Creative writing in organization teaching of the construction site

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ABSTRACT
This article presents the creative writing strategies used by students of the discipline of Construction Technology of the Civil Engineering course of a university in the Brazilian Northeast to present the learning outcome in this discipline. The summaries were written in verse form by the students from the reflection of reading documents in the content area of the discipline and the understanding of the videos watched by them on the same topic. The results showed a good performance of the class in addition to the technical knowledge for the activation of the sensitive. The students considered that creative writing brought more lightness to the teaching and learning process in the organization of the construction site.

Keywords: Poetry, Construction technology, Engineering education.

1 INTRODUCTION

In engineering education, traditional curricula predominate, weak interdisciplinarity and late integration, when present, between the different curricular components, between theory and practice and between the school world and the professional world. Roughly speaking, these curricula are still organized sequentially, in which the disciplines of the basic sciences are followed by the applied sciences and, finally, by the practices, for example the internships. There are commonly a large number of subjects placed in the curriculum, in a linear and compartmentalized way. (Ribeiro, 2007).

Oliveira et al. (2013) state that several engineering schools use the traditional teaching method, composed only of a methodology based on the transmission of content in expository classes.

For Lázaro (2018) school education, even that of Higher Education, somehow presents remnants of the traditional teaching model such as: the arrangement of chairs in rows, silence, predominance of the use of the board and chalk or brush for frame, and especially the reproduction of the contents in classroom and expository classes. Taking the relationship of the teacher with the student to happen in a verticalized way, in which the teacher is the one who holds all the knowledge and the student is that passive subject, who memorizes the knowledge passed on and only repeats them. This leads to an organizational structure of teaching to incompatibility with the current demands of the classroom, and the search for new methodologies for teaching-learning.

However, today, the professional environment requires the engineer to possess both technical knowledge and transversal skills, which must be developed in the undergraduate period, so that students enter the profession with such skills, such as teamwork and oral and written communication.

Sousa (2014) considers that when the student has competencies and skills guarantee the globality of the behavior in the face of challenges, and can, therefore, mobilize what was learned in real situations. This is an important factor when it comes to construction sites, because it is the built area planned to allocate and distribute materials, labor and equipment, being necessary to its organization, and the responsible professional, in this case, the engineer, needs to be able to fulfill this mission.

In a technical way, two Regulatory Standards directly conceptualize the construction site. NR 18 - Conditions and environment of work in the construction industry, defines it as: fixed and temporary work area where support operations and execution of a work are developed. ABNT NBR 12284:1991 explains that they are: areas intended for the execution and support of the works of the construction industry, divided into operational areas and living areas.

According to Saurin and Formoso (2006) the planning of the construction site should be seen as a managerial process like any other. Since the product of civil construction is produced within the construction site, its management must occur without errors and avoiding as much waste as possible, fulfilling each stage of construction without lack of materials and inputs that are necessary for its execution. Thus, it is necessary a more qualified knowledge for this, making the student reflect on the subject.

The educational environment has also undergone constant changes in recent decades, promoting the emergence of several initiatives that aim to support and foster actions to improve the quality of education, as a way to modify the educational scenario, both in teaching practices and in student performance.

Innovative, contextualized strategies that use resources that broaden the perspectives of learning can become effective options in improving the teaching-learning process.

For the significant learning of the contents taught, changes in the posture of students and teachers are necessary. Students should be open to obtaining new knowledge, while teachers need to update their teaching methodologies, opting for didactic alternatives that favor the construction of learning in a significant way, in which the student uses previous knowledge to build new knowledge.

This article presents the creative writing strategies used by students of the discipline of Management and Production of Constructions in the civil engineering course of a Northeastern University to present the result of learning in that discipline. Syntheses were written in the form of sentences and verses by the students from the reading of documents in the area of the content of the discipline and the understanding of the videos watched by them.

2 CONCEPTUAL APPROACH

Active teaching methodologies are not new, but they have been gaining more space with the advancement of studies in the area of learning psychology. Classical thinkers of education, such as Freire, Dewey, Piaget and Rogers, already defended the thesis that the traditional model of teaching did not seem to be the most effective.

There are several methodologies considered active, but all have in common the belief that the student is the protagonist of the learning process and that he will only learn something if he experiences it in practice.

