



STRATEGIES FOR MOTIVATING EMBRYOLOGY LEARNING: AN EXPERIENCE REPORT IN THE NURSING COURSE OF THE FEDERAL UNIVERSITY OF RIO GRANDE DO SUL

Simone Marcuzzo¹  Paola Melo Campos²  Júlia Schneider³ 
 Claudenilson da Costa Régis⁴ 

^{1 2 3 4} Universidade Federal do Rio Grande do Sul

ABSTRACT

The behavior of the student in Higher Education in relation to their learning process is often discussed. The beginning of the curricula in the health area is theoretical and of the biological area, which can lead in demotivation to the learning in the entering student. The present report aims to present the experience of the use of active methodologies in the Nursing Course in order to make the learning of Embryology more meaningful. This action research had as objectives: 1) to relate basic theoretical contents with the disciplinary practices and 2) to capture the student's attention with the content developed in the classroom. The approach of the theory with the professional practice was obtained through the participation of monitors in the seminars presented by the students. The monitors contributed with reports of practical experiences, evidencing the importance of the theory. Videos, diagrams, mock-ups, practical classes and study guides were the strategies used to access content, contrasting the traditional model of expository class. An extra class space in social network was created, which allowed the sharing of supplementary material to the classes. We evaluated this action research through the application of an instrument with closed questions, associated to students' reports. We found that the participation of the classroom monitors assisted the contextualization of the importance of Embryology for Nursing professionals. Through the comments of the students, it was observed that the introduction of varied didactic strategies provided greater participation and motivation. It is concluded that the diversified offer of more interactive learning methodologies are ways to be developed in the academy, which provide quality learning.

KEYWORDS

Higher Education. Embryology. Nursing. Active learning.

Corresponding Author

¹ Simone Marcuzzo

E-mail: simone.marcuzzo@ufrgs.br

Universidade Federal do Rio Grande do Sul, Brasil

CV Lattes

<http://lattes.cnpq.br/9677689249944390>

Submitted: 23 Sept. 2018

Accepted: 22 Nov. 2018

Published: 06 Dic. 2018

[doi> 10.20396/riesup.v5i0.8653470](https://doi.org/10.20396/riesup.v5i0.8653470)

e-location: e019011

ISSN 2446-9424

Antiplagiarism check



Distributed under



ESTRATÉGIAS PARA MOTIVAR A APRENDIZAGEM DA EMBRIOLOGIA: UM RELATO DE EXPERIÊNCIA NO CURSO DE ENFERMAGEM DA UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL

RESUMO

O comportamento do discente no Ensino Superior em relação ao seu processo de aprendizagem é tema discutido frequentemente. O início dos currículos na área da saúde é teórico e da área biológica, o que pode acarretar em desmotivação para a aprendizagem no aluno ingressante. O presente relato visa apresentar a experiência da utilização de metodologias ativas no curso de Enfermagem com o intuito de tornar mais significativo o aprendizado da Embriologia. Essa investigação-ação teve como objetivos: 1) relacionar conteúdos básicos teóricos com as práticas disciplinares e 2) envolver a atenção do aluno com o conteúdo desenvolvido na sala de aula. A aproximação da teoria com a prática profissional foi obtida por meio da participação de monitores nos seminários apresentados pelos discentes. Os monitores contribuíam com relatos de vivências práticas, evidenciando a importância da teoria. Vídeos, esquemas, maquetes, aula prática e roteiro de estudos foram as estratégias utilizadas para acessar o conteúdo, contrapondo o modelo tradicional de aula expositiva. Um espaço extraclasse em rede social foi criado, que permitiu o compartilhamento de material suplementar às aulas. Avaliamos essa investigação-ação por meio da aplicação de um instrumento com perguntas fechadas, associado a relatos dos discentes. Constatamos que a participação dos monitores em sala de aula auxiliou a contextualização da importância da Embriologia para a atuação do profissional de Enfermagem. Por meio dos comentários dos discentes, observou-se que a introdução de estratégias didáticas variadas proporcionou maior participação e motivação. Conclui-se que a oferta diversificada de metodologias de aprendizagem mais interativas são caminhos a serem desenvolvidos na academia, que oportunizam qualidade da aprendizagem.

