

## The Teacher Education and Other Educational Agents, New Technologies and Learning Environments research line: origin and trajectory

A linha de pesquisa Formação de Professores e Outros Agentes Educacionais, Novas Tecnologias e Ambientes de Aprendizagem (PPGE-UFSCar): origem e trajetória

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### Abstract

It is presented the origin and trajectory of the Teacher Education and Other Educational Agents, New Technologies and Learning Environments research line (PPGE-UFSCar). In order to do so, we address the main problems researched, theoretical and methodological references adopted, the main results evidenced in the investigative processes carried out and in the training of researchers conducted by the participants of the research line over the last 40 years.

**Keywords:** Teacher education. Postgraduate studies. Teachers' learning and professional development.

### Resumo

Apresentam-se informações sobre a origem e trajetória da Linha Formação de Professores e Outros Agentes Educacionais, Novas Tecnologias e Ambientes de Aprendizagem (PPGE-UFSCar). Para tanto, são abordadas as principais problemáticas pesquisadas, referências teóricas e metodológicas adotadas, principais resultados evidenciados nos processos investigativos realizados e na formação de pesquisadores conduzidos pelos participantes da linha ao longo dos últimos 40 anos.

**Palavras-chave:** Formação de professores. Pós-graduação. Aprendizagem e desenvolvimento profissional da docência.

### The origin

The research line of the Postgraduate Program in Education - PPGE/CECH/UFSCar<sup>3</sup> entitled Teacher Education and Other Educational Agents, New Technologies and Learning Environments has historically been linked to the creation, expansion, and complexification of the Center of Education and Human Sciences of the

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Federal University of São Carlos. It has its roots in the Institute of Educational Technology (in the early days of the creation of UFSCar) and in the subsequent departmentalization process of CECH in 1986.

The Institute of Educational Technology (1970), the birthplace of the Center of Education and Human Sciences, was conceived as a space for teacher training and investigation of training processes in order to feed education. Initially, the educational processes of science and mathematics teachers are considered, undergraduate teaching degrees present in the beginning of the Federal University of São Carlos. The conception of teaching processes explained in the Pedagogical Plan (MAIA, 1970) already explicitly involved concern for the professionalization of teachers, the consideration of a knowledge base for contextualized teaching that contemplated a solid theoretical and practical formation considering both specific knowledge of the subject (in the case of initial degrees, Mathematics and Sciences) and pedagogical knowledge, expansion and diversification of the cultural repertoire, development of investigative posture and of experimentation in relation to educational technology and to computer-assisted teaching, in terms of the plan itself.

Likewise, this line originated in the scope of the creation of the Master's Program of UFSCar (UFSCar/FCC, 1975)<sup>4</sup>, with the area of concentration on Teaching Planning, which became, in 1981, the area of concentration on Teaching Methods, until the restructuring of PPGE-UFSCar in research lines and no more in areas of concentration, in 2010. First, it was linked to the Department of Teaching Methods, formerly the Department of Educational Technologies and currently to the Department of Pedagogical Theories and Practices (DTPP). The area of concentration of Teaching Planning became Teaching Methods in the first years of operation of the Master in Education of UFSCar, having at its core the teaching and learning processes. It is within the scope of this area of concentration that the line of research Teacher Education and Other Educational Agents was configured, which was expanded to the current line of Teacher Education and Other Educational Agents, New Technologies and Learning Environments.

In its conception, the Master of Education of UFSCar, which also counted on the collaboration of professionals from the Carlos Chagas Foundation and the Pontifical Catholic University of São Paulo, involved the very clear delimitation of two areas of concentration, namely "Educational Research" and "Teaching Planning", to be developed in a curricular organization conceived in modules and that would guarantee a common trunk to the two areas of concentration and later differentiation for the specificities of each area, as well as the type of knowledge to be produced in the researches. At the beginning of the Program, one area, the Educational Research area, was devoted to basic research, while that of Educational Planning

<sup>4</sup> In the elaboration of this article, we cannot forget to name the teachers who, over time, have been linked to the research line Teachers Education and Other Educational Agents, New Technologies and Learning Environments and that helped in its construction: These are (in alphabetical order): Betty Antunes de Oliveira, Claudia Raimundo Reyes, Clovis Osvaldo Gregorin, Dácio Rodney Hartwig, Daniel Ribeiro Silva Mill, Décio Pacheco, Dionísio de Oliveira, Eda Therezinha de Oliveira Tassara, Eglê Pontes Franchi, Elizabeth Tunes, Emiko Uemura, Emilia Freitas de Lima, Fermio Fernandes Sisto, Júlio César Coelho de Rose, Maevi Anabel Nono, Márcia Brito de Oliveira Bueno, Marcia Rozenfeld de Oliveira, Maria Celia Cota, Maria Aparecida Foresti Ferreira da Costa, Maria Benedita de Lima Pardo, Maria Cecília Raphael de Goes, Maria Iolanda Monteiro, Mario Arturo Alberto Guidi, Myrtes Alonso, Nivaldo Nale, Petronilha Beatriz Gonçalves e Silva, Regina Bochniak Pereira, Regina Maria Simões Puccinelli Tancredi, Rosalia Maria de Aragão, Roseli Pacheco Schnetzler, Roseli Rodrigues de Mello.

