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Culture and Educational Practice in Safety and Health of Work Using Images



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ABSTRACT

The research presents the development of a project through visual images as an educational practice, to integrate technology, arts, and technical knowledge of occupational safety and health. In this context, the project's objective was to encourage the production of images about occupational safety and health, aiming to contribute to the dissemination and popularization of the theme. The methodology followed the guidelines of the Preferred Reporting Items for Systematic Reviews, the structuring of classroom activities based on the Photovoice method, and the organization of a photographic contest and exhibition with awards. The results provide potential improvements in the development of teaching-learning to consolidate a prevention culture in future professionals. Therefore, they impact the reduction of embargoes, interdictions, work accidents, improvisations, and rework in the workplace. Furthermore, with the photographic collection acquired over the years, we intend to publish a portfolio with the winning images.



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1. INTRODUCTION

For a long time, the organizational model of the companies prioritized above all the maximization of production to the detriment of better working conditions. However, it is noticeable that a new culture of occupational safety and health is currently being disseminated. This culture meets the global trend, representing the establishment of pacts, principles, and values that should guide practices and conducts that meet new and old demands in the area (CAMPOS; DIAS, 2012).

In this scenario of changes, it is fundamentally required for the individual to understand the ongoing transformations, in the light of changes in the world of work (MENDES, WÜNSCH, 2007). Therefore, this culture is an element strictly related to the way the individual faces reality, interfering in practical actions.

The development and presence of a culture focused on safety and health at work are essential elements to direct individual and collective behaviors for the realization of safe work and accident prevention. The assimilation of this culture is noticeable when the values are internalized and people show preventive and zealous actions towards themselves and others (VIEIRA; JUNIOR; SILVA, 2014). Regarding awareness for young people, Lima et al., (2017) highlight that college students, despite having a higher level of education, are constantly putting their lives and the lives of others in danger.

Drinking and driving are some of the most recurrent risk factors, which further reinforces the importance of implementing educational measures aimed at these young people and their families to raise awareness and sensitivity to life. In this logic, issues of occupational safety and health should also be internalized while still in college, since young people are preparing for the labor market. This goal is realized as young people are reached by prevention campaigns that stimulate critical thinking and lead to reflection on their work practices.

With the intensification of visual culture, it becomes imperative that educational practices cover the understanding and appropriation of this culture present in everyday life so that the subject can be a critical and creative receiver. Therefore, it is necessary that educational spaces promote the integration of information and communication technologies in their teaching practices, since they are present and influence the sphere of social life (MENDES, OLIVEIRA; 2017). It is known that the use of visual images as a way to instruct and educate is not recent, presenting

several functions beyond illustration. Moreover, visual images reveal aspects of the material and immaterial culture of societies, composing the relationship between the real and the social imaginary (MAUAD, 2015).

This research integrates artistic and technical knowledge of occupational safety and health through visual images using awareness activities as an educational practice to create a direct relationship between universities and society in general. In general, the project aims to promote the production of everyday images about occupational safety and health, enabling the dissemination and popularity of the subject.

2. THEORETICAL FRAMEWORK

As time went by, photography began to play a very important role, because, besides providing information, it also improved the vision of social reality. The camera captures the moment in a given space, and the interpretation is left up to each individual. However, knowing how to look and read photos means understanding the world and the reality around us (MARTINS, 2010).

According to Scott (2014), photography can be used as a tool to raise awareness and influence decisions that have environmental, social, economic, cultural, and political implications. In the context of education, visual perception emerges as a tool that stimulates reflection among students and educators, as well as critiques historical challenges and contemporary issues (LOUGHLIN, 2013).

In this context, photography represents reality in which the elements of its language employ certain meanings. Knowing how to interpret such meanings and employ them is fundamental to developing one's discourse about reality (DELIBERADOR; ALVES; LOPES, 2013). One of the main challenges for teachers today is the integration of technologies in their daily practices in the classroom, according to Campanholi (2012), photography is a resource that leads the student to a more interactive learning process. The individual builds a thought not only textual but of the image, aimed at the analytical and critical understanding of how these changes interfere with the perception of reality.

To complement more traditional methods (MORROW, 2001; PROSSER,1998) the use of photographs is increasing as a methodological tool (PROSSER; SCHWARTZ, 1998), because

the image can show perspectives that are not visible in the first contact with the situation, broadening the reflexive sense from an experience (HERON,1996).