PALAVRAS-CHAVE

Ensino superior. Embriologia. Enfermagem. Aprendizagem significativa. Metodologias ativas.

ESTRATEGIAS PARA MOTIVAR EL APRENDIZAJE DE LA EMBRIOLOGÍA: UN RELATO DE EXPERIENCIA EN EL CURSO DE ENFERMERÍA DE LA UNIVERSIDAD FEDERAL DEL RÍO GRANDE DEL SUR

RESUMEN

El comportamiento del alumnado en la Enseñanza Superior en relación a su proceso de aprendizaje es un tema discutido frecuentemente. El inicio de las formaciones en el área de la salud es teórico y del área biológica, lo que puede resultar en desmotivación para el aprendizaje en el alumno principiante. El presente relato pretende presentar la experiencia de la utilización de metodologías activas en el curso de Enfermería con el objetivo de hacer más significativo el aprendizaje de la Embriología. Esta investigación-acción tuvo como objetivos: 1) relacionar contenidos básicos teóricos con las prácticas disciplinares y 2) involucrar la atención del alumno con el contenido desarrollado en el aula. La aproximación de la teoría con la práctica profesional fue obtenida por medio de la participación de monitores en los seminarios presentados por los profesores. Los alumnos monitores contribuían con relatos de experiencias prácticas, evidenciando la importancia de la teoría. Los vídeos, esquemas, maquetas, clases prácticas y guías de estudios fueron las estrategias utilizadas para acceder al contenido, contraponiendo el modelo tradicional de clase expositiva. Se creó un espacio “extraclase” en las redes sociales, que permitió el intercambio de material complementario a las clases. Evaluamos esta investigación-acción por medio de la aplicación de un instrumento con preguntas cerradas, asociado a relatos de los discentes. Constatamos que la participación de los monitores en el aula ayudó a la contextualización de la importancia de la Embriología para la actuación del profesional de Enfermería. Por medio de los comentarios de los profesores, se observó que la introducción de estrategias didácticas variadas proporcionó mayor participación y motivación. Se concluye que la oferta diversificada de metodologías del aprendizaje más interactivas son caminos a ser desarrollados en la universidad, que oportunizan la calidad del aprendizaje.

PALABRAS CLAVE

Enseñanza superior. Embriología. Enfermería Aprendizaje activo.

Introduction

The conservative teaching methodologies historically guided the academic training of health professionals, since the process was restricted to the transmission of content by the lecturer combined with the critical passivity of the student (MITER et al., 2008). In the past, students were allowed to influence teachers by accepting them as superiors on the hierarchical scale, considering them competent in their area of knowledge, and recognizing their power to reward or punish through assessments. Therefore, the students had to adapt themselves to the teachers' methods. However, at present we can observe a change in the student profile, it is noticed that students are no longer influenced by the title of "PhD" of the instructor, often doubting their didactic competence (JESUS, 2003).

The change in the student profile is related to the profound changes that are taking place in the contemporary world: the rapidity in the production of knowledge, the provisionality of the truths built up in scientific knowledge and, above all, the ease of access to the vast range of information and not only the transmission of knowledge. The recognition of these three principles imposes a significant change in education at all levels and should guide the process of training professionals (FINI, 2017).

Universities have attacked these changes, and have introduced mechanisms to improve teaching activities, through the implementation of college professor assessment by students, for example. In this context, the lecturer, who has been trained in this traditional model of teaching, has been challenged to reflect on the paradigms of the teaching and learning process, becoming more flexible and seeking didactic alternatives to meet the language and interests of students.

In recent years, a vast body of research has been created concerning the nature, origins, and development of the processes involved in student learning. The instructional paradigm, centered on responses, is being replaced, albeit more slowly than would be desirable, by questioning, research, and the active construction of responses. Theories and models about learning processes have suggested the urgency of equipping students with tools that allow them, from the questions formulated in the personal study, in classes, in laboratories, in literature reviews, in an autonomous and self-regulated form, but not necessarily solitary (ROSÁRIO, 2006).

In order to revitalize this scenario, it has been advocated that learning should be geared towards humanistic dimensions and that it can evoke affectivity beyond the restricted view of the intellectuality, with empathy and collaboration, in order to make it more solid and lasting (ROGERS, 1986). As a segment of this construction, significant learning emerges, in which the instructor is a facilitator in building a more favorable attitude and with more student motivation towards learning (MITER et al., 2008).