was intended for the production of applied research that, in today's experience with Post-Graduate Programs, would resemble much more in its characterization what is understood as professionalizing masters, as can be illustrated by the text below. Although innovative at the time, in concrete terms the coexistence of areas has never been a tranquil one by their own characterization and complicated individual translations, such as an area intended for those who think and another area for those who act. In line with the PNPG which postulated at the time:

[...] the need and desirability of postgraduate programs aimed at the creative performance of roles, whether university professor or researcher, or specialist, we propose, to UFSCar the present course plan of Postgraduate course in Education whose structure will allow the preparation of university professors who are also able to be researchers in education - either at the level of fundamental research (concentration on Educational Research) or in applied research or technical development (concentration on Teaching Planning). Thus, although two areas of concentration are defined as more intensive training - one that allows for the acquisition of knowledge and skills more linked to educational research, understood as basic research, of a non-immediate nature, and **another that allows the formation of a problem-oriented specialist of curriculum and teaching that investigates and produces knowledge of a more utilitarian and immediate nature, applied to specific problems and narrow scope** (our emphasis) - both will be linked through a common fundamental formation a same basic general objective: the postgraduate qualification for the development of creative activities in the field of education, with an attitude of permanent openness to research (UFSCar/FCC, 1975 in SAVIANI & GOLDBERG, 1976, p.82).

The original curricular organization was made up of five modules that comprised disciplines and activities. The disciplines offered may be embedded in fundamentals of education and educational research. The disciplines most directly linked to the Teaching Planning line were allocated in the last module. The activities, which permeated the various modules, were of a practical nature such as: problem solving simulation laboratory, dissertation preparation, discussion forum, research project laboratory and teaching program laboratory, respectively distributed among modules 1 and 5). The general objectives outlined in the curricular plan involved the development of skills, attitudes and values necessary to:

1. Continuous analytical-reflexive behavior, capable of guaranteeing a critical, creative and responsible decision-making process in the face of professional or social situations;
2. Effective performance of professional roles, whether as a university teacher, as an educational researcher or as an expert. (UFSCar/FCC, 1976, p. 5)

The original proposal for each area of concentration was innovative when thinking about the emphases of basic research and applied research. In the case of the current line Teacher Education and Other Educational Agents, New Technologies and Learning Environments it is also about having knowledge

production space, considering both basic and applied research. By promoting spaces for the professional development of teaching, at the same time it develops applied research, focusing, for example, on learning objects, research intervention, learning environments. In seeking to investigate and understand the nature and dynamics of teaching-learning processes, one invests in basic research on teacher thinking. As can be seen below, the development of the line accompanies international trends of research on teacher education, teacher learning, learning communities, and teachers professional development.

We present, below, characteristics evidenced by the line over the years<sup>5iii</sup>.

### **The 1980s<sup>6</sup> - Beginning of the Line - studies on procedural variables**

At this time, the research on Teacher Education, in general, focused on issues related to how teachers learn to teach (sources of knowledge, beliefs, and attitudes), with emphasis on teacher professionalization, in defining the knowledge needed to teach. The researchers until then were characterized by research program predominant at the time, entitled process-product (Shulman, 1986) and were characterized, as a rule, by experimental, quasi-experimental, and correlational designs developed in controlled environments and characteristic of process-product approaches that could configure procedural variables of the teacher or classroom environment that showed impacts in terms of gains in student learning. In a more explicit way, the general outline of the research involved in this trend implied consideration of the following relations: presage variables → contextual variables → process variables → product variables (DURKIN; BIDDLE, 1974).

The *presage variables* are related to the formative experiences of the teacher (coming from social class, age, sex, etc.); to the teacher's professional education experiences (university, characteristics of the training program, experiences with teaching) and the characteristics of the teacher (motivation, personality traits, etc.). *Contextual variables* include the students' formative experiences (from social class, age, gender, membership groups, etc.), the characteristics of the students (attitudes, skills, knowledge, etc.) to the school and community contexts, size, ethnic composition of the community etc.), the class contexts (class size, didactic material, media, etc.). *Process variables* relate specifically to the classroom: teacher and student behavior in class. The *product variables*, in turn, refer to the observed changes in student behaviors, whether considered immediate performance / earnings, - learning gains, attitudes towards curricular subjects, acquisition / improvement of skills, etc. - or long-term effects in the students (possible to be inferred through longitudinal studies) such as the development of professional skills, for example.

