Pedagogy of learning: a praxis of industrial safety

Pedagogia da aprendizagem: a praxis of industrial safety

DOI:10.34117/bjdv9n8-015

Recebimento dos originais: 03/07/2023
Aceitação para publicação: 03/08/2023

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ABSTRACT
This research analyzes the teaching-learning process of the industrial safety training of the Basic Platform Safety Course, developed by the training company Sampling Planning and Industrial Safety Advisory. The course is compulsory for offshore activities in the oil and gas industry in Brazil. When dealing with safety at sea, it is important to start from the premise that navigation imposes an associated danger, derived from the fact that it develops in an environment not conducive to human life, therefore, this theme is of extreme importance. The objective of the research is to evaluate how the learning pedagogy is related to the safety praxis in the offshore work environment. The type of research was based on a case study developed through observation and on-site interview questionnaires. As a data collection instrument, we used document analysis from theoretical tests, practical exercise sheets, grade maps, frequency controls and evaluation questionnaire, provided from the institution. Consolidated data demonstrate that the selected target audience knows and applies industrial safety standards and that the concepts acquired during the course are important in preventing accident risks. It is concluded that education is characterized by being an instrument of theoretical-practical association through information that can intervene in the reality and promote changes in everyday attitudes, leading to new practices for the construction of citizenship.

Keywords: evaluation, industrial safety, petroleum and gas industry, learning.

RESUMO
Esta pesquisa analisa o processo de ensino-aprendizagem do treinamento de segurança industrial do Curso Básico de Segurança em Plataformas, desenvolvido pela empresa de treinamento Sampling Planning and Industrial Safety Advisory. O curso é obrigatório para atividades offshore no setor de petróleo e gás no Brasil. Ao tratar de segurança no mar, é importante partir da premissa de que a navegação impõe um perigo associado, decorrente do fato de se desenvolver em um ambiente não propício à vida humana, portanto, esse tema é de extrema importância. O objetivo da pesquisa é avaliar como a pedagogia de aprendizagem está relacionada à prática de segurança no ambiente de trabalho offshore. O tipo de pesquisa foi baseado em um estudo de caso desenvolvido por meio de observação e questionários de entrevista no local. Como instrumento de coleta de dados, foi utilizada a análise documental de provas teóricas, fichas de exercícios práticos, mapas de notas, controles de frequência e questionário de avaliação, fornecidos pela instituição. Os dados consolidados demonstram que o público-alvo selecionado
conhece e aplica as normas de segurança industrial e que os conceitos adquiridos durante
o curso são importantes na prevenção de riscos de acidentes. Conclui-se que a educação
caracteriza-se por ser um instrumento de associação teórico-prática por meio de
informações que podem intervir na realidade e promover mudanças de atitudes cotidianas,
levando a novas práticas para a construção da cidadania.

**Palavras-chave:** avaliação, segurança industrial, indústria de petróleo e gás, aprendizagem.

### 1 INTRODUCTION

This article aims to highlight reflections on the teaching-learning process of the Industrial Safety Training Courses for the Oil and Gas Industry - Campos Basin, specifically the Basic Course on Platform Security. This analysis is based on the routine of the training and consulting company Sampling Planning and Industrial Safety Advisory, in order to investigate and intervene in the teaching-learning relationship of students enrolled in classes.

To understand, we will start our discussion from industrial safety as a fundamental requirement for productive activities. Industrial safety aims to minimize the risks inherent to the industry, preventing work accidents, being a multidisciplinary area that requires a management of production processes. The main risks in the industry are associated with accidents, which can have a major environmental impact and harm entire regions.

The Regulatory Standards - NRs, in Brazil, are intended to regulate and provide guidance on mandatory procedures related to safety and occupational medicine. In this context, industrial security, in accordance with the Regulatory Standards - NRs, is mandatory for private and public companies and public bodies of direct and indirect administration, as well as by the organs of the Legislative and Judicial Branches, that have employees governed by the Consolidation of Labor Laws.

