



## ACTIVE TEACHING METHODOLOGY IN ERGONOMICS AND THE LEARNING ACQUIRED IN THE WORK N'ROLL PROJECT SINGING THE WORK

Leonardo Augusto Pistolato<sup>1\*</sup>

Rodrigo Augusto dos Santos<sup>2</sup>

Raoni Rocha Simões<sup>3</sup>

### Abstract

This article aims to demonstrate the impact of active teaching methodologies on the learning of Ergonomics. To this end, the authors base their work on an experience carried out from a project conceived and developed in the Ergonomics disciplines of the Health and Safety Engineering undergraduate course at the Federal University of Itajubá, which seeks to understand the history of work in Brazil through music produced between the 1930s and the present. The method developed was the application of questionnaires to the two students involved, at two different moments of the project, generating responses that were analyzed in order to understand the relationship between active methods, music and learning in ergonomics. These results showed that the active methodology using music as a tool enabled a significant increase in student engagement in carrying out the proposed task and, consequently, allowed for a deeper learning about the history and concepts of work and ergonomics presented in the proposed activity. Finally, we consider that active methods, such as the one developed in the experience reported in this article, go against the logic of a liberating education, which places the student as the central element of their learning process, and which contributes to their own emancipation.

**Keywords:** Teaching in ergonomics. Active teaching methodology. Pedagogical practice. Music and ergonomics.

### 1. INTRODUCTION

The technological, scientific, economic and social changes experienced in recent years have a direct impact on the various fields of social life, such as the organization of work, forms of production and professional training, imposing on individuals constant adaptations to keep up with them. In the field of education, especially in higher education institutions, it is up to professional training courses to prepare students for these transformations, providing a context that resembles the reality of work (Casale, 2013). It is in this circumstance that Active Teaching Methodologies emerge, with the aim of developing methods that bring the student to the center of the learning process (Berbel, 2011). The diversity of active methods is usually high, with

<sup>1</sup> Federal University of Itajubá – Itabira Campus. \* leonardo\_pistolato@hotmail.com.

<sup>2</sup> Federal University of Itajubá – Itabira Campus.

<sup>3</sup> Federal University of Itajubá – Itabira Campus.



different experiences using music as a central pedagogical tool in the teaching process (Gaiza, 1998).

The Federal University of Itajubá (UNIFEI) has been developing, for some years, training with its professors in active methodologies, as part of a process of modernization of teaching in which this university has been passing. As a result, the syllabus of the two Ergonomics disciplines of the undergraduate course in Health and Safety Engineering (ESS) were restructured, in order to incorporate active methods as a central approach in the students' learning process. As a result, one of the projects developed in one of the disciplines of Ergonomics was aimed at understanding the historical and social context of work in Brazil, having as a tool of analysis the interpretation of the lyrics of some songs released between the 1930s and the present years, thus making a parallel between the history of work and the history of Ergonomics itself, which always considers the difference between what is prescribed and what is real in work situations (Rocha, 2017).

In this way, a professor and two musician students of this graduation created the project entitled "Work n'roll: singing the work", in which 12 songs are played, from the 1930s to the present, related to human work. With each song played, an analysis is made by the trio itself about the historical context of the work in Brazil at the time this song was composed. Presentations of this project were made in 3 different environments, as well as a virtual material was created, made available on the internet. All this material produced was then used in the Ergonomics classes of the ESS undergraduate course, drawing a parallel with the history of the discipline itself.

The process of choosing the songs and analyzing the lyrics went through long periods of study and dedication by the students and the teacher involved. However, even though it started in the context of an Ergonomics discipline, the project went beyond the discipline itself, and remained active for at least three years thereafter. Thus, at least two questions arise in this context: why were teachers and students so involved in the project, given that there was no objective evaluation for them? What is the impact of this process on the learning of Ergonomics content for the students involved in the project?

To try to answer these questions, the objective of this article is to analyze the project carried out as a teaching tool for the two students involved, seeking to understand the impacts of this activity on their learning process. It is not the objective of this article to detail the musical analyses themselves or the discussions held with the songs, but to understand how a project of



this nature can facilitate the learning of the students involved in it, in relation to the contents present in the discipline of Ergonomics.