In this sense, it is essential that educational institutions enable the access of these young people to media technologies and jointly develop products aimed at society. Allied to this, Scott (2014) states that photo competition in an educational institution can become an effective pedagogical tool.

Understanding that images are characterized as starting and reference points for discussions (COLLIER JUNIOR, 1987, p.99), it becomes evident that photography has a communication range superior to verbal communication in the field of occupational safety and health, making people with any level of education aware. The visual experience worked on in disciplinary activities about occupational safety, seems to allow an effective didactic environment and a reflective educational sphere, promoting critical thinking about the subject addressed.

3. METHODOLOGY

The methodology used to cover this awareness through the cameras was developed in the academic community of the University of Pernambuco - UPE and the general community, acting in the following thematic areas:

- Communication: Production and diffusion of educational material;
- Culture: Cultural and artistic production in the area of photography, film, and video.

With actions directed to the internal and external public of the UPE Campus, the project run by the Safety and Hygiene at Work Laboratory - LSHT presents national amplitude. LSHT is a research group that develops activities in teaching, research, and extension at the Polytechnic School of the University of Pernambuco.

The project aims to have an annual reach of 4,700 beneficiaries directly, among UPE's faculty and students, as well as society in general, since it integrates activities open to the public. Moreover, it integrates the mandatory curricular component 'Safety Engineering', of the courses Industrial Mechanical Engineering, Mechatronics Engineering, Electrical Engineering, Electronic Engineering, Telecommunications Engineering, Automation and Control Engineering, and Materials Physics. Besides the curricular credit for undergraduate students, the project foresees the effective participation of graduate students.

It is worth noting that this is a project in its second year of execution, intending to become a continuous flow project, on an annual basis. Moreover, due to the social distancing caused by COVID-19, and the consequent digital immersion and new work habits, part of the project's methodology was restructured.

4. METHODOLOGICAL PROCEDURES

The methodology is based on the Project Analytical Structure (PAS), which allows the mapping of the project execution processes into activity packages, as shown in Figure 1.

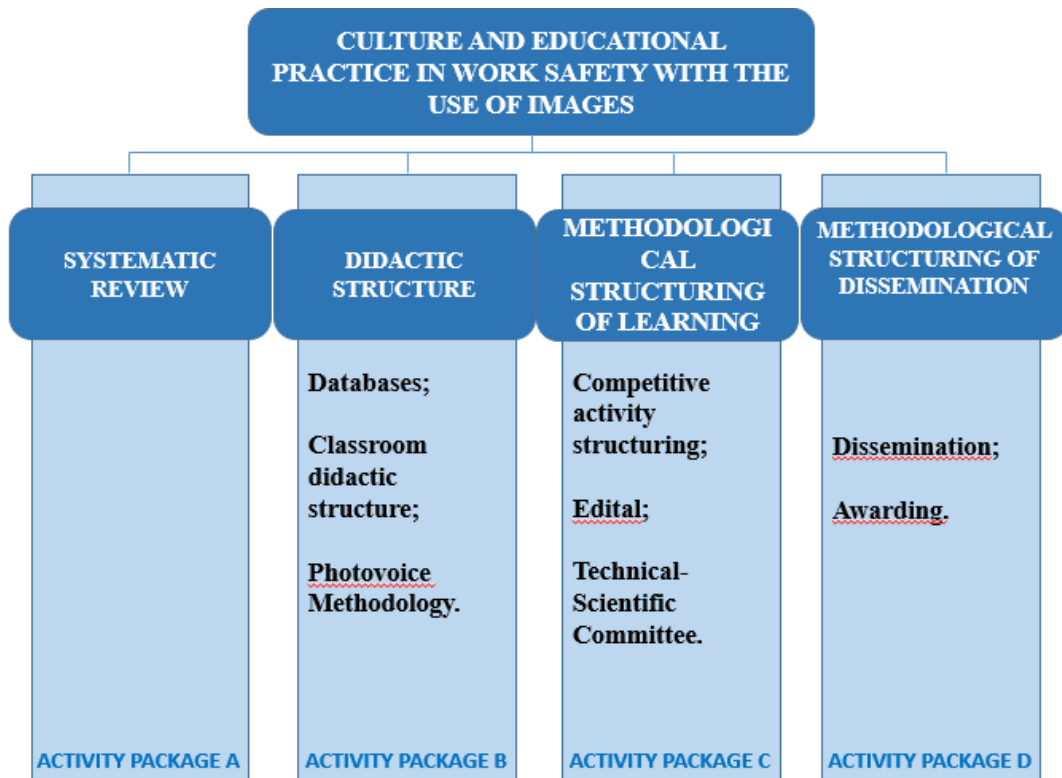


Figure No 1 - Project analytical framework

Source: Authors (2021)

As mentioned, the project is in its second year of execution, however, the first year of execution was limited to the execution of activity packages A, C, and D.

