



ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research

Vol. 11, Issue, 05, pp. 46705-46708, May, 2021

<https://doi.org/10.37118/ijdr.21780.05.2021>



RESEARCH ARTICLE

OPEN ACCESS

ACTIVE LEARNING METHODOLOGIES: COMPETENCES DEVELOPED BY STUDENTS OF THE INSTITUTO DE EDUCAÇÃO, CIÊNCIA E TECNOLOGIA BAIANO, ON DESAFIO RECODERS 2020

Aline F. Gomes*¹, Carlos Eduardo F. de Azevedo², Priscila F. Oliveira¹, Ronald T. L. Moret¹ and Vagner C. Oliveira¹

¹Instituto Federal de Educação, Ciência e Tecnologia Baiano, campus Teixeira de Freitas, Bahia, Brazil

²Comitê para a Democratização da Informática (Recode), Rio de Janeiro – RJ, Brazil

ARTICLE INFO

Article History:

Received 24th February, 2021
Received in revised form 29th March, 2021
Accepted 19th April, 2021
Published online 14th May, 2021

Key Words:

Learning, Competences, Teaching-learning, Skills.

*Corresponding author:
Aline F. Gomes,

ABSTRACT

This work aimed to identify how the use of the Active Learning Methodology by the Desafio Recoders contributed for students to develop General Skills - according to BNCC - by groups of students, during their participation in the Desafio Recoders. Such research was related to the analysis of active teaching-learning methodologies, in which the student's participation can occur in an active way. In addition to documentary research, the forty students from the Instituto Federal de Educação, Ciência e Tecnologia Baiano, campus Teixeira de Freitas, who reached the third phase of the Desafio Recoders, answered a questionnaire with eight objective questions, by electronic / digital means. The research data were treated using googleforms and presented through graphics, from which a triangulated analysis was made, using data of a quali-quantitative nature. This study obtained the following results: the Active Methodology used was identified and described, enabling its application by other students and educators in order to understand how this technique led to the development of skills and the acquisition of skills, and it was also possible to identify which ones skills the students applied and developed during the participation of the Desafio Recoders.

Copyright © 2021, Aline F. Gomes et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Aline F. Gomes, Carlos Eduardo F. de Azevedo, Priscila F. Oliveira, Ronald T. L. Moret and Vagner C. Oliveira. 2021. "Active learning methodologies: competences developed by students of the instituto de educação, ciência e tecnologia baiano, on desafio recoders 2020", *International Journal of Development Research*, 11, (04), 46705-46708.

INTRODUÇÃO

The use of strategies that aim an active participation of the student in the teaching-learning process, in opposition to the techniques and methods, called traditional, is not something new in the educational literature, much less, in the field of pedagogical practices, however, its adoption and evaluation of effectiveness goes through the analysis and understanding of the man and society model that is desired to develop from a certain pedagogical trend and by the presence or not in the educator of two "fundamental postures: the reflective practice and the critical implication" (PERRENOUD *et al.*, 2002). In this sense, it is believed to be essential that every pedagogical practice is constantly: evaluated, rethought and transformed, even if the teaching-learning techniques are the same, because they produce different results according to the chosen method, the objectives and context of its application. Thus, the techniques and/or teaching strategies, typical of what is called "Active Learning Methodologies", do not have any meaning and efficacy in themselves, once the choice of this or that technique as the best will depend on the evidence of its

efficacy and validation for a given context, but never seen as unquestionable and finished. Based on the above assumptions, linked to the "Four Pillars of Education" recommended by the United Nations Educational, Scientific and Cultural Organization (UNESCO): learning to know, learning to do, learning to live together and learning to be [...], and the General Skills set forth in the Common National Curricular Base (BNCC), the team that monitored the participation of students from the Federal Institute of Education, Science and Technology Baiano (IFBaiano) in the Recoders Challenge raised the following question: How the use of Active Learning Methodology by the Recoders Challenge contributed to the students' development of the General Skills set forth in the BNCC?

