

USING GAMIFICATION AS A DIVERSIFICATION STRATEGY IN LIBRAS'
PEDAGOGICAL MATERIALS

*O EMPREGO DA GAMIFICAÇÃO COMO ESTRATÉGIA DE DIVERSIFICAR OS
MATERIAIS DIDÁTICOS DAS LIBRAS*

*EL EMPLEO DE LA GAMIFICACIÓN COMO ESTRATEGIA PARA DIVERSIFICAR
LOS MATERIALES DIDÁCTICOS DE LA LIBRAS*



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ABSTRACT: The educational materials for Brazilian Sign Language - Libras still follow a traditional teaching model, thus creating a methodological gap. This article aims to demonstrate how to diversify these materials through activities that follow an active methodology, gamification, in which games are used for educational purposes, thereby changing the purpose of the game, which is entertainment, and the immediate focus of the student. We propose 16 games for basic vocabulary, which were implemented in 5 workshops/minicourses on Libras in the city of Boa Vista (Roraima). The results of this implementation were analyzed and are presented in this article. Based on these, we developed a guide explaining the games in detail. We observed that the shift in focus provided by gamification makes the repetition of vocabulary less evident and less tiring. We conclude that gamification can help reduce the methodological gap in Libras's pedagogical materials.

KEYWORDS: Libras. Active Methodologies. Gamification.

RESUMO: Os materiais didáticos para a Língua Brasileira de Sinais (Libras) ainda seguem um modelo tradicional de ensino, criando, assim, uma lacuna metodológica. O objetivo deste artigo é mostrar como diversificar esses materiais a partir de atividades que seguem uma metodologia ativa, a gamificação, na qual jogos são empregados com fins didáticos, alterando dessa forma, a finalidade do jogo, que é o entretenimento, e o foco imediato do aluno. Propomos 16 jogos para o vocabulário básico, os quais foram implementados em 5 oficinas/minicursos sobre Libras na cidade de Boa Vista (Roraima). Os resultados dessa implementação foram analisados e são apresentados no presente artigo. A partir desses, desenvolvemos uma cartilha apresentando os jogos detalhadamente. Observamos que o desvio do foco proporcionado pela gamificação faz com que a repetição do vocabulário fique menos evidente e cansativa. Concluímos que a gamificação pode ajudar a reduzir a lacuna metodológica existente nos materiais didáticos de Libras.

PALAVRAS-CHAVE: Libras. Metodologias Ativas. Gamificação.

RESUMEN: Los materiales didáticos para la Lengua Brasileña de Señas - Libras aún siguen un modelo tradicional de enseñanza, creando así una brecha metodológica. El objetivo de este artículo es mostrar cómo diversificar estos materiales a través de actividades que sigan una metodología activa, la gamificación, en la que se emplean juegos con fines didáticos, alterando de esta manera la finalidad del juego y el enfoque del alumno. Proponemos 16 juegos para el vocabulario básico, los cuales fueron implementados en 5 talleres/minicursos sobre Libras en la ciudad de Boa Vista (Roraima). Presentamos los resultados de la implementación en este artículo. A partir de estos, desarrollamos una guía que presenta los juegos detalladamente. Observamos que el desvío del enfoque proporcionado por la gamificación hace que la repetición del vocabulario sea menos evidente y cansadora. Concluimos que la gamificación puede ayudar a reducir la brecha metodológica existente en los materiales de Libras.

PALABRAS CLAVE: Libras. Metodologías Activas. Gamificación.

Introduction

This research aims to present how active methodologies, specifically gamification, can contribute to the development of teaching materials for the teaching and learning of Brazilian Sign Language (LIBRAS). Active methodologies “... are teaching-learning strategies centered on the active participation of students in constructing the learning process, in a flexible, interconnected, and hybrid manner” (Morán, 2018, p. 4, our translation). Their primary goal is to involve the students in the learning process so that they become protagonists in the journey of knowledge, transforming into investigators, questioners, a builder of knowledge, and a developer of ideas. These methodologies are based on the notion that knowledge is co-constructed between teacher and student, not merely transmitted. Their objective is to motivate the students, making them co-responsible in the learning process, meaning that such proposals motivate students to play an active role in constructing that knowledge.

Despite advancements in discussions on methodologies and active methodologies for language teaching and learning (Leffa, 2003; 2012; Costa-Albuquerque; Mayrink; Oliveira, 2020), the impact of these discussions is not as significant in LIBRAS teaching materials, which mostly favor a traditional educational model (Pereira, 2009; Silva, 2012; Silva, 2020). Thus, there is a gap between the teaching and learning of foreign languages and LIBRAS, when considering the diversity and quantity of practices employed in teaching materials.