## 2. THEORETICAL FRAMEWORK

In the search for the conception of new pedagogical proposals with the potential to promote student autonomy and that satisfy the new professional profiles, higher education institutions have made use of Active Teaching Methodologies (Berbel, 2011). While in traditional methodologies the teacher is responsible for transmitting knowledge to students in lectures of theoretical content (Ponciano, Gomes & Moraes, 2017), in Active Methodology the teacher is not the only source of knowledge, but a guide of the teaching process that encourages the student to build knowledge and interact with what is studied through the solution of problems or projects (Barbosa & Moura, 2013).

Active teaching methodologies take as a starting point what students already know for the construction and expansion of knowledge, making them aware of their learning process (Masson et al., 2012). They allow students to develop, in addition to the technical skills of their area of specialization, a set of transversal skills, such as communication skills, leadership, conflict management, critical posture, respect for diversity, social responsibility, and sustainable vision (Correia & Oliveira, 2020).

For the success of the method, it is necessary for the teacher to adjust the curricular content to the objectives of each project, getting involved in the elaboration stage and adapting to respond to the needs of the students during the realization of the activities (Fernandes, Flores & Lima, 2012). In structuring the project, the teacher must make the quality criterion clear, encourage the search for problem solving, evaluate the stages and offer constructive feedback, leading the student to the role of protagonist of learning (Campos et al., 2016).

Bell (2010) points out that Active Teaching Methodologies should not be seen only as a complementary activity to support teaching, but rather as the basis of the curriculum, as many projects are supported by science or originate from current social problems. The result is a greater understanding of a subject, deeper learning, higher level reading, and a greater motivation to learn.

Among the various existing tools as teaching methods, music has long been used as a tool, from basic education (Gaiza, 1998) to higher education, in courses such as Biology (Paixão et al., 2017), Geography (Oliveira et al., 2005) and Law (Junior, 2018), since it is a language that allows human beings to create, expressing oneself, knowing and even transforming reality



(Tavares, 2000). If music has been used for a long time as a pedagogical tool, it can and should be incorporated into active methods, in order to contribute to greater student learning in the process.

Learning, therefore, is closely linked to music, through different concrete experiences. When the proposal to use music is presented to the students, the tendency that is observed is to become curious, with almost always satisfactory receptivity, because music favors the concentration and absorption of ideas in a more natural way (Oliveira et al., 2005). In the teaching-learning process, music is, therefore, a strategic possibility, that is, a tool to assist the learning of other disciplines (Romanelli, 2009).

### 3. MATERIALS AND METHODS

The methodological approach used to understand the learning generated by the project was the application of questionnaires in the form of open interviews with the two students participating in the project "Work n'Roll: singing the work".

The questionnaire is an investigative technique composed of a set of questions that are submitted to people in order to obtain information about interests, feelings, knowledge, beliefs, behavior, etc. (Melo, 2015). Building a questionnaire basically consists of translating research objectives into specific questions. The answers to these questions provide the data required to describe the characteristics of the population surveyed or to test the hypotheses that were constructed during the planning of the research (Gil, 2009). The questionnaire is a type of interview and, as such, has no exact measure that guarantees that your objectives are achieved. However, there is a logical sequence of steps that the researcher can follow, such as: planning what will be measured; formulate the questions to obtain the necessary information; define the text and order of the questions and the visual aspect of the questionnaire; test the questionnaire, using a small sample, in relation to omissions and ambiguity; and, if necessary, correct the problem and do a new pre-test (Aaker et al., 2001).

The questionnaire was built with open questions, with the objective of bringing to light elements of the learning process lived and perceived by the students of the project. It sought to highlight questions that showed the difference between a traditional teaching process in the classroom and the process experienced by the current project. Thus, five questions were formulated, shown below: 1) Describe in your own words how you consider that the project brought learning about the content of ergonomics; 2) In your opinion, what are the main differences in the learning process between traditional methods (in the classroom) and the



methods provided by this project?; 3) Despite all the effort and time required to execute the project, and knowing that it is not worth a grade and does not have any objective evaluation, describe why you decided to stay in it over time; 4) Give concrete examples of how learning was built through the project; 5) Describe here what was most relevant during this process.

The questionnaire was applied at two different times, in February 2018 and July 2019, so that we could understand the difference in students' perceptions over time. The answers from the questionnaire applications were analyzed and treated, and are shown below.

#### 4. FINDINGS

The results presented below are descriptive analyses obtained from the students' answers to the questionnaires carried out. These analyses are accompanied by excerpts from the answers of one or both students, which illustrate what is being exposed.

