and nursing courses from [N. N.: cut off for peer review purposes].	The reports pointed to a better understanding of others: colleagues from a different course, professionals from other areas, and patients themselves. This provided the sharing of knowledge and the approximation with the upcoming professional practice, extending the grasping of PHC concepts and practices and encouraging interprofessional and collaborative practice. The stereotypes of professions represented barriers to interpersonal relationships, and the specific skills of professions were valued, reinforcing the traditional teaching model. Professors-tutors were identified as both fundamental players in the teaching-learning process and people that limited learning for having a professional background different from the students.
12	To analyze and characterize three pedagogical strategies (supervised patient assistance, with frequent follow-up visits guided by an extended anamnesis script) adopted in the [N. N.: cut off for peer review purposes] subject, regarding their theoretical and pedagogical bases.	The strategies contributed to developing clinical skills related to an extended understanding of health and problems by training relational and communicational competences. The supervised assistance was construed as a natural and gradual process that prepares students for the upcoming years. Frequent follow-up visits favored bonding, which is important to building trust relationships and monitoring results. Scripts were useful to evaluate the appointments, and revealed some of their weaknesses.
Guerreiro DCG. O ensino da clínica ampliada na atenção primária à saúde: percepções, vivências e práticas de professores tutores e alunos de graduação médica Botucatu (SP): São Paulo State University; 2018. (Study in progress).	To recognize the practices of professors-tutors and students in the context of the IUSC III subject.	Study in progress.
Bravo VAA. A formação do profissional de saúde na atenção primária: desafios e metas para a qualificação do SUS. Botucatu (SP): São Paulo State University; 2018. (Study in progress).	To analyze the possible influence of the implementation of programs such as Pró-saúde and Pet Saúde to promote changes in teaching institutions and the training of PHC professionals.	Study in progress.



The studies listed in Chart 1 originated six academic master's degrees and six doctorates that were published as books and scientific papers, and disseminated in scientific conferences, among other forms.

The professional training, teaching methods, and PHC teaching themes were investigated from different perspectives, from the point of view of medical and nursing undergraduate students to healthcare professionals, such as doctors, nurses, dental surgeons, health community agents, nursing technicians and/or aides, and coordinators of health courses and subjects/modules related to primary care.

All the studies reported in the present paper were approved by the BMS Research Ethics Committee, in accordance with resolution no. 466/2012, which instituted guidelines and norms that regulate human research<sup>13</sup>. The majority of the investigations were qualitative, and sought to understand the examined experiences and the perceptions associated with them, by agents involved in the processes and relationships established between interlocutors<sup>14</sup>.

The instruments used to collect data were mostly semi-structured interviews, documentary analysis, focus groups, and questionnaires. Data organization, on the contrary, was carried out in multiple ways, such as the content analysis method proposed by Bardin<sup>15</sup>, the creation of categories set in meaning and sense nuclei with analysis by a historical-cultural approach, and Vigotski's explanation method<sup>16</sup>.

Overall, the studies posited the important role of teaching institutions in the training of future healthcare professionals, and the relevance of teaching methods that potentiate the teaching-learning process, such as interprofessional education and the problem-solving methodology. Additionally, the relationship between PHC services, teaching institutions, and undergraduate health students stood out as one of the most prevalent topics.

I think that, from the moment you begin practicing, for instance as nursing students, on the second year, and the medical students, on the third year [...] we begin to realize the benefit that IUSC has brought. Understanding why we work the way we work and how it changes our knowledge, our future professional life. So I think that in the end, when our training is over, we see how important it was<sup>11</sup>. (p. 68)

Nevertheless, it is known that Brazilian higher education institutions still apply the traditional and hegemonic teaching model, which compartmentalizes knowledge, and leads to professional silos, and inefficient and little resolute teamwork. Their practice setting is a care model focused on disease and subordinateness of health professionals to the medical work<sup>17</sup>.

Given this panorama, and the need to change professional training to achieve a better integration of teaching with health services and improve the relationship between different health professionals, interprofessional education has been pointed as a tool that can promote alteration in teaching settings toward efficient practices to cope with social and health problems<sup>18, 19</sup>.