There is a struggle by the deaf community for the recognition of LIBRAS, as it is commonly misperceived as not being a language in the same way as spoken languages are (Quadros, 2020). This devaluation contributes to the stigma faced by the deaf community, and for this reason, measures that promote the appreciation of Brazilian Sign Language (LIBRAS) also support the empowerment of this community. Therefore, the methodological deficiency present in LIBRAS teaching materials may exacerbate the situation of this language being undervalued (Pereira, 2009).

The aim of this article is to show how LIBRAS teaching materials can be enriched through activities based on the premises of active methodologies. For this work, we will focus on activities aimed at teaching and learning LIBRAS as a second language for hearing people and we will specifically look at one type of active methodology, which is gamification. Furthermore, we will focus on activities that develop the acquisition of vocabulary in this second language.

Leffa and Alves (2020) define gamification as an approach in which games, play, scavenger hunts, and challenges are employed for educational purposes. This active methodology is a process in which there is a shift in the purpose of the game, as it primarily serves the function of teaching (Leffa; Alves, 2020; Leffa, 2020). Beyond this initial shift, we propose a second one, which is a shift in the immediate focus of the student, who moves from learning to aiming for good performance in the game. Although this immediate shift occurs, with the student's goal being to win or achieve a high ranking in the game, they inadvertently learn because, without realizing it and in an enjoyable way, they acquire vocabulary or add grammatical knowledge of the second language.

For the development of the games, we followed the steps for creating teaching materials as outlined in Leffa (2003). The author argues that educational proposals should go through four stages: analyzing the students' needs, stipulating the objectives of the activity, implementing the activities with the students, and evaluating the results. The discussed games are aimed at the basic level, where one of the main needs of the students is to learn vocabulary in the language. One of the problems with learning vocabulary is that it is often practiced through repetition to aid memorization. However, when this repetition becomes explicit and evident to the student, it makes the task tedious (Kruk; Pawlak; Zawodniak, 2021).

Based on this need, the authors of this article developed sixteen games aimed at practicing and consolidating vocabulary in LIBRAS. After developing the games, the authors implemented them in five workshops and mini-courses on basic LIBRAS in the city of Boa Vista. Two workshops took place during events organized by the Federal University of Roraima (UFRR), the 1st Seminar of 21 years of the LIBRAS Law, and the XVIII Week of Letters, targeting participants of these events. The third workshop was promoted by the Municipal Department of Education of Boa Vista with public school teachers. The last two workshops occurred with students from a specialization course for teachers at the State University of Roraima and from a postgraduate course at UFRR.

After applying and evaluating the games, the authors of this article compiled in a booklet a detailed explanation of how to apply each of them. The booklet is intended for teachers and developers of teaching materials and aims to serve as a source of ideas to diversify the activities used in the teaching and learning of LIBRAS⁴.

⁴ The primer can be downloaded [here](#).

This article is divided into seven sections, the first of which is the introduction. In the second, we characterize active methodologies, contrasting them with traditional pedagogy/education; next, we present a literature review on the state of the teaching materials used for teaching LIBRAS and the deficiencies of these materials reported in the literature; then, we define gamification and its benefits for teaching and learning; thereafter, we present the methodology that underpinned the process of creation, implementation, and evaluation of the games; in the "Results" section, we discuss the outcomes achieved from the implementation of the games in the booklet; finally, the "Final Considerations" section presents the conclusions of this article.

Active Methodologies

Active methodologies consist of a series of proposals that seek to provide an alternative to the traditional method of teaching by promoting a more collaborative, engaging, and participatory teaching-learning process (Morán, 2015, 2018; Cortelazzo *et al.*, 2018; Mattar, 2017; Neves; Mercanti; Lima, 2018). When we talk about traditional pedagogy/education, we are considering a vertical model that assumes a hierarchy between the teacher at the top and the student below. This hierarchy is justified, within this view, because the teacher is the holder of knowledge, while the student is considered a "tabula rasa." The interaction between teacher and student serves, then, for knowledge to be transmitted, and due to this characteristic, this model became known, from Freire (2003), as banking education. This term is based on the metaphor that the school is treated like a bank, and just as one goes to the bank to withdraw money, one seeks to extract knowledge in school, without any kind of exchange or sharing of ideas between teacher, student, and peers.

A characteristic of traditional education is the adoption of a deductive process, where a generalization is presented to the student and, after this introduction, concrete examples of this generalization are presented (Morán, 2018). For example, a LIBRAS teacher might say that one should not pay attention only to the hands of the interlocutor, as in this language, facial expression also has the function of conveying meanings. To illustrate this, the teacher then provides concrete examples of real sentences, such as the difference between statements and questions. The explanation followed by examples illustrates the deductive process, which traditional methodologies make use of (Morán, 2018, p. 2).

