The use of the Problem Based Learning and podcast in the learning of the curricular component philosophy in high school

Aline Moreno Dassie[1], Raquel Rosan Christino Gitahy[2]

[1]Jornalist, Brazil

[2] Department of Education, University The State University of Mato Grosso do Sul and The University do Oeste Paulista, Brazil

Abstract

The issue that guided the development of this study was: Does the utilization of Problem Based Learning (PBL), involving the resolution of everyday problems and philosophical themes, presented in podcast format, potentialize the learning of Philosophy for high school students? Based on this research issue, the general objective was drawn: to analyze the potential of PBL and podcast media for the meaningful learning of the Philosophy component in High School. The instruments used for data collection were: a preliminary questionnaire with students, records made through Google docs, during the application of the seven steps of PBL, production and recording of podcasts and comments made to t hem. In addition, a self-assessment and peer assessment were carried out with the students, culminating in a round of conversation. An interview with the teacher was also carried out to analyze the process experienced. Data analysis was performed from two categories that emerged from the theoretical framework and data obtained. It was evidenced that, in the application of PBL combined with the construction of a podcast, in the discipline of Philosophy, in High School, students exercised their protagonism and learned to work collaboratively with their peers.

Keywords: Problem Based Learning; Podcast.; High School; Philosophy;

1. Introduction

Active methodologies are increasingly occupying important spaces in the teaching and learning process, as well as Digital Information and Communication Technologies (ICT) in the school context. Over the last decades, they have also changed the relationship between teachers and students in the classroom, considering that high school students are constantly appropriating several digital media in their daily lives, because they belong to a generation that was born in virtual environments. In this sense, we highlight that this research analyzed a specific active methodology - the PBL -, linked to Digital Information and Communication Technologies (ICT), the podcast, with the proposal to highlight its contributions in building an autonomous student, active and protagonist of the process.

The last stage of Basic Education in Brazil is High School, which is three years long. The purpose of this phase is to deepen what has been learned in Elementary School. During this period, many young people are preparing to enter Higher Education, through the National High School Exam (ENEM), university entrance

exams, public competitions, etc.

All stages of Basic Education - Kindergarten, Elementary and High School - follow regulations and guidelines provided by law. Article 35 of the Law of Directives and Bases for National Education (LDBEN) states that the purposes of High School are:

I - the consolidation and deepening of the knowledge acquired in elementary school, enabling the continuation of studies;

II - the basic preparation of the student for work and citizenship, to continue learning, so as to be able to adapt flexibly to new conditions of occupation or subsequent improvement;

III - the enhancement of the student as a human being, including ethical training and the development of intellectual autonomy and critical thinking;

IV - the understanding of the scientific-technological foundations of productive processes, relating theory to practice in the teaching of each subject. (Brasil, 1996)

Thus, it is evident that basic education in Brazil aims at the integral human formation of these students, so that in the future they can build a democratic, fair, and egalitarian society. The curricular component of Philosophy, in Brazil, is no longer mandatory in Elementary School, but only in High School. The relevance of Philosophy teaching, in the current context, is so that students can better reflect on all the social, economic, political, cultural, and technological issues and transformations, among others. Through Philosophy, the student can produce pertinent questionings and reflections.

Paulo Freire left an important legacy regarding Philosophy of Education, as his thoughts and observations are discussed today. Freire criticized an education in which only the teacher transferred information and the student remained in a passive condition when he should be active. The importance of education, for Freire (2008), is to develop the critical spirit of the students. In this sense, the educator was harshly critical of "banking education", a term he called the act of depositing knowledge. According to Freire: "To teach is not to transfer knowledge, but to create the possibilities for its own production or construction" (Freire, 2008, p. 47).

This educational proposal advocated by Freire is compatible with the education aimed at in Philosophy teaching, in which the exercise of critical thinking must be always present, because we are dealing with human education, which consists of several aspects in the formation of the individual, such as the cognitive, the social, and the political, among many others, and not programming machines or robots.

According to Aranha (1996), "philosophy emerges, then, as a reflexive thought that seeks the rigorous definition of concepts, the internal coherence of the discourse, in order to enable debate and discussion". (Aranha, 1996)

It can be seen, therefore, that Philosophy is an indispensable human activity in the educational development of students, indispensable in schools, because through it, values such as morals, ethics, customs, among others, can serve as guidance for oneself as well as in the way of treating or "seeing" the other, providing attitude changes before the world, through reflections.

