

**FLIPPED CLASSROOM AND DIGITAL TECHNOLOGIES: DIDACTIC
POSSIBILITY FOR SCIENCE TEACHING IN AN ACTIVE METHODOLOGY
PROPOSAL**

***SALA DE AULA INVERTIDA E TECNOLOGIAS DIGITAIS: POSSIBILIDADE
DIDÁTICA PARA O ENSINO DE CIÊNCIAS EM UMA PROPOSTA DE
METODOLOGIA ATIVA***

***AULA INVERTIDA Y TECNOLOGÍAS DIGITALES: POSIBILIDAD DIDÁCTICA
PARA LA ENSEÑANZA DE LAS CIENCIAS EN UNA PROPUESTA DE
METODOLOGÍA ACTIVA***

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ABSTRACT: In this text, we presented some analyzes and reflections on a Didactic Sequence developed with 25 high school students from a federal public institution, located in the Brazilian Midwest, during the period of Remote Education are presented. We opted for an adaptation of the Flipped Classroom (SAI, in Portuguese), alternating asynchronous moments in the Virtual Learning Environment with synchronous moments, through Google Meet. We work on dialogic strategies, aiming at student protagonism, based on forums and questions about the relationship between the veracity of information and scientific criteria. The students were instructed to seek reasons for the news broadcast referring to the new Coronavirus, Sars-Cov-2. From the research carried out, it was possible to infer that the structured didactic sequence allowed the creation of spaces for dialogicity, triggering actions of clash of ideas, refuting and arguing unreliable information and also enabling academic production (for example, some presentations to other students), on the part of students.

KEYWORDS: Flipped classroom. Active methodologies. Science teaching.

RESUMO: Este texto objetiva apresentar análises e reflexões sobre uma Sequência Didática (SD) desenvolvida com 25 estudantes do Ensino Médio de uma Instituição pública federal, localizada no Centro Oeste Brasileiro, durante o período de ensino remoto. Optamos por uma adaptação da Sala de Aula Invertida (SAI), alternando momentos assíncronos no Ambiente Virtual de Aprendizagem com momentos síncronos, por meio do Google Meet. Trabalhamos estratégias dialógicas visando o protagonismo estudantil, a partir de fóruns e questionamentos

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sobre a relação entre a veracidade de informações disseminadas na sociedade e critérios de cientificidade para identificá-la. Os estudantes foram orientados a buscar fundamentações sobre notícias veiculadas referentes ao novo Coronavírus, Sars-Cov-2. A partir da pesquisa realizada, foi possível depreender que a sequência didática estruturada permitiu criar espaços para a dialogicidade, desencadear ações de embates de ideias, refutar e argumentar informações não fidedignas e, ainda, viabilizar produções acadêmicas (por exemplo, apresentações), por parte dos estudantes.

PALAVRAS-CHAVE: Sala de aula invertida. Metodologias ativas. Ensino de Ciências.

RESUMEN: Este texto tiene como objetivo presentar análisis y reflexiones sobre una Secuencia Didáctica (DS) desarrollada con 25 estudiantes de secundaria de una institución pública federal, ubicada en el Medio Oeste brasileño, durante el período de enseñanza a distancia. Optamos por una adaptación del Aula Invertida (SAI, in Portuguese), alternando momentos asincrónicos en el Entorno Virtual de Aprendizaje con momentos sincrónicos, a través de Google Meet. Trabajamos estrategias dialógicas, buscando el protagonismo de los estudiantes, a partir de foros y preguntas sobre la relación entre la veracidad de la información difundida en la sociedad y los criterios científicos para identificarlos. Se instruyó a los estudiantes para que buscaran las razones de la transmisión de noticias referentes al nuevo Coronavirus, Sars-Cov-2. De la investigación realizada se pudo inferir que la secuencia didáctica estructurada permitió la creación de espacios de dialogicidad, desencadenando acciones de choque de ideas, refutando y argumentando información poco confiable y posibilitando también la producción académica (por ejemplo, presentaciones), sobre el tema.

PALABRAS CLAVE: Aula invertida. Metodologías activas. Enseñanza de las ciencias.

Introduction

In times of social distancing, although the face-to-face nature needs to be re-signified, the continuity of the teaching-learning process is necessary, which, like the other activities, needed to undergo adaptations. However, even before this scenario, it was already possible to observe changes in society, which were reflected in the ways of teaching and learning, due to technological innovations and the large amount of information and resources available on the network. Therefore, it becomes fundamental that the quality of this process is sought and achieved with planning and openness to new ways of learning.