More specifically, meaningful learning is the process by which new knowledge relates in a non-arbitrary and non-literal way to the student's cognitive structure, so that the prior

knowledge of the learner interacts significantly with the new knowledge that is presented, provoking changes in their cognitive structure (AUBUBEL, 1973). In order to access a greater role of the student in their learning process, and thus promote meaningful learning, we have encouraged the adoption of teaching-learning methodologies that approach the content in more dynamic and participative ways, favoring the approximation between students and instructors (CARRARO et al., 2011). These new ways of articulating knowledge in higher education are the so-called "active methodologies" of teaching and learning (XAVIER et al., 2014), which stimulate critical-reflexive teaching-learning processes and proposes the elaboration of autonomous form (SOBRAL; CAMPOS, 2012).

However, curricular fragmentation can be a challenge to the implementation of diversified methodologies of health education. The courses in the health area have a common axis of initial basic disciplines, especially in the biological field, which in the curriculum are far from practical health activities. Basic health sciences, therefore, is a term that refers to the study that underlies all professional training of knowledge of health courses (CÁRNIO, 2011). This model of curriculum structured in isolated disciplines and that delimits the basic cycle separated from the clinical cycle is a strategy to homogenize the teaching in the area (MALNIC and SAMPAIO, 1994). However, specifically in the health area, most incoming students have perspectives on clinical practice rather than on academic activity itself. This is revealed by the influence factors in the choice of career, in which the need to contact patients, the interest in helping others and the quest for independence stand out. Curricular fragmentation, therefore, can lead to demotivation for learning or even conflicts of orientation in the student entering the University (SOBRAL, 2003).

Embryology is a discipline of the basic sciences, inserted in Morphology, a science that also covers Histology and Anatomy. These disciplines aim at the macroscopic and microscopic study of the structure of living beings and their development (MALNIC and SAMPAIO, 1994). Embryology, more specifically, is related to the study of embryonic and fetal prenatal development (MOORE, 2016). In the Nursing course, after attending basic sciences, the students are directed to Nursing Care subjects (in the fourth semester of graduation), composed of a block of theoretical classes and disciplinary practices in fields of activity (Hospital School and Basic Unit of Cheers). Disciplines such as Women's Health and Newborn Care, Nursing Care for the Newborn, Child and Adolescent and Nursing Care in Collective Health are strongly related to the content addressed in Embryology. Embryology topics of special interest to this area of nursing are, for example, ovulation, gametes transport, fertilization, implantation, maternal-fetal relations, fetal circulation, critical periods of development and congenital malformations. Although the contents of Embryology clearly relate to subjects of a practical nature that are taken further in the Nursing course, to the incoming student these relationships are not obvious and direct, since they have not yet had contact with professional practice at the University, have no notion of the fields of action of a nursing professional. This disconnection between theory and practice, as well as the new volume of information and the demands that entering in the University imposes, can lead to a lack of interest of the students in the learning of Embryology.

From these reflections that emerged during the Embryology teaching practice for the Nursing course of the Federal University of Rio Grande do Sul (UFRGS), it was tried to implement didactic strategies that would motivate learning in this theoretical discipline. The report of this experience is part of an action research. Action research in education is a strategy for the development of professors and researchers so that they can use their research to improve their teaching and, consequently, the learning of their students. Through action research, practice is improved by the systematic oscillation between acting on the field of practice and investigating it. We plan, implement, describe and evaluate a change to improve your practice, learning more during the process, both about practice and research. The phases of action research were adapted to the specific needs of this experience report (THIOLLENT, 2008). In the exploratory phase, the problem-situation was listed: difficulties experienced by students in perceiving the importance of the theoretical content addressed in the discipline for professional practice, which leads to deficits in the learning of Embryology in the Nursing course of UFRGS; sequentially, the objectives of action-research were elaborated: to implement active, meaningful and motivating didactic strategies, centered on the protagonism of the student in the classroom. As specific objectives of this action, we seek: 1) to relate basic contents with the disciplinary practices, assuming that the student of the third semester does not have practical experience yet to make these connections; 2) to use a diversity of didactic strategies to involve the student with the content developed in the classroom, as opposed to the traditional model of expository class; and 3) promote a more welcoming learning environment. The actions were implemented during class, with three groups and, at the end of the course, the data were collected. Through the application of an instrument with closed questions and also through reports produced spontaneously by the students, we evaluated whether the application of the didactic strategies fulfilled its objective of motivating the learning of Embryology for Nursing. Finally, each semester, a “round of conversation” was promoted in order to provide more learning to the group, since both the researcher and the participants learn to investigate and discuss their actions.

