

Pedagogical Strategies Based on Socio-Affective Scenarios in Distance Education: A Look from the Perspective of Tutors

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Abstract: This article aims to identify the perceptions of tutors in the application of Pedagogical Strategies (PS) based on Socio-affective Scenarios in Distance Education (DE). Socio-affective Scenarios are the mapping of social indicators and moods. PS are actions conducted by teachers or tutors to try to personalize teaching in DE with the aim of minimizing cases of drop out. In this context, the methodology was developed in a qualitative approach. The target audience was eight tutors who applied PS in two undergraduate courses at a Brazilian Public University. To participate in the study, the tutors answered an online questionnaire, which represented the data collection instrument. As a result, the tutors considered it important to use PSs in their classes because they allowed for increased social interactions, greater collaboration, engagement and participation of students.

1 INTRODUCTION

Distance Education (DE) uses tools to mediate teaching, such as Virtual Learning Environments (VLE). In VLEs, pedagogical actions are constituted by the participation of the teachers and tutors. They have specific responsibilities that, when combined, complement each other. From the teacher's perspective, students need to develop autonomy and discipline as they organize their study routine. In this context, it is essential that trainers, teachers, and tutors make their classes more dynamic, prepare curricular content, teaching materials, and pedagogical procedures, and evaluate and carry out academic management of the teaching and learning process (Kirsch and Veloso, 2024).

VLE tutors have responsibilities related to mediating participation, suggesting studies, answering questions, providing guidance, and helping with possible difficulties in using technologies (Mattar *et al.*, 2020). Furthermore, by having frequent contact with students, tutors can

better understand their experiences, difficulties, and achievements, leading to integration that is more effective into the educational institution (Fraga, 2020). In view of this, the tutor is responsible for performing multiple tasks, acting in academic and technical support, in emotional support, playing a fundamental role in motivating and monitoring students. It is possible that in this process of being close to the students' journey, the tutor can generate bonds, creating a closer and supportive relationship. This closeness can be built by promoting a pleasant learning environment, causing a feeling of well-being (Aguar and Grossi, 2024).

In VLEs, interaction with others occurs through platform resources. One of the challenges is being able to analyze facial expressions, voice intonation, and body language, and the presence of the colleague is identified through communication in Forums, Chats, etc. Active exchange between subjects is very important because it is through this that individuals can engage in the learning process (Coelho and Tedesco, 2017).

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One of the possibilities for tutors to establish rapport with students is through the application of Pedagogical Strategies based on Socio-affective Scenarios, which are actions that teachers or tutors can use in VLEs to try to personalize teaching and bring the actors involved closer together. Pedagogical Strategies (PS) are defined as the way each teacher puts their personal pedagogical model into practice, that is, teachers can structure different strategies that aim to promote and mediate their students' learning (Ribeiro, 2019).

In this context, Socio-affective Scenarios are formed by the combination of social exchanges arising from the Social Map and affective aspects of the Affective Map of students in the Cooperative Learning Network VLE (abbreviated in Portuguese: ROODA) (Akazaki, Machado and Behar, 2022).

Therefore, the objective of this article is to identify the perceptions of tutors in the application of Pedagogical Strategies based on Socio-affective Scenarios in Distance Education (DE). The work is organized into eight sections. The next section describes the Theoretical Basis. The third section explains the ROODA VLE, the Social Map and the Affective Map. The fourth section explains the Socio-affective Scenarios based on Learning Analytics. The fifth section presents the Pedagogical Strategies based on Socio-affective Scenarios. The sixth section describes the methodology. The seventh section analyzes and discusses the results, and the last section lists the conclusions.

2 THEORETICAL BASIS

The following articles were extracted from two Systematic Literature Reviews (SLR) that sought to identify social and affective aspects similar to the proposal of this research, making it possible to carry out analyses regarding its development, make comparisons and project perspectives for the study. It is important to emphasize that no investigation was found that addressed the social and affective aspects together, so it was necessary to carry out the SLR separately.

In the SLR on social interactions in DE, the aim was to analyze the indicators and how they were inferred. Thus, the study by Armah, Bervell and Bonsu (2023) verified the presence of teachers, cognitive, social, students, and satisfaction with the online course.