In this context, one possibility to work with a focus on student action and on promoting experiences in challenging situations is the Inverted Classroom (SAI, in Portuguese), based on Digital Technologies. This resource allows teachers to dialogue with students and mediate actions that mobilize them to act and make decisions, enabling them to assist their students' learning (ARRUDA; GOMES; ARRUDA, 2021). Therefore, if on the one hand there are chances of success in the use of such resources, on the other, the question is: can the familiarity

that young people have with the digital world be well explored didactically, in order to personalize individual and collective learning, through the intentionality that the teaching work demands?

Unlike what happens in the conventional/traditional method (SILVA *et al.*, 2017), in this perspective teachers need to have grounding and knowledge that the center of the learning process will no longer be themselves but will culminate in conceptual formation by the student. Thus, it is important that teachers seek possibilities for an active learning format by the learner.

In this sense, for the foundation of their praxis, learning theories can be focused, for example, on Vygotsky's social interaction; Dewey's experiences, regarding active teaching; Ausubel's meaningful learning; or Paulo Freire's pedagogical aspects regarding the development of student autonomy, as presented to us by Diesel, Baldez, and Martins (2017).

Among the possibilities, we reiterate our interest in SAI, which, according to Martín (2017), seeks to engage the student, with a view to favoring the development of critical thinking and creativity, communication, and collaboration. However, we still need to highlight that the implementation of proposals with this focus depends on the teacher's planning and pedagogical intentionality (MORI; CURVELO, 2016). Indeed, Mori and Curvelo (2016) discuss that the different pedagogical actions are dependent on the intentionality, that is, the inclusion of the strategy [or even a material] in a systematized form of education.

In SAI, aiming at student autonomy, conventional classes can be replaced by images, texts, videos, and digital technologies to introduce basic content previously made available to students. And how can SAI be materialized in the classroom? These have contact with the object of study in various environments before the class starts, in various formats or resources, and questioning directed at the learning objectives. Especially in this pandemic period, when classes take place remotely, physical contact and face-to-face presence are destined to the interaction between students and teacher, mediated by the use of technological resources. These, in turn, have taken on the function of instruments of mediation and/or problematization by the teacher for the learning of his or her students. If this cannot happen in person, this mediation can be done through the use of technology.

Thus, SAI enables the student to become the protagonist of his learning and manage his time in order to execute the proposed activities and seek resources to solve his doubts and improve his understanding, guided by the teacher. The fact of having early access to the selected material and problematized by its mediating action can lead students to the desire to learn about the information and, thus, relate it to their previous knowledge and bring new meanings in a more meaningful learning (MOREIRA, 2019).

Therefore, the SAI should have didactic-pedagogical support to subsidize the proposals of collective actions and direct the selection of materials to be worked initially by students, which can be divided into pairs or small groups, guided by the teacher in dialogical processes.

In this perspective, based on the proposals of Vygotsky (2009), the mediator-teacher can create teaching situations by reading texts and statements among students, enabling discussion about what was read. As for the use of audiovisual resources, these can be used to broaden their ideas and advance their knowledge about a given theme. The internalization of this knowledge is also consolidated by the dialogical mediation between them and the teacher. We must also emphasize the importance of technological support at the moment when this pedagogical practice is being carried out. In the current context, this is what will sustain the interaction of dialogic possibilities in teaching and learning moments, especially in this moment of pandemic.

Considering these situations, we developed a proposal for classroom intervention with the planning of a Teaching Sequence (TS), seeking to use the SAI to assist in the understanding of high school students about ways to prevent the spread of a new disease, called Covid-19 by the World Health Organization (WHO). This is an acronym of the English expression Coronavirus Disease, related to the name of the disease, to which we added the number that identifies the year of its emergence (2019), as presented to us by Sobrinho-Junior and Moraes (2020).

We found that, in this pandemic context - in which there is a demand for people to stay away until a way to avoid contamination in a safer social environment is found - it is important to plan and seek to understand how chemical/scientific knowledge can help in the prevention and combat of misinformation involving this disease, which has already caused millions of deaths worldwide. Thus, we aim to disseminate the importance of teachers' work in the sense of making the teaching-learning process more dynamic through contextualized work and with themes that are relevant to the lives of students and to a given social and technological context, which, when experienced, needs to be analyzed and reflected upon with and by them, in order to situate themselves and make decisions in a conscious manner.

