SEVEN
publicações acadêmicas

THE VOICE OF EXPERIENCE: PORTRAITS AND CHALLENGES IN TEACHING BIOLOGY IN CONTEMPORARY TIMES

A VOZ DA EXPERIÊNCIA: RETRATOS E DESAFIOS NO ENSINO DE BIOLOGIA NA CONTEMPORANEIDADE

LA VOZ DE LA EXPERIENCIA: RETRATOS Y DESAFÍOS EN LA ENSEÑANZA DE LA BIOLOGÍA EN LA ÉPOCA CONTEMPORÁNEA

https://doi.org/10.56238/sevened2025.030-061

Maria Caroline Rodrigues Moura[1], André dos Santos Fontes[2], Bruna Cardoso de Sousa Rocha[3], Ceres de Moura Vale[4], Maria Karoline Carvalho Almeida[5], Ludmylla de Sá Ribeiro[6], Luiz Eduardo das Neves Silva[7], Patricia da Cunha Gonzaga Silva[8]

ABSTRACT

This study seeks to analyze the portraits and challenges of contemporary biology teaching through the accounts of teachers from the municipality of Picos, Piauí, and neighboring regions. Teachers' experiences with biology teaching present many challenges, especially motivating students to learn scientific and biological knowledge. This study, through qualitative research using questionnaires, interviewed teachers, and the data were analyzed using content analysis. This study hopes to contribute to a better understanding of teachers' motivations, challenges, and classroom experiences in basic education biology, with an emphasis on practices, training, and expectations in the profession.

Keywords: Teaching. Sciences. Biology. Teaching Experiences.

RESUMO

Este estudo busca analisar os retratos e desafios no ensino de Biologia na contemporaneidade por meio de relatos de docentes do município de Picos-PI e regiões vizinhas. As vivências e experiências dos professores no tocante ao ensino de Biologia apresenta muitos desafios, em especial motivar os discentes para aprender os

[1] Degree in Biological Sciences. Universidade Federal do Piauí. E-mail:carolpicos83@ufpi.edu.br
ORCID:0009-0007-5915-2550 Lattes: https://lattes.cnpq.br/9337466718137874
[2] Post-graduate in Higher Education Teaching and School Management. Universidade Federal do Piauí
E-mail: andrebio18@outlook.com ORCID: 0009-0005-9536-9357
Lattes: https://lattes.cnpq.br/7664055952041916
[3] Post-graduate in School Management and Supervision with Higher Education Teaching. Secretaria Municipal de Água Branca. Piauí, Brazil. E-mail: brunacardosodesousarocha@gmail.com
ORCID: https://orcid.org/0009-0006-0734-5011 Lattes: http://lattes.cnpq.br/8378092762758217
[4] Degree in Biological Sciences. Universidade Federal do Piauí. E-mail: ceresvale@ufpi.edu.br
ORCID: 0009-0001-4337-9108 Lattes: https://lattes.cnpq.br/8673098814605623
[5] Postgraduate in Special and Inclusive Education. Secretaria do Estado do Piauí. Piauí, Brazil.
E-mail: karolcarvalho7@hotmail.com ORCID: https://orcid.org/0009-0008-6434-1556
Lattes: http://lattes.cnpq.br/7059970025532570
[6] Degree in Biological Sciences. Universidade Federal do Piauí. E-mail: ludmyllasa18@gmail.com
ORCID: 0009-0000-6026-9325 Lattes: https://lattes.cnpq.br/5857327480675753
[7] Master of Education. Universidade Federal do Piauí. E-mail: eduardosilva1984edu@gmail.com
ORCID: https://orcid.org/0000-0003-1408-9352 Lattes: https://lattes.cnpq.br/9675818406534804
[8] Dr. in Education. Universidade Federal do Piauí. E-mail: patriciagonzaga@ufpi.edu.br
ORCID: https://orcid.org/0000-0002-9602-495X Lattes: https://lattes.cnpq.br/5147194594187454

conhecimentos científicos e biológicos. Neste trabalho, por meio da pesquisa qualitativa, com a utilização de questionários, docentes foram investigados e os dados analisados utilizando a análise de conteúdo. Espera-se, com esse estudo, contribuir para uma melhor compreensão acerca das motivações, desafios e experiências docentes frente à sala de aula, na disciplina de Biologia na educação básica, dando ênfase às práticas, formação e expectativas na profissão.

Palavras-chave: Docência. Ciências. Biologia. Experiências Docentes.