There is no question about the importance of teaching Philosophy, but, given this issue, it is also necessary to think about the application of a methodology that meets the demands of the current context, through which

the student is placed as the protagonist of the process. Thus, it is necessary to overcome the traditional Philosophy teaching, which is focused only on the application of the content, based on concepts and theories that are only intended to be assimilated by the students. For this, it is necessary to use active methodologies that facilitate and provide interactions, exchange of ideas, discussions, and group positions.

In this sense, we will make mention in this research about the relevance of PBL, because it instigates not only the protagonism of students and their group, but also promotes the exchange of sharing opinions and reflections.

According to Ribeiro (2021):

Problem Based Learning (ABP) - Problem Based Learning (PBL), as it is known worldwide - is essentially a teaching-learning methodology characterized by the use of real-life problems to stimulate the development of critical thinking and problem solving skills and the acquisition of fundamental concepts of the knowledge area in question. (Ribeiro, 2021, p.13)

Therefore, scholars on the subject increasingly yearn for the need to innovate, review practices, and train students for a "transformative" education.

In practice, the PBL methodology is applied following seven steps, namely:

Reading of the problem situation and clarification of unknown terms; 2. identification of the problem proposed by the statement; 3. discussion of the problem and formulation of hypotheses to solve it; 4. summary of the hypotheses; 5. formulation of learning objectives. Based on previous knowledge, the issues that must be studied to solve the problem are identified; 6. Autonomous study of the issues raised in the previous step; 7. Return to the tutorial group to rediscuss the problem considering the new knowledge acquired in the previous study phase (Berbel, 1998).

For the application of PBL, the room is divided into teams, which are made up of: a discussion leader, who leads the meeting, demands participation, and organizes for the seven steps to happen; a secretary (rapporteur), who writes down everything that happened in the process; and the participating members. Finally, the teacher evaluates the student's performance.

In PBL, the problem situation is the starting point, that is, the students are introduced to the problem right from the beginning. After that, everyone discusses the subject and creates hypotheses to solve the problems that were mentioned, by means of plans. Then, the group splits up so that each student can do some research. After this stage, the students meet again and discuss the issues again, reviewing the hypotheses raised previously.

Thus, it is through the problem that the student will be motivated to research and study, being the active agent, the one who seeks to reason from different angles. He will no longer be a mere passive receiver.

Another point to be addressed about the relevance of getting the student to reflect on their learning, besides PBL, is to also mention the use of ICT, which are undoubtedly effective and motivating ways to work in the classroom, since high school students are constantly appropriating several digital media in their daily lives.

Nowadays, mobile technologies, especially the smartphone, are part of the lives of virtually all young people, through this resource one can record sound and images, photograph, access the internet, among others. "This type of learning gives students the opportunity to build and enhance knowledge, as long as they have a

smartphone or tablet in hand and are connected to the internet" (Sonego & Behar, 2019). In this way, Valente (2018, p. 20) ponders that:

Overall, the classroom has changed little and does not yet enjoy the benefits provided by the digital culture. In this sense, it can be said that the classroom is completely out of sync with the rest of society, especially in relation to its students.

Digital technologies by themselves do not bring any transformation, because what makes them effective and efficient is the use of them with the purpose of teaching and learning, knowing when and how I will use them, what are the proposals and their goals. We live in a world under construction, and technological innovations affect everyone.

As Sonego and Behar (2019) state:

To this end, in the development of this type of learning it is necessary that the proposed activity comes from a planning that involves a curricular content, didactic material, and a study activity oriented and guided by a teacher with educational goals. (Sonego & Behar, 2019)

Sharing this vision, among so many existing possibilities, the podcast is one of them, allowing students to develop their protagonism, to work in teams and, through technology, to develop something pedagogical beyond the classroom.

Therefore, the podcast should be welcome, as a learning tool, at any level of education, i.e., from Elementary School to College and, for this to happen, there must be a planning, since digital technologies are available to everyone, but they alone do not bring contributions, the benefits can only be achieved when there is an appropriate pedagogical use.