Description of the Investigation-Action

The action-research was registered as a project called "Applied Embryology" (registered in Pro-Rectorry of Extension - PROREXT-UFRGS 33926). The project was developed in the discipline of Human Embryology for the Nursing course of the Federal University of Rio Grande do Sul. The discipline is allocated in the third semester of the course. The number of students in the course varies each semester, with an average of 40 students per class. The project was developed during three semesters, in three different classes. It was elaborated by the lecturer regent of the discipline together with students who have already studied the discipline in previous semesters. On the first day of each semester, the project objectives were explained to the students and the monitors participating in the action were presented. The monitors were students of the Nursing course who had already studied the discipline of Embryology and who became available to participate in the project because they had affinity for the area. The monitors had already experienced disciplinary

practices as well as extracurricular internships, so they were more experienced than the students in the course. The activities developed, as well as their objectives and the way of evaluating the experience, will be described next.

Seminars

On the first day of class, the class was divided into groups (around 5 participants per group). Each group was assigned a theme, such as, "prenatal", "childbirth", "congenital malformations". The topics should be prepared by the group responsible to be presented in the form of a seminar during the course of the semester. Each lesson on the discipline's teaching plan schedule had a corresponding seminar. The monitors assisted the students in the preparation of the seminar, providing assistance and conducting their preparation, as well as they assisted and contributed to the presentation of the seminars in the classroom. After the presentation, the monitors would report on their experiences about what was covered (what disciplines and/or which stages students would see in practice the concepts presented, for example). In the end, the large group was encouraged to ask questions and make comments. The activity contemplated 30 minutes of each class, whose duration is 1 hour and 40 minutes. The intention of the participation of the monitors was to bring contributions related to the contextualization of the theory with the professional practice of the Nurse.

Three-dimensional visualization of embryonic structures

For three-dimensional visualization of the embryological processes, videos, models and anatomical pieces were used. The explanation of the content of each class began with videos that show virtual animations of the processes. From the video, schemes were represented on the whiteboard and students were encouraged to collaborate with the construction of the scheme. To assist in this process, some models of satin vinyl foam, on a macroscopic scale, were prepared for students to manipulate. In addition, a practical lecture was carried out for the microscopic visualization of histological slides (cuts of testis, ovary, chicken embryo, mouse fetus), anatomical pieces of human and other animal fetuses, as well as embryonic attachments from the laboratory collection of Morphology of UFRGS.

Social network Facebook

At the beginning of the semester, a closed discipline group was created on the social network Facebook. The virtual environment made it possible to quickly provide videos (excerpts of films and serials), reports that related to Embryology and supplementary material for the study (abstracts, schemes, animations). The virtual environment also provided a means for sharing tips for more effective study, content often not addressed in the classroom. The purpose of the use of this media was to maintain a greater contact with the students within a communication tool of their reality.

Outlined study guide

A study guide was created for each class, in which the student was asked to outline the main topics of the class, on one page. For example: "outline the fertilization and development until the bilaminar embryo: identify epiblast, hypoblast, amniotic cavity, yolk sac, chorion, syncytiotrophoblast and cytotrophoblast". The total completion of the script was checked, and a note was awarded to complement the final concept of the course. The purpose of this script was to provide the revision of the extra class content, as well as to help the student to list the main processes studied.

Action evaluation

The evaluation of the action was done in two ways: In order to evaluate the participation of the monitors in the thematic seminars, we elaborated an instrument with 8 closed questions and answers in a scale of five points, indicating the satisfaction level for each evaluated item: "bad", "unsatisfactory", "regular", "Great" and "not applicable". There was also an open field for testimonials. The students who took the course received this material on the last day of class and answered it in the classroom. The student was asked not to identify himself. Afterwards, the responses were computed. The closed questions, as well as the tabulated answers are described in Table 1.