##### 4.1. Motivating and stimulating project

First, the students manifested that the project in which they are involved is motivating and stimulating because they are active subjects in its elaboration. Characteristics such as "challenging" and "engaging" were made explicit, emphasizing the importance that they themselves had in the process of designing and constructing the project, and in the study that they had to carry out to fulfill this stage. It was not, therefore, a ready-made, pre-defined proposal, with clear *a priori* rules, but a joint construction with the students, involving them in the process and, in this way, motivating them to actively participate in it, as shown in the verbalization below of student 1.

"Work n' Roll gave me another perspective on the conventional way of learning in the Engineering course. The project, from the beginning, seemed to me to be both challenging and engaging, dealing with subjects covered in the specific undergraduate disciplines, but also making use of extracurricular skills. The entire process, from the elaboration, was the responsibility of all participants: the search for songs, structuring the repertoire, investigating the historical context and designing arrangements were shared responsibilities. It is not as if the teacher only informs what should be done or understood, but it was up to me to go after the knowledge and consider what could be relevant to the work. Thus, I needed to evaluate what I already knew and what I had to learn to achieve the results. It was an obvious opportunity to develop skills such as argumentation, creativity and flexibility to divergent ideas". Student 1.



## 4.2. Art as a pedagogical tool

Then, the importance of art and music as teaching tools was greatly emphasized by the participating students. According to them, artistic and musical elements facilitated the learning of the concepts worked on in the disciplines of Ergonomics, such as: "task", "activity", "accident", "organization of work", since the interpretations made of the songs worked on in the project led to in-depth reflections on these concepts. Below are verbalizations from both students in this regard.

"When I was part of the Work n'Roll – Singing the Work project, I became aware of this educational characteristic of art. The songs work as workers' reports, a conversation that reveals feelings, frustrations, pains, conflicts, historical contexts, human-human relationship, human-machine relationship, technological revolutions, cultures. Some examples:

- The song "Seja Pena de Mim" (1937) by Cyro de Souza e Babau is a samba that shows the historical context of the first half of the twentieth century, reports a look at work as suffering, representing popular classes that worked hard with no prospect of change, making an effort to live honestly.
- "Bonde São Januário" (1940) by Ataulfo Alves and Wilson Batista is a reflection on the antonyms "worker x malandro", shows an exaltation of work and has in its history an example of the political interference present in the Vargas era. The samba could no longer have as its theme the vagrants and scoundrels of Lapa, we were at the moment of creation of the so-called samba-exaltation.
- "Construção" (1971) by Chico Buarque presents us with a context of civil construction, the mechanization of man and devaluation of life, the symptoms of an afflictive repetitiveness that affects mental health, family relationships and behaviors in the workplace;
- "Electronic Brain" (1969) by Gilberto Gil reports a period of technological advances, the concern with the replacement of man by machine. And he makes an analysis of the man-machine relationship in a comparative way, valuing man's ability to doubt, to be emotional, to reflect, to make mistakes, to gain experience.
- In "Hallucination" (1976), Belchior invites us to seek to really understand reality by establishing a critique of theories and abstractions. This "theory x



practice" relationship is very present in the most diverse fields, including the context of occupational safety. The formulation of rules and procedures by people who do not exercise and do not understand the real activity can generate numerous problems. This involves the need to develop empathetic thinking, with less judgment, placing the worker as the holder of knowledge that should be valued;

- "Capitão de Industria" (1996) by the band Paralamas do Sucesso, the mechanization of man is also evident, it is reported with a lament about lack of time and opportunities to have moments of reflection, leisure or even rest". Student 2.

"The reports contain a strong reflective and emotional potential. When interpreting a song, a character is incorporated, who tells a story and exposes feelings. In a way, this allowed me, in an organic way, to do the empathetic exercise of understanding the work from the perspective of those who do it". Student 1.

#### **4.3. Ease of learning historical and technical content**

As the project was considered motivating and stimulating, as well as music considered a pedagogical tool by the participating students, both verbalized a greater ease in learning the historical and technical contents involved with the disciplines of Ergonomics.

Historically, students reported the context of work in the first half of the last century, its relationship with slavery, the role of music as an act of political resistance in times of oppression (such as during slavery itself or the military dictatorship), the relationship between work, censorship and music, and the place of music and work in the 1980s and 1990s, period of great economic opening in Brazil. The verbalizations below, from both students, illustrate this discussion.