These are used in this The work by Benabbes *et al.* (2023) analyzed engagement in learning, considering the total number of posts made in the

Forum and the time spent in the VLE. Authors Karsli and Karaman (2024) examined students' experiences of interaction with content and the factors that affect the level of interaction, appreciation, and participation in DE. Thus, it is possible to verify that the analysis of social interactions in DE can be done through indicators.

The investigation by Armah, Bervell, and Bonsu (2023) examined questionnaire responses by applying Partial Least Squares Structural Equation Modeling. The study by Benabbes *et al.* (2023) used an unsupervised clustering technique, based on the student dataset according to their level of engagement.

The research by Karsli and Karaman (2024) analyzed the interaction of students with the content in a VLE and applied semi-structured interviews with the students. The data obtained were examined using descriptive analysis and content analysis. In this regard, it was noted that the focus on monitoring students' social interactions is still a recent practice, given that, in some platforms, this data is still insufficient.

In the SLR on affective aspects, we sought to understand what the methods are and how they are measured. The author Firat (2022) adopted descriptive statistics using the t-test, Mann-Whitney U test, Pearson's correlation coefficient, and linear regression. The article by Vlachogianni and Tselios (2022) investigated the data obtained from the three questionnaires (Big Five, System Usability Scale, and demographic) with Cronbach's Alpha. In turn, Peng and Dutta (2023) applied the Delphi method to conceptualize the research structure and Structural Equation Modeling to explore personality traits.

The work by Firat (2022) analyzed two scales, the Big Five and the e-Learning Autonomy Scale to measure the affective aspects. The investigation by Vlachogianni and Tselios (2022) adopted the System Usability Scale, Big Five, and a demographic questionnaire. The authors Peng and Dutta (2023) requested the completion of the Big Five model. Thus, by examining the publications, it was possible to verify that all of them require the student to complete at least one questionnaire in order to detect their personality or mood.

The related works presented were relevant for the understanding and reflection on social and affective exchanges, mainly focused on Distance Education, in which no specific work on this topic was obtained. In this sense, this research intends to unite socio-affectivity.

3 ROODA VIRTUAL LEARNING ENVIRONMENT: SOCIAL MAP AND AFFECTIVE MAP

The ROODA VLE (<https://ead.ufrgs.br/rooda/>) is a free, participant-centered software that allows students to view materials, interact with synchronous and asynchronous communication tools, as well as exchange and submit activities.

ROODA was chosen for this study because it is one of the institutionalized platforms in a Brazilian Public University, enabling the collection of student data through Socio-affective Scenarios composed of the Social Map and Affective Map (Akazaki, Machado and Behar, 2022).

The Social Map is a resource that enables, based on the interactions of participants in the communication tools: Chat, Library, Contacts, Forum and Web Portfolio, the generation of sociograms that allow monitoring the relationships established in the VLE (Behar *et al.*, 2019).

Thus, the Social Map currently has six indicators, which are:

- Absence: the student enters the VLE and does not respond to the class's contact requests.
- Collaboration: the student contributes by sharing files, content, images, pages and links.
- Distance from the class: the student sends messages and posts on the VLE, but does not receive feedback from peers.
- Drop out: the student has never accessed the course, and does not establish exchanges.
- Informal groups: the student presents an exchange of messages established between three or more subjects, thus enabling the existence of groups among the participants.
- Popularity: the student maintains a higher frequency of interactions in relation to the rest of the class, based on an average among all, highlighting those who are above.

In addition, the Affective Map aims to assist in detecting students' affective moods. It interrelates subjectivity in text, personality traits and motivational factors for inference and recognition of moods. This process considers the following communication tools Chat, Diary and Forum. In this way, the student's moods are analyzed qualitatively in ROODA and represented graphically, allowing the teacher to monitor their progress (Longhi, 2011). Figure 1 shows the Affective Map.