Methodologically, these researchers fit the model developed by Rosenshine & Furst (1973) to study teaching in natural environments, or classrooms, involving measurement and control of variables in order to understand relationships in the form of causes or reasons, between these different forms of teaching and learning:

<sup>5</sup> The analyses presented in Cochran-Smith, M., & Zeichner, K. (2005) are taken as reference.

<sup>6</sup> "The 1980s" was drawn from Shulman (1989) and Mizukami (2003).

1. The development of procedures to describe teaching in a quantitative manner;
2. Correlational studies in which descriptive variables are related to student growth measures;
3. Experimental studies in which the significant variables obtained in correlational studies are tested in a more controlled situation (p. 122).

This research program included, for example, surveys that used systematic observation systems that were formed by pre-established categories. The observation of classroom events, considering such categories, almost always implied activities of low inference by the observer (record of the occurrence of several observable facts) and not of high inference involving judgment or evaluation of observed activities. Studies that focused on comparing methods are also included in this program. With statistical sophistication for the mapping of classes - 'apprehension of the instructional process' - these studies were characterized by described poverty (the classroom events, of a small number, were pre-fixed) and interpretative, not explaining the nature, specificities of different instructional processes.

[...] much of the process-product research, though based on naturally produced correlations, defined effective teaching by means of an act of synthesis carried out by the researcher or analyst in which the individual behaviors associated with the student's desirable output grouped together to form a new combination. There was, on the other hand, scant evidence that any of the observed teachers had behaved in class in a manner consistent with the collective model [of this new composition] ... [of] a non-theoretical and undoubtedly empirical nature, even when the teacher advanced experimental treatments the emphasis has always been pragmatically on what worked and what did not. The causes were looked for in the behaviors and not in explanations or significant mechanisms. (SHULMAN, 1989, pp. 32-33).

Several of the master's studies conducted in the early 1980s have adopted correlational and quasi-experimental designs.

It is observed, in this decade, a progressive change towards the qualitative approaches in educational research. New relationships between educational research and pedagogical practices start to be investigated. A linear view is replaced by a more systemic approach to the influence of research on educational policies. Trends that aimed to identify behavioral evidence gave way to interpretive approaches. During this period, research on and from teachers is frequent, emphasizing pedagogical practices and processes of teacher learning and professional development.

The growth of interest in cognitive psychology and the conceptions of knowledge and development inherent in it, as well as methodological developments related to protocol analysis, personal histories, the interpretations that subjects give to their own actions and to events and phenomena were important for a change in paradigm of educational research and, consequently, research on teacher education. There was a turn in the Brazilian production at the end of this decade towards qualitative approaches in the development of educational research.

On this occasion, as a means of establishing a closer relationship between the University and the schools in the city of São Carlos, in order to build a traineeship for the undergraduates studying at UFSCar, as a counterpart, several short-term activities were developed aiming teacher education. For the researchers, these activities constituted investigative activities, highlighting the inclusion in the Eugenio Franco, Militão de Lima and Juliano Neto, of the state public network of the city of São Carlos-SP, Brazil, throughout this decade.

One of the partnership projects of the Federal University of São Carlos and University of São Paulo- São Carlos (CNPq), involving professors and post-graduates of the line of Teacher Education and Other Educational Agents, was related to the study of contributions of the Experimentoteca (thematic sets of materials that involve the areas of Mathematics, Biology and Physics) for the learning of science teachers and elementary school students.

The Experimentoteca, developed by the team of Prof. Dietrich Schiel at CDCC, is a Science Laboratory that aims to rationalize the use of experimental material in the same way that a public library facilitates the access of a large number of publications to a large audience in a free loan system for the user. It is the result of a discussion of the teachers who participated in the 1st Symposium on Integration of Universities - Elementary and Middle Schools, held in 1979 in São Carlos. Their conception was based on the needs that these teachers felt for experimental activities in the classroom. (<http://www.cdcc.sc.usp.br/experimentoteca/index.html>)

In 1986, the research group Teacher Education and Other Educational Agents was formalized in the research directory of CNPq. At the time, the group carried out research in the sub-area “Education/Teaching Education”, in the Teaching Methodology area of the Postgraduate Program in Education (PPGE) of UFSCar. The master’s studies carried out in the PPGE related to the area of Teacher Education were at this time about teaching courses, instructional materials, degrees and pedagogical practices among other related topics.

### **The 1990s - Consolidation of the Line: teachers’ though, reflexive teacher, teacher as researcher of the practice itself**

In 1990, with the approval of the Doctorate course of this program, the area of Teaching Methodology was reformulated and included in its proposal the line of research Teacher Education and other Educational Agents, keeping as its thematic core the Teaching-Learning Process, under the responsibility of Dr. Maria da Graça Nicoletti Mizukami.