The Regulatory Standard NR30 establishes minimum requirements for Safety and Health in Waterway Work. According to NR30, its objective is to regulate mandatory protection against accidents and occupational diseases, facilitate first aid to injured and achieve the best possible safety and health conditions for Highway workers. (MTE, 2022)

Thus, industrial safety in activities developed in the maritime environment, following the line of safeguarding human life at sea, is regulated through the Maritime Authority Standards - NORMAM.
In this context, it is up to the Brazilian Navy, through NORMAM 24, to establish standards for the accreditation of institutions, to teach courses related to safeguarding human life at sea. The navy is also responsible for the safety and protection of ships and maritime facilities contributing to the fulfillment of the legal duties of the Brazilian Maritime Authority. (NORMAM 24, 2022)

According to NORMAM 24, as defined by the Directorate of Ports and Coasts of the Brazilian Navy, the Basic Platform Security Course’s general purpose is to qualify the student, not waterway, for the tasks on board "Offshore" Units. These procedures provide the basic knowledge of mandatory safety measures. These recommendations are required on items 5.2 and 5.3 and Tables 5.3.1 and 5.3.5 of Resolution A.891(21) of 25/11/1999 of the International Maritime Organization, in addition to what is required by the STCW-1978 Convention as amended 1978, as amended, as we will see below. (NORMAM 24, 2022)

Sampling, a company focused on training activities in industrial safety, since 1993 in the market, offers solutions to meet legal and regulatory requirements in Safety, Environment, Health and Quality.

Our challenge in the context of industrial safety training is to analyze the teaching-learning process developed by Sampling. It is imperative to understand safe practices in the work environment, from the knowledge acquired during the Basic Course of Platform Safety for workers.

Guimarães (1995) states that it is necessary the exercise of praxis in education, because only action generates an activism without depth, while reflection generates an immobility that will not fulfill the transformative possibility of education. The best solution would be to carry out a true dialogue between reflective attitude and action of theory with practice, that is, thinking with doing. This process strengthens and empowers the workers.

The following quote by Freire seems very appropriate to the above concept:

“Man is a being of relationships. Culture is the reflection of man’s creative process and this creative process makes him an agent of active adaptation and not an accommodation. This conception distinguishes nature of culture, understanding culture as the result of their work, their creative effort. This discovery is responsible for the rescue of his self-esteem, as a great sculptor creates a beautiful work of art. It seeks to overcome the dichotomy between theory and practice, because the process presupposes knowledge. Freire concludes that to know is to interfere in reality, and become himself as a subject of history.” (FREIRE, 1983)
2 DEVELOPMENT

2.1 SAFEGUARDING HUMAN LIFE AT SEA: A BRIEF CONCEPT

The use of sea, lake or river waters refer to the first civilizations, as they are excellent means for transporting cargo and people. However, the natural elements and adverse conditions found in these media, make this activity extremely dangerous. The history of world navigation through time reveals that the sea claimed many lives and in the past any emergency meant death. Even today, lives are still lost, but the vast majority due to non-compliance with the established safety rules. (SAMPLING, 2013)

On 15 April 1912, the Titanic sank killing 1,475 people. An analysis of the possible causes of this accident found that one of the main factors was the quality of the plate used in its construction. Since then legislation has been improving to ensure safety of workers at sea.

Therefore, as navigation is one of the most important human activities and, in the same proportion, very dangerous, and to improve safety and environmental protection performance in the maritime industry, international regulations have been developed. Initially in 1948, an international convention of Geneva, created the Inter-Governmental Maritime Consultative Organization - IMCO, which in 1982 became International Maritime Organization - IMO.