Saidelles, Minuzi, Barin e Araújo (2018,) enfatizam que o podcast:

Although it is a theme not much explored in Brazil, these new media can help the inclusion in the educational scenarios. In addition, podcasts can provide visually impaired people with greater access to the content, allowing them to expand their universes of contact with information, without the need for a predestined time and place to use the resource.

The podcast production, if planned in a pertinent way, contributes to promote teamwork and collaboration, enabling the construction of knowledge in a collective way, as it occurs through active methodologies.

Thus, the question that guided the development of this study was: Does the use of Problem Based Learning (PBL), involving the resolution of daily problems and philosophical themes, presented in podcast format enhance the learning of Philosophy for High School students?

Based on this question, the general and specific objectives of this study were outlined. The general objective was to analyze the potential of Problem Based Learning (PBL) and the podcast media for the meaningful learning of Philosophy in High School.

The specific objectives to achieve the general objective were: To investigate the challenges and the construction of skills and competencies in the application of PBL in High School; To analyze the potential of the podcast allied to the PBL process; To evaluate how the learning of Philosophy materializes in digital narratives through podcasts and commentaries as an educational resource in formal education.

2. Method

To achieve the objectives established in this study, a qualitative methodological approach research was developed, which, according to Santos Filho & Gamboa, "its fundamental purpose is the understanding, explanation and specification of the phenomenon." (Santos Filho & Gamboa, 2013, p. 41), following the path of research-intervention, which, according to Rocha and Aguiar (2003), "seeks to investigate the lives of collectivities in their qualitative diversity, assuming an intervention of a socioanalytical nature."

2.1 Context and participants

A public school, in the interior of the state of São Paulo. The institution is located in the urban perimeter, away from the city center, in a neighborhood of the municipality considered middle class. The school caters to students in the final years of Elementary School, High School, and Youth and Adult Education (YAE). The participants were: a Philosophy teacher and her 25 third grade students. The research was registered and approved by the Ethics and Research Committee at Plataforma Brasil, with CAAE nº 39818920.0.0000.5515.

2.2 Information collection techniques

To legitimize this study, we used as criteria, in addition to the theoretical framework, field research with the use of different instruments:

1. A questionnaire was applied to 25 students, to get to know, initially, the degree of intimacy that the students had with digital technologies.

2. Observation of the whole process developed in the active problem-based learning methodology and production of the podcast.

3. Documents of the PBL steps filled in on Google docs by the reporter.

4. Podcast file and its posted comments.

5. Application of a Conversation Wheel with the students, with the proposal to know if studying philosophical issues through PBL and podcast production was meaningful, among other questions.

6. Application of peer evaluation and self-assessment.

7. Interview with the Philosophy teacher.

2.3 Procedures

At first, data collection would be carried out in person, at the headquarters of the educational institution; however, because of the coronavirus pandemic, classes in state schools were being taught remotely, since the beginning of 2020, through the São Paulo Education Media Center (CMSP), thus complying with the São Paulo Plan of the State Government, therefore, it was necessary to apply the research also remotely.

In addition to this CMSP platform, as a school reinforcement, the unit's teacher held meetings with the students two days a week remotely, through Google Meet, so it was necessary to adapt this research to the context and, thus, carry out the proposal remotely.

In mid-May 2021, to facilitate communication between the researcher, the teacher and the 25 students, different groups were created on WhatsApp, that is, the room was divided into two groups, which were called: "PBL

Group A", which was composed of 12 students and "PBL Group B", composed of 13 students. These groups were used to clarify doubts and exchange information about the times and days that the research would later be applied, through the Google Meet platform.

After this process, the field research began in mid-June. Thus, the research proposal was exposed, involving the PBL theme and Philosophy teaching, culminating with the production and recording of the podcast. The dates and summary of the activities performed will be presented in chart 1.

Table 1. Research activities

Day/Month/Year	Type of activitys
9 and 10 /june/ 2021 16 and 17 /June/ 2021	General presentations, about the research proposal and the PBL theme, the application of the seven steps, production and recording of the podcast.

Source: The author.

An initial summary of the actions taken in the classroom can be seen in Table 2.