The Affective Map is formed by four mood, as seen in Figure 1, which are:

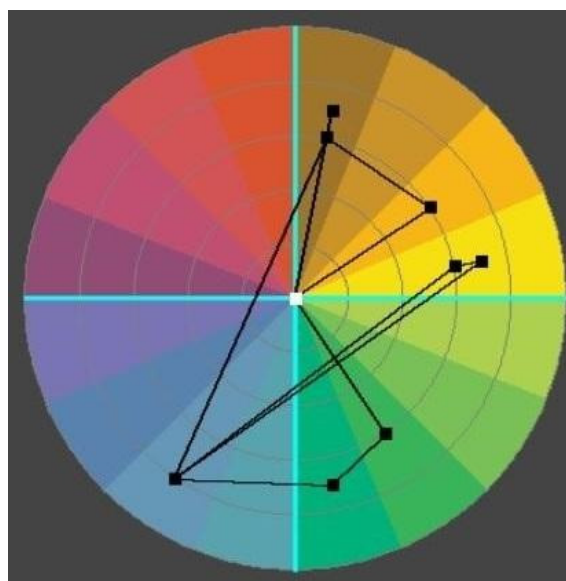


Figure 1: Affective Map.

- Satisfied (yellow): indicates that the student reveals joy, enthusiasm, satisfaction and pride in completing the task.
- Animated (green): shows that the student somehow demonstrates hope, interest, serenity or surprise in facing the challenges of learning.
- Discouraged (blue): suggests that the student expresses or represses the manifestation of guilt, fear, shame and sadness for not being able to follow the content.
- Dissatisfied (red): manifests or tries not to show irritation, contempt, aversion and envy.

In the context of Education, considering affectivity becomes essential, since, in addition to being related to social interaction, it contributes to favoring the cognitive aspects in the construction of knowledge (Piaget, 2014).

In this scenario, understanding the needs and interests of users can serve to outline their social and moods profiles. In the next section, the concept of Socio-affective Scenarios based on Learning Analytics is explained.

4 SOCIO-AFFECTIVE SCENARIOS BASED ON LEARNING ANALYTICS

Socio-affective Scenarios are the mapping of social indicators (Absence, Collaboration, Distance from the class, Drop out, Informal groups, Popularity) from

the Social Map and mood (Animated, Discouraged, Dissatisfied and Satisfied) from the Affective Map belonging to the ROODA VLE (Akazaki, Machado and Behar, 2022).

In this work, the Socio-affective Scenarios are composed of the analyses of the different types of student profiles in the VLE. The choice of the name “Scenarios” was related to the synonyms of the word: situation, circumstance, context, framework and panorama (Aurélio, 2024).

In addition to the work developed in the Social Map and Affective Map, the authors Akazaki, Machado and Behar (2022) used Learning Analytics (LA) to cross-reference moods with social indicators, resulting in Socio-affective Scenarios. LA is the measurement, collection, analysis and reporting of data about students and their contexts, to understand and optimize learning and the environments in which it occurs (Siemens, 2012).

The Socio-affective Scenarios using LA were defined based on interaction data and textual insertions of 285 students. Thus, a total of 57 Socio-affective Scenarios were found (an example is: Animated and Popularity), of which 14 did not have one of the indicators, social or affective. Thus, through LA it was possible to discover two new indicators, the Undefined Affective and the Undefined Social (Akazaki *et al.*, 2023).

The Undefined Affective corresponds to the subject who is not present in any of the moods in a given week, that is, he is not Satisfied, Animated, Discouraged or Dissatisfied. On the other hand, the Undefined Social represents the individual who did not appear in any social indicator, but is present, non-cooperative, does not belong to any informal group, is not distanced from the class, has not dropped out, and is not popular. In this sense, it is necessary to review the Social Map and Affective Map tools to include these students. It is important to note that a student can only be present in one affective indicator in a given week, since the mood variation is measured and their position on the Affective Map is determined. However, the student can be in more than one social indicator, because the Social Map performs a quantitative analysis of the data (Akazaki *et al.*, 2023).

Therefore, the tools that make up the ROODA VLE are fundamental as pedagogical spaces, since it is through them that the teacher can make his/her course more dynamic, support the student, and mediate the educational process in order to promote the construction of learning. Thus, from the Socio-affective Scenarios based on Learning Analytics, the teacher or tutor can know the profile of his students

and recommend Pedagogical Strategies, with the objective of personalizing teaching and learning, as discussed below.