Theoretical basis

The mere introduction of new technologies in education does not imply improvements in the teaching-learning process. Educational advancement requires a change of mentality from the whole school community involved and, especially, from the teacher (CIPRIANI; MOREIRA; CARIUS, 2021). The teacher needs to seek strategies that allow students to go beyond specific knowledge. We assert that it is important to seek both pedagogical and digital-technological competencies.

Moran (2018) states that technology currently inhabits all spaces. Thus, the teaching-learning process can happen in the interconnection between the physical world and the digital world, since these two spaces are not mutually exclusive. By the way, they can develop mutually and synergistically, favoring the formation of expanded and hybrid environments. The teacher, therefore, is responsible for mediating learning situations aimed at meeting the needs of his or her students.

However, as shown in the research conducted by Cipriani, Moreira and Carius (2021), the teacher's actions, in an attempt to consolidate the teaching-learning process remotely, have culminated in work overload, generating anxiety, concern and anguish for teachers. Indeed, as Morgado, Sousa and Pacheco (2020) show, depending on the way technology is inserted into the educational process, the teacher may be involuntarily inserted into the "24/7 Era" (twenty-four hours, seven days a week). Therefore, it is fundamental to consider the changes in the teaching profession and its meaning in the digital reality (MORGADO; SOUSA; PACHECO, 2020).

In this sense, SAI can also reduce the teachers' workload, as long as it is inserted in the educational environment in a planned and structured way by the teacher, in which students seek answers to the problems brought by the teacher. However, it is necessary to point out that the educational system lacks innovation and change consciously assumed in the organization of the teaching and learning processes in relation to the models in force. In fact, innovation is not just the random use of digital technologies. The methodology used by the teacher becomes fundamental for the dynamization of learning and the production of knowledge by students (BERGMANN; SAMS; 2016).

For Valente (2014), SAI is an e-learning modality, also known as 'Online Education', in which instructions that can generate conceptual knowledge are given before the interaction with the teacher. The moment of the class is destined to work with those contents already studied through practical activities, such as: problem solving, conversation wheels, group discussions,

collaborative learning, and project development. This inversion would happen in relation to conventional/traditional teaching, in which, normally, the teacher provides information to the student, who must study the material after the moment of interaction and, then, perform some evaluative activity.

At SAI, the student can assume, depending on the teacher's approach, the protagonism of an active learning, based on questioning, searches, discussions, and practical activities. In this scenario, the teacher stops making presentations on content and engages in actions that make it possible to work with the student's difficulties. In other words, the teacher goes beyond the exposure of content, based on memoristic rules (SILVA *et al.*, 2017), to contribute to the construction of individual and collective proposals. Moreover, it can be developed in an intentional and planned way by the teacher who intends to experience this process, and, for this purpose, can use a TS.

For Zabala (1998), the TS is an educational resource with a differentiating element in the ways of teaching and learning. It is a series of didactic procedural actions aimed at a learning unit. The way the activities are articulated will determine the specificity of the proposal. The theme, the observations, the discussions, and the evaluation can have various purposes, according to the role attributed to these elements and to the subjects that participate in the activity. Above all, the method by which it will be developed is as paramount as the planning, execution and evaluation of this sequence. Thus, we reiterate our intervention proposal with the planning of a TS, which thematized the forms of prevention of Covid-19. For this, it was essential to seek ways to raise the students' prior knowledge, from the increase of intersubjective processes, made possible by dialogic interaction, through the use of digital technologies. This is important because dialog provides the development of language and the understanding of signs from the exchange of social experiences, which allows the development of a more elaborate thinking.

For Vygotsky (2009), knowledge can be formed in the interaction between information and subject, mediated by dialogue with other subjects and the development of inner language. After several interactions, the new knowledge can be internalized, enabling new ideas and providing different processes of intersubjectivity and changes, both in the cognitive structure of those involved and in the process of knowledge elaboration of students.

However, it is worth noting that, as Barcelos *et. al.* (2021) show us, students' interactions with various media [for example, WhatsApp, Facebook, and Instagram], in which the process of dissemination of fake news is materialized, are increasingly potent. In fact, in a phase of advancement of the anti-scientific movement and, consequently, of Fake News, we consider of

extreme relevance to seek to develop, in our pedagogical practice, actions in which the several and possible interactions among students are materialized, but also considering the development of criticality to establish criteria in the verification and search for validation of information conveyed by the media.