Table 2. The actions applied in the classroom

Discussions	PBL	Podcast
Problem-Situation	Presentation of the seven steps, going through the reading. Election of a coordinator/leader and a rapporteur/secretary (who will write down everything that happens in the process). Identification and discussion of the proposed problem, elaboration of the learning questions, individual study and feedback to the tutorial group.	Discussion about which of the existing platforms would be used and who would be the elected students for further recording.

Source: The author.

The research began on June 2, 2021, was suspended for a few weeks in July due to the school break and was resumed in early August and ended in the same month.

The PBL methodology with the creation of the podcast was carried out in 14 classes in total, seven for Group A and seven for Group B. In the first two classes there was a presentation of the PBL and the idea of creating the podcast. Then, three classes were used to discuss the problem entitled "Discrimination/social inequality". After solving the problem, there was the production of a podcast showing the paths taken to solve the problem, and two classes were used to create the podcasts. Thus, the activities aimed at solving the problem and producing and recording the podcasts were performed, as shown in Table 3.

Table 3. Number of lessons used for PBL, culminating in podcast creation

Groups A and B	Title of the Problem-Situation	Average time used in solving the problem and in producing and recording the podcast
Group A - Informal presentation of the PBL and the podcast	_____	2 lessons
Group A - PBL - Problem	"Discrimination/Social Inequality"	3 lessons
Group A - Podcast Production and Recording - Problem	"Discrimination/Social Inequality"	2 lessons
Group B - Informal presentation of the PBL and the podcast	_____	2 lessons
Group B - PBL - Problem	"Discrimination/social inequality"	3 lessons
Group B - Podcast Production and Recording - Problem	"Discrimination/Social Inequality"	2 lessons

Source: The author.

2.4 Data analysis

The data analysis was performed based on the floating reading of all the data collected and on the crossing with the theoretical framework, allowing the elaboration of two categories of analysis, namely: Category A - Potentiality of PBL in Philosophy learning: the students' protagonism and the collaborative work among peers; and Category B - Potentiality of ICT in Philosophy learning: content production through podcast.

3. Results

Next, we will present the results obtained in the research according to the categories that will be detailed.

3.1 Application of the student questionnaire

The student questionnaire shows that in relation to the use of digital technologies: 84% use smartphones; 8% access via notebook/computer/tablet. 24% of the students spend more than 12 hours connected to the internet; 32% from 8 to 12 hours a day; 16% from 5 to 8 hours a day; 16% from 1 to 4 hours a day; 12% less than 1 hour. 88% of the students use social networks to learn content from the school curriculum; 73.9% search using videos on Youtube. 80% stated that it is possible to learn a subject from the discussion of a problem in a team and 44% of the students believe that the creation of a podcast in the process of teaching and learning school content is valid.

After applying the questionnaire with the students, we began the observation of the whole process developed

in the seven steps of the PBL and the production and recording of the podcast.

3.2 Application of the PBL problem situation (Group A)

The application of the seven steps of the PBL, and the production and recording of the podcast were conducted by the tutor (teacher), responsible for the Philosophy discipline. After all doubts were clarified, from the third meeting on, as mentioned above, the PBL Opening, that is, the first step, was started. As the room had already been divided into two groups, it was emphasized that the composition of the members of each team would not be changed.

The students in Group A were asked to elect two students, one to be the leader and the other to be the secretary. As everything was done remotely, once again it was necessary to seek the support of digital technology tools, since the secretary needed to take notes, for this we resorted to Google docs, because this resource allows editing text documents when necessary and it is possible to share with all the integrated contacts.

The problem dealt with referred to the philosopher Adorno, Education after Auschwitz. We tried to bring everyday situations experienced by students, to stimulate individual research and debate with their peers.

To begin the first step of the PBL, which consisted in carefully reading the problem and clarifying the unfamiliar terms, besides the projection on the screen using Google Meet, so that everyone could read individually, the text was also made available on Group A's WhatsApp. After a few minutes, when everyone finished reading the problem-solving situation, they proceeded to the clarification of the unknown terms.

To the surprise of the tutor teacher, most of the students commented that there were no unknown terms. After a few moments, only one student mentioned that he did not know the meaning of the word Auschwitz. Then a student explained that it was a concentration and extermination camp in Poland, referring to the Nazi regime. Then the second step of the PBL was applied, which was about identifying the proposal by the statement, defining the problem, without yet trying to explain why. Thus, the students immediately identified what was most important in the text to be discussed, issues such as:

Racism; inequality; prejudice; discrimination; religious intolerance. (Narratives of Group A).