In 1958 the IMO Convention, although not regulated under this name, became mandatory, aiming at:

“Provide technical cooperation between governments in the field of regulation and operational practices involving technical aspects that may affect the performance of international trade, encouraging and facilitating the adoption of standards that contribute to ensuring maritime safety, efficiency of navigation, prevention and control of pollution from ships.” (SAMPLING, 2013)

In Brazil the rules of safeguarding human life at sea are the responsibility of the Brazilian Navy, which develops them taking as a minimum requirement the international conventions and standards ratified by Brazil. The main national rules on this subject are in the Maritime Authority Standards (NORMAM), according to Barros “the safeguarding of human life at sea and navigation is not only the responsibility of the Brazilian Navy, but of all who, directly or indirectly, are involved with navigation.” (BARROS, 2001)

When dealing with safety at sea, it is important to start from the premise that navigation imposes an associated danger, derived from the fact that it develops in an environment not conducive to human life, therefore, this theme is of extreme importance.
According to Barros, safety at sea can be defined with a short but extremely comprehensive phrase: “Security is simply to carry everything to completion, doing everything right and knowing everything that should be known.” (BARROS, 2001)

Thus, when embarking in any maritime unit, one must quickly become familiar with the means, rules and emergency procedures on board, so that the crew can work with the same goal in mind when dealing with the various conditions that arise. Every onboard person should be interested and have updated knowledge about the subjects related to the concepts of salvage, acquired in the Basic Course of Personal Safety, such as rules and security procedures, survival techniques and equipment that contributes to ensuring their physical and psychological integrity at sea.

2.2 BASIC PLATFORM SECURITY COURSE: A PANORAMA

The Basic Platform Safety Course, according to the recommendations of the International Maritime Organization and in addition to what is required by the STCW-1978 Convention, aims to qualify the student, not the waterway, for the tasks on board offshore units, giving you basic knowledge about safety measures on board. (NORMAM 24, 2022)

The course in its curricular structure 04 modules, makes a total workload of 40h/a, comprising theoretical and practical knowledge, and theoretical evaluation and practical exercises. Modules are organized in the following disciplines: Personal Safety and Social Responsibility; Elementary First Aid; Prevention and Fire Fighting; Personal Survival Techniques and Emergency Procedures.

The methodology of the course will consist of theoretical classes and practical participation in the subjects of survival, first aid and fire fighting, and parts of these can be applied on board. If impossible, it can be taught in an appropriate place that simulated conditions.

With regard to teaching techniques, in the expositive classes should be used appropriate instructional resources to the learning objective, such as: film, video, photo, schemes and plans of various types of platforms, aiming to bring the student to the ambience on board. The practical parts of the subjects will be carried out in areas properly prepared with: individual equipment for each student; instructors and monitors. There should be tight security at the event, as well as support and relief services. Students will be guided in relation to safety and appropriate clothing for practical fire fighting and salvage classes.
Also, regarding the evaluation, the criteria of frequency and degree (grade) are observed. It is up to the student to attend classes and mandatory practical activities, with a minimum of 90% of attendance in all classes taught in the course. The student’s learning will be measured through a theoretical assessment focusing on the contents of all disciplines. In the theoretical evaluation will be used a scale of 0 (zero) to 10 (ten), with approximation to tenths. The instructor will make assessments of the student’s learning in the performance of practical activities performed during the training. In the evaluation of practical activities will be assigned satisfactory or unsatisfactory concept.

The approval will be given at the end of the course where the approved student will be entitled to a certificate according to the model provided in specific NORMAM, registered and signed by the representative of the Maritime Authority of the area. It will be considered approved the student who: obtained a grade equal to or greater than 6.0 (six), on a scale of 0 to 10 (zero to ten) in the theoretical evaluation and reach the satisfactory concept in the practical activities; has the minimum frequency required (90%).

If the student does not meet the conditions described in the above paragraphs, he will be considered disapproved.

2.3 EDUCATION AND THE TEACHING-LEARNING PROCESS: AN INTRODUCTION TO THE THEME

According to Jacobi (1999) to carry out an education process, it is necessary to create a concept of general interest that is strengthened as citizenship and the dimension of education for active citizenship are assumed as determining aspects in the multiplication of participatory practice in the decisive processes of public interest.