Methodological Path

Considering the problem to be investigated, the community participating in the research and the moments of interaction and study in *locus* with the students/participants, this study is a qualitative research, of the research-action type. For Moreira and Caleffe (2008), this is a methodology of social intervention in the real world with examination of the effects of its intervention. Thus, it is essential that the researcher be cooperatively inserted in the investigation among the investigated subjects. Action research can contribute to the proposal of more critical educational practices, and is widely used in this type of investigation.

The subjects of this research, and, therefore, co-authors, in our conception, were the students of the Technical Course in Informatics integrated to the High School of an institution located in a rural area of the Midwest of Brazil. In this class, at the beginning of the activities' development, there were thirty-four students enrolled. We proceeded to plan a didactic sequence together with the chemistry teacher of the institution where we developed the research. Initially, three lessons were planned and taught based on the SAI methodology about the chemical knowledge related to Covid-19. However, throughout the development it was necessary to develop three more classes, totaling six meetings for the conclusion of the proposal. Thus, we had six encounters in the 2nd semester of 2020, each of them being counted as three hours [the equivalent to four 45-minute lessons]. The activities were developed in groups of up to three students.

We constituted as data collection instruments: observation of interactions in students' discussion forums about previous knowledge related to the problematizing question in the VLE-Moodle forum; analysis of questions involving the materials made available by the teacher in Moodle (hypertexts, hyperlinks and videos); study of the simultaneous interaction of the class with the teacher through Google Meet during the classes; examination of the activities developed by the students and their participation in the presentation developed by the groups.

This moment of pre-interaction of the simultaneous class with the teacher and the students served as a problematization resource for new searches and questions, in which, in a way, the teacher sought to bring concerns to raise more knowledge, fulfilling his pedagogical

intention as a mediator of the process. In this case, these questions were raised both in the VLE-Moodle, in asynchronous moments, through forums and activities oriented towards bibliographic research, and in the synchronous moments that were carried out for the development of the proposal.

The inaugural meeting was divided into two moments, both arranged as pre-class elements. In the first one, a discussion forum was opened in Moodle, in which students were asked to relate their previous scientific knowledge regarding the Coronavirus. Then, videos and texts from reliable sources were made available on the same platform, with the following themes: chemistry of the Coronavirus; sanitizing alternatives; what soap can do with the coronavirus. Here, we open an observation to clarify that SAI, as an active methodology, cannot be limited to the indication of videos or texts. However, this resource can bring answers and clarifications to questions posed by the teacher, helping the student to better understand their conceptions from readings and discussions with colleagues. Following the meeting, another forum was opened, in which comments on these materials were focused.

In the second, we highlight the interactive exhibition mediated by the regular teacher with the support of the researcher and students through Google Meet. In this class, we addressed the following issues: importance of scientific knowledge due to the continuous flow of information about the Coronavirus; need for critical thinking and acting towards the necessary care; demand for scientific knowledge/development of critical thinking supported by the knowledge of issues in basic chemistry, related to it. At the end, we developed an activity proposal, in which students should divide themselves into groups of up to three members. In this proposal, they would present, in the second meeting, a news story that had caught their attention. The classmates should discuss and position themselves, stating their opinion and arguments to support their analysis based on the texts and discussions from the previous class, as well as their knowledge of the news and other readings on this theme. Then they would decide whether the news presented by each group was true or false.

In the third and fourth meetings, in a synchronous moment using Google Meet, the groups presented news to the class through the dynamic "Fact or Fake?" The TS would end with a round of conversation about the work developed. However, we realized the need to discuss with these students aspects of ethics in science/research and the issues of authorship recognition and citations that should be related. Then, there was the redesign, in order to achieve a more critical posture and the development of reflections on ethics in science, in which students could recognize the need to cite the sources in which they conducted the research on themes related to Covid-19, as well as the importance of continuing these TS in order to work

procedural and attitudinal knowledge, in addition to factual and conceptual knowledge discussed by Zabala (1998). In the first moment of the fourth meeting, texts and videos were again made available on Moodle, reflecting on the importance of references in scientific papers and respect for authorship.