As soon as all these points were raised, the brainstorm, which would be the 3rd step of the application of PBL, had to be interrupted, because the 45 minutes of the class had ended.

In the next class, the third step of the PBL application was resumed, that is, the brainstorm, which consisted in analyzing the problem, offering explanations for the questions listed above, based on the previous knowledge of each student, thus letting the thought flow.

Below are some important records among the pairs

The genocide of the Jews occurred because German politicians of the time believed in the supremacy of the Aryan race.

This still exists today, since many are still persecuted and discriminated against because of their skin color, religion, sexuality, etc. (Student's narrative Y).

Thus, the group observed certain aspects that instigated them in the text and that should be investigated to solve the problem at hand.

Then the tutor (teacher) proceeded to step 4 of the PBL - which consisted in making a synthesis of the discussion of the problem. The process took place in an oral manner. The leader asked for everyone's participation, and spontaneously the students spoke up.

Moving on to the last step of the Opening, which is the 5th step, the students formulated the learning objectives to deepen their explanations. Also in a participative manner, in common agreement, they listed five questions to be worked on.

What makes a person do all this?

Why did Hitler dislike Jews?

Why is racism structured in our society?

What is the role of education in this situation that happens frequently in and outside of schools?

What would be the solutions to prevent Auschwitz from happening again?

(Group A).

After this step, the 6th step of PBL occurred, which consisted of individual study, in which a deadline of one week was set for the students to individually research different sources - such as books, websites, articles - about the subject.

In the 7th and last step of the PBL, there was a rediscussion, whose purpose was to mention the knowledge obtained by the group. It was suggested to the group to write short texts. It was evidenced that the students sought solutions to the problems presented from different issues related to the problem situation. Some of the excerpts are highlighted:

Education plays a fundamental role in the formation of citizens, because through it it is possible to promote student awareness. (Narrative of Student X).

To prevent a new Auschwitz from happening it is necessary to be tolerant to differences, so it is necessary to engage the whole society in favor of this issue, such as promoting lectures, debates through cartoons, movies, games, and others. (Narrative of Student Y).

3.3 Application of the PBL problem situation (Group B)

In the first meeting for the application of PBL, with Group B, which had previously been composed of 13 students, the Opening of the seven steps of PBL was initiated. Again, a leader and a secretary were elected. Group B was also told that all notes were to be taken using Google Docs.

The text worked again was the philosopher Adorno's Education after Auschwitz. For the first step of the PBL, the tutor (teacher) asked everyone to read the text carefully, and the process was again the same as in Group A, i.e., it was shared on the Google Meet screen and sent on the WhatsApp group. Then, after reading the problem situation individually, the students pointed out that there were no unknown terms in the text.

Then, the second step of the PBL was applied, which was about the identification proposed by the statement, defining the problem, without trying to explain why. Thus, the students immediately identified what was most important in the text to be discussed, questions such as:

Persecution of Jews, homosexuals, gypsies, blacks, and communists (Narratives from Group B).

Next, the third step of PBL was applied, that is, the brainstorm. We highlight some of the explanations of the

questions listed as based on the prior knowledge of some of the students:

The genocide of the Jews occurred years ago, but regardless of each country, even today people are discriminated against for their race, ethnicity, sexual option, social issues, among others. (Narrative of Student X).

It is necessary to know the past to better understand the future, because violence is not restricted only to a concentration camp. (Narrative of Student Y).

After this moment, the 4th step was interrupted and continued in the next class.

In the resumption from the second class, the 4th step of the PBL consisted in making a synthesis of the discussion of the problem, the process was carried out orally. The leader emphasized the need for everyone's participation.

Moving on to the last step of the Opening, which is the 5th step, the students formulated the learning objectives to further their explanations. They listed six questions to be worked on:

What leads a person to promote genocide?

What role does education play in this situation, which happens frequently in and outside of schools?

What made the Germans hate the Jews?

In what era did Nazism take place?

Where did World War II take place? Why did it happen?

Do you think discrimination still exists in Brazil? (Group B).