Taking the problem question, this study proposal had as a general objective: to identify how the use of the Active Learning Methodology by the Recoders Challenge contributed to the students' development of the General Competencies set out in the BNCC and by specific objectives: expose the ten general competencies of Education provided for in the Common National Curricular Base - BNCC; present the Recode Platform Challenge and the Active

Learning Methodology used; understand the importance of Active Learning Methodology for the development of competencies. The proposed research is justified from the perspective that every pedagogical practice is a constant hypothesis test, where absolute truths are not accepted, because no knowledge about a particular object is fully completed, much less all its variables analyzed and interpreted. In education there is always something to reflect, question and intervene, mainly when the subject involves the relationship between methods, techniques and teaching-learning. When approaching the subject in question, from an interdisciplinary look, it is projected to contribute with the enrichment of the theoretical-practical discussions in the educational scope, as well as to propose interventions and/or improvement in the use of the methods and techniques that base the practices of teaching-learning in the Brazilian Education, from the identified evidences. Adopting the 10 (ten) general skills of Basic Education, provided in the Common National Curricular Base (BNCC) as the basis of the study. The teaching methodologies are directions used by teachers aiming at the transmission of knowledge effectively and efficiently to their students, the motivation of students and the direction as to learning.

Among the various methodologies are cited: Traditional Teaching Methodology; Traditional Socio-interactionist Teaching Methodology; Constructivist Teaching Methodology; Montessori Teaching Methodology; Innovative Teaching Methodologies; Freirian Teaching Methodology and Active Methodologies. In the context of this work, Paulo Freire's Pedagogical Current is emphasized, since it is pointed out as one of the foundations of the Recode Methodology, which is the advocating source of this study, and also the active methodologies, whose principles were employed by the students participating in this research, in the execution of the stages of the Recoders Challenge. The main characteristic of Active Methodologies is the student's role in the learning process, being committed and responsible for this process. In this sense, it is understood that such methodology is inherent to the transformations that the contemporary society has been going through and, due to these transformations, which in fact have required re-significations in the teaching-learning methods in order to make the classes attractive to the students and consequently for them to be committed in the learning process. The use of digital technologies should not be confused with active methodology, because the latter exists even before the emergence of digital technologies, according to Ferrarini (2019) and, as the other methodologies, can be enhanced by such technologies. Therefore, the use of such methodologies presents remarkable characteristics such as the break with the traditional model focused on the unilateral transmission of content/knowledge, giving the student the protagonism. It is perceived that Project-Based Learning has as centrality: the obtaining of knowledge and the development of skills. Thus, among the main characteristics of Project-Based Learning are: being centered on the student; developed in tutorial groups; stimulate engagement and problem-solving skills; stimulate critical thinking and the formulation of hypotheses to solve problems; develops communication skills, argumentation and collaborative work in teams; among other cognitive and socio-emotional skills. (CECÍLIO & TEDESCO, 2019).

The literature reports that Problem-Based Learning (PBL) emerged in the late 1960s at McMaster University, Canada, and in Maastricht, the Netherlands, in Medical Schools, initially, according to Lovato *et al.* (2018) and according to Moran (2018). This methodology is based on Constructivist Pedagogy, using real problems as a starting point. Such problems are proposed by the teacher, who acts as a guide, probing the students' knowledge without providing answers. The advantages of Problem-Based Learning are: participation in real situations or situations which are close to reality, stimulus to constant study, independence and responsibility of the student. However, an abrupt change in the teaching method requires great effort from the actors involved in the process, requiring a change in students' behaviour, maturity and organisation (MARIN *et al.* 2010). Moreover, while for vocational training the methodology proves to be very efficient, for the understanding of contents of basic disciplines this seems not to occur, according to Marin *et al.* (2010). It is worth