In 2010, the World Health Organization issued a report entitled Framework for action on interprofessional education and collaborative practice, which pointed that interprofessional education happens "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes"<sup>20</sup>. (p. 7)

Taking into consideration that few Brazilian institutions use interprofessional education as a basis for the teaching-learning process to promote a future collaborative practice between healthcare professionals<sup>17</sup>, this teaching tool was the topic of one of the studies, in which students saw colleagues from different backgrounds as a source of learning, leading to a greater collaboration between students in activities at BMS<sup>11</sup>.

I think it is one of the most interesting subjects of the course [...] for having new people in our groups [...] people from the nursing course [...] to be able to exchange knowledge with them [...] because most times people bring new things, we can share knowledge, opinions, and even confront them [...] <sup>11</sup>. (p. 63)

This investigation disclosed the perception of shared work as an important way to reach care comprehensiveness, although the stereotypes of professions have been mentioned as barriers in interpersonal relationships. It was also possible to identify professors-tutors as the people who mediated or limited learning, for having a professional training different from the students', and as a fundamental key in the mediation of the whole teaching-learning process<sup>21</sup>.

Student knowledge sharing takes place in these subjects not just through the interprofessional practice, but also the problematizing education, used as a teaching method that enables students to be co-responsible for their learning and to be trained to work as professionals that can formulate solutions when faced with problems<sup>21</sup>.

Working on problematization involves discovery, autonomy and initiative resulting from provocations that encourage thinking and prepare students to have a critical consciousness. In addition, it allows a new interpretation of the world, which guides on its transformation<sup>21</sup>.

Another study showed that, through the activities developed with communities in the set of subjects, students could understand the power of education as a social transformation tool, and recognize the tensions resulting from dealing with problematizing teaching practices. The investigation highlighted the presence of constructive and questioning dialogues among the people involved and the bet in transformative actions<sup>7</sup>.

Students indicated that after they took the subject they began to value health education as a transformation vehicle and construe it as crucial to every healthcare professional<sup>7</sup>:

[...] awareness of the importance of health education and the different forms and situations in which it can be carried out<sup>7</sup>. (p. 79)

[...] I think it is necessary to discuss health education. By understanding that I have a mission as a transforming agent in my profession [...].<sup>7</sup>. (p. 79)

Students also stressed that performing activities with communities favored a problematizing health practice<sup>7</sup>:

[...] we always did it as to address children so they told how they washed the hands, if they did so, taking into account their habits and making them feel comfortable<sup>7</sup>. (p. 79)

[...] working on a conversation circle in which everybody could talk about their knowledge, enabling guidance based on the reality experienced by each one<sup>7</sup>. (p. 79)

At this point, it is necessary to emphasize praxis as one of the central topics of the problematization methodology, because students have the opportunity to surpass their spontaneous point of view and evolve toward a reflective, informed, and creative professional consciousness<sup>23</sup>. It is fundamental to stress the role of professors-tutors in the subjects as people who coordinate health services with universities, taking into account that they try to keep an equal, democratic, and socially built relationship with students, mediated by the use of teaching tools (problematization and interprofessional education)<sup>22</sup>.

This relationship is clear in one of the investigations mentioned in the present paper, through the following report:

[...] we had a great need to study and discuss, because we did not know how to do it, we knew we had to do it differently, but had no idea what this difference was, and it was... I think it was the theoretical mark on which we based to develop the anamnesis in the third year, because we had to formulate something different, and we did not know where, but... many people had already thought of this, so we got close to them and kept studying [...].<sup>3</sup>. (p. 73)

The pedagogical training of professors must be inserted in the movements of creation and building of a new consciousness. To achieve that, it is usually necessary to make emerge the 'whys' and 'hows' of being a professor, based on a collective and continuous reflection process about the personal experience, providing thus an aware teaching action that develops the potentiality of professors to search for solutions and optimize capacities by conjugating beliefs, values, and knowledge<sup>23</sup>.