The evaluation of the use of the implementation of varied didactic resources was made by the perception of the behavior of students in the classroom: level of attention, participation in activities and motivation. In addition, at the end of the semester, a conversation round was held in which students were able to present their observations on the action. The students' comments have been transcribed and will be presented below.

Results

Initially, when the project was proposed in the classes, it was noticed an attitude of distrust of the students. However, as the dynamics were applied, the students were more receptive. During the development of the action, the progress in demonstrating commitment to activities was clear.

A total of 97 students, from the three classes in which the action was applied, answered the instrument for evaluation of the participation of the monitors during the seminars presented by the students who are students of the discipline. Table 1 presents the questions, the results of the level of satisfaction in each item and the number of responses obtained. It is noticed that most of the students answered "good" and "great" in all the questions. For example, in the question "Did the experience of the instructors contribute to the content of the lecture with clinical practice?", 82.2% of the students responded as "good" or "great". Regarding the participation of the monitors, 82.2% of the students responded as "good" or "great" and 98.9% answered that the activity should continue.

Here are some of the students' reports on this activity:

"It was very constructive and real because it brings theory closer to practice and makes us understand that content is very important." (Student A)

"(...) it helped me to have a clearer understanding of the role and importance of the nurse." (Student B)

"It made me visualize matter in practice, which I had difficulty with." (Student C)

"I felt much more at ease and secure demonstrating my knowledge when I will get to the practice." (Student D)

"The idea of seminars during all classes was very good. It gave us chance to see how the knowledge acquired in the discipline will be used in the future and also have the first contact with various conditions that we had never heard about." (Student E)

It can be seen from the data and the reports that the participation of the classroom monitors, contributing with more practical information on the applicability of theoretical concepts, helped the students to contextualize Embryology within the practice of the Nursing professional. In addition, we found that it was constructive for incoming students to live with students at a more advanced stage in the course, the monitors. This exchange made it possible for incoming students to visualize the appropriation of the knowledge that occurs along the course of the curricular activities perceived in the students in the phase of completion of the course.

Table 1. Results of the evaluation of the performance of the monitors

	1	2	3	4	5	Not applicable	Total
The participation of the monitors has created a comfortable environment for answering questions			3	22	71	1	97
The explanations of the monitors were objective			5	23	69		97
The collaboration of the monitors was didactic and favorable to the determination of matter			5	29	63		97
The monitors attended the activities as scheduled			7	25	65		97
The hours of participation of the monitors were satisfactory	1	1	32	59	4		97
The participation of the monitors made me participate more in class	3	17	35	37	5		97
I was integrated with the monitors			18	43	28	8	97

The experience brought by the monitors contributed to associate the content delivered in class with the clinical practice.	2	8	84	3	97
--	---	---	----	---	----

Source: instrument developed to evaluate the participation of the monitors in the seminars. 1: bad, 2: unsatisfactory, 3: regular, 4: good and 5: great.

With regard to the use of the implementation of varied didactic resources, a more active behavior of students in the classroom was observed. There is a perception of a higher level of attention, as well as a more active and motivated posture during the lesson.

We point out some observed advantages of the methodologies used. The three-dimensional visualization of the embryological processes obtained through the presentation of the videos and models is a valuable resource for the oral explanations of the complex sequence of events that occur in the different stages of human development. Associated with oral explanations, students were encouraged to participate in the construction of visual schemas, with key words on the whiteboard, helping to establish the biological terms. In the practical class, human embryos and fetuses were observed at different stages of development in fixative solution, as well as histological sections of reproductive organs, embryos and fetuses, which contributed to consolidate the theory and practice approach. The outlines in the roadmap helped students visualize the content in a more concise way, reinforcing the key points. The Facebook group provided a means for rapid exchange of knowledge, most students "viewed" and/or "liked" the posts. This contact brought all those involved together, since an extra classic bond was maintained. The following are some comments from students about the use of these strategies.

