



## The Learning Incubator: an innovative teaching and learning technology in nursing

Incubadora de Aprendizagem: tecnologia inovadora de ensino e aprendizagem na enfermagem

Incubadora de Aprendizaje: tecnología innovadora de enseñanza y aprendizaje en la enfermería

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### ABSTRACT

**Objective:** To understand the meaning of the Learning Incubator as a teaching and learning technology in the nursing area. **Method:** Qualitative research, supported by grounded theory. Data was collected from March to November 2019, through interviews with guiding questions and hypotheses directed at two different groups. The analysis was done by comparative data analysis and included open, axial and integrated coding, as proposed by the method. The theoretical sample included 23 participants, which were nurses, technicians, and nursing students. **Results:** The delimitation of the categories converged in the phenomenon (Re)signifying knowledge and practices in the Learning Incubator. Guided by the paradigmatic model, the categories were named according to the three following components: Condition: Recognizing that the being and the professional practice are inextricable; Action/interaction: Revisiting professional practices that are repetitive and mechanic; Consequence: Referring to the reflections and knowledge constructed in the Learning Incubator. **Conclusion:** The Learning Incubator, as seen by the study participants, is not limited to the Incubator meetings or the themes addressed in it. Beyond a welcoming physical space, the Incubator expands itself and becomes a tool that promotes self-reflection and self-assessment of professional behaviors and attitudes.

### DESCRIPTORS

Education, Nursing; Learning; Technology; Education, Continuing.

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## INTRODUCTION

The term technology can be understood and defined from several perspectives, depending on the area of knowledge. Here, technology is understood as a complex configuration that relies on a subjectively determined but specifiable set of processes and products. Technology is connected with obtaining certain result or resolving certain problems using particular skills, knowledge and practices. In this perspective, technology is not reduced to the production and incorporation of physical products, but refers to the ability to innovate, (re)evaluate or (re)create knowledge, processes and practices in daily human and social relations<sup>(1-2)</sup>.

In the health area, innovation technologies are the aspects that grow the most and have huge effects on health-care practice. In Brazil, the “Project Health Brazil 2030” stands out. The main objective of this project is creating a network for the establishment of a National Innovation System<sup>(3)</sup>. This system is centered on sustainable regional development and encompasses technology and innovation as prospective strategic determinants for coping with regional inequalities. It also aims for the integration and interinstitutional cooperation between the different areas of knowledge, in addition to the active participation of different social actors<sup>(4)</sup>.

In this perspective, educational and health institutions, in general should invest in the development, implementation and evaluation of innovative technologies that can contribute to the qualification of assistance and the improvement of health care indicators. As mediators and transforming agents of health care, nursing professionals cannot be oblivious to this process. In addition to consuming and importing technologies, nursing professionals must be at the forefront of these technologies, according to daily demands and theoretical frameworks that enable the understanding and critical-reflexive systematization of their outcomes<sup>(5-6)</sup>.

In addition to being at the forefront of new technologies, it is important to associate teaching with reflective learning and practice, in the sense of continuously (re)signifying the action regardless of the time and space in which it is inserted<sup>(7)</sup>. In this process, the Learning Incubator is an innovative technological tool, capable of enhancing initiatives, encouraging creative thinking, and promoting proactive actions in daily professional practice. The Learning Incubator, as a teaching and learning technology, enables reflexive self-organization of knowledge, in a process of detachment from the action and juxtaposition with new knowledge<sup>(8)</sup>.

Based on this proposition, the university extension project called Learning Incubator was developed with the objective of building knowledge and practices through action-reflection-action. This project was created in 2012 by the hospital management and researcher who was the coordinator of the project with a dual purpose: to arouse the innovative and entrepreneurial potential of nursing students and to enable the re-signification of nursing care for professionals already inserted in the service, through interactive teaching and learning approaches applied in practice<sup>(8)</sup>.