5 PEDAGOGICAL STRATEGIES BASED ON SOCIO-AFFECTIVE SCENARIOS

Pedagogical Strategies (PS) encompasses several perspectives, as they can refer to methods, techniques, and practices that act as resources for achieving pedagogical objectives. When implementing PS, the teacher or tutor must consider that each student learns at a different pace from the others, and it is necessary to know the student's previous development and their context (Amaral, 2017).

The authors Barvinski *et al.* (2021) established criteria to be followed for a PS to be considered adequate in terms of structure, language, and direction of actions, which are: resource, direct language, action, and self-assessment. Continuing the research by Barvinski *et al.* (2021), researchers Akazaki *et al.* (2022) developed, based on these four criteria and the 57 Socio-affective Scenarios based on Learning Analytics, a total of 342 PS.

An example of a PS for the “animated” and “popular” Socio-affective Scenario using the “Chat” tool is: *“The student has shown to be animated and popular, interacting much more than the rest of the class. The Chat tool can help this person encourage communication and interaction among peers. You can suggest that he/she open different Chat rooms, and thus build a greater social relationship in the class. It is important that you carry out a self-assessment on the application of this Pedagogical Strategy in order to verify if it is appropriate for the student’s profile”*.

Based on the Socio-affective Scenario, the teacher or tutor is recommended to take action in a given tool and is suggested to carry out a self-assessment after applying the PS, in order to verify if it is achieving its objective and if it is in line with the student’s needs.

The use of PS requires the teacher to propose actions that encourage communication, interaction and sharing of emotions in the VLE. Thus, they must be linked to challenging situations and problem solving. In this sense, considering the Social Map, Affective Map, Socio-affective Scenarios based on Learning Analytics and the PS, the methodology used to carry out the present study is conceptualized below.

6 METHODOLOGY

The methodology was developed using a qualitative approach using a Content Analysis procedure based on Bardin (2011). This choice was made because the research object involved the PS based on Socio-affective Scenarios inferred in ROODA.

The PS were applied manually by tutors in two undergraduate courses in the DE modality using the ROODA VLE, which took place in the first semester of 2024, at a Brazilian Public University. The researcher analyzed the Socio-affective Scenario of each student in each course and filled out a spreadsheet with each Scenario, with six PS available for each one. The tutors were then responsible for monitoring their students, correcting their activities, and choosing, on a weekly basis, one of the six PS based on Socio-affective Scenarios per student to apply to ROODA within two days and mark on the spreadsheet.

The tutors had to meet the following inclusion criteria: be a graduate student at a Brazilian Public University; mediate a course in ROODA; have access to a computer and/or smartphone with internet; respond to the research instrument and agree to the Free and Informed Consent Form (FICF). In order to meet ethical issues, the FICF was made available with the purpose of formalizing the research and clarifying doubts, allowing the choice of whether or not to participate in the research.

Thus, at the end of the semester, the tutors were invited to participate in an online questionnaire. Additionally, considering the General Law on the Protection of Personal Data (GLPD) of Brazil, nº 13.709/2018, the subjects were informed about the research and its nature; their involvement; the purpose of the instruments used; the voluntary nature of their work; the collection of data and its storage. In this context, the possible risks and discomforts were highlighted; the benefits of participating in the research and the confidentiality of the information.

There were nine tutors in total for the two courses. However, eight collaborated with the questionnaire, and the data were analyzed based on these responses. It consisted of essay questions related to changes in students' social and affective behaviors and their preference for using ROODA tools. In addition, tutors were asked whether they would apply the PS in their classes, their importance and possible contribution to the teaching and learning processes. Thus, the Bardin (2011) method was used to perform the analysis, in which three categories were created, namely:

- Category I: application of Pedagogical Strategies based on Socio-affective Scenarios;

- Category II: social and affective aspects of students;
- Category III: preference for tool in ROODA.

The categories were created based on a global reading of the essay responses, which allowed an investigation of the participants' intentions and, thus, it was possible to understand the tutors' point of view.

To begin the discussion of the data, it was important to investigate the profile of the individuals in this study, as discussed below.