According to Loureiro et al. (2002), paradigm changes require attitude changes. Thus the process of participation is only achieved through knowledge of its cause and access information, especially from more excluded social groups. Well-informed citizens, when assuming themselves as relevant actors have more conditions to pressure authorities, as well as to motivate themselves to actions of co-responsibility and community participation. (JACOBI, 1999)

Freire (2002) develops educational praxis through dialogue as a process of reflection and action in the construction of knowledge, is fundamental to intervene in reality and promote change leading to citizenship, which implies a dialectical movement
between the critical unveiling of reality and transformative social action, according to the principle that human beings are mutually educated and mediated by the world.

Education to be effective cannot be siloed, but interactive, as stated Freire:

“From this process comes a knowledge that is critical, because it was obtained in an authentically reflective way, and implies a constant act of unveiling reality, positioning itself in it. Knowledge constructed in this way perceives the need to transform the world, allowing the actors to discover themselves as historical beings.” (FREIRE, 1983)

Freire and Malcolm provided important contribution to this form of learning, which is the paradigm for andragogy. Andragogy is defined as the art and science of guiding adults to the teaching-learning process. This methodology varies considerably from traditional pedagogy oriented to children. (PACHECO ET AL., 2006)

Through andragogy adults are motivated to learn as they experience that their needs and interests are satisfied. Learning is life-centered, so programs should be focused on life situations rather than discipline.

Therefore, experience is the richest source for the adult to learn, so the center of the methodology of adult education is the analysis of experiences. Adults have needs to be self-directed, and in this context, the teacher’s role is to engage in the process of mutual investigation with students and not just to transmit and evaluate. The theoretical-practical association is fundamental for the construction of knowledge to be acquired. This is especially true with regard to experiences focused on the area of industrial safety, imposing beyond technical knowledge, a preventive attitude and the development of autonomy, interaction and teamwork, in addition to the recognition of leadership. According to Skinner (qtd. in FIORELLI, 2001, p. 35-36), “behavior results from the interaction between the individual and the environment”.

For Soto (2005), education makes the person easy to drive, but difficult to control; easy to govern, but impossible to enslave. Thus, we understand that the ability to exercise essential leadership is fundamental to every human being, so respect must prevail in the context of teaching-learning.
3 METHODOLOGICAL DESIGN: THE OBJECT OF STUDY UNDER ANALYSIS

3.1 TYPE OF RESEARCH

As for the method used to carry out the research, the deductive method was chosen, characterized by logical construction in order to reach a conclusion. According to Gil (2009), it is the method that starts from the general and then goes down to the particular: part of principles recognized as true and allows us to reach formal conclusions, by virtue of logic.

As for the intended objectives, the research was classified as descriptive, based on practical action, in which the facts were observed, recorded, analyzed and interpreted. According to Sampieri; Collado; Lucio (2006) in the descriptive research the objective is to describe situations and events manifested on a given phenomenon.

As for the moment of data collection, the study was conducted in a transversal way, taking into account that the data were collected in a single moment. Also according to Sampieri; Collado; Lucio (2006), in the cross-sectional research the objective is to describe variables and analyze their incidence at a given time.

Regarding the manipulation of the variables, the research was based on the non-experimental study. According to Sampieri; Collado; Lucio (2006), in the non-experimental research there is no manipulation of the variables. The phenomena are observed in their natural way and then analyzed.

As for the data collection and analysis procedures, the research used in this study was classified as bibliographical, documentary and case study, proposing a quantitative approach. According to Gil (2009), the case study is an empirical study that focuses on investigating a current phenomenon within its real context.

The case study option, as a type of research, is founded in Yin (2001), when it states that such research adapts to research in education; when the researcher is confronted with complex situations and seeks answers to the “how?” and the “why?”; when it seeks to find interactions between relevant factors proper to this entity; when the objective is to describe or analyze the phenomenon to which it is directly accessed, in a deep and global way, and when the investigator intends to grasp the dynamics of the phenomenon. This was the case of research of the course. This company was a groundbreaker.

It is an empirical study that focused on investigating a current phenomenon within its real context, as mentioned above, which also corresponds to the postulate by Gil (2009).
Next, table 1 presents the concept map for the classification of the chosen research model.