The volunteer members of the project (professors, scientific apprenticeship scholarship students and assistance nurses), under the coordination and supervision of a research professor, meet regularly to organize, deepen and systematize the themes that will be promoted in the Learning Incubator, as well as to evaluate the intervention process.

Characterized as a concrete space for continuing education<sup>(9-10)</sup>, the Learning Incubator can be considered a technology that promotes self-reflection and meaningful learning with the potential to (re)evaluate professional practices through the qualification of relational, interactive, and health care processes. Unlike Business Incubators, the Learning Incubator is a living laboratory, where new ideas and possibilities can be generated due to the dynamic and cyclic sharing of knowledge and practices<sup>(8)</sup>.

The Learning Incubator is located in a teaching hospital, more specifically in a physical space with an area of 230 m<sup>2</sup> carefully and aesthetically designed to receive professionals. A prior thematic schedule is arranged with the local leaders every six months. The schedule is divided into thematic learning units, which are conducted in the Incubator by nursing scholarship students (from the 7th semester onwards) and master's degree students, in groups of up to fifteen collaborators, under the supervision of the nurse responsible for the continuing education program at the institution. The weekly incubations/meetings last 80 minutes each and are developed according to meaningful learning methodologies as premises of continuing health education<sup>(9-10)</sup>. In these meetings, the nursing staff is organized in small groups, according to their schedules, and are encouraged to recognize themselves as protagonists of new pacts of daily living and practices. At each meeting, a theme that is previously arranged with the local leaders is discussed and systematized, based on questions that generate and induce reflection and considering listening, exchange of experiences and new learning of each member.

Thus, considering that the use of Learning Incubators by educational institutions is still scarce when it comes to their institutionalization, and recognizing the need to contribute to the Project Health Brazil 2030's goals and to the advancement of innovation technologies in the nursing area, the following question is proposed: what is the meaning of the Learning Incubator as a teaching and learning technology in the nursing area? Therefore, the objective is to understand the meaning of the Learning Incubator as a teaching and learning technology in the nursing area.

## METHOD

### TYPE OF STUDY

Qualitative research supported by grounded theory, which is focused on understanding social phenomena according to the meaning of relationships, interactions and associations between people<sup>(11)</sup>.

### POPULATION

The study included 15 nursing professionals (nurses and nursing technicians) and eight (8) nursing scholarship

holders (from the 7th semester onwards), organized in two sample groups. Data was collected from March to November 2019, in a medium-sized Hospital Institution, through individual interviews, recorded in digital voice recording, with an average duration of 50 minutes. Afterwards, the interviews were transcribed for simultaneous and comparative data analysis by the researchers, as provided by the method. The inclusion criteria for the sample groups were: nurses and nursing technicians who worked exclusively in the institution and who, a priori, had participated in the monthly activities at the Learning Incubator (both categories); and nursing scholarship holders who had conducted these activities. The exclusion criteria for both groups were: professionals/scholarship holders with less than a year of insertion in the activities of the Learning Incubator.

### SELECTION CRITERIA

The first sample group was composed of nursing professionals (nurses and nursing technicians), according to their active involvement in the monthly activities carried out at the Learning Incubator. Most professionals are female, aged between 24 and 48 years old, married and with an income between R\$ 1800.00 (nursing technicians) and R\$ 4700.00 (nurses). Participants were invited in a generic invitation sent by email to the nursing sectors and the interviews were previously scheduled and carried out at the workplace, with the first participants to express their acceptance. Based on the answers to a broad and central question, new questions and hypotheses emerged and directed data collection to a second group.

The second sample group was composed of the eight (8) nursing scholarship holders (from the 7th semester onwards) that are part of the extension project Learning Incubator and who had participated in the monthly activities at the Incubator in the current year. Of the eight (8) scholarship holders, all are female and aged between 20 and 25 years old, six (6) are volunteers and two (2) receive a scientific apprenticeship scholarship of R\$ 400.00. The scholarship holders were invited and all responded affirmatively to the nominal invitation. The interviews were previously scheduled according to the availability of each student and were carried out in one of the University laboratories.