mentioning that Problem-Based Learning differs from Project-Based Learning, although both are collaborative, participative and student-centered, the first focuses on the problem and the other on the project, which aims for a tangible product as a result. About Team-Based Learning (TBL), Oliveira (2018) mention that: TBL was created in the late 1970s by Larry Michaelsen with the main objective of promoting the improvement of learning, besides developing collaborative work skills, evidencing: management of learning teams, preparation and application tasks of concepts, constant feedback and peer evaluation. According to Oliveira (2016) the concept of group differs from team (team), since the team appears with the emergence of certain characteristics in a group, such as the high level of individual commitment aiming at the best group performance and the trust among members, who always work together and help each other, although they have different assignments. Such characteristics demand more interaction time among the members of a group. While Bollela and collaborators (2014) cite three stages in the application of the method, Oliveira and collaborators mention four stages, for these authors the second stage described takes place in two phases, occurring outside and inside class. The stages are 1. Individual preparation (pre-class); 2. Preparation ("readiness assurance"); 3. Application of the acquired knowledge (concepts). In this sense, it is believed that Team-Based Learning has as its most evident benefits making the student the main responsible for obtaining knowledge and developing their skills and abilities, promoting decision-making and effective and collaborative teamwork.

MATERIALS AND METHODS

A descriptive research was conducted, which described the Challenge Recoders, its regulations and its phases, as well as the application of an online questionnaire with 40 (forty) students IF Baiano - campus Teixeira de Freitas, who have passed to the third phase of the Challenge. The sample corresponded to 100% of the research universe and will be non-probabilistic and intentional. About the data collection process, a documentary research was conducted, through the analysis of data from Recode Platform, and the Common National Curricular Base - BNCC, as well as bibliographic research, with renowned authors in the area of active learning methodologies, and field research with students. The inclusion and exclusion criteria of the research participants were related to the fact that they must have taken the courses provided by the Recode Platform, and thus have passed to the final stages of the Recoders Challenge. The instrument for data collection corresponded to the application of an online questionnaire, with 8 (eight) objective questions, using the Likert scale as response alternatives, with data tabulation in pie charts, to perform a triangulated analysis, from the quali-quantitative data, in addition to which googleforms was used to perform the treatment of the collected data. The choice of the educational institution was the Federal Institute of Education, Science and Technology Baiano - IF Baiano, campus of Teixeira de Freitas - Bahia, for being the Educational Institution of the State of Bahia with the largest number of students enrolled in the Challenge Recode that won the campaign Internet in hand (RECODE, 2020).

The object of study of this research was the Recoders Challenge, developed and offered by the Recode Platform, which according to institutional data, is the online and interactive learning environment, which offers access to courses developed, exclusively, to strengthen the digital empowerment of young people. It also supports special training for educators and professionals who want to strengthen their role as transformation agents. The courses available on the Recode Platform were developed so that the study takes place exclusively online, autonomously, anywhere and anytime, with or without the mediation of a teacher. This gives greater flexibility and scope to the activities. According to Recode (2020), knowing and valuing the knowledge and history of the student is one of the premises of the Recode Methodology and guides all actions. Certification is awarded at the end of all courses, after a learning journey composed of interactive and gamified activities. Current topics are addressed, which helps students face the challenges of the 21st century and

develop their digital and socio-emotional skills. Within the notion of Digital Empowerment, Recode's actions began to deal with two simultaneous dimensions. The first involves the development of digital skills, i.e. through teaching-learning processes that contribute to the deepening of learners' digital skills; the second deals with community engagement and community problem-solving processes. To account for these dimensions, an organisation's own methodology document, the Recode Methodology Guide, was developed. With the COVID-19 pandemic, educational and social institutions faced the interruption of their on-site activities. The same happened with Recode's Digital Empowerment Centers, which needed to reinvent themselves during this period. What was observed were several digital reinvention strategies, forcing the deepening of digital empowerment strategies to meet society's demands for educational training, especially for young people in situations of social vulnerability. According to institutional data, one of the strategies that Recode adopted during this period was the Recoders Challenge. This project was divided into five stages: 1. the implementation of digital empowerment courses on the Recode Platform; 2. the formation of youth teams to create technological solutions to social problems arising from the COVID-19 pandemic; 3. a mentoring process of these groups with volunteers from different institutions and organizations; 4. the creation of videos by the youth teams on the solutions invented; 5. the evaluation of the videos by a specialized team and the awarding of prizes to the best videos presenting the best proposals. The Recoders Challenge is, therefore, a gamified ideation process in which students appropriate technologies to propose solutions to community problems.