![Concept Map]

**Table 1 - Methodological Design**

<table>
<thead>
<tr>
<th>Methodological Design</th>
<th>Source: Rosário, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>deductive</td>
<td>Adaptation by author, 2023</td>
</tr>
<tr>
<td>on the method</td>
<td></td>
</tr>
<tr>
<td>descriptive</td>
<td></td>
</tr>
<tr>
<td>on the objectives</td>
<td></td>
</tr>
<tr>
<td>Research:</td>
<td></td>
</tr>
<tr>
<td>Pedagogy of learning - a praxis of industrial safety</td>
<td></td>
</tr>
<tr>
<td>on the focus</td>
<td></td>
</tr>
<tr>
<td>on data collection and analysis</td>
<td></td>
</tr>
<tr>
<td>quantitative</td>
<td></td>
</tr>
<tr>
<td>bibliographic, documentary, case studies</td>
<td></td>
</tr>
<tr>
<td>transversal</td>
<td></td>
</tr>
<tr>
<td>on the moment of data collection</td>
<td></td>
</tr>
<tr>
<td>non-experimental</td>
<td></td>
</tr>
</tbody>
</table>

The investigation of the teaching-learning process was developed, at first, through bibliographical research and documentary analysis.

The bibliographical research was carried out through a survey of the literature already published on the subject, through books, journals, dissertations, theses and laws.

Regarding the document analysis, the documents analyzed were evaluation sheets, control of degree and frequency of students and, finally, the analysis and systematic interpretation of the data. Theoretical tests and evidence sheets of students' practical exercises, grade maps and frequency controls were also analyzed. In addition, the reaction evaluation sheets filled by the target audience in relation to the pedagogical performance in execution of the course, aiming to associate the methodology used to the teaching-learning relationship.

Finally, the case study was divided into three types of analysis: 1) organizational histories, through the analysis of the educational institution called Sampling; 2) observational, linked to quantitative research, using high-scale observation of the data; 3) life stories, data collected in documents registered through a questionnaire focused on safe practices in the offshore work environment, with students of the course.

The case study aimed to discover the relationship of the target audience with the instructional resources investigated here. Lüdke and André (1986) consider that the case
study aims at discovery. Even if the researcher starts from some theoretical assumptions, he must constantly keep an eye on new elements that may emerge as important during the study.

Social, cultural and professional factors related to the issue of safe practice in offshore activities were raised.

3.2 DELIMITATION AND SCOPE

It was chosen for this research the training and consulting company Sampling Planning and Industrial Safety Advisory, for being a precursor of industrial safety courses, in Macaé, Rio de Janeiro and region.

It must be pointed out that Sampling is one of the important companies in the country that has its own Training Centers with all the necessary equipment for salvage practices, providing more effective teaching-learning relationship with student practice. It is also important to emphasize that this company has sustainable procedures, such as the use of natural gas and the reuse of water in firefighting exercises, protecting and preserving the environment.

3.3 POPULATION AND SAMPLE

The sample selected for the quantitative research was 158 people and took into account the population of 261 students, according to the statistical formula shown in the following table:

<table>
<thead>
<tr>
<th>Table 2 - Formula for sample determination</th>
</tr>
</thead>
</table>
| \[
| n = \frac{n'}{1 + \frac{n'}{N}}
| \]

Source: Sampieri; Collado; Lucio, p.258, 2006
Adaptation by the author, 2023

Where \( n = \) sample size; \( n' = \) sample size without adjustment; and \( N = \) population size.

The target audience selected for the study was composed of 158 (one hundred and fifty-eight) students, 71 of them autonomous, 57 collaborators of multinational companies and 30 employees of Petrobras, enrolled in the classes.
3.4 INSTRUMENTS FOR DATA COLLECTION

The bibliographical research was based on printed and electronic publications, such as books, laws and academic papers that address the theme of the study.

The documentary research had as sources theoretical proofs, evidence sheets of practical exercises, grade maps, frequency controls and reaction evaluation questionnaires of the students extracted from the institution.

The case study was conducted through in loco observation and questionnaires interviews with students of Sampling.