After this step, the 6th step of PBL occurred, which consisted of individual study, in which it was again stipulated that the deadline would be one week, and that the students should research the subject individually.

In the third meeting, the 7th and last step of the PBL took place, whose proposal was to mention the knowledge obtained by the group. It was suggested to the group that they should write short texts. It became evident that the students sought solutions to the problems presented from different issues related to the problem situation, and one student pointed out that:

All the issues addressed in the text often happen inside and outside of schools, therefore, the role of education is important because it establishes relationships and understands how the society in which we live is organized.

3.4 Production and Recording of the podcasts (Group A and B)

After the end of the application of the seven steps of the PBL, the production and recording of the podcasts occurred with both Groups. The recording platform used was Anchor. Both Group A and Group B reached a consensus and wrote the opening and the conclusion to start recording the PBL learning questions. Then the students themselves said who they would like to do the recording, the others participated by following along. After the end, the podcast was forwarded by WhatsApp, so that each group could listen to it through Spotify. Thus, the learning of philosophy materialized in digital narratives, through podcasts, that is, the students had the opportunity to reflect philosophical issues of a classic text, such as Adorno's Education after Auschwitz, which was written years ago, in different contexts, but is still relevant to be discussed to this date.

With the purpose of knowing how it was for them to work in teams and if studying philosophical issues through PBL and podcast production was meaningful, a conversation circle was held with the students.

3.5 Conversation circle (Group A and B)

During the conversation circle students were asked several questions, including: Did working in a team develop skills and competencies? The students mentioned that:

Collectively you learn more. It was good to feel that everyone collaborated and helped each other (Narrative from Group B).

Furthermore, when asked about what it was like to study individually about the subject before class, the students stated that:

It was something not so common. (Narrative from Group A).

It was very good. (Group B narrative).

When asked if the experience of feeling protagonist of the school's daily life was significant, the students emphasized that:

Yes, we felt that our opinion was respected, there was no single and absolute answer. There was not a single, absolute answer. Each one gave their opinion according to their own way (Narrative of Group A).

Yes, even though we did not master the content of the philosophical texts, we were able to contribute with ourselves and with the group what each one knew. (Group B narrative).

We can see, therefore, that even though they were not used to this methodology, the students felt stimulated to think about finding solutions to the problems worked on. Thus, PBL allowed them to create a collaborative environment, through debates and group decision-making.

The students were also questioned about ICT, as follows: How was the process of creating the podcast on Philosophy? Was it meaningful for you to create and make available material about philosophical themes in the form of a podcast? Why was it meaningful to you?

It was very interesting. Yes, because it broadened our knowledge, we were able to reflect on many points, thus learning better. (Narrative of Group A).

It was very good to create a podcast. Yes, it is interesting, we like that we learn using platforms available on the cell phone. (Group B narrative).

It can be seen, therefore, that the associated digital technologies in school environments are very welcome. It is evident, therefore, the urgent need to promote changes, because these students can no longer be restricted only to textbooks, notebooks, blackboards, among other non-technological tools. Digital inclusion must be part of the school context in a more expressive way, considering that it is already part of the students' lives.

Once this process was completed, we started to apply peer evaluation and self-evaluation, that is, besides each student doing their own evaluation, they would have to evaluate the members of their team.

3.6 Evaluation and self-evaluation by peers

The students had to report whether they were Excellent, Good, Fair, Poor or No evaluation, by means of the peer evaluation and self-assessment.

Again, the use of a digital technological resource was necessary. Thus, Google docs was used to apply the Questionnaire.

Table 4. Self and peer assessment applied to students

	Self-Assessment	**Peer-Assessment**
		Name
Presence at the meetings		
Preparation for the meetings		
Observation of established deadlines		
Participation in discussions		
Respect for team members' opinions		
Contribution to the organization of team work		
Contribution to consensus building and task accomplishment		

Source: Borochovicius and Tortella (2014).

Regarding the self-assessment, the 20 students, in all the items mentioned above gave the grade of their participation as (E) Excellent and only five of them, also in all items, said that their participation was framed in (B) Good. Thus, the questionnaire brought back the students' perceptions of their learning during the PBL process and the production of the podcast. With the purpose of obtaining more information for data analysis, the peer evaluation was performed, adopting the same questions indicated in the self-assessment.