For the teaching of foreign languages, a range of alternatives to the traditional method has emerged over time, such as the direct method, the audio-oral method, the audiovisual method, the communicative approach, and the action-oriented approach (Leffa, 2012; Costa-Albuquerque; Mayrink; Oliveira, 2020). In this article, we will focus on the discussion of active methodologies, which differ from traditional pedagogy/education in several ways. First, active methodologies align with the ideas of Freire (2003), as they seek a horizontal relationship between teacher and student, who is seen as a being who possesses knowledge, and this knowledge should not be disregarded by the teacher.

The concept that knowledge is transferred is abandoned, and the view that knowledge is constructed by both teacher and student is adopted. In this model, the teacher should not be the "transmitter" of knowledge, while the student is merely a passive receptacle of their learning. Instead, the role of the teacher is to act as a mediator, creating a bridge between the knowledge and the student; a curator selecting the content and materials; and a guide, supervising the students in their learning process (Morán, 2015).

Morán (2018) discusses how active methodologies seek to expand the inductive process in the teaching-learning process, which involves presenting concrete examples to the student and allowing them, through the analysis of these examples, to construct the proposal. To make this concept more concrete, let's return to our example of questions in LIBRAS. A LIBRAS teacher might present various examples of affirmative and interrogative sentences, ask students to analyze these examples, and try to identify the strategies used in LIBRAS for asking questions. From the analysis of the examples, students may observe how the facial expression changes from a neutral expression to one of doubt.

From this observation, the student will know that one cannot ignore the facial expression of the interlocutor since it also plays a role in conveying meanings. In this example, the teacher adopts an inductive method, since the proposal is not presented ready-made to the student, but they must construct it from the analysis of concrete data. Morán (2018) discusses how active methodologies seek to expand the inductive process so that the student does not receive ready-made theory from the teacher but constructs knowledge through experiments, games, and other activities. The author discusses how "learning through transmission is important, but learning through questioning and experimentation is more relevant for a broader and deeper understanding" (Morán, 2018, p. 2, our translation).

In this context, active methodologies represent alternative models to banking education. The goal is for the student to be the protagonist in the learning process. They move from

passively listening to actively collaborating with the class by questioning, contributing their personal experience, researching from different sources, collaboratively deciding what is taught, how it is taught, and at what pace, etc. Such characteristics make learning more meaningful for the student (Arbelaitz *et al.*, 2014; Paiva *et al.*, 2016; Jeong *et al.*, 2019). Active methodologies consist of various approaches such as the flipped classroom, station rotation, problem-based learning (PBL), project-based learning, team-based learning (TBL), gamification, design thinking, etc⁵.

Despite the diversity of proposals, all active methodologies share the common goal of increasing the student's protagonism, positioning them as an active participant and co-responsible for the construction of their knowledge. Regarding the materials for teaching and learning LIBRAS, it is observed that most activities are based on traditional pedagogy, an aspect that will be discussed in the next section.

Teaching and Learning Materials for LIBRAS

As previously mentioned, there is a significant gap when comparing the teaching and learning materials available for LIBRAS with those intended for the teaching of additional oral-auditory languages. This gap is both quantitative, as oral-auditory languages have more resources, and methodological, if we consider the methodological diversity of activity proposals. This aspect is addressed by Silva (2020, p. 12), who discusses that "the state of the art of pedagogical practice for teaching LIBRAS as L2 is substantially distant from the state of the art of pedagogical practice for teaching-learning of second oral languages." In LIBRAS teaching materials, a traditional approach to teaching still prevails (Pereira, 2009; Silva, 2012). For example, Silva's (2012) study compares three teaching materials and shows that they primarily use the deductive method, to the detriment of the inductive. Araújo, Junqueira, and Sobreira (2016, p. 146) discuss that "there is a great demand for the creation and adaptation of materials for the teaching and learning of LIBRAS in an innovative and stimulating way, starting from conventional materials." We argue that gamification is one of the methods that can help meet the demand discussed by the authors in the passage above.

⁵ The present research focused on the development, application, and analysis of active methodologies of the gamification type. For information on other types of methodologies mentioned, refer to: Cortelazzo *et al.* (2018), Mattar (2017), Neves and Mercanti, and Lima (2018), among others.

Pereira (2009) discusses that teaching materials can contribute to worsening the condition of disrepute of LIBRAS. If the material presented to the student is predominantly based on traditional teaching methods, the teaching and learning process may not occur in the most effective way, and the student may erroneously believe that learning the language is difficult when, in fact, the lack of alternative materials hinders the teaching and learning process. Therefore, the work of analyzing teaching materials, as well as creating proposals aimed at promoting more effective language teaching and learning, has implications not only pedagogically but also politically, as they can contribute to the valorization of the language itself. Hence, it is essential to discuss proposals that LIBRAS teaching materials can adopt in order to diversify linguistic practice and reduce the gap between teaching materials used for oral-auditory languages and those designed for LIBRAS.