The questionnaires were directed to the target audience, in a classroom provided in Sampling, with an opening lecture, in which the objective of the research was explained. There was no dialogue about the questions, however it was clear to the target population that there would be a return of the approach after the conclusion of the analysis.

The questionnaire was based on basic questions and aimed to analyze and obtain information about the perception of the population about the teaching-learning process of the content, theoretical concepts, survival practices and the applicability of the standards related to the Basic Course of Platform Security. We also sought to identify the existence of actions aimed at safe practices in the offshore work environment in the view of respondents.

According to Parasuraman (1991), a questionnaire can be understood from a set of questions designed to generate the data necessary to achieve the objectives of a research project.

It is imperative to point out that the questionnaire is a scientifically developed instrument, composed of a set of questions ordered according to a predetermined criterion, which must be answered without the presence of the interviewer (MARCONI; LAKATOS, 1999, p.100) and which aims to collect data from a group of respondents.

4 RESULTS AND DISCUSSION

Aiming at a better understanding of the results obtained from the data collection and analysis, this analysis will be divided into two stages:

1- Documental, as presented by May (2004), in which this becomes a means through which the researcher seeks a correspondence between its description and the events to which it refers.
2- Case study, according to Gil (2009): an empirical study that focuses on investigating a current phenomenon within its real context.

Below is the discussion of step 1:

According to the selection of the target population, three distinct groups of people were taken into account, facilitating the analysis of their perception and their correlations, namely:

1- Petrobras employees;
2- Foreign company workers;
3- Autonomous students, that is, those who directly finance their course.

According to Gil (2009), it is important to choose individuals selected based on certain characteristics, as more appropriate to obtain useful results.

In general, surveys are conducted by samples. It should also be noted that in order to safeguard the scientificity of the study and the conditions for its proof, it is necessary to have a representative sample of the universe.

It should be noted that the sample of this research with quantitative focus was determined from the application of a statistical formula in the population and sample chapter.

The target audience selected was composed of 158 students, 30 from Petrobras, 57 from foreign companies and 71 autonomous. The diversity of students occurs due to the obligation of the Basic Course of Platform Safety for people who work or who want to work in the oil industry. The oil market is a competitive market that requires professional qualifications to be part of it. According to Neiva (2001), with the discovery of oil, man jumped into a new era: the industrialized world, which brought as one of the main consequences the need for qualifications for work.

Moving forward, in table 3, the analysis of the target audience selected.

<table>
<thead>
<tr>
<th>Students</th>
<th>Quantity</th>
<th>Petrobras</th>
<th>Foreign Companies</th>
<th>Autonomous</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>30</td>
<td>57</td>
<td>71</td>
<td>158</td>
</tr>
</tbody>
</table>

Source: Created by the author, 2023

Continuing the discussion, the study proposed the development of didactic-pedagogical analyzes, through the critical look of the teaching-learning process of the course. The results presented should consolidate the perception of the target audience: students of Petrobras, foreign and autonomous companies.
The analyzes took into account bibliographies and documents completed by students at the end of the Basic Course of Platform Safety. Issues related to didactics, methodology and objectives of the course, logistics, emphasizing personnel management and transportation were observed. Finally, we investigated the information on the execution of training, involving the necessary resources such as equipment, materials and food correlated to the teaching-learning process of the disciplines taught: Personal Security and Social Responsibility, Elementary First Aid, Prevention and Fire Fighting and Personal Survival Techniques and Emergency Procedures.

Guimarães (1995) states that the exercise of praxis in education is necessary because isolated action generates activism without depth, while reflection generates an immobility that will not fulfill the transformative possibility of education. Thus, the solution would be to carry out a true dialogue between the reflective attitude with the action of theory and practice, that is, thinking with doing. This process strengthens man and enables him to positively affect reality.

Below the analysis demonstrates the percentage of satisfaction of the target audience in relation to the Basic Platform Security Course consolidating the teaching-learning relationship perceived during the evaluations of the documents analyzed.