### DATA COLLECTION AND ANALYSIS

The stages of data collection, analysis and categorization and the comparative data analysis occurred simultaneously, as provided by the grounded theory<sup>(12)</sup>. The analysis of the first sample group showed that the meaning of the Learning Incubator was strongly associated with the physical space, as professionals considered it encouraged, promoted, and enhanced reflections, enabled by the association with nursing scholarship holders during the incubation process. Consequently, the analysis of data from the first group led to new questions, such as: what are the meanings attributed to the Learning Incubator by nursing scholarship holders, as protagonists of the process? What did the incubation process aroused in the scholarship holders and how do they evaluate

their participation in this project? Based on these questions, the hypothesis: The proximity, empathy and autonomy of the nursing scholarship holders promoted reflections on the experience of being and doing of the professionals. Thus, a new data collection was conducted, as proposed by the method, with eight scholarship holders, giving rise to the second sample group, as detailed below: 1st group (4 Nurses and 11 Nursing Technicians, with the following question: What meaning do you attribute to the Learning Incubator? What has this process aroused in you?); 2nd group: (8 nursing scholarship holders (from the 7th semester on), with the following question, elaborated based on the previous hypothesis: What is the meaning that you attribute to the Learning Incubator, today, after your insertion as protagonist and what has this process aroused in you?).

The analysis process included open coding, axial coding and data integration, as proposed by the grounded theory method. In open coding, the data was analyzed line by line to recognize the codes and the composition of the concepts. This was followed by the regrouping of the data, with axial coding to elucidate the regrouping of data. The process of refinement of categories and subcategories was supported by the paradigmatic model, as provided by the method<sup>(11)</sup>. In data integration, the last stage, the categories were refined so that it was possible to delimit the phenomenon.

Theoretical saturation was achieved with the repetition of information and the absence of new meaningful elements related to the investigated object. In the process of theoretical construction, memos and diagrams were developed, based on the researchers' records and insights<sup>(11-12)</sup>. NVIVO® software was used in data organization and coding.

### ETHICAL ASPECTS

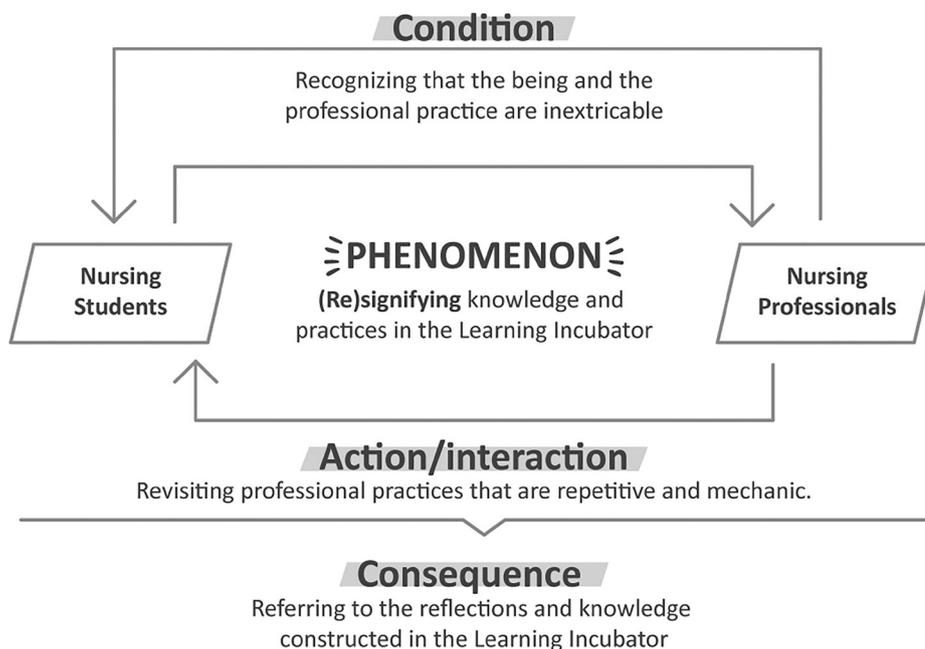
The project was approved by the Human Research Ethics Committee, protocol #27667322018. To guarantee their anonymity, the participants were identified with the letter "E", followed by the number corresponding to the order in which the interviews were conducted and the indication of the referred sample group "G", as for example E1G1... E15G1, E1G2... E8G2.