Among the various methodologies, it was necessary to decide which to adopt, considering the context in which they would be applied. Costa-Albuquerque, Mayrink, and Oliveira (2020, p. 195-196) point out that "the choice of these teaching models must necessarily go through a reflective movement that leads the teacher to analyze their context and the needs of their students, on one hand, and on the other, the options of technologies available to them." For beginners, one of the major needs of the students is to learn vocabulary from different semantic fields (e.g., greetings, alphabet, numbers, pronouns, colors, foods, clothes, furniture, personal information, countries, nationalities, terms of kinship, sports, places in the city, etc.).

The amount of vocabulary that needs to be acquired is one of the challenges at this initial stage. To reinforce it, it is common to adopt exercises that promote the repetition of items that the student needs to learn. Duolingo, for example, is a platform centered on the acquisition of vocabulary and essential phrases that make extensive use of repetition (Sataka; Rozenfeld, 2021). However, repetition done in an explicit manner can have negative effects, making the process monotonous and uninteresting (Kruk; Pawlak; Zawodniak, 2021).

Considering this need, we chose gamification as a way to practice vocabulary. We argue that the shift in focus promoted by games makes repetition less explicit to the student and, for this reason, they have the potential to increase class engagement in the teaching and learning of LIBRAS as a second language, as they make the material more dynamic and stimulate student participation through cooperation, competitiveness, and curiosity, as we will discuss below.

Gamification

The main goal of using games as an educational strategy is to increase student engagement. There are various principles of gamification that can be applied to educational activities. The key principles we employed in developing our proposal are the intrinsic pleasure of the activity itself and the principle of overcoming, which is the one that "provides the player with the conditions to be able to do more, know more, make more, and be more than they are capable of" (Leffa, 2020, p. 12, our translation).

In this article, we argue that gamification not only shifts the purpose of the game, as defended by Leffa and Alves (2020) and Leffa (2020), but also shifts the focus of the student. Typically, when a student undertakes tasks proposed in class, such as exercise lists, their focus is on deducing the rules of the language to complete the exercise, meaning the focus is primarily on learning the second language (L2). However, the introduction of a game temporarily shifts this focus to a secondary plane, as when challenged through a game, the student's competencies are primarily directed towards achieving good performance.

This shift has been confirmed in other research and can be beneficial on several occasions. For example, in the health field, Rocha *et al.* (2016, p. 898, our translation) report how "games have the characteristic of completely diverting the patient's attention, therefore they can also be used in pain treatment." We argue that this shift in focus, in the context of teaching and learning, is beneficial in vocabulary practice because it allows the repetition to be less evident to the student. It is important to emphasize that despite this shift, learning remains the focus of the activity, as to perform well in the game, the student must master the content, that is, learning becomes the path to performing well in the game. Thus, games have the capacity to promote student engagement, making their learning more intense (Leffa; Alves, 2020, p. 211).

Some initiatives focus on teaching and learning LIBRAS through games (Araújo; Junqueira; Sobreira, 2016; Rocha *et al.*, 2016; Moura; Silva; Ribeiro, 2020). However, Araújo, Junqueira, and Sobreira (2016, p. 147) mention how many of these resources "seem disconnected from a teaching approach and end up 'loose' on the network." Another problem is that these proposals may become lost over time. For instance, many of the websites for games in LIBRAS cited in the study by Araújo, Junqueira, and Sobreira (2016), such as *LIBRASnet* (www.megainfo.inf.br) and *LIBRAS Brincando* (www.librasbrincando.com), are no longer

active. Therefore, it is essential that these proposals are not left loose but are incorporated into teaching materials in a planned manner.

Considering Rozenfeld and Viana's (2019) division of the class into four moments - (i) material selection; (ii) warm-up and introduction; (iii) working with the material; and (iv) practice, free use, and closure, games were designed to be used in the fourth moment, namely in practice. As they are aimed at consolidating vocabulary, at the time of their application, it is expected that this vocabulary has already been presented earlier.

Research Methodology

The design of didactic proposals is a complex process, as a range of factors must be considered. In this article, we employed the four-stage procedure outlined by Leffa (2003) for the creation of teaching materials, namely: (i) analysis, (ii) development, (iii) implementation, and (iv) evaluation. According to Leffa (2003), analysis is the first stage in the development of teaching materials and consists of identifying the students' needs and what they need to learn. As mentioned in the previous section, the need we identified was for activities that assist in the fixation of the language's lexicon and make repetition more subtle.

The second stage, as Leffa (2003) outlined, is development. This stage involves a series of steps, such as defining the objectives, defining the approach, defining the content, defining the activities, defining the resources, ordering the activities, and addressing motivation. We developed 16 games, listed in the table below, aimed at applying the vocabulary knowledge presented in class in order to perform well in the games.