For the execution of the project, it was necessary to obtain a theoretical background, and initially, a systematic review was performed based on the research protocol in Figure 2.

Item	Description
Objective	To research publications that address teaching methodologies with the use of images in occupational safety and health disciplines.
Keywords	Occupational safety and health, Photography and Education.
Databases	Scopus and ScieElo
Inclusion Criteria	Publication Time: 2015 - 2020; Knowledge areas: Education; Photography; Occupational safety and health; Thematic: Pedagogical practices with the use of images in occupational safety.
Exclusion criteria	Approach: Practices that do not use visual communication;
Research questions	Can photography be used in the classroom as an interactive learning process? Does visual perception stimulate reflection in students and educators? Does reading photography contribute to an awareness of workplace safety? Is the photography competition an effective pedagogical tool?

Figure no 2 - Research protocol

Source: Authors (2021)

With the combination of pre-established keywords, 1938 articles were found, distributed in the databases, and the references of the articles were selected for analysis, after the screening.

Continuing the selection process, the criteria of the year (2015 to 2021) and language (Portuguese, English, and Spanish) were inserted, and the number of articles was reduced to 981.

Subsequently, the selection was made by reading the titles (926 excluded) and repetitions (25 excluded), leaving 20 papers. Next, the abstracts were read (5 excluded) and the studies were fully read for inclusion (6 excluded). Finally, with the adopted criteria, 14 articles were included for analysis in this review. The article selection process is illustrated in the flowchart in Figure 3.

Identification	Articles identified through the Scopus database platform, SciELO, and by reference screening of the included articles. (N=3727)	
Selection	Selected articles by language, and year of publication (N=981)	Articles excluded by language, and by year of publication (N=2746)
	Articles selected by title (N=25)	Articles excluded by title (N=956)
	Articles selected by abstract (N=20)	Articles excluded by abstract (N=5)
Eligibility	Texts of full articles evaluated for eligibility (N=14)	Texts of full articles excluded (N=6)
Included	Number of articles included in the qualitative synthesis of this review (N=14)	

Figure no 3 - Flowchart of article selection

Source: Authors (2021)

In parallel, a didactic practice was structured (activity package B), based on the Photovoice methodology. Often used in the Nursing area, Photovoice is based on the representation of reality, through a format of visual expression, and thus, it triggers discussions and stimulates reflection. According to Wang (1997), PhotoVoice is an action-research method that is based on the analysis of expert people in their reality in a participatory manner, evidencing the experience through photographic records.

This method allows for reflection through the development of a guided discussion, where both positive and negative points can be highlighted. Allied to Photovoice, the use of *games* was chosen for the development of classroom activities.

The structure of a game can develop the learning context, through the satisfaction of the challenge of solving a problem, and thus being rewarded (LÉVIY, 2014). In this way, applications and digital platforms that can interact with multiple users on multiple devices can be used to motivate competition. The use of games that have a *ranking*, where at each stage students are challenged to acquire more knowledge, brings a more fun approach, and consequently, more attractive to the learning process.

For this, the image bank of the Occupational Safety and Hygiene Laboratory - LSHT of POLI/UPE, consisting of photographic records from technical and scientific research in partnership with private enterprise, is made available. The images will be linked to occupational safety concepts and a storyline developed by the teachers, so that students can develop critical analyses, with the occupational safety and health legislation as a reference.

Concomitantly, students will be encouraged to bring images of situations they have experienced, either in their work environments or simply as an observer of such situations.

To assist this dynamic, a form was structured, so that the student registers his knowledge about what is exposed in the photographs, according to the following information:

- Year: Year in which the image was registered;
- Sector: Identification of the sector of work activity of the photographic record;
- Activity/Services: Identification of the work activity and related services that the image exposes;
- Situation: Classification of the situation registered, if in compliance or not with the regulatory norms.