"The lecturer has made available several platforms to access the content, respecting that each student learns better in a different way. In addition, it was very interesting the models developed by the lecturer to illustrate the stages of embryogenesis. "(Student F)

"The lecturer uses several methods! Videos, slides, drawings and even some arts that she herself does to illustrate the story! Great!!!! "(Student G)

"Models were brought, examples given in class showed a great investment in the preparation of classes in order to find a common space with the field of Nursing" (Student H)

It is important to emphasize that the methodologies presented in this report were used in order to present the content in a more pleasant way to the student in the classroom, and thus motivate a more in-depth study of the content. They do not exclude, therefore, the importance of the extra class study in Embryology textbooks. Also, some students reported that they felt they lacked slides with text to orient themselves in class. Although this resource was not used in class, this material was also made available, as well as abstracts, for free student access.

Discussion

The action contributed in an efficient way to the motivation of the learning of the Embryology in the Nursing Course. There was a greater dedication and participation of the students in the classroom. The articulation between theory and practice was provided, highlighting the benefits of interdisciplinarity as opposed to the fragmentation of knowledge. The exchange of experiences between the academics at different stages (beginning and end) of the course, led not only to concepts presentation that will be discussed later in the curriculum, but also the initiation of a more critical thinking, as actual situations are shared in room of class. The use of varied teaching resources comes to meet the demand for significant incentives to facilitate awareness and engagement of students in their learning process because there was incentive for the student to participate in the construction of the lecturer's line of reasoning during the explanation of the content.

It is common that the curricular fragmentation causes questions among the students entering the Nursing course on the applicability of the theoretical concepts of Embryology. Added to this, the difficulty of the discipline itself (volume of information, complexity of processes) and the changes that academic life imposes (transition from the teaching model and learning from high school to higher, as well as the university routine itself).

Therefore, the initial challenges can be shocking and demotivating for students. Demotivation can trigger changes in cognitive functioning and learning, further reducing attention and concentration, which reinforces the possibility of performance impairment and even dropping out of the course. In contrast, during the three semesters in which the project was applied, there was a progressive engagement of the students during the class period. Although it was not evaluated quantitatively, it was also noticed a better performance of the students in the discipline, compared to the semesters prior to the implementation of the project. The students' reports indicate that the use of varied strategies arouses greater interest in the subject, facilitates the understanding of the complex processes, as well as the students indicate that they are motivated by the availability that the monitors and the instructor demonstrate in making the class more enriching than the standard.

In fact, didactic strategies that aim to encourage and welcome the freshman student in their learning process can promote a greater engagement in the achievement of academic demands and, therefore, benefits in the learning itself. Motivation in the academic context is determinant for the quality of learning and performance: motivated students demonstrate being participative and active in the learning process, seeking to capture information and expend the effort and dedication to develop and improve strategies for understanding and mastering the content that is being presented to it (RAMOS, 2013).

With regard to didactic strategies, several methodologies have emerged and there are discussions about the need for new strategies to be adopted so that the teaching and learning process is redesigned. For example, the use of gamification in the Physiotherapy disciplines

in the Rehabilitation and Practice of Problem-Based Physiotherapy in the Physiotherapy course of the University of Brasília has led to greater motivation and an interest in deepening the content of the students. (FRAGELLI, 2017). In this context, active methodologies appear as a proposal to transform the process of teaching and learning, as it focuses on the active participation of all those involved, focused on the reality in which they are inserted. As a confrontation with the traditional model imposed and accepted over time, the active methodologies of teaching and learning, stimulate the recognition of the problems of the world today, making the students able to intervene and promote the necessary transformations. The student becomes a protagonist in the process of constructing his knowledge, being responsible for his trajectory and the achievement of his objectives, in which he must be able to self-manage and self-govern his formation process, committing himself to his learning (FINI, 2017).

It is also emphasized the role of the monitors as mediators in the process of motivation for learning. The monitoring provides the student-monitor with the experience in activities that aim to awaken the critical and reflexive sense of the students in the course, as well as the development of leadership and autonomy of the monitor student (FERNANDES, 2017). Students benefit from the participation of the monitors, because they identify with them and the relationship can be more direct, compared to the student-professor. This creation of links and exchange of knowledge is fundamental and advantageous in the process of teaching and learning. Student monitors also have the opportunity to review the theoretical contents essential to the Nursing practices of the last semesters of the course, as well as exercise the ability to guide behaviors and instructions, and thus also contribute to their professional education and leadership training which are fundamental roles of a Nurse.