RESUMEN
Este estudio busca analizar las perspectivas y los desafíos de la enseñanza de la biología contemporánea a través de los relatos de docentes del municipio de Picos, Piauí, y regiones vecinas. Las experiencias docentes en la enseñanza de la biología presentan numerosos desafíos, especialmente en la motivación de los estudiantes para el aprendizaje de conocimientos científicos y biológicos. Este estudio, mediante una investigación cualitativa con cuestionarios, entrevistó a docentes y analizó los datos mediante análisis de contenido. Este estudio busca contribuir a una mejor comprensión de las motivaciones, los desafíos y las experiencias de los docentes en el aula de biología de educación básica, con énfasis en las prácticas, la formación y las expectativas de la profesión.

Palabras clave: Enseñanza. Ciencias. Biología. Experiencias Docentes.

1 INTRODUCTION

Biology is the science that studies living beings and seeks to understand the phenomena and functioning of organisms, evidencing the interaction between life and the environment in which it is inserted. The word Biology, etymologically, derives from the Greek *bios,* which means life, and logos, which means study, being conceived as the science that studies life and all its manifestations (Gonzaga, 2017).

The teaching of Biology is organized with a view to the memorization of denominations and concepts, as well as the reproduction of rules and processes, which does not contribute to the fulfillment of the main objectives of the discipline, according to Krasilchik (2011), which are: understanding of scientific knowledge related to life and the development of critical and problematizing sense of the situations inherent to this discipline.

In this perspective, we add its relevance, by addressing diversified themes that, every day, have been discussed by the media, and it is important for the teacher to contextualize them in order to enable the student to associate the reality of scientific development with the basic concepts of biological thinking. (Gonzaga, 2017).

For this, motivation is seen as an important process in the learning of students in the classroom, as the teacher going to the school environment will deal with great challenges and many responsibilities coming from the educational context (Avelar, 2015), in this context, in the mobilization of knowledge from science.

For Boruchovitch and Bzuneck (2009, p. 09), "[...] Motivation, or motive, is what moves a person or puts into action or makes him change course, motivation has been understood sometimes as a psychological factor, or a set of factors, sometimes as a process". Thus, motivation becomes an important factor for facing barriers in the teaching and learning of Sciences, especially Biology.

This study was motivated by the curricular component "Methodology of Science and Biology Teaching", of the Federal University of Piauí, when teachers who work in the teaching of Biology in basic education were investigated. 18 (eighteen) teachers who teach the discipline Biology, from the large area of Natural Sciences and their Technologies, in High School, working in Picos - PI and neighboring regions, were questioned. The objective is to analyze the portraits and challenges in the teaching of Biology in contemporary times through reports of teachers from the municipality of Picos-PI and neighboring regions.

The data were produced through qualitative research, with the application of questionnaires, and analyzed according to Bardin (2011). The data captured individual

characteristics of the teachers, as well as their perceptions, challenges and ideas for the improvement of teaching, contributing to a deeper understanding of the dynamics in the teaching of Science and Biology in contemporary times.

2 METHODOLOGY

Adopting a qualitative approach, according to Paulilo (1999), qualitative research centralizes, segments, and categorizes data to simplify analysis. In this study, we used a questionnaire, with open questions, addressing the motivations underlying the choice of the teaching profession, challenges faced in contemporary schools, suggestions to improve the teaching of Science and Biology, as well as the teaching practices employed in the classes. This choice allowed the collection of detailed information, allowing teachers to freely express their perceptions, motivations, challenges and practices in the teaching of Science and Biology.

The selection of participants was carried out based on specific criteria, considering teachers who work in the area of Natural Sciences, teaching Biology, in High School, in schools in the municipality of Picos-PI and neighboring regions. The choice of these participants provided a contextualized view of the teaching experiences in the region.

It began with the initial categorization of the data, grouping the information from the questionnaires into related sets. This step was essential to simplify the analysis process.

A more detailed segmentation of the data was carried out, identifying common characteristics and grouping related information into specific categories. Pattern identification was carried out thoroughly, examining responses, observations, and findings to highlight significant trends.

The next step involved cross-referencing the data, establishing associations between the information collected. This enriched the analysis, allowing for more robust insights and making it easier to formulate hypotheses for future investigations.

The practice of data visualization was adopted, using clear and accessible strategies to present the identified trends. This visual approach strengthened the collective understanding and contributed to the effective communication of the results.

In the presentation of the results, the findings were presented in a textual way, structured with clarity and cohesion. The data were analyzed according to Bardin (2011).