### RESULTS

The data comparative analysis allowed the delimitation of three categories that converged in the delimitation of the phenomenon: (Re)signifying knowledge and practices in the Learning Incubator. Guided by the paradigmatic model, the categories were named based on the three components: Condition: Recognizing that the being and the professional practice are inextricable; Action/interaction: Revisiting professional practices that are repetitive and mechanic; Consequence: Referring to the reflections and knowledge constructed in the Learning Incubator, as shown in Figure 1.

The condition category "Recognizing that the being and the professional practice are inextricable" is supported by two subcategories and enables a movement that converges to the central phenomenon. In the first subcategory "Realizing

## SIGNIFICANT FORMATIVE CONTEXT



**Figure 1** – Phenomenon: (Re)signifying knowledge and practices in the Learning Incubator – Santa Maria, RS, Brazil, 2019.

the need to evolve as a person and as a professional”, the participants highlighted that learning is comprehensive and occurs throughout life. In the same direction, the participants perceive themselves as apprentices, sometimes in need of welcoming and care and, at other times, eager for new knowledge and/or for meaningful exchanges to associate their way of being with their practice and vice versa.

*We always have new and different things to learn and to teach. We are never ready... we must always be involved and seek new horizons, new learnings. Every day we have to evolve as a person and as a professional and seek to (re)signify what we already know (E2G1).*

*With the Incubator project, I grew in every way and matured a lot as a person and as a professional. Teachers perceive, in the classroom, the students who are involved in the Incubator... when we are in contact with the professionals, we teach a lot, but we learn even more (E1G2).*

The subcategory “Paying attention to the way of doing things” is related to professional practice, evidenced by the participants of both groups. In the perspective of the scholarship holders, the daily routine stiffens the practice of nursing professionals, who often end up performing uncritical and isolated care. Participants in both groups recognize that nursing care goes far beyond depersonalized, repetitive and technical practices and that, therefore, it requires spaces that favor reflection and self-assessment. In this sense, they argue that nursing care requires the professional to be attentive and vigilant in order to be entirely with the other – the one receiving care.

*Care goes far beyond giving medications, bathing... it includes the entire professional, who needs to be there in full. As care professionals, we mark people's lives in a positive or negative way (E4G1).*

*I realize that the daily routine makes the practice of some nursing professionals very mechanical... some act involuntarily and end up providing a very technical care (E3G2).*

The action/interaction category “Revisiting professional practices that are repetitive and mechanic” is supported by two subcategories that portray the interactive and dynamic movements of the participants aimed at (re)organizing the work dynamics. In the first subcategory “Reflecting on the routine of the being and professional practice”, the participants stated that, at times, their practice does not match their principles and values and that, for various reasons, it is limited to reproducing techniques and daily tasks. They perceive that the nursing professional, as the care professional, needs constant self-reflection and self-assessment so that it is not reduced to a machine, which acts automatically and in a depersonalized way.