Since the beginning of this decade, a group of young researchers and professors in the area of Teaching Methodology had been carrying out joint research and intervention work in schools of the public education networks of São Carlos maintaining the collaboration commitments initiated in the previous decade. One of the works that stand out was the one that was carried out at the Juliano Neto School, which involved the continuous training of teachers at different levels (pre-school, early years, final years of elementary and high school) for a period of three to four years.

During this period, we present explanations regarding the nature of extensionist processes related to UFSCar's teaching-research activities, and one of its consequences is the establishment of long-term collaborative university-school processes. In this context, the article by Knowles and Cole (1993) was of fundamental importance for the assumption of the theoretical-methodological frameworks assumed by the participants of the line. This article was of paramount importance in relation to the formative and investigative directions adopted by the participants of the line, as well as the references obtained through it and by Joyce King and her stay in the Department of Teaching Methods of UFSCar.

During this period, the research group Teacher Education and Other Educational Agents participated actively in the Work Group (WG) of Teacher Continuous Education linked to the Congress on Teaching Educator of the State of São Paulo, promoted by UNESP every two years. In the WG Continuous Education, problems related to the formative models adopted by educational public networks were discussed, characteristics of teacher professional development in school contexts and the possibilities of overcoming the limitations evidenced in governmental actions. As a basis for the formative work and the discussions in the WG, the following ideas were considered in the research group and up to the present day they are considered as fundamental premises in the investigations carried out:

- a) the consideration of teachers' demands arising from their difficulties in the classroom;
- b) the proposition of activities of a practical nature that can help them to overcome them, through reflection on the pedagogical practice;
- c) the implementation of school-centered training actions;
- d) the teachers are designed as researchers/trainers' partners;
- e) the development of the formative work is considered as a process in permanent construction.

In 1992-93 the Dr. Maria da Graça Nicoletti Mizukami held a postdoctoral program at Santa Clara University with researcher Joice King and had the opportunity to get in touch with different teaching models that involved the immersion of the future teachers in different contexts and in contact with literature about teaching learning and teachers' professional development which, at the time, were not so easily accessed. This experience offered direct theoretical and methodological impacts in orientations, disciplines and research projects under the responsibility of the participants of the line.

In 1995, the Teacher Education and Other Educational Agents group was registered in the census related to the Directory of Research Groups of CNPq.

In this same year, the Teaching Methodology area - PPGE - and especially the members of the Teacher Education and Other Educational Agents - promoted the workshop Teacher Education: Reflexivity and Inquiry, with the support of FINEP, taught by professors J.G. Knowles and A.L. Cole, respectively from the University of Michigan and Ontario Institute for Studies in Education.

Subsequently, the Seminar “Teacher Education: Current Trends” was held, whose conferences were registered in the work by the same name. These two events were essential for the consolidation of the group’s identity, the group’s posterior and sustained development, as well as for the clearer configuration of the concepts, theoretical-methodological references and data collection and analysis tools of the research carried out within the scope of the Line.

On this occasion, Dr. Mizukami coordinated with the participants of the line, which were more closely articulated, two research projects linked to the first Public Notice of the Public Education Program of FAPESP. With the adoption of a constructive-collaborative methodology (Cole and Knowles, 1993) of university-school interaction and the consideration of the centrality of the school as a privileged place of teacher education, two researches were developed at a state school, Luiz Augusto de Oliveira - São Carlos, over the course of seven years. Seven university researchers and 27 school teachers participated in the research including the school principal, pedagogical coordinator, and librarian; scientific initiation, masters, and doctoral students. The nature of this program privileges university-school collaborative actions, offering spaces for the professional development of teaching stemming from the demands of specific schools. It is an innovative program that aims to strengthen the protagonism of the teachers in exercise, and that opened a very important horizon for the formative-investigative processes on learning processes and teachers’ professional development, investing in teachers’ work context and valuing the teaching work via materials for the school and scholarships for the schoolteachers’ participation in the project.

In the first research: “The reflection on pedagogical action as a strategy for modifying the elementary public school in a perspective of continuous training in the workplace” - FAPESP (1995-2000), through formative and investigative strategies that promoted and offered space for reflective processes of teachers, pedagogical practices were investigated and new knowledge about them was constructed in the face of the configuration of a learning community of teachers and researchers. This study allowed the examination of a problematic that remains current concerning the teacher education and research on teachers’ learning. Simultaneously, it was possible to analyze investigative and formative strategies - which consider the university school-university partnership and collaborative research as a formative instance.

Following the first project, and at the request of the school itself, the second research, “From the collective project of the school to the classroom: analyzing processes of professional development of teachers of the initial grades of elementary education” - Public Education Program - FAPESP (2000 -2002) investigated the construction, implementation and evaluation of a knowledge base - individually and collectively constructed by teachers in the initial grades of the same elementary school - in view of the transversal themes indicated in the National Curriculum Parameters.