7 ANALYSIS AND DISCUSSION OF RESULTS

The profile consisted of eight tutors, all of whom were female, with an average age of 37 years. The academic background was mostly doctoral students (n=4), followed by three masters and one doctoral student. The profile points to subjects with academic experience, as it consists of postgraduate studies. To maintain the anonymity of the participants, the letter "T" followed by a number was used throughout the subsection for the tutors.

7.1 Category I: Application of Pedagogical Strategies Based on Socio-Affective Scenarios

This category was composed of three main points about the Pedagogical Strategies: whether the students were enjoying the application, whether the tutors would use them in their classes, and whether they considered the PS important.

When asked if the students were enjoying the application of the PS, all eight tutors said "yes". Additionally, T1 wrote that *"they recorded feedback on the activities of other colleagues"* and T2 that *"they felt more confident and prepared"*.

Regarding using the PS in their classes, the eight tutors said "yes", corroborating some excerpts below. For T2: *"providing a personalized teaching model is always very important to help students combat drop out and to keep them engaged from the beginning to the end of the semester"*. T3: *"believes that, in teaching modalities supported by digital technologies, these strategies are an excellent support for identifying existing gaps"*. For T4: *"They are interesting, but they could add more to the class and not be so individual"*. This report is a suggestion that can be applied by the tutor, when evaluating the profile that appears most and using the PS that includes the largest number of students. It is

important to emphasize that, generally, the activities planned within a course do not consider the social and affective aspects of the student and teachers are not always able to propose content that uses the tools of the VLE. For T5: *"Of course! I would just adapt it a little more to my Scenario. For example: I work with the digital inclusion of elderly people, so perhaps some strategy needs to be reviewed and adapted considering that these Pedagogical Strategies were ready and I, as a tutor, would have to look at my context and apply them"*. For T6: *"I would apply them, mainly with the objective of engaging students more in the VLE"*.

In this sense, the tutors were asked if they considered the PS important and they were unanimous in their answer, stating "yes". For T1: *"it can increase engagement"* and T2: *"students feel more secure, develop organization and realize the importance of interacting with peers and teachers for success in their studies"*. For T3: *"the strategies can enhance the teaching and learning process in activities for both students and help teachers evaluate their pedagogical practices"*. For T4: *"Yes! The application of Pedagogical Strategies focused on Social and Affective Scenarios is important, as it allows students to be seen as unique beings, their emotions and social relationships being perceived, in addition to their learning profile. Thus, it allows the teacher to identify the student's limitations and potentialities"*. For T5: *"I consider it very important, as the Socio-affective Scenarios serve as an element that will help in the teaching and learning process in order to value aspects such as engagement, creativity, group work and acceptance"*. In this context, the tutors pointed out that Pedagogical Strategies can be customized according to the profile and learning context, allowing students to be seen as unique; they help to value engagement, creativity, group work and acceptance; as well as help the teacher to identify limitations and potentialities in the student.

Therefore, the PS contributed to advising on the teaching and learning process, expanding possibilities for both tutors and students, building knowledge and sharing information.

The responses obtained in this category are in line with the work of Hornink and Nogueira (2020, p. 48) who state that *"an environment of friendship and trust must be developed between the student and the tutor, so that the tutor can accompany them in their learning process, encouraging personal study and creating a relationship of trust with the student"*.

7.2 Category II: Social and Affective Aspects of Students

This category was formed by possible changes in student behavior. The eight tutors considered that there were changes in social and affective aspects, as shown in some excerpts below. For T1: *"The Pedagogical Strategies supported, directed and stimulated interactions. Students started to comment on their classmates' work in the Web Portfolio"*. For T2: *"the students seemed animated and engaged with the contact between them, exchanging ideas and sharing their knowledge. Those who reached the end of the course commented that they felt empathy from the teachers and tutors, in addition to having developed self-management throughout the class period"*. For T3: *"the students became more accessible during the classes with the impression that they were interacting more in the synchronous meetings and in the VLE. The Pedagogical Strategies maintained student participation during the class period. The main point was the increase in student engagement in carrying out the proposed activities"*. For T4: *"Yes, regarding the social and affective aspects, it was possible to observe that the students I monitored became more participative and questioning throughout the course. I believe that PS is very relevant, especially with regard to promoting personalized teaching and contributed significantly to students continuing to attend classes and carry out the proposed activities"*. T7 reported: *"My student dropped out of the course, so I was unable to monitor the changes in behavioral aspects regarding social and affective aspects. However, I consider the use of Pedagogical Strategies based on Socio-affective Scenarios to be valuable in intensifying social interaction in the Virtual Learning Environment, but I was unable to identify the contribution in this course, given that my student dropped out"*. From the tutor's response, it is possible to understand that he considers the use of PS to be important in intensifying social and affective interactions, but was unable to perceive changes in these two aspects, since his student dropped out of the course, that is, he no longer accessed ROODA.