We held the fifth meeting, promoting another synchronous interaction on Google Meet, to close this discussion, with the clarification of some doubts and the orientation to complete the proposal with the logbook to be delivered in the VLE-Moodle with the final presentations. Finally, in the sixth meeting, we had a conversation circle, using Google Meet, in which we talked about the elaboration of the group presentation activity and the difficulties/solutions to build this activity, as well as the others presented in the VLE.

Results and Discussion

Based on the theories of mediated learning, proposed by Vygotsky (2009), we first raised a question about the relationship these students were making between the study of chemical concepts and the problems caused worldwide from Sars-Cov-2, the cause of Covid-19. The first suggested activity was a discussion forum, in which we asked the students to relate their acquired knowledge in Chemistry to the news they had been receiving about the new Coronavirus. We obtained a total of twenty-five interactions, a relevant quantity, considering the current panorama of totally online classes and considering that access to technologies, many times, is still limited, especially in the institution where the research was developed, located in a rural area.

Among the interactions and answers of the students on the forum questions, some commented that this is a new disease and, therefore, there are still no drugs, nor methods effectively tested and scientifically proven to produce a vaccine or even a supposed form of immunization. They talked about the issue of alcohol gel and soap for washing hands. In addition, the students discussed the amount of Fake News laid out daily, which can be seen in student 11's speech, "*Not everything we receive is reliable, after all, studies are still being developed on substances that can contribute to the end of this virus.*" This excerpt shows the student's attention to information conveyed on social media. Moreover, they emphasized that chemistry can help to better understand the methods of prevention and combat, interaction of substances for the production of medicines, vaccines and production of sanitizers.

A point worth mentioning refers to the discussion about the need for scientists to seek, with the help of chemistry, to understand the viral structure, as well as "*identify the genetic code*

and discover the weak points of the new Coronavirus" (student 18). With this, "they can discover a possible cure" (student 7). Based on this discourse, we note the possibility of interdisciplinarity of the theme entering into the most diverse curricular components, in this case, Biology, Biomedicine or Biochemistry, Pharmacy, Health and other areas. We emphasize the complexity to achieve proposals that are effectively interdisciplinary (SOUZA; SILVEIRA; LONGHINI, 2015), but we consider that this possibility should be sought and that collaborations between teachers from different areas effectively help in the interest and participation of students. Thus, we agree with Souza, Silveira, and Longhini (2015), according to whom the actions may tend to interdisciplinarity, since we still need to advance [and a lot] in this understanding so that, one day, we have interventions that are, in fact, interdisciplinary. The interfaces between the areas were commented by the students, as for example what happened with student 13, when he asked if "*Shouldn't this be worked on in biology classes?*", when we started the first moment with the conversation circle through Google Meet. Another case was that of student 6, when he said that "*I didn't know that chemistry was even related to biology*".

The strategy of problematizing the questions relating Chemistry and the investigation of Fake News caught the students' attention. It is worth considering that, in the second forum, focused on questions about the material provided, a student showed interest in the structure of the Angiotensin-Converting Enzyme 2 (ACE 2), i.e., a cell receptor designed as an attempt to explain how the virus accesses human cells.

Thus, we elucidate the function of these cells in the body, normally associated with the production of a chemical substance called Angiotensin, responsible for controlling blood pressure. Yet another student asked about the outbreaks of psychosis and hallucinations supposedly related to the Coronavirus. This question was discussed in the interaction moment of the class and, therefore, put up for debate, arriving to the consideration that the information was too early for us to be able to state this with more reliability, because much still needed to be investigated and evidenced.

The class also considered that perhaps these hallucinations were due to the very high fever, often reported by Covid-19 patients, which could cause some metabolic alteration, possibly leading to cognitive alterations. We reiterate that studies could come at a later date that would shed more light on how this virus can access the brain cells. At the moment, no consensus has been reached among the components of the scientific community, and only after several studies and a better understanding of the mechanism of action of this microorganism will it be possible to understand the mechanisms and problems that the contamination by the virus can

cause to the human organism. This scenario reflects again the need to develop collective and interdisciplinary work, given the complexity of the theme.

According to Vygotsky (2009), when the process of knowledge acquisition is mediated by the other and, in this case, by the school, we infer that from the experiences and interactions between student-student and student-teacher - or even in social interactions outside school - the student, through language and mediation of other signs, can elaborate a knowledge that is being studied. Based on these relationships, we try to stimulate research and the formulation of hypotheses, always trying to understand what would be consensus or not in terms of scientific knowledge. We found that this aspect became important when we realized the need to work on the scientific nature of chemical knowledge, its interdisciplinary relations, and the ethical issues that are quite pertinent in the current context. This is because human consciousness finds it easier to assign meaning when it is able to relate the objects with which it interacts, mediated by social relations.