In table 4, the percentage of acceptance of 158 students was 54.4% and 34.8%, totaling 89.2% of approval by students on the quality of teaching.

<table>
<thead>
<tr>
<th>Assessment level on teaching methodology</th>
<th>Level</th>
<th>Unsatisfactory</th>
<th>Regular</th>
<th>Satisfactory</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>1.3</td>
<td>2.5</td>
<td>7.0</td>
<td>34.8</td>
<td>54.4</td>
<td></td>
</tr>
</tbody>
</table>

Source: Created by the author, 2023

In table 5, regarding the transport used by students to transfer from theoretical classes to practices, the acceptance rate was 81%, with considerations between good and great by the target audience.

<table>
<thead>
<tr>
<th>Assessment level on transportation</th>
<th>Level</th>
<th>Unsatisfactory</th>
<th>Regular</th>
<th>Satisfactory</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>5.7</td>
<td>6.3</td>
<td>7.0</td>
<td>36.1</td>
<td>44.9</td>
<td></td>
</tr>
</tbody>
</table>

Source: Created by the author, 2023

Table 6 shows a consolidation on the infrastructure; the items evaluated were:
1- Logistics of personnel, performed by the administrative staff, at the reception and enrollment of students.
2- Food (breakfast and lunch).
3- Environmental physical conditions (lighting, temperature).

As we can see, there was a high acceptance rate from the students, making a total of 72.8% between good and great, on the logistics of staff and the quality of reception. Thus, we observe that teaching goes beyond the classroom and that interdependent relationships are important for the process that involves teaching and learning.

Man is a being of relationships. Culture is the reflection of man’s creative process, and this creative process makes him an agent of active adaptation and not an accommodation. This concept distinguishes the nature of culture, understanding culture as the result of their work, their creative effort. This discovery is responsible for the rescue of his self-esteem, as the statue is the work of a great sculptor and the brick the work of a fine potter. It seeks to overcome the dichotomy between theory and practice, because during the process, when man discovers that his practice presupposes knowledge, he concludes that to know is to interact with reality, one perceives himself as a subject of history. (FREIRE, 1983)

Table 6 - Perception of the target audience researched on the infrastructure

<table>
<thead>
<tr>
<th>Assessment level on infrastructure</th>
<th>Unsatisfactory</th>
<th>Regular</th>
<th>Satisfactory</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>8.9</td>
<td>7.0</td>
<td>11.4</td>
<td>32.3</td>
<td>40.5</td>
</tr>
</tbody>
</table>

Source: Created by the author, 2023

Table 7 shows the consolidated results of approval in the Basic Course of Platform Safety regarding the marks of the tests in the subjects studied. In this context, the failure rate was tiny in relation to those approved with an average equal to or greater than 2.0 (two), in which the maximum value is 4.0 (four).

Thus, of the 158 students surveyed in this period only 02 individuals disapproved of the theoretical contents. This demonstrates the teaching-learning relationship that occurs from the content taught.

Another observation is that 138 students were above average between 3.0 (three) and 4.0 (four), demonstrating comprehensiveness in understanding the content presented. Finally, this evaluation demonstrates that the majority of students who were above average between 3.0 (three) and 4.0 (four) is composed of the group of autonomous, that is, are not necessarily working in the oil industry, however sought the Basic Course of
Platform Safety for an opportunity in the offshore market taking into account the obligation of this training for the work shipped.

According to Viola and Leis (1991), the multisectoral profile does not mean uniformity, it indicates a growing plurality of social sectors that recognize the legitimacy of education and the need to include it in the planning of national development.

<table>
<thead>
<tr>
<th>Grade</th>
<th>0-1.0</th>
<th>1.1-2.0</th>
<th>2.1-3.0</th>
<th>3.1-4.0</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students quantity</td>
<td>2</td>
<td>5</td>
<td>13</td>
<td>138</td>
<td>158</td>
</tr>
<tr>
<td>Students learning %</td>
<td>1.3</td>
<td>3.2</td>
<td>8.2</td>
<td>87.3</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Created by the author, 2023

About teaching-learning process, according to the table above, referring to the grades of the tests, it is concluded that more than 90% of the target audience reached between 3.0 (three) and 4.0 (four) of average. This reaffirms the quality of the proposed content and its comprehension by the students.