As each student evaluated the others, 600 responses were obtained, of which 482 indicated the evaluation as (E) Excellent, and only 120 indicated (B) for Good. The 20 students, in all the items mentioned above gave the grade for the participation of their peers as (E) Excellent, and only five of them, also in all the items, affirmed the participation of their peers as (B) Good.

Thus, the questionnaire brought back the students' perceptions of their peers' learning during the PBL process and the production of the podcast.

The last instrument used was an interview with the teacher, aiming to find out if she would use PBL again in Philosophy classes and podcast production in the construction of knowledge.

3.7 Interview with the teacher

In the interview, the teacher was emphatic in stating that learning the content of Philosophy happened in a more meaningful and collaborative way using the active PBL methodology. Moreover, the teacher also

stressed that she would use the active PBL methodology again in her Philosophy classes.

When the teacher was asked if she would use the podcast production again in the construction of knowledge in the educational context, she said yes.

Therefore, through the analysis of the problem situation worked during the process of the seven steps of PBL, the recording of the podcasts, the application of the questionnaire with the 25 students, the round of conversation with the students, the self-evaluation and peer evaluation of the process and the interview with the teacher, it was possible to reach the results of the research.

3.8 Category A - Potentiality of PBL in learning Philosophy: student protagonism and collaborative work with peers

In the collaborative work, in which the exchange of experiences and knowledge takes place, all the students involved in the research were satisfied with the process, through their answers to the questionnaire, that is, 80% said that it is possible to learn a subject through team discussion. Thus, PBL was used with the intention of making the classroom an environment in which the student exercises protagonism/autonomy and learns collaboratively in teams.

The PBL applied in the subject of Philosophy, in High School, proved to be a resource of paramount importance in student learning, considering that it was possible to evidence that students exercised their protagonism and learned to work collaboratively among peers, as they went in search of answers on their own, actively participating in the process with their previous knowledge and, moreover, exchanged experiences with each other. Evidencing how significant their learning was, since they attributed meaning to the context of the work, seeking solutions to each problem presented.

It is very important to highlight this peculiarity of the PBL methodology, since many educators still insist on transmitting knowledge to students, thus exercising that hierarchy of superiority, i.e., the teacher is in an active condition while the student is passive, since the student receives the content only to memorize it, without being able to question and reflect about the content worked.

The student feels much more stimulated about his learning when it comes from him, and not only from the teacher. It can be seen, therefore, that the school, as well as the educators, must change this concept that has been contemplated for years, considering that the teachers' training is focused on the lecture class.

Group work, therefore, gives students the opportunity to learn from each other, opinions and doubts are shared among peers, thus promoting a collaborative environment.

3.9 Category B - Potentiality of ICT in Philosophy learning: content production through podcast

PBL, as well as many of the active methodologies, which are considered innovative and seek to overcome the traditional model, totally expository, meets the aspirations of this new generation, as well as the use of ICT in the educational context. It is worth mentioning that the research was applied with young people who belong to Generation Z (born between 1995 and 2010), that is, they were born completely connected with digital technologies.

Once again the traditional way that the teacher conventionally uses in the classroom to present his content, in a totally expository way, was broken with the use of the podcast, a tool still little explored in the educational field, considering that the use of the podcast in the classroom, as observed in this research, provided the students with an opening in the active participation among peers, because there was much dialogue and reflection throughout the production and recording process.

As mentioned earlier, the students involved in the research were born completely connected to digital technologies. Therefore, they were asked how much time they spent connected per day. Through the questionnaire they stated that: 32% spend 8 to 12 hours, 24% more than 12 hours, 16% 5 to 8 hours, 16% 1 to 4 hours, and 12% less than 1 hour. Most of them spend a significant number of hours in front of screens.

When asked which of the technologies they had already used in the classroom in the learning process, the students said that 60% had used the smartphone, 16% the computer, and 16% had never used digital technologies in the classroom in the learning process.

When asked which social networks they use to search for school content to learn, 73.9% said it was YouTube, 8.7% Google, and 8.7% WhatsApp.

When asked if they knew and what a podcast was, 92% of the students said yes. Regarding listening to podcast, 44% said yes. When asked if they believed that podcast creation or listening to a podcast can be used in the process of teaching or learning a given school content, 44% said yes and 56% said maybe.