The promotion of learning through active methodologies makes use of several strategies, such as: *PeerInstruction (PI),* Team-Based Learming (TBL), *WritingAcrossthe Curriculum* (WAC), *Project Based Learning* (PBL*), among others (SCHMITZ, 2016).*

In an integrative review on active teaching-learning methodologies carried out by PAIVA et al. (2016), several types of them were synthesized, as shown in table 1.

Table 1 - Types of active teaching-learning methodologies

Types	**References**
Problem-based learning	Gomes et al. (2010) and Marin et al. (2010)
Pedagogy of problematization	Marin et al. (2010) and Paranhos and Mendes (2010)
Problematization: Arco de Marguerez	Marin et al. (2010), Pedrosa et al. (2011), Gomes et al. (2010) e Prado et al. (2012)
Case Studies	Gomes et al. (2010), Pedrosa et al. (2011) and Limberger (2013)
Reflective groups and interdisciplinary groups Mentoring groups and facilitation groups	Gomes et al. (2010) and Carraro et al. (2011)
Group exercises	Pedrosa et al. (2011)
Seminars	Gomes et al. (2010) and Pedrosa et al. (2011)
Critical report of experience	Gomes et al. (2010)
Round tables	Gomes et al. (2010)
Socialization	Carraro et al. (2011)
Plenary	Pedrosa et al. (2011)
Dialogued exhibitions	Pedrosa et al. (2011)
Thematic discussions	Pedrosa et al. (2011)
Annotated reading	Pedrosa et al. (2011)
Bureaux	Pedrosa et al. (2011)
Presentation of films	Pedrosa et al. (2011)
Musical interpretations	Pedrosa et al. (2011)
Dramatizations	Pedrosa et al. (2011)
Playful-pedagogical dynamics	Maia et al. (2012)
Portfolio	Gomes et al. (2010) and Paranhos and Mendes (2010)
Oral evaluation (self-assessment, group, teachers and cycle)	Marin et al. (2010)

Source; Paiva et al. (2016).

Other strategies of active teaching methodologies presented in the literature are project-based learning, peer instruction, culture circle; inverted classroom and classroom-laboratory.

In table 2, below, are synthesized educational practices of active learning carried out by FONTENELLE (2019) a, FONTENELLE et al. (2019) b, FONTENELLE (2020) a and

FONTENELLE et al. (2020) b in Civil Engineering course in northeastern Brazil based on Waldorf pedagogy, which is a pedagogy that uses art to assist in the teaching and learning process.

Table 2 - Educational practices of active learning in civil engineering course

Discipline	Educational practices of active learning
Building technology	▪ Watercolor painting about visits to the works ▪ Cordel's production on the evaluation of three construction sites ▪ Video production on safety at the construction site ▪ Production of poetry on construction technologies ▪ Practical class of assembly of the recycled plastic bathroom
Budget, planning and control of works;	▪ Production of a cordel on time planning at the construction site ▪ Production of video about construction budget
Management and Production of Constructions	▪ Painting watercolors on content synthesis ▪ Production of parodies about smart buildings ▪ Parody production on BIM (Building Information Modeling) ▪ Production poetry on *Lean philosophy* ▪ Video production on construction management

Fonte: FONTENELLE (2019) a, FONTENELLE et al. (2019) b, FONTENELLE (2020) a e FONTENELLE et al. (2020) b.

There are several teaching-learning methods that can be used to promote improvement in the teaching and learning process. In a way, the forms of active and/or collaborative learning, centered on the process and/or students, and the constructivist teaching methods serve this purpose (ESCRIVÃO FILHO; RIBEIRO, 2009).

3 METHODOLOGY

Building Technology is a compulsory subject of the Civil Engineering course. In the programmatic content is addressed the constructive processes of a work from the project to the painting.

The main teaching strategies used are: Lectures with discussion of concepts and case studies; Reading and interpretation of texts; Seminars of the students for presentation of scientific article and case studies and / or practical work carried out by them and technical visits.

During the pandemic, *webinars* and videos on the topics were introduced, and the students were asked to summarize the understanding of these documents, in verse form.

4 RESULTS AND DISCUSSIONS

Each pair of students selected and watched a video about building technology. The synthesis was presented in verse form, as shown in tables 3 and 4 below.