### **Years 2000 - From presential to virtual, but not exclusively**

The long stay in the Luiz Augusto school made it possible to follow detailed individual and collective processes related to teachers’ learning and teachers’ professional development as well as to understand the teaching knowledge base

of teachers in the early years, which is highly complex given its interdisciplinary characteristic and isn't usually addressed in initial teacher education courses. By means of some formative strategies designed in the projects, it was possible to investigate in a deeper way certain important characteristics of the experienced teacher learning processes, since they were not linear, continuous, uniform and predictable. These characteristics indicate the relevance of the use of concrete situations and of close interest to teachers, considering the themes, experiences, and activities addressed in the proposed formative actions so that they can trigger and test teachers' knowledge, personal theories, certainties, dilemmas.

These research were systematized in the book: *School and Teachers' learning: research and teacher educational processes*, edited by EDUFSCar with the support of the Committee of Producers of Educational Information (Comped) and had its reproduction contracted by the National Institute of Studies and Research (INEP) in the Program of Support to Initial and Continuous Teacher Training, in 2002.

In 2004, the group was contemplated by the Proext - MEC / SESU Public Notice to build the Program of Support to Educators: Professional Development Space, through articulated teaching, research and extension activities, aimed at teacher education and other educational agents and taking into account the formative needs of these professionals and taking into account the different stages of their professional development. Specifically for this purpose, the Teachers' Portal of UFSCar was built ([www.portaldosprofessores.ufscar.br](http://www.portaldosprofessores.ufscar.br)).

In 2005 this group was again contemplated in another Proext - MEC-SESU Public Call and the approved proposal aimed at broadening the scope of the Program of Support to Educators: Professional Development Space through establishing the foundations of a virtual community of teacher learning of permanent character, by the provision of infrastructure that facilitates the access and accomplishment of the activities carried out by the Portal.

From 2004 to 2007, in view of the learning derived from the participation in research that required a long period of immersion in a school and from the observation that peer interaction is a relevant tool and source for learning and professional development, the research group took on the challenge of investigating early-career teachers and experienced ones in interaction during their participation in a Mentoring Program, via the Internet, since they had the Teachers' Portal of UFSCar. It is the project "Mentoring Program for Teachers of the Initial Series: Implementing and Evaluating a Continuum of Teacher Learning", funded by FAPESP - Public Education.

In this research-intervention project, again of a constructive-collaborative nature of the interaction between researchers and teachers, it was possible to accompany, with the aid of ten experienced teachers who were trained as mentors, about 50 beginner teachers with up to five years of teaching experience. The dyads beginner and mentor maintained weekly virtual contacts through electronic messages for a period of six months to a year and a half. It should be noted that the model of mentoring adopted was built together with the group of experienced teachers from a stage aimed at this purpose and its setting in a virtual environment.

Throughout the research, it was possible to configure the formative needs evidenced by beginning teachers who sought the mentoring program; and to describe and analyze how the work of mentors aggregates in their online contact with early-career teachers and what the difficulties, dilemmas, challenges faced by the former and the latter in developing an identity as teacher educators.

The realization of this program had an impact on the subsequent production of the line and other actions. Among them we highlight: the supervised internship model and teaching practices of the undergraduate courses in Pedagogy and Music Education of the Open University System of Brazil - UFSCar, since the teachers of the school receiving teaching students participate in a specific teacher education process, which had as a base the formation of mentors; the offering of other mentoring programs, whose models we indicate later, and greater international insertion.

Between 2005 and 2009, the group developed three other projects funded by CNPq, two of them related to the Mentoring Program. They are:

- a) "Participation in a research group as a tool for teaching professional development for experienced teachers: the case of the UFSCar Mentoring Program" (CNPQ - Human Sciences Call) that focused on the research about the teachers' professional learning processes of a group of experienced teachers in their role as mentors of early-career teachers in the initial series in interaction with university researchers.
- b) "Elementary schoolteachers' learning-to-teach processes and teaching cases" (CNPQ-Universal Call), with the intention of investigating and fostering the process of professional development of teachers of different levels and modalities of teaching; of mentors and early-career teachers - based on web-based case study strategies.
- c) "Professional learning-to teach community of teachers' mentors and researchers: validation of a protocol for analysis of the constitution and development processes", funded by CNPq (Human Sciences), the group validated a protocol to analyze processes and variables involved in the construction and development of involving the experienced teachers - mentors - and the researchers responsible for conducting the Mentoring Program, via the internet, aimed at early-career elementary teachers.

It is noteworthy that, since 2005, Dr. Maria da Graça N. Mizukami, joined the Mackenzie Presbyterian University but remains active on the line.

In 2008, Dr. Rosa Maria Anunciato de Oliveira created the group Studies on Teaching: theories and practices also linked to the line of Teacher Education and Other Educational Agents. Her group has investigated different aspects of teacher education: initial training, continuous education, higher education, pedagogy course and other degrees, whose main objective is to aggregate studies on teacher education involving initial training and its unfolding, as trainees, student-teachers and other experiences during the formative process and investigate the teachers continuous education, the educational policies and teacher education courses.