Table 1 - List of games

	Game	Content	Level
1	Elimination Game	Diverse	Vocabulary
2	<i>Soletrando</i>	Alphabet	Vocabulary
3	Wheel of Fortune	Alphabet	Vocabulary
4	<i>Pim</i>	Numbers	Vocabulary
5	<i>Senha</i>	Numbers	Vocabulary
6	<i>Sequência</i>	Numbers	Vocabulary
7	Memory game	Diverse	Vocabulary or Grammar
8	<i>NIM</i>	Numbers	Vocabulary
9	Battleship	Letters and Numbers	Vocabulary
10	Memory game	Diverse	Vocabulary or Grammar
11	<i>Pensa rápido</i>	Diverse	Vocabulary
12	<i>Jogo da velha do conhecimento</i>	Diverse	Vocabulary or Grammar
13	<i>Imagem e Libras</i>	Diverse	Vocabulary
14	<i>Quiz</i>	Diverse	Vocabulary or Grammar

15	<i>Bingo</i>	Diverse	Vocabulary
16	<i>Jogo da adivinhação</i>	Diverse	Vocabulary

Source: Authors' creation.

Many of the above games are adaptations of games commonly used in foreign language teaching and learning. The first author of this article has worked in English language teaching and learning for over ten years in various schools, at different levels, and with different materials. Throughout this journey, he compiled this collection of games. Then, the second author of this article, who is a fluent speaker of LIBRAS, assisted in the process of adapting these games so that they could be used in LIBRAS classes.

The games were adapted to be playable in LIBRAS, even by students at the basic level, teaching basic signs such as “CORRECT,” “INCORRECT,” “TIME’S UP,” “HAS,” “DOES NOT HAVE,” “MISSED TURN,” “LOST EVERYTHING,” and “CONGRATULATIONS,” and facilitating interaction between teacher and student in the target language for exchanging information about the progress of the game. Additionally, some games required further adaptation.

For example, in the PIM game (game 4 in the booklet), a number is chosen, and students must say a sequence that replaces the desired number and its multiples with PIM. For example, if the number 3 is chosen, students should say in sequence "1, 2, PIM, 4, 5, PIM, 7, 8 PIM, etc." We adapted this game by replacing PIM with a sign using the extended hand. Another example of adaptation can be seen in Bingo (game 15 in the booklet), where instead of shouting "Bingo!", the person stands up and makes the bingo sign. Establishing strategies so that communication during the games occurs only in LIBRAS is beneficial, as, regardless of their performance, students have multiple opportunities for interaction in the target language with the teacher and peers for information exchange.

The third stage, as discussed by Leffa (2003), is implementation. The objective of this stage is for the material to be tested with students. According to the author, there are three implementation scenarios: (i) implementation of the material by the teacher who is the author of the material, (ii) implementation of the material by another teacher who is not the author, and (iii) direct use by the student without a teacher. In our case, implementation was carried out in the first manner, as we, the authors of the games, acted as the teachers in the workshops implementing the proposal. For implementation, we promoted mini-courses/workshops on basic LIBRAS at university events and through the Education Department of Boa Vista (Roraima).

We conducted five workshops in 2023, with different groups consisting of 10 to 30 students. Workshops/mini-courses 1, 2, and 4 were offered at events, and the event organizing team took care of promotion and registration of participants. Workshops 3 and 5 were offered in postgraduate courses (a specialization course and a master's course), and the participants were students from these courses.

Table 2 - Workshops for the application of games

	Month	Location	Audience
1	April	Libras Language Course at the Federal University of Roraima (UFRR)	Event participants in celebration of National Libras Day
2	May	Municipal Secretariat of Education and Culture of the city of Boa Vista (Roraima)	Libras teachers from the public school system
3	August	State University of Roraima (UERR)	Students from the UERR Specialization Course in Letters
4	November	Letters Course (UFRR)	Participants of the UFRR Letters Week event
5	December	PPGL (UFRR)	Students of the Graduate Program in Letters at UFRR

Source: Author's creation.

In most cases, the workshop audience had little knowledge of Libras, knowing only a few signs, which was relevant for observing the effectiveness of the games with people unfamiliar with the language. An exception was workshop 2, shown in the table above, where the audience was Libras teachers with advanced knowledge, which was relevant for obtaining feedback on the effectiveness of activities from professionals who work with teaching.

Finally, the fourth and last stage outlined by Leffa (2003) is evaluation. This stage can be conducted formally through forms, interviews, and questionnaires that students complete after finishing the class, or informally, by direct observation of how the student interacts with the material. We adopted informal direct observation, noting the audience's reception and whether the games fulfilled their role in encouraging participation and creating engagement. Only in the second workshop did we request verbal feedback on the games, since the audience consisted of Libras teachers. Both the observations and the teachers' feedback are reported in the following section, which presents the results of the research.