According to Freire (2002), developing educational praxis, through dialogue as a process of reflection and action in the construction of knowledge, it is fundamental to intervene in reality and promote change leading to citizenship. This perspective implies a dialectical movement between the critical unveiling of reality and transformative social action, according to the principle that human beings educate each other and are mediated by the world.

From the analyses presented above, we observed that, although in different groups, there is a correlation between the teaching-learning process. This evaluation is consolidated from the information discussed in the reaction evaluation reports, in the verification of bibliographic, documentary, didactic-pedagogical and administrative material, considering the percentage of massive approval both in the theoretical tests and in the practical exercises subsidized by the effective frequency during the classes.

5 CONCLUSION

The activity of the oil sector has developed a lot in recent years and the pre-salt perspectives suggest that this market should continue to grow, even with the environmental impact caused to the planet. To ensure that the exploration and production of the oil industry takes place in a controlled manner, in accordance with the best practices of the international industry aiming at operational safety and environmental preservation,
in order to prevent accidents from harming human life and the environment, industrial safety training for workers on board maritime units is of paramount importance.

To analyze to what extent the pedagogy of learning of the Basic Course of Platform Safety for the oil and gas industry - Campos Basin is related to a safe praxis in the offshore work environment was an important challenge explored in this article.

With regard to factual information, from the bibliographical research and documentary analysis, it was concluded that the theoretical content and practical activities of the Basic Course of Platform Safety consolidate an educational praxis, providing a technical knowledge that satisfactorily indicates the teaching-learning relationship in the area of industrial safety.

After the analysis of institutional documents and students, such as evaluation forms and reaction evaluation questionnaire, it was identified that the target audience surveyed demonstrated a high degree of knowledge about the importance of the teaching-learning focused on the relationship between theory and practice, emphasizing the quality of the technical staff, content, methodology, instructional resources, didactic material, equipment, theoretical and practical classes, exercises of fixation of learning, infrastructure and logistics in general.

According to the analysis focused on the perception of the target audience with the instructional resources investigated, it was proved that there is an understanding of the importance of industrial safety explored in the theoretical and practical classes of the Basic Course of Platform Safety, demonstrated from the general evaluation of the training in which students consider the course excellent and evidence a massive approval about the knowledge acquired.

Still with reference to the results, it was evidenced that the teaching-learning process of the contents acquired with the course was consolidated through the commitment of the target audience with the dialogue, the information, behavior and knowledge proven through the analysis of tests, practice sheets, grade maps and frequency controls. In this context, there was a process of effective participation and frequency and a high level of performance and approval.

The results obtained highlight that propositions of preventive educational actions minimize work accidents. Thus, after analysis, the research proves that the knowledge acquired in the Basic Course of Platform Safety promotes a safe practice in the environment for offshore workers, generating instruments that guide them in identifying
problems and assists them in finding solutions, integrating them in preventive action and active participation focused on industrial safety standards.

It was concluded that education is characterized by being an instrument of theoretical-practical association, through information that can intervene in the reality and promotes changes in everyday attitudes, leading to new practices in the construction of citizenship. Articulating the exercise of citizenship to face the educational issue not only presupposes the awareness of individual duties determined by morality, but, above all, awareness of collective rights defined by political negotiation, creating the new culture of participatory management.

6 RECOMMENDATIONS FOR FUTURE RESEARCH

As a proposal for future work, we recommend studies on industrial safety assessment in companies and/or industries focused on safe practice, with assessment tools and educational intervention methodologies, culture of accident prevention and not only as accounting for accidents at work, according to numerous researched literatures on this subject.

Another issue for future studies is to employ statistical data of incidents in the United States and use them as a way of preventing accidents, working these data and training multipliers through universities in graduate work safety, degrees in petroleum and environmental engineering and in technical courses on safety at work.
REFERENCES