I think that the training work was very important. Because first we transformed ourselves and you would problematize with yourself, and only then do it in the student group [...] we really felt part of the process, and then... wow! We grew so much, felt like a subject, and you can only treat others as subjects when you feel like one yourself. So I think this was all very interesting. The dynamics, when we felt embraced, and then you feel comfortable to speak your mind, without getting afraid that other people say oh! you are wrong! So I think this was really important, the meetings were very important and a lifelong learning. We can learn with life only [...]³. (p. 135)

This study, dedicated to examining the role of professors-tutors, made clear the recognition of the existence of a work that aimed to provide students with knowledge, and empower them to play their part as educators with more confidence<sup>3</sup>. Professors should have the opportunity to be protagonists in their work, that is, to be free to make decisions and define alternatives for their teaching activities<sup>24</sup>.

It is noteworthy that these policies enabled teaching institutions to adjust their practices to make them compatible with SUS principles and guidelines that allowed their coordination with health services.

In that sense and taking into account the relevance of these policies, one of the topics prioritized as the subject of one of the studies looked at the role of 2001 BCG when curricular changes are posed. This investigation identified in three medical schools in the state of São Paulo the depreciation of PHC in medical courses, the tensions between universities and services to perform teaching in communities, and the distance between the academic standpoint and the teaching practice<sup>9</sup>, which contradicts what health undergraduate BCG establishes to be a "contextualized practice" in different teaching settings since the beginning of training<sup>25</sup>.

Another study about community teaching and the interaction between services and universities analyzed tensions and potentialities of the relationship between medical and nursing undergraduate students and PHC workers in healthcare services<sup>4,26</sup>.

The main positive aspects pointed by professionals were: the richness of the contact with students, which encourages them to search for new knowledge; the achieved learning, which qualifies them and enables them to expand care practices in new care branches; the incentive they receive to break out of convenience and consolidated conduct standards; and the gratification they feel for contributing to training future professionals, fitter to work on SUS<sup>4,26</sup>.

Despite the overall positive feedback, the publications presented elements that still need to be explored and refined by the proposal coordinators, in the spheres of both university and service management and coordination. A few examples of aspects that should be improved are: need to better adjust the activities between teaching institutions and services, in consonance with the local specificities; better planning and organization of conjoint actions with teams, taking into consideration the reality of each territory; and the importance to carry on the proposals over time, instead of executing them sporadically<sup>4,26</sup>.

## Final considerations

The scientific production examined in the present paper showed how Pró-ensino na Saúde was powerful and strategic in the fulfillment of the objective to make health professionals more prepared to meet the health demands of the population, and develop team and collaborative work. The



project originated academic research in priority areas for health work on SUS, and helped qualify graduate students in the collective health field, with a focus on professional training. It allowed for partnerships between several subjects and spaces involved in the professional training of students regarding community teaching, and also offered an opportunity to discuss the use of active teaching methodologies that could better train doctors and nurses.

The making of knowledge in different moments of community teaching caused the interaction between universities, services, and communities to get stronger, in the form of student training, a greater appropriation of the theme by professors, and the continuing education of the professionals involved.

It is possible to state that the integration experiences adopted by BMS and promoted by the IUSC subjects over time are currently recognized and legitimized by different professionals in several settings.

#### Authors' contributions

All the authors actively participated in the writing, discussion, and review of the manuscript, and the approval of its final version.

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### **Producing research, training, health, and education in the teaching-service-community integration**

The present study is an experience report about the development of research, knowledge production, and training in the interface between university and health services, based on the Pró-Ensino na Saúde program (Capes public notice no. 24/2010). It presents problem-solving education, interprofessional education, permanent education of healthcare professionals and teachers, and Brazilian Curricular Guidelines as drivers to a professional education committed to the development of the Brazilian National Health System, focused specifically on valuing the integration between public universities and health services. The investigations carried out approached different dimensions of teaching in primary health care involving pedagogical practices, teaching education and development, performance of healthcare professionals as teachers, pedagogical innovations, and questions related to health work practices. A fragility in the organic relationship between university and primary care, and innovations that pace toward rupture with the instituted teaching method were pointed in the richness and diversity of the studies found.

*Keywords:* Higher education. Primary health care. Interprofessional relations.

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