Finally, lecturers want their students to learn to analyze subjects and processes, to critically evaluate proposed solutions to the problems of the physical and social world, and to be able to apply the ideas learned in formal instruction to the problems and challenges that lie outside the classrooms. However, although students are confronted with large amounts of information, they do not always modify the conceptual architecture of their meanings, and, frequently, students' understanding is below what is intended, with consequent repercussions on academic outcomes. These reflections instigate questions such as: how should the hours of contact between lecturers and students be organized to promote skills that prepare them for the challenges that will appear in their lives? How to increase student engagement in tasks? How to improve the quality of your learning? The answers to these questions involve the entire university community. In fact, the diversified offer of more interactive learning methodologies, of promoting small group mentoring opportunities to discuss and deepen questions, are some examples of ways to be developed in academia and with evident implications in the quality of learning (ROSÁRIO, 2006).

Final Considerations

Thus, the adoption of diversified teaching strategies fulfilled its pedagogical objective, as well as instigated the motivation of students of the Nursing course for the study of Embryology. It is hoped that such an experiment could also motivate other instructors, not only in the Nursing courses, but also in other courses in the health area, to reinvent their classes. We highlight the perceived factors that are positively related to the higher engagement and motivation for the learning of Embryology after the development of active methodologies for the Nursing course: 1) to visualize the practical applicability of the content seen in the classroom; 2) achieve different ways of "learning" through the application of diversified didactic strategies, which consequently provide greater student autonomy in their learning process; 3) encourage the student to actively participate in the development of content in the classroom; 4) integration between the students in the initial and final semesters (monitors), allowing the exchange of experiences and the creation of links; 5) highlight the role of monitoring in the process of mediating student learning; 6) foster a greater sense of belonging, a consequence of the commitment of all to provide a more welcoming learning environment. 6).

Still, as limitations of this action research, we can raise the question of the need for greater investment in building instruments for the evaluation of students' motivation that include more aspects, cognitive and emotional, potentially stimulated by the adoption of varied didactic strategies in the classroom. Also, comparing the academic performance pattern of the classes before and after the strategy's implementation could add interesting data to the story. Finally, more accounts of this nature could encourage more fruitful discussions. However, the literature on curricular innovation in Higher Education in the area of health, with a focus on transdisciplinary and associated with active methodologies, is still restricted.

It is worth emphasizing that there is no rigid rule that bases the choice of the strategy that will facilitate the teaching of Embryology in Higher Education. What is important is to be attentive to the profile of the students, to have a global perspective of the possible strategies to be able to decide what is most appropriate at a given moment and in tune with the presented situation and to take up the challenge of promoting a more welcoming university environment for the motivation to learn.

References

AUSUBEL, D. P. **Algunos aspectos psicológicos de la estructura del conocimiento**. Buenos Aires: El Ateneo, 1973.

CÁRNIO, Evelin Capellari. As ciências básicas e a enfermagem. (Editorial). **Rev. Latino-Am. Enfermagem**, São Paulo, v.19, n.5, p. 1061-1062, set./out. 2011. Disponível em: <https://www.revistas.usp.br/rlae/article/view/4414>. Acesso em: 19 abril 2018.

CARRARO, Telma Elisa et al. Socialização como processo dinâmico de aprendizagem na enfermagem: uma proposta na metodologia ativa. **Invest. educ. enferm**, Medellín, v. 29, n. 2, p. 248-254, jul. 2011. Disponível em:

http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-53072011000200010&lng=en&nrm=iso. Acesso em: 25 Nov. 2018.

FERNANDES, Juliana. ABREU, Thaynara Alves. DANTAS Anne Joyce Lima. SILVA, Angélica Maria de Sousa. Influência da Monitoria Acadêmica no Processo de Ensino e Aprendizagem. **Clínica & Cultura**, v.2, n.1, jul./dez. 2016. Disponível em: <https://seer.ufs.br/index.php/clinicaecultura/article/download/5650/6220>. Acesso em: 26 nov. 2018.

FINI, Maria Inês. Inovações no ensino superior. Metodologias inovadoras de aprendizagem e suas relações com o mundo do trabalho: desafios para a transformação de uma cultura. **Administração: Ensino e Pesquisa**, [S.l.], v. 19, n. 1, p. 176-183, jan. 2018. ISSN 2358-0917. Disponível em: <https://raep.emnuvens.com.br/raep/article/view/982>. Acesso em: 25 nov. 2018.