The group also investigates teachers' professional development processes focused on pedagogical conceptions and practices in different contexts; the development, implementation, and evaluation of teaching and teacher education methodologies; the beginning of the teaching career, the narratives future teachers, teachers and other educational agents.

### **From 2010 to the present day - perspectives and challenges**

In 2009-2011, through a new CNPq funding, a research and intervention project (Teachers' professional development indicators: construction and evaluation) was developed, which, through the internet, constructed and evaluated professional development indicators (or reference) of teachers in the initial years (1st to 5th years) of elementary education and at the same time helped them to rebuild their knowledge base for teaching.

The Program of Support to Educators: diversifying the virtual teachers' learning communities in the Teachers' Portal of UFSCar, again financed by PROEXT in 2011, aimed at diversifying the scope of action of the and expand the teacher education spaces offered to UFSCar's professors and to bring together teachers of Higher Education and undergraduate students, and teachers of Basic Education in virtual teachers' learning communities, of permanent character. As a result, it was necessary to expand the offer of new sections and courses.

An example of these initiatives was the Third Space Project (which counted on Fapesp funding), which investigated the insertion of graduates of the teaching license course in Pedagogy of the Open University of Brazil - UFSCar system in kindergarten classrooms and initial years for about one academic year, and the interactions established between university-school, theories and practices relationship and formative processes carried out in face-to-face and virtual activities'.

In 2012, the group was contemplated by a CNPq funding (Universal Call) with the project "Online mentors' teacher education program: knowledge base - professional identity - practices" that refers to the professional development of experienced teachers when participating in an online teacher education mentoring program, aimed at teachers beginning in the first years of elementary school, developed in the Portal of Teachers of UFSCar.

Another, extremely significant for the academic community of UFSCar, refers to the creation of a space focused on the UFSCars' Teacher Education Continuous Program meeting the specifications of the Law of Teaching Career 12772 of 12/28/2012, UFSCar, through PROGRAD and with the support of the Secretariat of Distance Education (SEAD), the group participated in the construction of the TPD- Teacher Professional Development Program, developed on the Teachers' Portal. It is a program inserted in the "Program of Support to Educators: Professional Development Space" (PROEXT-UFSCar), which aimed to enable novice higher education teachers to access a varied set of information and establish a teacher's learning-to-teach community, predominantly via the internet. The TPD presented the following characteristics:

- Meeting the specific training needs of Higher Education teachers in view of the different career phases and the specific contexts of action;
- The interaction of early-career teachers by more experienced teachers;
- The participation of teachers in strong professional learning communities;
- The guided discussion of emblematic situations of professional life;
- Sustained reflection on practices and their explanation;
- The exchange of knowledge between peers, between teachers and other professionals;
- The collaboration between several professionals of the institution;
- The involvement of Higher Education teachers in their own professional development processes.

Within the scope of the TPD, a space for the teaching development (STD) was developed as the first collaborative-formative action, in the form of an online workshop. The STD was built by a group coordinated by Dr. Graça, with the support of professionals from the SEAD and UFSCar Undergraduate Dean. The program had two editions of module 1, the introductory module to the theoretical foundation of how the teacher learns to teach and to develop professionally, as well as analyzes of pedagogical practices of UFSCars' teachers. During 2014-2015 there were 150 participants.

Since 2016 the Teacher Education and Other Educational Agents group have been working together with the group led by Dr. Rosa A. de Oliveira from PPGE-UFSCar, in the project "Intergenerational dialogue in teacher induction: the establishment of a teacher education continuum of teacher education" (READ) (CNPq-Universal Call) whose purpose is to investigate the limits and possibilities of building a collaborative network in a virtual space involving experienced teachers, beginners and graduates with a view to the professional development of the participants. The general objective of the research is to analyze the contributions to teacher learning brought about by the online exchange of experienced teachers, novice teachers and graduates, through an intergenerational dialogue in a virtual space.

Now in 2017 the groups that make up the line and Rosa de A. de Oliveira, Ana Paula Gestoso, Andrea Moruzzi and Aline M.M.M. Reali, responsible by the Teacher Education and other Educational Agents, New Technologies and Learning Environments research line, teamed up with Cármen Lúcia B. Passos e Fabiana Marini, linked respectively to the following research lines of PPGE-UFSCar: Science and Mathematics Education and School Education: Theories and Practices was contemplated once again by the line of Public Education funding of FAPESP with the project "Experienced and novice teachers professional development: the Hybrid Mentoring Program", whose purpose is to analyze the contributions and limits of a hybrid mentoring program for the learning and professional development of teachers of beginners and experienced teachers.