Given these considerations, it was possible to note that the tutors understood the PSs as an ally in the teaching process, helping students to understand the importance of interaction and increasing the number of exchanges in the VLE. In addition, they increased the students' affection, as they put themselves in the place of teachers and tutors, as well as enjoyed the contacts made and did more of the courses' homework. The author Barvinski (2020) points out

that the PSs can act as articulators to keep the student committed and engaged with their studies.

7.3 Category III: Preference for Tool in ROODA

In this category, tutors were asked whether they perceived any preference for ROODA tools, and four indicated “Web Portfolio”. For T1: “*Webfolio because it was the most requested for posting activities*” and T2: “*Webfolio was very well received by the students I monitored*”. On the other hand, T3 indicated: “*Students carried out their interactions via message to the tutor*”, that is, the tool was not clear, as it could have been Chat or Contacts, since both allow sending messages. For T4: “*Yes, I noticed that my students liked to carry out activities in the Diary and in the Webfolio, so I gave preference to applying strategies that use these tools*”. T5 wrote: “*I don't know if I can say I prefer it, but I noticed it was easier to use Forums than to respond to comments in the Web Portfolio, for example*”. For T6: “No” and T7: “*No, because my student dropped out of the course*”. For T8: “*The students I monitored used the ROODA Web Portfolio as a priority and not other tools*”.

Therefore, there was no consensus on a single choice. However, it is possible that the Web Portfolio was considered by four tutors, since most of the activities were to be posted in this tool. According to Amaral (2017), the planning and preparation of PS should be incorporated into the teacher's pedagogical practices, therefore, depending on the choice made by the teacher, when putting together their teaching plan, they may end up prioritizing a certain tool in the VLE.

Thus, it was understood that the tutors considered that PS can help the teacher in cases of disinterest and drop out, understand the students' difficulties and provide new ways of organizing the content. In addition, it was possible to observe that the tutors believe that the students began to expose their difficulties, became more participative, questioning, confident and connected.

According to Barvinski *et al.* (2021), strategies contribute to motivation, the creation and strengthening of bonds, the intensification of interaction, the personalization of teaching, the expression of emotions, welcoming, approaching, facilitating learning, encouraging collaboration, cooperation, interaction and student participation.

In addition, for Bossi and Schimiguel (2020), it is necessary for teachers to seek updates in the way they apply their knowledge in class, in order to increase student interest. Thus, PS can be an ally of tutors and

teachers as a way to promote and mediate student learning.

8 CONCLUSIONS

In Distance Education, the physical and temporal separation between subjects makes their relationships unique. The ways of interacting with others, communicating and acting in a Virtual Learning Environment (VLE) are elements of analysis for ongoing qualification. By considering the needs of each student through their social and affective aspects, the use of Pedagogical Strategies can be a tool to support the teacher and tutor, enabling the personalization of teaching and learning.

The research described the perceptions of tutors in the application of Pedagogical Strategies (PS) based on Socio-affective Scenarios. As contributions, the tutors observed changes in the social and affective aspects of the students, such as increased interactions and collaboration, greater engagement and participation. Additionally, the tutors would use the PSs in their classes, considered them important, and also pointed out that the students liked the application. Regarding the preference for some tools, there was no consensus, but four of the total of eight tutors indicated the Web Portfolio.

As future work, a tool can be created that automatically selects the PSs for each student's Socio-affective Scenario, with the teacher or tutor being responsible for choosing which PS to apply.

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