Based on the results of the implementation, the first author and the third author of this article wrote a booklet of games, with detailed instructions on how they can be implemented. The aim is for this booklet to be used both by independent Libras teachers to diversify their classes and by educational material, publishers to diversify the activities in these materials.

Results

The evaluation conducted from observations and feedback received during the last workshop revealed that the games proved to be effective tools for teaching and learning, mainly due to the following reasons: (i) the students engaged in the activities; (ii) the practice of repetition was less evident; (iii) the students demonstrated absorption of the vocabulary practiced through the games; and (iv) the games provided feedback on the difficulties. We will discuss each of these factors below.

The first positive point of using the games is that they promote class engagement. In our observation, we used two indicators to assess engagement: (i) whether students volunteered to participate in the games and (ii) whether they celebrated when they won. We noticed less engagement in our first game. The Elimination Game (game 1 in the booklet) starts with a list of items given by the teacher, and students take turns signing the items on the list to eliminate them until no more elements remain. The lesser engagement resulted from the fact that the students were not yet familiar with us and, in some cases, also with each other.

This lack of familiarity creates initial shyness that inhibits student participation. A fact that corroborates this perception is that, from the third workshop onwards, we applied the game twice, once with the letters of the alphabet and the second time with colors. In the second round, engagement increased, which shows that familiarization with the class and the teacher is also a relevant point that should be considered in the implementation of the games. After the first game, there was a significant increase in student engagement, with several volunteering to participate and showing enthusiasm in celebrating their victories. The games with the most engagement were *Soletrando* (game 2 in the booklet), Memory Game (game 10 in the booklet), and *Pensa rápido* (game 11 in the booklet).

In *Soletrando*⁶, the student must spell a word using the manual alphabet based on an image that is drawn for them. In the Memory Game, one student starts a sentence like "I went to the market and bought chocolate," and the next student must repeat the sentence, adding another item to the list, such as "I went to the market and bought chocolate and acai," and the next student repeats the sentence adding another item like "I went to the market and bought chocolate, acai, and banana." In this game, students become anxious because the list grows enormously with each turn, and they fear not being able to remember all the words. However,

⁶ The translation would be: Spelling.

they are quite happy and relieved when their turn comes, and they manage to add another element to the list. In *Pensa Rápido*⁷, a semantic field is chosen, one student names an item from that semantic field, and another has 10 seconds to name another item from the same field. For example, if the theme is "animals," and one starts by signing "CAT," the next signals "DOG," etc.

Not all games produced the same level of engagement. The game PIM (game 4 in the booklet) and Password (game 5 in the booklet) created less engagement among the class. We believe this occurred for two reasons: (i) to perform well in these games, students needed not only to have mastery of the vocabulary presented in class but also logical-mathematical literacy; and (ii) a high level of attention and concentration was also required.

For instance, in the PIM game, described in the previous section, students could not say a chosen number or its multiples, making a sign with the extended hand. For example, if the number 3 was chosen, they had to sign '1, 2, SIGNAL, 4, 5, SIGNAL, 7, 8, SIGNAL.' This game demands not only vocabulary knowledge but also mathematical literacy skills, as it requires understanding multiplication. Additionally, it requires the student to maintain constant attention to their peers' moves, because when their turn comes, they need to be aware of what was previously said to determine at which number they are. From there, they must decide if the number is a multiple, if they should make the number's sign or replace it with a specific sign.

In the *Password* game (game 5 in the booklet), the teacher thinks of a secret password, and the students try to guess it. Based on the students' guesses, the teacher provides hints that they should use to formulate their next guesses. For example, if the teacher thinks of the password 24 and a student signals 14, the teacher signals "ONE NUMBER IN CORRECT PLACE" to indicate that one of the numbers in the student's guess is in the same position as the secret password chosen by the teacher. This game requires attention to the peers' guesses, heed to the teacher's hints, and logical reasoning. For example, if a student signals 14 and the teacher signals "ONE NUMBER IN CORRECT PLACE," it is expected that from this hint, they deduce that either the 1 or the 4 is in the correct place, and subsequent guesses only use these numbers in those positions such as "15", "16", and "17" or "44", "34", and "24". In our implementation, we noticed that many students do not use this strategy, as they repeat numbers that have already been guessed by their peers. This causes the game to shift from being a game

⁷ The translation would be: Think Fast.

of reasoning to being a game of luck, in that the student randomly guesses numbers, hoping to luckily match the password.

The celebration, along with the engagement, is an indication of their focus shift at that moment, which was on performing well in the activity. However, as the student's focus is on performing well, the repetition of vocabulary that the games promoted became less prominent to the student. Thus, gamification proved very effective when there is a need to work with various vocabulary items. For this reason, we believe that developing and applying active methodologies like gamification is essential precisely because of the opportunity to work on other literacies.