FRAGELLI, Taís Branquinho Oliveira. Gamificação como um processo de mudança no estilo de ensino aprendizagem no ensino superior: um relato de experiência. **Rev. Inter. Educ. Sup.**, Campinas (SP), v.4 n.1, 2017, 2017. Disponível em <https://periodicos.sbu.unicamp.br/ojs/index.php/riesup/article/view/8650843/16979>. Acesso em: 04 de jun. 2018.

JESUS, Saul Neves de. Estratégias para motivar os alunos. **Educação**, Porto Alegre, v. 31, n. 1, p. 21-29, jan./abr. 2008. Disponível em: <http://revistaseletronicas.pucrs.br/ojs/index.php/faced/article/download/2753/2101>. Acesso em 12 de mar. 2018.

MALNIC, Gerhard. SAMPAIO, Magda Carneiro. O ensino das ciências básicas. **Estud. Av.**, São Paulo, v.8,n.22, , set./dez. 1994. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-40141994000300081. Acesso em: 21 fev 2018.

MATOSO, Leonardo Magela. Lopes. **A importância da monitoria na formação acadêmica do monitor: um relato de experiência**. Rev Catussaba. v.3. n.2, 2014. Disponível em: <https://repositorio.unp.br/index.php/catussaba/article/view/567>. Acesso em: 17 jan 2018.

MITRE, Sandra Minardi et al. Metodologias ativas de ensino-aprendizagem na formação profissional em saúde: debates atuais. **Ciência & Saúde Coletiva**, São Paulo, v. 13, suppl. 2, p. 2133-2144, 2008. Disponível em: http://www.scielosp.org/scielo.php?pid=S141381232008000900018&script=sci_abstract&tlng=es. Acesso em: 25 out 2017.

MOORE, Keith L. et al. **Embriologia clínica**. 10. ed. Rio de Janeiro: Elsevier, 2016. ISBN 9788535285031

RAMOS, Susana Isabel Vicente. **Motivação acadêmica dos alunos do ensino superior**. Psicologia.pt Motivação acadêmica dos alunos do ensino superior. Disponível em: <http://www.psicologia.pt/artigos/textos/A0677.pdf>. Acesso em: 28 nov 2017.

- ROGERS, Carl. **Liberdade de aprender**. 2.ed. Porto Alegre: Artes Médicas, 1986.
- ROSÁRIO, Pedro. **Comprometer-se com o estudar na Universidade**: "Cartas do Gervásio ao seu umbigo". Coimbra: Edições Almedina, S.A, 2006.
- SILVA, Jaqueline Carvalho e et al. Pesquisa-ação: concepções e aplicabilidade nos estudos em enfermagem. **Rev. bras. enferm.**, Brasília, v. 64, n. 3, p. 592-595, Junho 2011. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-71672011000300026&lng=en&nrm=iso. Acesso em: 25 Nov. 2018.
- SOBRAL, Dejanó Tavares. Motivação do aprendiz de medicina: uso da escala de motivação acadêmica. **Psic.: Teor. e Pesq.**, Brasília, Jan-Abr 2003, Vol. 19 n. 1, Disponível em: <http://www.scielo.br/pdf/ptp/v19n1/a05v19n1>. Acesso em: 12 mar 2018.
- SOBRAL, Fernanda Ribeiro; CAMPOS, Claudinei José Gomes. Utilização de metodologia ativa no ensino e assistência de enfermagem na produção nacional: revisão integrativa. **Rev. esc. enferm. USP**, São Paulo, v.46, n. 1, p. 208-218, fev. 2012. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342012000100028&lng=en&nrm=iso. Acesso em: 25. nov. 2018.
- THIOLLENT M. **Metodologia da pesquisa-ação**. 16a ed. São Paulo: Cortez; 2008.
- XAVIER, L.N.; OLIVEIRA G.L.; GOMES A.A.; MACHADO, M.F.A.S.; ELOIA, S.M.C. Analisando as metodologias ativas na formação dos profissionais de saúde: uma revisão integrativa. **SANARE: Revista de Políticas Públicas**, v.13, n.1, p.76-83, 2014. Disponível em: <https://sanare.emnuvens.com.br/sanare/article/view/436/291>. Acesso em: 25. nov.2018.