RESEARCH RESULTS AND DISCUSSION

With the launch of the Recoders Challenge, a partnership was established between Rede Recode and the Sector Library of IF Baiano - Teixeira de Freitas campus, through registration of the Library and the students participating in the Recode Platform, so they could participate in the Recoders Challenge. Initially, in the first phase, 40 students from IF Baiano - Teixeira de Freitas campus enrolled in the Recode Platform courses, but only 37 (thirty-seven) of them remained in the Recoders Challenge until the final phase. After the conclusion of the Recoders Challenge and the authorization of the Ethics Committee for data collection, an online questionnaire was sent to the 37 students from IF Baiano who reached the last phase of the Challenge. In relation of this, 86.5% of the students answered that they agree that they are more actively interested in the activities, 8.1% totally agree and 5.4% disagree. In view of the percentages, it can be seen that most of the Recoders Challenge participants who were surveyed believe that they participated actively in the activities, which was in fact perceived during the meetings that were held, but some of them disagreed and pointed out the difficulties of access to the Internet as the main cause for low participation. It is noteworthy that in two of the nine teams, of students from IF Baiano, Teixeira de Freitas campus, between phases 2 and 4 there was a dropout of 3 participants, precisely, because they did not have access to the internet, hindering their participation in activities, which require active participation.

It is noteworthy that the student as the main responsible for the development of their skills and abilities is the main point of team learning. In this sense, the Recoders Challenge focused on the students' participation as the main actors of the learning process, since they were the ones responsible for developing the idea of social action and putting it into practice in a digital environment. Thus, it is evidenced the project-based learning, since the students, organized in teams, had to create a project to meet a community need, obtaining knowledge and developing skills autonomously, while the teacher acted as a collaborator with the projects developed by teams. The aforementioned participation of students reflects the general competence of Basic Education, provided for in the Common National Curricular Base (BNCC) to exercise intellectual curiosity and resort to the proper approach of sciences, based on the knowledge of different areas. Thus, it was possible to notice that the Challenge

participants developed project-based learning in the Recode Platform, which suggested digital reinvention strategies specifically on how to approach contents such as information technology and digital communication. It is presented that, 75.7% of the participants agreed that the spaces provided by the Recoders Challenge enabled them to express knowledge and 21.6% totally agreed, while 2.7% disagreed. Therefore, it is believed that with the Recoders Challenge the focus is no longer on the content but on the development of critical, autonomous and responsible subjects, involving the dimension of social and emotional skills as the focus of the pedagogical work. According to the Methodology Guide of Recode, there is recognition of the importance of Digital Culture, highlighting four social and emotional skills as priorities for the pedagogical work of the institution: problem solving, creativity, communication and collaboration. Thus, regarding the BNCC general competences, such responses highlighted the use of different languages, as well as knowledge of the languages: artistic, mathematical and scientific, to express and share information, experiences, ideas and feelings in different contexts and produce meanings that lead to mutual understanding. Thus, it is perceptible that the methodology used in the Recoders Challenge provided opportunities for the students to express their knowledge. It was also observed, with the answers, the competence: on the understanding and use of digital technologies of information and communication in a critical, significant, reflective and ethical way in different social practices.