3 RESULTS AND DISCUSSION

In this section, we present the results and analysis of the study carried out. Goodson (1994) reports the importance of turning our gaze to the stories of teachers, revealing their anxieties and dilemmas, trying to better understand the teaching practice, strongly criticizing our reality of training that is only concerned with investigating pedagogical practices by erasing the personal dimension.

The first question addressed to the teachers, about the choice of the teaching profession, revealed motivations and values that impelled them towards starting and remaining in the career. For some, the vocation awoke from their youth, giving rise to an inclination and admiration for the profession. As expressed by one participant: "It was the area in which I most identified, because I have always liked plants and animals since childhood, I was interested in learning more about the processes that involve living beings." (Teacher 01).

Others pointed to family influence as a preponderant factor, following in the footsteps of family members who chose the path of educators. According to Larrosa (2002), the narratives favor reflection on the experiences and thus make them experiences internalized and signified by the subject. Therefore, the importance of giving voice to teachers.

The figure of an inspiring teacher also emerged, acting as a catalyst for interest in teaching. One interviewee recalled, "I was influenced by a biology teacher in my high school." (Teacher 02).

In addition, some interviewees mentioned an intrinsic admiration for the profession, highlighting the positive impact educators can have on students' lives as a core motivation and the intrinsic power of education.

Next, the teachers interviewed reported their teaching journey, showing challenges that outline the complexity of this profession. Work overload is a primary concern, linked to the extension of working hours and resource responsibilities. According to Oliveira and Vieira (2012, p. 173) "[...] The intensification of work that occurs within the paid working day is quite worrying because it is, in general, more subtle and less visible strategies of exploitation."

The lack of family involvement in education is mentioned, pointing to challenges in building partnerships between school and family. Reis (2010) affirms the importance of this partnership between these two institutions (school and family) for the development and benefit of something that both have in common, that is, the education of students/children.

Maintaining the interest and attention of students is a constant difficulty, requiring innovative pedagogical strategies, the excessive use of cell phones in the classroom is also a contemporary challenge mentioned. The devaluation of teachers and basic education, the lack of public investment and the lack of support for special education are also major concerns shared by these teachers. (...) It is common for these professionals to be related to those who are among the most undervalued among others with the same academic qualification. (Santos, 2015).

The third question directed to teachers concerns the "Strategies to Improve the Teaching of Science and Biology today", according to the teachers' reports there are several approaches adapted to contemporary demands, such as introducing practical investigative classes, providing tangible experiences that sharpen curiosity and promote a deeper understanding of concepts.

Gamification and active methodologies were also mentioned, which respond to the need to make learning more engaging, transforming concepts into stimulating challenges that cultivate critical thinking. The combination of lectures and mind maps were mentioned, which seek to balance the delivery of information and conceptual visualization, meeting different forms of learning.

The integration of technology and digital resources were also mentioned, which enrich classes, connecting content to students' daily lives in a relevant way. Investigative practices in the field, laboratory and experiments were mentioned, which bring students closer to real science, encouraging the practical application of knowledge.

According to SanMarti (2002) and Szundy (2005), for meaningful learning to occur, students must be offered a diversified number of tasks and, for this, the teacher must know many techniques and resources.

These strategies reflect the diversity needed to enhance teaching by integrating innovative practices, technology, and student engagement. In this way, in teaching, the teacher elaborates experimental activities and can make use of media resources. This didactic tool serves both to diversify their didactic posture and to draw the students' attention to the content worked on (Castro; Vilaça, 2011).

Starting with the next question, focused on teaching practices in Natural Sciences/Biology, the diversity of strategies used by teachers is evident. The recurrence of the phrase "diverse resources" suggests a flexible approach, incorporating a variety of materials to enrich teaching.

The presence of "expository classes" highlights the importance of the direct transmission of theoretical knowledge. This may indicate an appreciation of conceptual clarity on the part of teachers. In contrast, the mention of "playful classes, conversation circles and dynamic classes" reflects the effort to make learning more participatory and engaging, promoting interaction among students.

The reference to "tools, play, research, experiments and digital resources" indicates a search for practical and technological methods to consolidate the concepts. This suggests an adaptation to contemporary learning demands. In addition, the inclusion of "active methodologies, mind maps, seminars and practical classes" reveals a more dynamic and collaborative approach, stimulating the active participation of students. In summary, the answers reflect flexibility and the search for effectiveness, integrating traditional and innovative methods to meet diverse learning needs.