Allied to these activities, and believing that competition is beneficial due to the motivations that guide each individual (Soler, 2003), the photography contest and award was conceived, to directly influence the development and quality of these activities.

Aiming to achieve a greater reach of students and professionals who are interested in the theme of the event, as part of activity package C, a public notice is structured, containing the guidelines for registration, the evaluation criteria of the images, and the awards. In parallel, a form is structured on the Google platform for registration. In this form, it is allowed to attach the participant's image, and then it is necessary to fill out the requirements demanded by the public notice. This data contributes to characterizing the profile of the target audience, directing more assertive dissemination in subsequent editions.

For the evaluation of the images, an evaluation committee is structured, composed of an LSHT professor with expertise in occupational safety and health, an external professor with expertise in photography, and a professor representing the University's Sectorial Coordination of Extension and Culture - CSEC. The award is organized in connection with the institution's university week. During the event, the award winners debate on the occupational safety and health practice of the image of their authorship.

5. RESULTS AND DISCUSSION

As a result of the first year of the project's execution, the photographic contest and exhibition with awards had the theme "**Good practices in the workplace**". Images were presented showing good practices in the working environment, about safety and health at work in the various economic activities.

Of the participants in the first version of the photography award, 60% were undergraduate students, followed by specialization and master's students, as shown in Figure 4.

PARTICIPANTS OF THE 1ST LSHT PHOTO AWARD

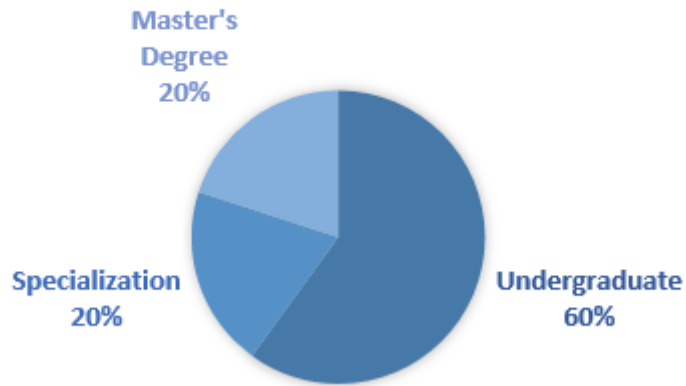


Figure no 4 - Quantitative of participants of the 1st photography prize according to the academic level

Source: Authors (2021)

The evaluation committee complied with the requirements of the call for entries, highlighting the visual impact, the organicity, the technical and aesthetic mastery, the relevance of the image to occupational safety and health, and the image's potential to bring the public closer to the academy. The winners were rewarded with a kit of books on occupational safety and health, in addition to having the honor of illustrating the frames of the Occupational Safety and Hygiene Laboratory - LSHT of the University of Pernambuco. They also received honorable mention certificates.

As an example, the winning photo (Figure 5) illustrates a pile-driving activity in the civil construction sector, with workers using a jackhammer, with proper individual and collective protection equipment. The rebar has its tips protected and the area is properly isolated and marked.



Figure no 5 - Picture of the 1st place Good practices in pile driving activity

Source: Authors (2021)

For the second edition of the contest, the following were developed: the public call, the contest rules and award, the promotional material (Figure 6), the google form for registration, and the *website* for dissemination and submission of proposals (www.premiofotografialsh.t.poli.br).



Figure 6 - Promotional material for the 2nd LSHT photography award

Source: Authors (2021)

6. CONCLUSION

With this project, it is believed that knowledge about occupational safety and health has been effectively disseminated, and the relationship between the university and society is being strengthened and multiplied.

Among the project's contributions, the following stand out:

- Implementation and dissemination of the occupational safety and health concept in the researched educational institution, generating improvement in the development of the academic community's activities;
- Valuing the university's artistic and cultural production;
- Publication of photographs that portray the labor reality in various productive sectors;
- Cultural and behavioral change in the academic community, regarding occupational safety and health;
- Improvement in the quality of learning and didactic activities.

Moreover, with future professionals aware of the importance of safety and health at work, there is the promotion of social and economic impacts, due to the consequent reduction of embargoes, interdictions, accidents, improvisations and rework in the workplace. Finally, with the collection of photos from the photography award, over the years, we intend to produce a portfolio with illustrations of occupational safety and health situations in the various productive sectors, directly impacting the dissemination of the prevention culture.

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