In addition to increasing participation, the games proved to be effective tools in teaching and learning. For instance, after introducing the Libras alphabet, we started with the Elimination game (game 1 in the booklet), and in this first game, the students had difficulties with some letters, such as F, T, P, K, and H. In the subsequent game, which was Spelling (game 2 in the booklet), we brought in words that specifically contained these letters and noticed that the students were already improving. Thus, it was noticeable that they carried the knowledge acquired in one game to the next game. This contributed to increasing engagement throughout the workshop because the vocabulary gained in one of the games made them feel more confident to participate in subsequent activities.

Finally, the fourth positive point was that the games made the students' difficulties evident, providing insights for the subsequent games' design. As mentioned earlier, in the Elimination game (game 1 in the booklet), students had difficulties remembering some letters such as K, H, P, F, and T. Therefore, the Spelling game (game 2 in the booklet), which was the next game, introduced words specifically containing the letters that students struggled with in the previous game, such as 'troféu' (trophy) and 'pato' (duck). Thus, the games provide essential feedback on the student's difficulties, which is crucial for planning subsequent activities.

After implementing the games in the workshops, we decided to create the "Gamifying Libras" booklet with a detailed description of each game to facilitate the implementation of the material by teachers. In this way, we hope it will serve as a tool in the teaching and learning practice of Libras by showing a possible way to diversify the methods used in the classroom.

Final considerations

This article discusses how to diversify activities in Libras teaching materials through the inclusion of proposals that involve gamification. It explores the potential of games, which not only promote learning but also foster engagement, minimize monotony in vocabulary repetition, and provide feedback on the difficulties faced by students. Thus, the use of gamification is a methodological tool that can be crucial in reducing the existing gap in Libras materials. One limitation is that not all games are suitable for all audiences. Therefore, it is essential that the teacher be able to assess which games work and which do not based on their knowledge of the class.

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REFERENCES

- ARBELAITZ, O.; MARTI, J. I.; MUGUERZA, J. Analysis of introducing active learning methodologies in a basic computer architecture course. **IEEE Transactions on Education**, v. 58, n. 2, p. 110-116, 2014.
- ARAÚJO, M. A.; JUNQUEIRA, M. S.; SOBREIRA, V. Jogos educacionais digitais e seus desafios de produção: enriquecendo o aprendizado em Cursos de Libras Ead. *In*: GODOI, E.; LIMA, M. D.; DA SILVA, R. M. (org.). **LIBRAS e o processo de formação continuada de professores**: discussões teóricas e metodológicas. Uberlândia: EDUFU, 2016. p.141-162.
- CORTELAZZO, A. L.; FIALA, D. A. S.; JUNIOR, D. P.; PANISSON, L.; RODRIGUES, M. R. J. B. **Metodologias ativas e personalizadas de aprendizagem**: para refinar seu cardápio metodológico. Rio de Janeiro: Alta Books, 2018.
- COSTA-ALBUQUERQUE, H.; MAYRINK, M. F.; OLIVEIRA, R. D. Repensando a relação entre metodologia, tecnologia e formação docente no ensino de línguas. **Revista Intercâmbio**, [S. l.], v. 45, 2020. São Paulo: LAEL/PUCSP. Available at: <https://revistas.pucsp.br/index.php/intercambio/article/view/50454>. Accessed in: 15 July 2023.
- FREIRE, P. **Pedagogia da Autonomia**: Saberes Necessários à Prática Educativa. São Paulo: Paz e Terra, 2003.
- KRUK, M.; PAWLAK, M.; ZAWODNIAK, J. Another look at boredom in language instruction: The role of the predictable and the unexpected. **Studies in second language**

learning and teaching, [S. l.], v. 11, n. 1, p. 15-40, 2021. Available at: <https://files.eric.ed.gov/fulltext/EJ1302145.pdf>. Accessed in: 15 July. 2023.

LEFFA, V. J. Como produzir materiais para o ensino de línguas. **Produção de materiais de ensino: teoria e prática**. Pelotas: EDUCAT, 2003.

LEFFA, V. Ensino de línguas: passado, presente e futuro. **Revista de Estudos da Linguagem**, [S. l.], v. 0, n. 2, p. 389-411, 2012. Available at: <http://periodicos.letras.ufmg.br/index.php/relin/article/view/2755>. Accessed in: 15 July 2023.

LEFFA, V. J. Gamificação no ensino de línguas. **Perspectiva**, [S. l.], v. 38, n. 2, p. 1-14, 2020. DOI: 10.5007/2175-795X.2020.e66027. Available at: <https://periodicos.ufsc.br/index.php/perspectiva/article/view/2175-795X.2020.e66027>. Accessed in: 15 July 2023.