"Brazilian music, poetry and popular art play a fundamental role in the country's history. They serve, in addition to entertainment, as an instrument of questioning, as a representative of our cultures, as historical tools, as an instrument of political resistance and social formation. Samba at the beginning of the last century, as well as other types of peripheral music that emerged from a people that was little enslaved, was once the main means of survival and a resource of resistance for many who were prevented from entering society. MPB (Brazilian Popular Music), an acronym of a genre that emerged in the 1960s with the second generation of bossa nova, played a great role as an instrument of opposition to the military regime (1964-





1985). These characteristics have extended over time in Brazilian music, with the rock movement, quite contesting, in the 1980s and 1990s and the hip-hop and funk movement very present in the 2000s and today. Much of what I know about various historical periods in Brazil and about the reality of other people and cultures is the result of the curiosity that many artistic works have caused in me. Art and culture playing an educational role". Student 1.

"The project's proposal as an integrator of previously learned content and an explorer of new knowledge, provided that teaching was a permanent process. Through investigations in readings or documentaries, information improved the subjects studied. For example, the censorship suffered by Wilson Batista and Ataulfo Alves in the 40s who, under the influence of the government, had the lyrics of their music changed. What was once a disdain for work, "the São Januário tram takes another sucker partner, only I won't work", turned into an exaltation: "the São Januário tram takes one more worker, I'm the one who will work". A similar fact about the song Caxangá, which in the 70s was censored and originally released with vocal modulations by Milton Nascimento to print the emotions that the censors had suppressed from the text in partnership with Fernando Brant - only to be rescued in full years later in a recording by Elis Regina. The study of the historical context of the songs proved to be fundamental to situate the theme analyzed by the project, deepening the discussion and also guiding the interpretations of the songs". Student 2.

In addition to the historical elements about the work, a motivating and stimulating project added to the potential of art as a teaching tool, also made it possible to learn technical aspects of the discipline, according to the students' reports. Concepts such as "activity", "regulations", "tacit knowledge", "variability", "man-machine relationship", "difference between what is prescribed and what is real", "absence of workers in the management processes" or "in the creation of norms" were reflected and made explicit by the students through the analysis of the songs, as can be observed in the verbalizations below.

"Other topics present in studies, such as activity, regulations, tacit knowledge, could be treated through songs such as that of Gilberto Gil who, in an encounter between man and machine, offered the opportunity to reflect on the limits that prevent the "electronic brain" from dealing with variabilities that emerge during the activity of work. A theme from 1969 that remains current: how to formalize tacit knowledge and transmit to a machine whether this knowledge concerns the work environment, but also the personal experiences, emotions and senses that the machine does not experience? Questions like this, recurring in class, are presented in a light and objective way by the song. This also occurs in Belchior's song about the real and the illusory, which could refer to the debate about the difference between what is





foreseen in the offices and organization and what is found in the factory. A difference that in many cases seems to match the title of the song, Hallucination". Student 1.

"It was interesting to note how complex subjects can be simplified, facilitating the transmission of knowledge to other people who are not used to these discussions. In the song by Milton Nascimento and Fernando Brant, for example, with verses like "See well my boss how good it can be: would you work in the sun and I would bathe in the sea? I fight to live, I live to die. While my death does not come, I live by fighting against the king"; or, still, in Caetano Veloso's song, "while men exercise their rotten powers", the reflection on the class struggle is an opportunity to discuss the absence of workers' participation in the company's management processes, ignoring their knowledge of the field. This indifference about the workforce can bring consequences similar to those expressed by Raul Seixas in Fool's Gold: a dissatisfaction with life even after getting a good job and satisfying social expectations. Also in the verses of the Valle brothers, "I wake up to work, I sleep to work, I run to work" the denunciation that there is no time to have, nor to be "beyond the smoke" in a life conditioned to only one possibility. When considering work as a central dimension in human life, it is essential to think about the consequences when it does not offer quality of life and well-being, aligning with the look at organizational and psychosocial issues that, as a health and safety engineering student, I am encouraged to have in my professional performance". Student 2.