It is presented that, 83.8% of the participants agreed that the Recoders Challenge provided autonomy in the execution of the activities and 16.2% totally agreed. Thus, it is believed that the work of engagement and community problem solving deals with activism, besides involving notions of entrepreneurship, in its strands of social entrepreneurship, civic entrepreneurship and social business, which leads to autonomy. Evidencing one of the BNCC general competencies that deals with personal and collective acting with autonomy, responsibility, flexibility, resilience and determination, making decisions based on ethical, democratic, inclusive, sustainable and solidarity principles should be consolidated with students, so that the learning process is effective. After all, the answers were related to the individual capacity to act with autonomy, responsibility, flexibility, resilience and determination, making decisions based on ethical, democratic, inclusive, sustainable and solidary principles. In this sense, it is recommended to use the active methodology of problem-based learning, so that students can engage more and more in the teaching-learning process in an autonomous and motivating way, demonstrating, including, their ideas. It is presented that 67.6% of the participants agreed that the Challenge Recoders ideas, opinions and questionings, obtained and discussed, favored the discussion of the contents and 32.4% totally agreed. Thus, it is perceived that the activities carried out were positive for the practice of dialogue as an educational act, in which the construction of knowledge is based on the experience of the student and the vision of each one. In this sense, the answers were related to the general competence of the BNCC that points to the argumentation based on facts, data and reliable information, with ethical positioning.

Thus, it is clear that the Recoders Challenge allowed the demonstration of ideas, based on the BNCC general competences, specifically on the promotion of communication and dissemination of information, in order to produce knowledge, solve problems and exercise leadership and authorship in personal and collective life. After all, the teams had to develop a social action based on some problem that was found in the community, enabling data collection in the communities. Exercising intellectual curiosity and resorting to the approach characteristic of the sciences, including investigation, reflection, critical analysis, imagination and creativity, was also a competence perceived through analysis of the answers, as they sought to solve problems and create solutions (including technological solutions) based on knowledge of the different areas. Thus, the problem-based learning teaching method was used, in which real problems are used as a starting point, thus enabling knowledge to be added. It is concluded that from the survey data described, the competence that was most identified in the students' answers was the

one that deals with problem solving and that highlights the effective use of learning by problems as an active methodology, recognizing that the use of such methodology contributed to the development of 08 (eight) of the 10 (ten) general competences of Basic Education provided by the BNCC. At the end, from this data analysis it is worth highlighting that only two competences of the BNCC could not be observed, or were not used during the development and participation of the students surveyed in the Recorders Challenge, which were the competences that deal with: to value and enjoy the various artistic and cultural manifestations, from local to global, and also to participate in diversified practices of artistic and cultural production; to know himself, appreciate himself and take care of his physical and emotional health, understanding himself in human diversity and recognizing his emotions and those of others, with self-criticism and ability to deal with them. The main results obtained refer to the teaching and learning process of students who participated in the Recorders Challenge, the exchange of knowledge, because students from all courses on campus participated, promoting interactivity and integration among peers. After all, the use of Active Learning Methodology by the Recorders Challenge contributed to the students' development of the General Competences foreseen in the BNCC through the identification of the Active Methodology used, which was the problem-based learning, allowing its application by other students and educators in order to understand how such technique led to the development of competences and the acquisition of skills and, also, it was possible to identify which competences students applied and developed during the participation in the Recorders Challenge. It is believed, then, that the use of Active Learning Methodology by the Recorders Challenge contributed for the students to develop the Competencies foreseen in the BNCC through: appreciation and use of knowledge historically built, contributing to the construction of a fair, democratic and inclusive society; exercise of intellectual curiosity; understanding, use and development of digital technologies of information and communication in a critical way; appreciation of the diversity of knowledge and cultural experiences; argumentation based on facts, data and reliable information, with respect for human rights, environmental awareness and responsible consumption; the exercise of empathy by valuing the diversity of individuals and social groups; resilience and determination, making decisions based on ethical, democratic, inclusive, sustainable and solidarity principles.

REFERÊNCIAS

BRASIL. Resolução nº 196/96, de 10 de outubro de 1996. Dispõe sobre as diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Disponível em: <http://bvsms.saude.gov.br/bvs/saudelegis/cns/1996/res0196_10_10_1996.html>. Acesso em: 10 jul. 2020.

_____. Ministério de Educação. Base Nacional Comum Curricular – BNCC. Disponível em: <http://basenacional.comum.mec.gov.br/images/BNCC_EI_EF_110518_versaofinal_site.pdf>. Acesso em: 05 jul. 2020.