4. Conclusion

In this sense, it was found that the creation of educational podcasts motivated students to learn philosophical issues in a more meaningful way. Moreover, it provided the development of new skills and competencies to the participating students, such as the construction of their own knowledge, and emphasized the importance and efficiency of collaborative work, in which everyone learns together by exchanging and diverging their opinions.

In summary, the results acquired throughout this research indicate the educational value that both the PBL and the podcast have for the teaching of Philosophy, i.e., they show that students not only learn through the construction of their own knowledge, but also through the interactions among peers. It is hoped that this study can be used to break down barriers between the traditional and the innovative models of learning and teaching. As for the context investigated, the research participants stated that discussing in groups, researching individually, participating in the action with their previous knowledge, debating orally, allow learning to become more significant in the classroom. Moreover, the student's role as a protagonist of their learning is very important, since PBL prevents the teacher from being the holder of all knowledge, encouraging learning to happen through exchanges, and not only through lectures. Even the teacher who participated in the research stated in an interview that she would use this active methodology again with her students.

It is important to point out that the literature review, made it possible to identify that PBL can develop students' critical thinking, because they not only actively participated, but also exchanged their experiences with their peers, and everyone could express themselves defending and debating their point of view. Thus, a central theme can be discussed and debated from several aspects.

It was also found that the learning of philosophy in high school became more meaningful to students using both PBL and the podcast as an educational resource, meeting the teaching of the philosophy curriculum component, encouraging the construction of critical and reflective thinking in students in the classroom. Therefore, the PBL combined with the creation of podcasts is aligned with the philosophical thought that pleads for the formation of collaborative citizens, economically, socially, and politically aware.

5. References

1. Aranha, M. L. A. (1996). *Filosofia da educação*. São Paulo: Moderna.

2. Berbel, N. A. N. (1998). A Problematização e a Aprendizagem Baseada em Problemas: diferentes termos ou diferentes caminhos? *Interface - Comunicação, Saúde, Educação*, *2*(2), 139-154. https://doi.org/10.1590/S1414-32831998000100008

3. Borochovicius, E., & Tortella, J. C. B. (2014). Aprendizagem Baseada em Problemas: um método de ensino-aprendizagem e suas práticas educativas. *Ensaio: Avaliação Pública em Educação, 22*(83), 263-294. https://doi.org/10.1590/S0104-40362014000200002

4. Brasil. Lei nº 9.394, de 20 de dezembro de 1996. (1996). *Estabelece as diretrizes e bases da educação nacional*. http://www.planalto.gov.br/ccivil_03/leis/L9394.htm

5. Santos Filho, J. C., & Gamboa, S. S. (Eds.). (2013). *Pesquisa educacional: quantidade-qualidade*. Cortez Editora.

6. Freire, P. (2008). *Pedagogia da autonomia: saberes necessários à prática educativa*. Editora Paz e Terra.

7. Ribeiro, L. R. C. (2021). *Aprendizagem baseada em problemas (PBL): uma experiência no ensino superior*. EdUFSCar.

8. Rocha, M. L. D., & Aguiar, K. F. D. (2003). Pesquisa-intervenção e a produção de novas análises. *Psicologia: ciência e profissão, 23*, 64-73. https://doi.org/10.1590/S1414-98932003000400010

9. Saidelles, T., Minuzi, N., Barin, C. S., & Araújo, L. M. (2018). A utilização do podcast como uma ferramenta inovadora no contexto educacional. *Redin-Revista Educacional Interdisciplinar, 7*(1) 1-10. http://seer.faccat.br/index.php/redin/article/view/1143

10. Sonego, A. H., & Behar, P. A. (2019). M-learning: o uso de dispositivos móveis por uma geração conectada. *Educação*, *42*(3), 514-534. https://doi.org/10.15448/1981-2582.2019.3.32203

11. Valente, J. A. (2018). Inovação nos processos de ensino e de aprendizagem: o papel das tecnologias digitais. In J. A. Valente, F. M. P. Freire, & F. L. Arantes (Orgs.), *Tecnologia e educação: passado presente e o que está por vir* (pp. 17-41). https://odisseu.nied.unicamp.br/wp-content/uploads/2018/11/Livro-NIED-2018-final.pdf