Table 3 – Creative writing of the Duo 1

ORGANIZED and PREFABRICATED WORK

Attention noble colleagues
In what we are going to present
For it is an important step
An organized work

Work is not a mess
If it's worth the cue, take the tips
For in a work facilitates
Leave everything in place

The first step is easy
Leave the workspace free
Always delimiting with tracks
The corridors, including

The second step is to separate
The places to store
In a put what you are using
And in the other what will still use

The third is more work
Because you're going to have to design
A more harmonious way
Of the shortening paths

The fourth is that just stack
And save correctly
Machines, switches and tools
Keeping them clean at all times

The fifth is you get rid of it
Of what can the path get in the way
But it's important to ask
If someone else won't use it

The sixth is planning
To leave around what is most used
And always store in the lowest places
Whichever is heavier

Another tip I'll give you
Which is using instruments
Or gutters with closures
Pro rubble discard

That's very important
And let's not forget
To use PPE's
For accidents not to happen

These tips are valuable
And they will make your day-to-day life easier
Just organize everything
To work with mastery

There's something else
That you need to be alert
Deflate tires and drums
For water not to accumulate

What if an oil spills
Or any other liquid
Clean immediately
For the fall is a risk

And to finish
Keep everything in the right place
Clean up all dirt
And don't miss any objects

Organization and cleanliness
They are not procedures
It should be a rule
To follow at all times

If you think it's over
Another thing we will teach
Which is the "5s" rule
To implement in the work

Every S is a sense
And it has its importance
Helps you save time and money
And still give you more security

The first is that of use
Which is to identify
What you're not using
to remove from the construction site

The other sense is ordination
That will help you find
All items of the work
In its proper place

The sense of cleanliness
Brings quality and safety
Eliminating disease risk
Bringing more confidence to the work

The sense of health
Talk about individual hygiene
Ensuring the right conditions
Pro worker do not get sick

The last is that of self-discipline
What is knowing how to work in a group
Hitting goals and seeking quality
For a good work to deliver
It takes willingness
to apply these principles
Increasing productivity
And avoiding waste

I'll end here
With my thanks
To Aridenise, our gratitude
For his teachings

Source: Double 1, (2021).

Table 4 – Creative writing of the Duo 2

Hygiene and health at the construction site

Hygiene is essential
Be anywhere
Especially on the construction site
For health to preserve

To start hygiene
Cleanliness and organization we must practice
If we don't keep that in mind
It won't do any good

Without hygiene, incidents will happen
Work will come to a standstill
Waste of materials will occur
Clutter and damage is what you will see

When using the bathrooms
Use neatly and correctly
Have respect for your companions
For they will use later

If the shower, by chance, breaks
It's risky for you to try to fix it
So, to prevent you from getting hurt
An electrician is advisable to call

When it's time to eat
The clean cafeteria must be preserved
For it is one of the main places
Where dirt should not be found

In addition to these precautions that we have just read
Some rules in the accommodations is also important to know
You need to respect your space and the room in order to keep
So that personal conflicts do not happen

Smoking in the accommodation is also not recommended
Aside from the fire risk, it's not very healthy
Consuming food is another point to avoid
Otherwise, bad smell and insects in the environment will set in

We must also not forget about personal hygiene
Bathing, for example, should be something habitual
It prevents skin diseases
And the sweat that stinks

Combing your hair, washing your hands and brushing your teeth
There are other habits to keep in mind
Because it avoids unpleasant situations
And terrible embarrassments

Source: Double 2, (2021).

The creative writing about the studies carried out in the area of Technology of the buildings of the civil engineering course of UFERSA-Mossoró synthesized in this text evidenced how much the students identified with the teaching of engineering through the arts.

5 FINAL CONSIDERATIONS

As an observer of the artistic activity carried out by the students, the professor agrees with Steiner when he affirms that this type of practice provides meaning to understand also with the intellect and to permeate also as the sense of duty what the individual has learned to see in art as the beautiful and the purely free human.

It is considered that the practice of creative writing should be more common in academia in order to unite abstraction with human sensibility where there is great unimaginable potential that can still be developed.

The technical and artistic productions of the students of the discipline of Building Technology of the Civil Engineering course of UFERSA show that sensitivity can be activated.

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