BOLLELA, V.R.; SINGER, M.R.; TOURINHO, F.S.V.; AMARAL, E. Aprendizagem baseada em equipes: da teoria à prática. Ribeirão Preto, 2014; 47 (3):293-300. Disponível em: <https://edisciplinas.usp.br/pluginfile.php/2898402/mod_resource/content/3/TEAM-BASED%20LEARNING.pdf>. Acesso em: 01 dez. 2020.

CECÍLIO, W. A. G.; TEDESCO, D. G. Aprendizagem Baseada em Projetos: relato de experiência na disciplina de Geometria Analítica. Rev. Docência Ens. Sup., Belo Horizonte, v. 9, 2019. Disponível em: <<https://www.maratona.univates.br/bdu/bitstream/10737/2023/1/2017LuisPauloHauschild.pdf>>. Acesso em: 28 nov. 2020.

FERRARINI, Rosilei et. al. Metodologias ativas e tecnologias digitais: aproximações e distinções. Revista Educação em Questão, Natal, v. 57, n. 52, p. 1-30, abr./jun. 2019. Disponível em: <<file:///C:/Users/aline/Downloads/15762-Texto%20do%20artigo-54659-1-10-20190326.pdf>>. Acesso em: 20 jul. 2020.

LOVATO, Fabricio Luís et al. Metodologias Ativas de Aprendizagem: uma Breve Revisão. Acta Scientiae, v. 20, n.2, mar./abr. 2018. Disponível em: <<http://www.periodicos.ulbra.br/index.php/acta/article/viewFile/3690/2967>>. Acesso em: 20 jul. 2020.

MARIN, Maria José Sanches et al. Aspectos das fortalezas e fragilidades no uso das metodologias ativas de aprendizagem. Rev. bras. educ. med., Rio de Janeiro, v. 34, n. 1,p. 13-20, Mar. 2010 . Disponível em: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022010000100003&lng=en&nrm=iso>. Acesso em: 27 ago. 2020.

MASSON, T. J.; MIRANDA, L. F.; MUNHOZ JR., A. H.; Castanheira, A. M. P. METODOLOGIA DE ENSINO: APRENDIZAGEM BASEADA EM PROJETOS (PBL). XL CONGRESSO BRASILEIRO DE EDUCAÇÃO EM ENGENHARIA. Belém, 2012. Disponível em: <<http://www.abenge.org.br/cobenge/arquivos/7/artigos/104325.pdf>> Acesso em: 12 nov. 2020.

MORAN, J. Metodologias ativas para uma aprendizagem mais profunda. 2018. Disponível em: <http://www2.eca.usp.br/moran/wp-content/uploads/2013/12/metodologias_moran1.pdf> Acesso em: 22 ago. 2020.

OLIVEIRA, B. L. C. A.; LIMA, S. F.; RODRIGUES, L. S.; PEREIRA JÚNIOR, G. A. Team-Based Learning como Forma de Aprendizagem Colaborativa e Sala de Aula Invertida com Centralidade nos Estudantes no Processo Ensino Aprendizagem. Revista brasileira de educação médica, Brasília, v. 42, n. 4, p. 86 – 95, 2018. Disponível em: <https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022018000400086>. Acesso em: 10 nov. 2020.

Oliveira, T. E., Araujo, I. S. e Veit, E. A. Aprendizagem Baseada em Equipes (Team-Based Learning): um método ativo para o Ensino de Física. Caderno Brasileiro de Ensino de Física, Relatos e propostas de experiências didáticas, v. 33, n. 3, p.962-986, dez. 2016. Disponível em: <<https://periodicos.ufsc.br/index.php/fisica/article/view/2175-7941.2016v33n3p962>>. Acesso em: 14 nov. 2020.

PERRENOUD, Philippe et al. As competências para ensinar no século XXI: a formação dos professores e o desafio da avaliação. Porto Alegre: Artmed, 2002.

RECODE. Desafio Recorders. Disponível em: <<https://recode.org.br/desafio/>>. Acesso em: 10 out. 2020.