*The activities at the Incubator helped me to analyze myself and reflect on my actions. Sometimes I become very mechanical in what I do, and everything becomes routine. Then, with these interventions in the incubator I was able to reflect about the way I have been performing the care (E11G1).*

*I could see that in the Incubator, professionals reflect a lot, get emotional, and share their personal experiences in an intense way. Everyone likes to be there and they always reinforce the need to talk about everyday things... we learn to see things differently and not just judge them (E4G2).*

The subcategory “Paying attention to the patient’s uniqueness” reveals that nursing care is not reduced to depersonalized and decontextualized practice. For the participants, care, in the true sense of the word, involves human relationships that require a different perspective, attentive listening and sensitivity to apprehend the uniqueness of the other. Therefore, they recognize that care does not come down to vertical and authority relationships, but has to occur through openness to the unique demands of patients and family members.

*I feel that nursing care requires constant openness to the other so that the professional is not authoritarian. I always need to think about the uniqueness of each person, especially the ill person, who is already in a vulnerable situation. Maybe what is unique to the patient is not unique to me (E12G1).*

*Most of the themes discussed are not new for professionals... the Learning Incubator manages to make them stop and think about themselves and the other, about the way this care has been happening... many realize that they need to review their way of thinking and acting (E5G2).*

The consequence category “Referring to the reflections and knowledge constructed in the Learning Incubator” is supported by two subcategories. The first subcategory “Reporting to the Incubator’s environment” refers to the importance of the Learning Incubator as a formative and self-assessing space. Although they often do not remember the themes and contents discussed in it, the Incubator’s welcoming and instigating environment promotes reflections that transcend the content and/or themes discussed. In this relation, the participants expressed that the Incubator gives them insights that promote new reflections and professional practices.

*Many times I can't remember the topic discussed, but when I think of the Learning Incubator I can think quickly and reflect on my actions and have a better conduct (E9G1).*

*Participating in the Incubator project gave me empowerment and better sense. I learn not only from the themes discussed, but it enables a collective construction of knowledge that I bring to my life (E7G2).*

The subcategory “Cultivating knowledge and practices learned in the Learning Incubator” demonstrates that the participants make efforts to bring the knowledge shared in the incubator to their daily lives. It also demonstrates that the Incubator sometimes represents a prospective lever that enables an autonomous and responsible training movement among the professionals.

*This process aroused my desire to seek new knowledge and improve my actions. I tried to rethink about the way I do things and tried to pay attention to myself to do everything in the best way possible (E11G1).*

*As part of this Incubator project, I need to study a lot every day. I need to have an advanced knowledge so I can discuss with the professionals. With the work already done, I was able to*

*improve my reading and writing abilities and, consequently, have a better performance in all academic works (E8G2).*

The results achieved showed that the Learning Incubator is not limited to the event within the Incubator and/or the themes discussed. Beyond a welcoming physical space, the Incubator expands itself and becomes a tool that promotes self-reflection and self-assessment of professional behaviors and attitudes in the daily practices. In this process, the perceptions of the technicians, although in greater numbers than the nurses, were very close to each other. Both technicians and nurses showed a deep desire and impulse to (re)think professional behaviors and attitudes.

For the nursing scholarship holders, the Learning Incubator represented a living laboratory, in which they challenged themselves for autonomous learning, expanded their knowledge, evaluated behaviors and attitudes and, above all, got motivated to read, write, and reflect. The results show that the scholarship holders, as participants in the project, feel challenged to transcend the themes and activities proposed in the classroom.

## DISCUSSION

The results of this study allows to argue that the Incubator, as a teaching and learning technology, is a significant space for the (re)evaluating nursing/health knowledge and practices. Besides being an innovative technology, the Incubator is characterized as an entrepreneurial strategy, due to the possibility of generating and integrating innovation, technology, and continuing education in the reality of professionals, as already evidenced in other studies<sup>(8,13)</sup>.

The Learning Incubator, therefore, (re)creates possibilities and arouses entrepreneurial and transformative attitudes, as it induces self-reflection and transcends the repetitive and mechanical daily practice that hinders thinking and paralyzes creativity, as mentioned by the study participants, and corroborated in a previous study<sup>(8)</sup>. Based on the activities developed at the Learning Incubator, the professional is determined and motivated to develop their own critical and reflective training, to deal with the reality and transform it. In this process, continuing education promotes learning at work, through work and for work, through collective thinking and based on the problems faced in the reality of services<sup>(14)</sup>.