"Music has made the learning process attractive, fun and permanent, stimulating reflective analysis and expanding knowledge. Issues discussed in classes, such as considering the worker as a singular individual, endowed with complexities and not just as another piece of the gear, were highlighted in songs such as Construção. Singing the story of a fatal accident, Chico Buarque exposes the character's dehumanized condition in precarious situations, repetitive movements like a machine, stuck in a routine that makes him lose his vivacity, in addition to the content of blaming the victim. These are elements of reflection treated in classes on quality of life and health of workers. Thinking about themes such as occupational illnesses and accidents through musical appreciation brought another perspective on this content". Student 2.

"In the project, a series of concepts that are studied in a very structured and theorized way in the classroom, are complemented and exemplified through these reports. Concepts that involve the worker's participation in the creation of norms, the relationship between tacit and explicit knowledge in the workplace, the variabilities present in the worker's activity and others. This exemplification allows for greater understanding and appreciation of the concepts studied,



it is a way of showing the student that there is a connection between the content and reality".  
Student 1.

## 5. FINAL CONSIDERATIONS

It was by contextualizing the traditional teaching and learning process, as well as the relationships between educator and students, that Paulo Freire created the "banking" conception of education. In this concept, "instead of communicating, the educator makes 'communications' and deposits that the students, mere incidences, patiently receive, memorize and repeat. (...) the only margin of action that is offered to students is to receive deposits, keep them and file them" (Freire, 1987, p.33). There is an increasingly deep and serious inadequacy between "banking" and compartmentalized education – developed by traditional teaching methods – with the transdisciplinary, transversal and global reality of the world around us. By maintaining the "banking" type of education, where the student is a passive receiver of information, the complex sets, the interactions between the parts and the essential problems are invisible (Morim, 2003). The bell rings, the students sit down and start to write countless words, whose meaning they do not understand well, which do not seem to interact with each other and which is distant from everyday life (Duarte Jr., 1994).

In every man there is a creative impetus and education is more authentic the more it develops this ontological impetus to create. Education must be disinhibiting, liberating

– and not restrictive – and art plays an important role in this process, as expression through it triggers a process in which the individual is perfected, in what is said to be his own re-education, and seeking his emancipation (Silva, 2008). Thus, education through art is a liberating act (Freire, 1987).

The project "Work n'roll: Singing the work" enabled new forms of learning for the students involved, enhancing the students' previous skills and their passion for music and integrating them with the contents discussed in the Ergonomics disciplines, in order to make them participate in the project, not as those who passively receive the tasks, but as active protagonists of the construction process. This method led them to a deep engagement in the project, to understand art as a pedagogical tool and to achieve the basic objective of any academic work: learning.

Finally, although it was not the objective of this article to discuss the impacts of the project on the teacher involved, it can be said, through spontaneous verbalizations of the same, that the effects were very similar to those of the students, namely, an important involvement,



the recognition of art and music as a teaching tool and the learning about the technical content and the pedagogical process constructed, given that in any process of exchange and interaction the student learns from the teacher, but the teacher also learns from the student or, in other words, "those who teach learn and those who learn teach by learning" (Freire, 2009, p.25).

## REFERENCES

- Aaker et al., 2001. *Marketing Research*, 7th ed., New York: John Wiley & Sons, Inc.
- Barbosa, E.F. e Moura, D.G., 2013. *Metodologias ativas de aprendizagem na Educação Profissional e Tecnológica*. Boletim Técnico Do Senac, 39(2), 48-67.
- Bell, S., 2010. Project-based learning for the 21st century: Skills for the future. The Clearing House, *A Journal of Educational Strategies, Issues and Ideas*, 83(2), 39-43.
- Berbel, N.A.N., 2011. As metodologias ativas e a promoção da autonomia de estudantes. *Ciências Sociais e Humanas*, Londrina, v. 32, n. 1, p. 25-40, jan./jun.
- Campos, A., Machado, G.B, Rados, G.J.V. e Todesco, J.L., 2016. Aprendizagem baseada em projetos: uma experiência em sala de aula para compartilhamento e criação do conhecimento no processo de desenvolvimento de projetos de software. *Revista online Competência*. Porto Alegre, RS, v.9, n.2, p. 17-35, ago/dez.
- Casale, A., 2013. *Aprendizagem Baseada em Problemas: desenvolvimento de competências para o ensino em engenharia*. 2013. Tese (Doutorado em Economia, Organizações e Gestão do Conhecimento) - Escola de Engenharia de São Carlos, Universidade de São Paulo, São Carlos.
- Correia, W.C.C. e Oliveira, G.F., 2020. Reflexões sobre a prática da interdisciplinaridade através da metodologia Project Based Learning. *Revista Docência do Ensino Superior*, v. 10, p. 1-17, 7 fev.
- Duarte Jr., J-F., 1994. *Por que arte-educação?*, 7ª ed., Campinas: Paiprus.
- Fernandes, S., Flores, M.A., & Lima, R.M., 2012. A Aprendizagem baseada em Projetos Interdisciplinares no Ensino Superior: implicações ao nível do trabalho docente. Paper presented at the *International Symposium on Project Approaches in Engineering Education (PAEE'2012): Organizing and Managing Project Based Learning Challenges*, São Paulo - Brasil, 26-27 July, pp. 227-236.
- Freire, P., 1987. *Pedagogia do Oprimido*. 17ª ed. Rio de Janeiro, Paz e Terra.