In our experience, we believe that the teacher can stimulate reflection by problematizing relevant situations and that this helps in the development of the student's autonomy as the protagonist and co-author of his/her learning, as well as makes it possible to instigate new inquietudes, stimulating the epistemological curiosity proposed by Freire (1996), defended and intended by our pedagogical practice.

Finally, we proposed a research work and presentation referring to true or false news that should be answered by the colleagues in the synchronous moment. The idea was so well accepted that the students preferred to call the dynamic "Fact or Fake". This initiative is totally in line with SAI's assumptions about student protagonism, as discussed in the theoretical foundation of this text (for example, in GOMES; PENNA; ARROIO, 2020).

In the third moment, we concluded the first SAI evaluation, in which each group presented a different news item and problematized its presentation. Some went further, with a Quiz proposal, aiming to make their presentation more dynamic and get the attention of their colleagues. The initial proposal was to use one to three minutes for each group's presentation. However, four groups stimulated discussions capable of arousing the curiosity of their colleagues, who stayed longer in the debate, up to ten minutes of discussion. This favored peer learning, as the students themselves provided learning moments to others from a more in-depth study of the issue.

The end of the class would be the posting of the material used by the students to present their work on Moodle, along with the logbook. Some presentations drew attention for the fact that they lacked references. In one of the posts, a student named the file as "*Slide about a fake*

news that I saw circulating on social networks, my own" (Student 25). Thus, we saw the need to work, in another specific moment, the issue of ethical procedures in research - there were discussions about authorship and plagiarism - justifying that scientific knowledge should be considered not only in the search for a cure for the Coronavirus, but in other areas of knowledge.

We also dealt with ethical issues and the nature of scientific knowledge, as well as the need for cooperation between different areas, as we have observed several times in the current context, in newspapers and magazines. This can contribute to a greater interest in Science and to a better dissemination and appreciation of it.

Finally, we proposed the reformulation of the works presented in order to give due credit to the references used. This initiative was thought about the educational practice supported by praxis. For Franco (2016), as already mentioned, mediation in educational practice is the same as placing the teacher as a mediator, motivator, or motivator of learning in a perspective that is always reflective. This, of course, brings propositions so that students can act actively and thus achieve their goals. However, this strategy will only be intelligible when it is governed by ethical criteria that characterize an action pedagogically woven, built in and for the *praxis*.

It is worth pointing out that moving towards a teaching-learning process that aims at the emancipation of the subjects is not only a task of the teacher. It is also necessary to stimulate in the students this movement of reflection, action, reflection, and new action, in order to constantly improve their form of social intervention. We understand that it would thus be possible to promote the formation of a society that is more aware of its social responsibility.

Final remarks

Educational resources can help in the teaching-learning process and have been essential in these times of the rise of teaching in remote format, in which we remain without face-to-face meetings, and the process of resuming face-to-face teaching is still seen with fear by most Brazilian schools. Answering our initial problem-question, it was possible to notice that the didactic sequence pedagogically structured and made possible by technologies allowed us to dialogue and trigger actions, reflections, and new attitudes in our students.

It is necessary to emphasize that, considering the objectives and the results discussed here, planning and revisions were necessary, as well as the collaboration of teachers, the use of technologies, dialogues, and constant reflection to make the activities more flexible, not limited to the mere exposition of content that has usually been performed in educational institutions, in

which the repetition and reproduction of what has already been said by the teacher prevails, which, most of the time, impoverishes the teaching-learning process.

As for our students' incentive to consult the internet, at the present moment, as long as it is based on guidelines, criteria, and parameters that can guide their decision making, it tends to be a starting point for new learning experiences. Therefore, we must always be attentive to the assumptions of *praxis*, because the act of critically reflecting on the practice enhances the teaching work based on active methodologies. At this juncture, the SAI, adapted to the remote activities presented here, allowed us more dynamic and reflective teaching and learning actions. Finally, it is up to us to reflect on the practices focused on the student's potential construction and performance, highlighting that these need to be planned and replanned, involving the close participation of the teacher in the pedagogical mediation processes.

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