It is noteworthy that since 2004, many of the researches have been carried out through the Teachers' Portal of UFSCar. The Portal is an institutional program of

UFSCar, originally funded by PROEXT/MEC 2003/2004/2005/2011, as previously indicated. It is a site directed to professionals of the educational area developed a set of research and intervention projects and of diverse activities under the responsibility of professors of UFSCar. In early 2008 and 2011 was qualified by the MEC as an innovative educational technology aimed at promoting the quality of basic education. It is, therefore, a virtual space aimed at meeting the teachers' different levels and modalities formative needs of groups or individual teachers and schools. It reached the mark of 160,000 accesses in July 2017 serving around 18,500 teachers in its various sections. More specifically, it has certified over 3,000 teachers in the various programs and courses developed. It constitutes a base of support for the development of a set of projects and activities that are under the responsibility of professors of the Department of Pedagogical Theories and Practices of UFSCar and involves undergraduate students and the Post Graduate Program in Education – Teacher Education and Other Educational Agents, New Technologies and Learning Environments. It also involves teachers from different education networks.

It has been a space for the development of research related to the teacher learning and professional development. Since its inception, approximately 30 theses and dissertations have been defended, with the objective of knowing how the programs and activities contribute to the teachers' professional development, the dissemination of distance education, and the establishment of teacher professional learning communities. They focus on the teachers' professional learning processes; the evaluation of distance learning initiatives planning and its implementation; the unfolding of teachers' participation in the proposed activities/programs; the identification of contextual variables that contribute to or hinder the effectiveness of online professional teacher development and the possibilities of these initiatives to improve educational practices. The results of the investigations are incorporated into the design and implementation of the Portal's activities/programs, generating a cycle of construction, translation, and application of scientific knowledge.

On the Teachers' Portal, teacher-users may, among other things: receive help in evaluating and building instructional materials; take questions; gather diverse information (events, tenders, public policies, etc.); socialize well-succeeded experiences; keep in touch with professionals in the University from other areas of knowledge; take part in virtual communities, through countless sections.

The Portal has a physical space at the UFSCar Education and Human Sciences Center comprising a computer laboratory and meeting rooms, management office, and secretariat. At the moment the Laboratory of Studies on Teacher Learning and Professional Development is in its installation phase, associated with CECH's Integrated Laboratory of Documentation and Political and Social Statistics. In this new physical space, the line will count on material and equipment infrastructure to conduct its researches.

The approval in diverse public calls (both research financing – CNPq and Fapesp – and extension activities through PROEXT) have been important for the planning, execution, and evaluation of different projects, since they provide resources for theoretical-methodological outlining and specialized personnel which would otherwise be difficult or even impossible to realize. The theoretical-methodological

achievements, as well as the contributions to the understanding of teacher learning and teacher professional development processes offered by the participants of the line, involve teams of technicians and space infrastructure that would not be possible to obtain solely through UFSCar institutional support.

The following topics have marked the scientific knowledge production in what refers to the research that the participants of the line are actually working: novice and experienced teachers learning and professional development; teaching cases; school trajectories and life histories of students interested in teaching; pedagogical practices in different contexts, levels and, teaching modalities; theory and practice; teacher and other educational agents knowledge base and pedagogical reasoning processes; teacher learning communities; university-school interaction; collaborative research; beginning of teaching; impact of policies on pedagogical practices, etc.

The theoretical assumptions in the investigations of the participants of the line consist may be listed as follows:

- the teachers learning and professional socialization processes are underscored by the experiences lived by these teachers and their ways of knowledge, and are influenced by emotional, ethical and performance factors;
- these processes start with the earlier educational experiences of the future teachers and continue through their professional careers. This learning also occurs in the context of the practices and relates strictly to the construction of the teaching knowledge basis. In this way, early formation is valued, although is shown to be limited in offering the expertise that is needed along the teacher's career;
- the teaching practices are strongly determined by teachers' knowledge, beliefs, objectives, hypotheses; curriculum components, students and their learning. For this reason, teacher education continued programs should be adapted to the formative needs that are specific to teachers and their teaching environments, and career stage they are on must be considered;
- single-size continuous education programs only partially address teacher education demands; adult learning is more related to the practical situation than to merely theoretical studies;
- the reflection on pedagogic action is a powerful strategy for teachers' continuous development, which should be based on their experiences;
- teachers need mental space and time to grow professionally, and these aspects must be institutionally provided by public policies;
- reflexive attitude demands reciprocal professional dialogue, communication, interchange and development among teachers, and between them and researchers;
- such processes imply collaboration, mutual understanding, consensus building, democratic decision-making and common actions processes;

- with the advancement of digital information and communication technologies, especially the internet, it is possible to amplify social interaction between teachers that are found in different stages of their careers and these professionals and researchers in the university – through interactive talks, written narratives, analyses and the construction of teaching cases, among other tools.

During the development of these inquiries some investigative and formative tools were established which are powerful in terms of referring information for the teacher's implicit theories on aspects such as: teaching, learning, students, academic success, student's families, clarification of their pedagogic practices, the construction/reconstruction of teaching expertise in an individual and collective way, and teachers' reflexive processes.