The fifth and last question refers to the recurrent limitations for methodological applications, the answers point to the lack of resources as the main obstacle. The lack of equipment, space, laboratories, financial resources and teaching materials emerges as a significant challenge. In addition, there are specific mentions of the lack of preparation, inadequate functioning of existing laboratories and the absence of support from the government.

According to Sátyro and Soares (2007. p. 11):

> (...) especially public schools, which account for 90% of elementary school enrollment. School infrastructure can have a significant influence on the quality of education. Adequate buildings and facilities, existence of a school library, sports spaces and laboratories, access to textbooks, reading and pedagogical materials, adequate relationship between the number of students and the teacher in the classroom and longer effective class time, for example, may improve student performance.

These responses reflect not only the aspiration for more innovative practices, but also highlight the practical barriers that teachers face. The insufficiency of financial resources and infrastructure directly impacts the implementation of these practices, limiting the ability of educators to enrich their pedagogical approaches and provide more comprehensive experiences to students.

Teaching and learning Biology at a time when science and technology establish a very close relationship becomes a great challenge. Among these difficulties in the teaching of science, the most evident is the lack of motivation on the part of the students, driving them to

think about practices that can arouse interest and curiosity about the knowledge coming from Biology.

4 FINAL CONSIDERATIONS

With this research, one can conclude the need to reinvent oneself daily to provide and provide a more meaningful learning in Science and Biology. It is understood, therefore, that the student is not only a passive receiver of learning, but that he is the main agent of it.

This work observes the importance of the didactic use of technologies for the learning of Science and Biology. It is also possible to list the contribution that the path of teaching aspires to. It is undeniable and evident the need for greater investment in basic education. Only in this way can a better quality of teaching be provided, arousing more and more interest on the part of students and simultaneously valuing the teaching staff, promoting a better teaching-learning of Science and Biology.

REFERENCES

Avelar, A. C. (2014). A motivação do aluno no contexto escolar. Anuário Acadêmico-Científico da UniAraguaia, 3(1), 71–90.

Bardin, L. (2011). Análise de conteúdo. Edições 70.

Boruchovitch, E., & Bzuneck, J. A. (2009). A motivação do aluno: Contribuições da psicologia contemporânea (4th ed.). Vozes.

Bremm, D., & Güllich, R. I. da C. (2018). Dos cheiros às memórias da escola: Formação e docência em ciências biológicas. Revista Contexto & Educação, 33(106), 254–270. https://revistas.unijui.edu.br/index.php/contextoeducacao/article/view/7049

Castro, C. L., & Vilaça, F. N. (2011). Proposta de ensino de impulso, colisões e quantidade de movimento para o ensino médio com uso de sensores da PASCO. São João del Rei, MG.

Gonzaga, P. C. (2017). A bioalfabetização no ensino médio: Interfaces com a prática docente de professores de biologia [Doctoral dissertation, Universidade Federal do Piauí]. Teresina.

Goodson, I. (1994). Dar voz ao professor: As histórias de vida dos professores e o seu desenvolvimento profissional. In A. Nóvoa (Ed.), Vidas de professores. Porto.

Krasilchik, M. (2011). Prática de ensino de biologia (4th ed.). Editora da Universidade de São Paulo.

Larrosa, J. B. (2002). Notas sobre experiência e o saber da experiência (J. W. Geraldi, Trans.). Revista Brasileira de Educação, (19), 20–28.

Oliveira, D. A., & Vieira, L. F. (2012). Condições de trabalho docente: Uma análise a partir de dados de sete estados brasileiros. In D. A. de Oliveira & L. F. Vieira (Eds.), Trabalho na educação básica: A condição docente em sete estados brasileiros. Fino Traço.

Oliveira, M. B. F. de, & Szundy, P. T. C. (2014). Práticas de multiletramentos na escola: Por uma educação responsiva à contemporaneidade. Bakhtiniana: Revista de Estudos do Discurso, 9, 184–205.

Paulilo, M. A. S. (1999). A pesquisa qualitativa e a história de vida. Serviço Social em Revista, 2(2), 135–148.

Reis, L. P. C. (2010). A participação da família no contexto escolar.

Sanmarti, N. (2002). Didática em las ciências em la educación primaria. Síntesis.

Santos, W. A. (2015). Uma reflexão necessária sobre a profissão docente no Brasil, a partir dos cinco tipos de desvalorização do professor. Supere Aude, 6(11), 349–358.

Sátyro, N., & Soares, S. S. D. (2007). A infraestrutura das escolas brasileiras de ensino fundamental: Um estudo com base nos censos escolares de 1997 a 2005. Brasília.