LEFFA, V. J.; ALVES, C. Como um Jogo: Gamificação Responsiva no Ensino de Línguas. **Revista Linguagem em Foco**, Fortaleza, v. 12, n. 2, p. 207-226, 2020. DOI: 10.46230/2674-8266-12-3671. Available at: <https://revistas.uece.br/index.php/linguagememfoco/article/view/3671>. Accessed in: 15 July 2023.

JEONG, J. S.; GONZÁLEZ-GÓMEZ, D., GALLEGOS-PICÓ, A.; BRAVO, J. C. Effects of active learning methodologies on the students' emotions, self-efficacy beliefs and learning outcomes in a science distance learning course. **JOTSE: Journal of Technology and Science Education**, [S. l.], v. 9, n. 2, p. 217-227, 2019. Available at: <https://files.eric.ed.gov/fulltext/EJ1210897.pdf>. Accessed in: 15 July 2023.

MATTAR, J. **Metodologias ativas: para a educação presencial, blended, à distância**. 1. ed. São Paulo: Artesanato Educacional, 2017.

MORÁN, J. Mudando a educação com metodologias ativas. Coleção mídias contemporâneas. **Convergências midiáticas, educação e cidadania: aproximações jovens**, [S. l.], v. 2, n. 1, p. 15-33, 2015. Available at: https://moran.eca.usp.br/wpcontent/uploads/2013/12/mudando_moran.pdf. Accessed in: 15 July 2023.

MORÁN, J. Metodologias ativas para uma aprendizagem mais profunda. In: BACICH, L.; MORÁN, J. (org.). **Metodologias ativas para uma educação inovadora: abordagem teórico-prática**. Porto Alegre: Penso Editora, 2018.

MOURA, J. M. S. S.; SILVA, M. T. Q.; RIBEIRO, M. L. Q. **O uso de jogos no ensino de Libras**. Resumo apresentado no VII Congresso Nacional de Educação - CONEDU. Maceió, 2020.

NEVES, V.; MERCANTI, L. B.; LIMA, M. T. **Metodologias ativas: perspectivas teóricas e práticas no ensino superior**. Campinas: Pontes Editores, 2018.

PEREIRA, M. C. P. A língua de sinais brasileira: Análise de material didático de ensino como segunda língua para ouvintes. **Linguagem**, São Carlos, v. 7, n. 01, p. 01-14, 2009.

Available at: <https://www.linguasagem.ufscar.br/index.php/linguasagem/article/view/557>.
Accessed in: 15 July 2023.

PAIVA, M. R. F.; PARENTEM J. R. F. P.; BRANDÃO, I. R.; QUEIROZ, A. H. B. Metodologias ativas de ensino-aprendizagem: revisão integrativa. **SANARE-Revista de Políticas Públicas**, [S. l.], v. 15, n. 2, 2016. Available at: <https://sanare.emnuvens.com.br/sanare/article/view/1049>. Accessed in: 15 July 2023.

QUADROS, R. M. **Libras**. São Paulo: Parábola Editorial, 2020.

ROCHA, P. R.; LIMA, R. W.; MACEDO, R.; MAIA, C. Gamificação: Um aplicativo para o ensino da Língua Brasileira de Sinais. In: **Anais dos Workshops do Congresso Brasileiro de Informática na Educação**, [S. l.], 2016. p. 896. Available at: https://www.researchgate.net/publication/309887847_Gamificacao_Um_aplicativo_para_o_ensino_da_Lingua_Brasileira_de_Sinais. Accessed in: 15 July 2023.

ROZENFELD, C. C. F.; VIANA, N. Reflexões teóricas sobre a aula de língua estrangeira: organizando materiais, analisando contextos, definindo percursos. **DELTA: Documentação De Estudos Em Lingüística Teórica E Aplicada**, [S. l.], v. 35, n. 4, p. e2019350402, 2019. Available at: <https://www.scielo.br/j/delta/a/C9XR7C448Cf3LNkTFsbjydB/>. Accessed in: 15 July 2023.

SATAKA, M. M.; ROZENFELD, C. C. F. As abordagens-metodológicas de ensino de língua estrangeira no aplicativo Duolingo. **DELTA: Documentação De Estudos Em Lingüística Teórica E Aplicada**, v. 37, n. 2, p. 202147855, 2021. Available at: <https://www.scielo.br/j/delta/a/H9XM5jQTPSSnYgcPMBn8Q9r/>. Accessed in: 15 July 2023.

SILVA, L. Aquisição de segunda língua: O estado da arte de Libras. **Alfa: Revista de Linguística**, São Paulo, v. 64, 2020. DOI: 10.1590/1981-5794-e11861. Available at: <https://periodicos.fclar.unesp.br/alfa/article/view/11861>. Accessed in: 15 July 2023.

SILVA, R. R. O ensino de Libras para ouvintes: Análise comparativa de três materiais didáticos. In: ALBRES, N. A. (org.). **Libras em estudo: ensino-aprendizagem**. São Paulo: FENEIS, 2012.

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