- Freire, P., 2009. *Pedagogia da autonomia: saberes necessários à prática educativa*, 40 ed. São Paulo: Paz e Terra.
- Gaiza, V.H., 1988. *Estudos de Psicopedagogia Musical*. São Paulo: Summus, 2ª ed, v. 31. Gil, A.C., 2009. *Métodos e técnicas de pesquisa social*. 6ª ed. São Paulo: Atlas.
- Junior, I.S.T., 2018. A importância da música como ferramenta de ensino nos concursos preparatórios para concursos públicos. *Revista Âmbito Jurídico*, n 169, ano XXI.
- Masson, T.J., Miranda, L.F., Munhoz J-R., A.H., Castanheira, A.M.P., 2012. Metodologia de ensino: aprendizagem baseada em projetos (PBL). Belém, set. 2012. In: *XL Congresso Brasileiro de Educação em Engenharia – COBENGE 2012*. Disponível em: <http://www.abenge.org.br/cobenge/arquivos/7/artigos/104325.pdf>. Acesso em 14 set 2020.
- Melo, W.V. e Bianchi, C.S., 2015. Discutindo estratégias para a construção de questionários como ferramenta de pesquisa. *R. Bras. de Ensino de C&T*, [S. l.].
- Morim, E., 2003. *A cabeça bem feita: repensar a reforma, reformar o pensamento*. 8ª ed. Rio de Janeiro: Bertrand Brasil.
- Oliveira, H.C.M. et al. 2005. A música como um recurso alternativo nas práticas educativas em Geografia: algumas reflexões. *Revista Caminhos de Geografia*, Uberlândia, ano 8, n15.
- Paixão, G.C., Lima, L.A., Colaço, N.J.O., Lima, R.A., Casimiro, T.C., Castro, L.H.P. e Pantoja, L.D.M., 2017. Paródias no ensino de microbiologia: a música como ferramenta pedagógica. *Reciis – Rev Eletrôn Comun Inf Inov Saúde*, jan.-mar., 11(1).
- Ponciano, T.M., Gomes, F.C.V. e Morais, I.C., 2017. Metodologia ativa na engenharia: verificação da abp em uma disciplina de engenharia de produção e um modelo passo a passo. *Revista Principia - Divulgação Científica e Tecnológica do IFPB*, [S.l.], n. 34, p. 32-39, jun. 2017. ISSN 2447-9187. Disponível em: <<https://periodicos.ifpb.edu.br/index.php/principia/article/view/1309>>. Acesso em: 02 Set. 2020. doi: <http://dx.doi.org/10.18265/1517-03062015v1n34p32-39>
- Rocha, R., 2017. Atividade coletiva na redução da carga de trabalho: uma articulação entre regulações quentes e frias. *Revista Brasileira de Saúde Ocupacional* - 42: e5. DOI: <https://doi.org/10.1590/2317-6369000005316>
- Romanelli, G., 2009. Como a música conversa com outras áreas do conhecimento. *Revista Aprendizagem*, Pinhais, n14, p. 24-25.



Silva, L.L.F., 2008. Educação pela Arte. *Revista Iberoamericana de Educación*. Disponível em: <[http://www.quadernsdigitals.net/datos\\_web/hemeroteca/r\\_1/nr\\_796/a\\_10728/10728.pdf](http://www.quadernsdigitals.net/datos_web/hemeroteca/r_1/nr_796/a_10728/10728.pdf)> Acesso em: 14 set. 2020.

Tavares, F.M.M., 2000. *Estrutura e Funcionamento do Ensino Fundamental*. Ceará: UVA.