Among various formative and investigative tools adopted in these projects, the following are highlighted: written narratives, analyses and construction of teaching cases, collective discussions (in persona and virtual) and the teaching and learning experiences. These experiences may be characterized as:

[...] structured teaching and learning situations, planned by the researchers and implemented by the teachers, stemming from subjects listed by themselves as an object of individual and shared interested, discussed collectively. These experiences constitute circumscribed processes - which may imply actions with small groups of teachers, or in classrooms involving both teachers and students –, and are generally derived from practical difficulties related to the comprehension of curricular components or from challenges posed by school life and public policies (MIZUKAMI et al., 2010, p.116)

These studies have enhanced the groups actuation in researching and investigating countless processes related to teachers learning and professional development, taking schools as bases for their action, be it face-to-face or online, and entailed our relationship with foreign researchers: Ardra L. Cole; J.G. Knowles; Norman Vaughan; Maria Alfredo Moreira; Andi Kent; Vanessa Dennen; Fran Kochan, Linda la Velle.

Throughout the existence of the research line the following results have been possible:

1. Offering references, alternatives, subsidies for the elaboration and reformulation of teacher education initial and continued courses and their evaluation;
2. Developing new models for continued teacher education through interventions with teachers and their analyses in collaborative groups (Mentoring Program, Teaching Cases Program, Teachers Education Program, Online Mentors Education Program, Third Space Project, Teachers' Learning and Teaching Network; Hybrid Mentoring Program);
3. Characterizing and analyzing pedagogic practices at different teaching levels and career stages;

4. Developing and evaluating instructional courses, especially involving the internet;
5. Developing knowledge of teachers thinking, personal theories/implicit theories; teachers' learning and professional development processes;
6. Developing long-term interventions with basic education teachers, grounded on a constructive-collaborative model;
7. Producing expertise in teacher education through narrative research;
8. Developing interventions via the internet or through a hybrid education approach in different teachers' levels and career stages, based on a constructive-collaborative model of university-school and researcher-teacher interaction;
9. Producing a series of collections, whose titles are indicated as follow, with the results of researches realized by Master and Doctor degree students of the research line Teacher Education and Other Educational Agents, New technologies and Learning Environments, of other research lines that address the issues related to teacher learning and professional development, realized at PPGE-UFSCar, namely the volumes of the series "Teacher Learning", coordinated by Aline M.M.R Reali and Maria da Graça N. Mizukami:

Professional teacher learning: expertise, contexts, and practices.

Teacher education: pedagogic practices and school.

Teacher education processes: content and practices.

Theorization of pedagogical practices: school, university, research.

Complexity of teaching and teacher continuous education.

Teacher learning: knowledge, contexts, and practices.

Teacher professional development: theory and practice.

Teaching in contemporaneity: learning, teaching, and learning to teach.

Through its existence, the line has investigated teachers' educational processes realized in different modalities, focusing on the school. Long-term intervention researches are frequently realized (2 to 7 years, for example), in diverse contexts – school, virtual environments, university, among others. These initiatives demanded the participation of many researchers in enterprises that have enabled its proponents and students to focus on different and often articulated research problems. Currently, the line's teachers are investigating a hybrid mentoring program aimed at novice teachers in preschool education, starting grades and in programs for youth and adult education, and the relationships that can be demonstrated between experienced and novice teachers in a network of teacher learning.

We understand that both these initiatives are configured as part of a research program, comprised of a set of researchers with varied expertise, gathered with the objective of comprehending the learning processes of teachers in different levels of education and in different stages in their professional journey (initial teacher education programs, novices and experienced), which derive from the inter-generation dialogue realized in virtual and face-to-face activities'. Aspects such as alternatives for the minimization of early career difficulties, teachers' professional development, the process for construction of knowledge bases for teaching; professional development for experienced teachers, narratives as teacher education space, among others, have been focused in these researches.

These initiatives have shown to be very promising in the construction of new expertise in the area of teacher education. The ongoing initiatives related to the production of knowledge on teacher learning and professional development in different areas of knowledge, specificities, contexts, and modalities of education have been shared in wider forums by researchers of the field through exchanges in events held in our country as the National Meeting of Didactics and Teaching Practice (ENDIPE); Annual Meetings of the National Association of Postgraduate and Research in Education (ANPED); National Congress of Teacher Education (CNFP) and São Paulo State Congress on Teacher Educator (CEPFE); International Congress of Autobiographical Research; as also in international events such as: American Educational Research Association Annual Meetings (AERA), International Conference on Educational Research (ICET), International Council on Education for Teaching (ECER), Congreso Internacional sobre el Profesorado Principiante y la Inducción a la Docencia. In these wider forums, a collaborative network has been established that has allowed, to the members of the line, different types of promotion of the researches, as well as the collaborative networks.

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