The results of this study also show that just designing new policies, such as the policy of continuing health education, is not enough. In addition to its conception, it is necessary to promote technologies that make sense in everyday professional practices. As a technology that induces meaningful teaching and learning, the Incubator transcends traditional meetings and/or lectures and enables collaborative learning through approaches that enhance interactions, associations and interprofessional relationships<sup>(8)</sup>.

Therefore, it is a complex training process that requires the development, since undergraduate studies, of professional skills to initiate processes instead of just consuming and/or adapting to previously conceived proposals. Therefore, it requires “a teaching and learning process in which the

student, as a biopsychosocial and active participant” is driven towards autonomous learning and is able to change the “existing meanings through the organization and integration in the cognitive structure of previous and new concepts, making them meaningful”<sup>(15)</sup>. A study addressing this theme demonstrated that a curriculum aimed at developing entrepreneurial skills among students, increases professional perspectives and the achievement of more effective and transformative results in practice<sup>(16)</sup>.

In this context of discussions, one of the ideas expressed by the participants of this study stands out, which is that the Incubator promotes reflections that transcend the physical environment or the themes/contents discussed, that is, it provides them with insights that promote reflections on their professional behaviors and practices. It is evident that, in addition to the themes discussed, the interactive technologies that allow dynamic connections between being and doing, between theory and practice, with what is experienced in everyday practice, are also highlighted.<sup>(17-18)</sup>.

The main objective of continuing health education is the transformation of work. It is expected that it promotes the development of critical and conscious professional attitudes in the professional’s being and doing, aiming for the development of a transformative practice, as demonstrated by the participants of this study. Corroborating these findings, a recent study demonstrated that the work extrapolates work activities and is, above all, a space for training and continuing education of the health workforce. However, this perspective requires changes in the way of thinking and organizing the teaching and learning processes, based on methodological alternatives consistent with and for this world of work<sup>(19)</sup>.

Just like theory, practice also needs to be revisited and (re)signified permanently. In this relation, all circumstances need to be enhanced according to reflective and dialogical processes that reflect the practice, in order to not reproduce sterile practices. Accordingly, the mediator needs “to be dialogical, critical and reflective, as well as to be aware of the intentions that guide their practice, in the sense that subjectivity builds reality, which changes according to the collective interpretation”<sup>(20-21)</sup>.

The continuing education process, mediated by the Learning Incubator, requires a propositional critical thinking of workers, managers, users and educational institutions. This thinking was incorporated by the participants of this study when they mentioned that, in addition to the topics

discussed at the Incubator, collaborative learning and construction made it possible to re-evaluate professional attitudes and behaviors. Under this approach, it is important to overcome the reproduction of specific knowledge focused on the transmission of content with predefined themes and traditional approaches. As shown in previous studies, it is necessary to enable new ways of teaching and learning, so that the participants, in this case the professionals and the students, feel motivated to (re)construct knowledge and practices in an autonomous and co-responsible way<sup>(22-23)</sup>.

A limitation of this study was the incipient use of the Learning Incubator by nursing professionals, which may reflect on a superficial characterization of the state of the art of this technology. Therefore, new studies in the Nursing/health area should be conducted to associate continuing education, supported by significant teaching and learning methodologies, to Learning Incubators, in order to expand and validate theories and practices.

Therefore, the understanding of the meaning of the Learning Incubator as a teaching and learning technology in the nursing area will expand its use by researchers, professors and nurses. This way, it will enhance new technological initiatives and promote the advance of the nursing area.

## CONCLUSION

In the perception of the participants, the Learning Incubator, as a teaching and learning technology in the nursing area, represents a space for encounter, dialogue and (re)signification of their professional being and doing. Combined with continuing health education, the Learning Incubator allows the problematization of the work process, aimed at transforming professional practices and the organization of work.

The Learning Incubator, as seen by the study participants, is not limited to the Incubator meetings or the themes addressed in it. Beyond a welcoming physical space, the Incubator expands itself and becomes a tool that promotes self-reflection and self-assessment of professional behaviors and attitudes crystallized in daily practices.

The Learning Incubator is, in short, a prospective technology for the promotion of continuing health education. It is considered relevant that nursing professionals do not limit themselves to consuming and reproducing established practices, but also challenge themselves to lead new processes and products that contribute to the (re)signification of professional practice.

## RESUMO

**Objetivo:** Compreender o significado da Incubadora de Aprendizagem como tecnologia de ensino e aprendizagem na área de enfermagem. **Método:** Pesquisa qualitativa, apoiada na teoria fundamentada nos dados. A coleta de dados ocorreu entre março e novembro de 2019, por meio de entrevistas com questões norteadoras e hipóteses direcionadas a dois diferentes grupos. Considerou-se a técnica de análise comparativa dos dados, a partir da codificação aberta, axial e integralizada, conforme proposto pelo método, atingindo-se amostragem teórica com 23 participantes, os quais eram enfermeiros, técnicos e alunos de enfermagem. **Resultados:** A delimitação das categorias confluiu para o fenômeno, (Re)significando saberes e práticas por meio da Incubadora de Aprendizagem. Norteadas pelo modelo paradigmático, as categorias foram denominadas com base nos três componentes: Condição: Reconhecendo a indissociabilidade entre o ser e fazer profissional; Ação/interação: Revisitando posturas profissionais rotineiras e mecanicistas; Consequência: Remetendo-se às reflexões e aos saberes construídos na Incubadora de Aprendizagem. **Conclusão:** A Incubadora de Aprendizagem, conforme significado pelos participantes do estudo, não se reduz ao momento da Incubação ou às temáticas abordadas. Para além de espaço acolhedor, a incubadora amplia e traduz-se em ferramenta indutora de autorreflexão e autoavaliação de atitudes e posturas profissionais.

**DESCRITORES**

Educação em Enfermagem; Aprendizagem; Tecnologia; Educação Continuada.

**RESUMEN**

**Objetivo:** Comprender el significado de la Incubadora de Aprendizaje como tecnología de enseñanza e instrucción en enfermería. **Método:** Es una investigación cualitativa basada en la teoría fundamentada en los datos, los cuales se recopilaban entre marzo y noviembre de 2019 mediante entrevistas compuestas por preguntas orientadoras e hipótesis dirigidas a dos grupos diferentes. Se consideró la técnica del análisis comparativo de los datos, a partir de la codificación abierta, axial e integral, propuesta por el método, llegando al muestreo teórico con 23 participantes enfermeros, técnicos y estudiantes de enfermería. **Resultados:** La delimitación de las categorías convergió en el fenómeno, (Re)significar el conocimiento y las prácticas a través de la Incubadora de Aprendizaje. A partir del modelo paradigmático, las categorías se denominaron en función de tres componentes: Condición: Reconocer la inseparabilidad entre el ser y el hacer profesional; Acción/interacción: Revisar las posturas profesionales rutinarias y mecanicistas; Consecuencia: Remitirse a las reflexiones y conocimientos construidos en la Incubadora de Aprendizaje. **Conclusión:** La Incubadora de Aprendizaje, tal y como la entienden los participantes del estudio, no se reduce al momento de la Incubación ni a los temas tratados. Además de ser un espacio acogedor, la incubadora se expande y se traduce en una herramienta que induce a la autorreflexión y a la autoevaluación de actitudes y posturas profesionales.

**DESCRIPTORES**

Educação em Enfermería; Aprendizaje; Tecnologia; Educação Continua.

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