



INTERACTION BETWEEN TEACHERS AND DEAF STUDENTS: A SYSTEMATIC REVIEW OF THE LITERATURE

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Abstract:

The aim of this study was to conduct a systematic literature review on the interaction between teachers and deaf students in Brazil and Portugal. The search was limited to research carried out in the last decade (2013-2023) in the following databases: Annual Reviews, DOAJ, Scielo, Scopus, Web of Science and Willey Interscience. The following search terms were used: teacher, student, deaf and interaction. 15 studies were selected that met the inclusion and exclusion criteria. Among the studies selected, the first author to be associated with Brazilian institutions (n=14) was in a higher number, with only one study published in Portugal (n=01). Twelve studies (n=12) used qualitative research, and the majority of studies (n=06) were based on the legal, ontological, epistemological and pedagogical principles advocating inclusive education. Although few studies (n=05) point to the positive potential of interaction between the teacher and the deaf student, this is an aspect that needs more attention as we still need to provide quality education to these students who are already enrolled in classes and thus guarantee them the realization of their rights as learners. Overall, we conclude that the majority of the studies (n=10) indicate limitations, barriers and obstacles that hinder the interaction between the teacher and the deaf student and consequently affect their learning.

Keywords: inclusive education, interaction, deafness, systematic review literature

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1. Introduction

Inclusive education policies are currently guiding public education policies in both Brazil and Portugal. The schooling of deaf students is now a reality that is growing in mainstream basic education classes in Brazil, and this growth is confirmed by data from the School Census carried out in Brazil in 2023 (Brazil, 2023), which indicates that of the 47.3 million students in basic education, approximately 0.1% have a disability related to deafness, a percentage that indicates an increase compared to a few decades ago.

In Portugal, according to data from the 2021 indicators on disability, 2.8% of the resident population has a hearing impairment (GEP/MTSSS, 2023), and we have not found any figures on the percentage of students enrolled from pre-school to secondary education.

In light of these indices, and in line with Pereira, Lunardi-Mendes & Pacheco (2018), we can see that both the Brazilian and Portuguese educational contexts are active in terms of implementing inclusive public policies. However, the authors point out that in Brazil: "*Access to school knowledge is still a contemporary challenge, as this right is not yet guaranteed for everyone*" (p. 37). This is because there are still deaf students in mainstream classes who do not have interpreters, in mainstream classes and teachers who do not know sign language, which leads to limitations in communication and interaction, among several other reasons that are challenging and limiting for students with deafness.

The inclusion of deaf students in mainstream classrooms requires pedagogical, methodological and communicative adaptations in order to ensure their intellectual development. It is not enough to guarantee the enrolment of deaf people, there are other aspects, including pedagogical, methodological and communicative, that need to be restructured in order to promote quality teaching. In this context, it is important to emphasize that the learning process for deaf people requires specific characteristics in teaching and interaction. According to Vygotsky (1994), cognitive and linguistic functions enable social interaction through signs and words. In this way, deaf children must be exposed to their mother tongue (sign language) from a very young age in order to develop cognitive mechanisms that will contribute to interactive processes and linguistic and communicative acquisition during their schooling.

According to the Ministry of Education (2009), published to help teachers in Portugal with the linguistic acquisition of deaf students in an environment rich in interactions, it states that when teaching a deaf student, the teacher must use the gaze, i.e. in other words, the whole process of teaching and learning for the deaf must be thought through the gaze, in terms of interaction, motivation, relationship, attention and production.

These actions must be carried out by the teacher as processes for stimulating and developing conditional reflexes, as Vygotsky (1994) called them, with the aim of stimulating communicative and social interactions.

So we start from this assumption, where the classroom should, in fact, be a welcoming space, a positive relational environment that articulates affection, understanding and interaction that allows deaf and hearing children to have meaningful

learning experiences using their sign languages (LGP - Portuguese Sign Language; and Libras - Brazilian Sign Language).

It is in this school space, through the interaction between teachers and students, that the construction of knowledge takes place (or should take place), which certainly contributes to the personal, intellectual and critical development of students with disabilities.

The deaf student is crossed by social relations through which he learns, develops, interacts and builds knowledge, just like other students. In the same vein, Vygotsky's (1994) studies reiterate the importance of the social and cultural context for the intellectual development of all students in the school phase.

Skliar (1998) points out that education for deaf people should not be based on the parameters of hearing people but should be guided by the socio-historical-cultural and identity differences of the deaf community, and that linguistic difference is, therefore, a key aspect of the educational process.

It is in this context that our research question arises: What has been published about the interaction between teacher and deaf student?

In order to specify the elements that make up the structure of the question of our review, we have used a scheme in the form of the acronym PICO created by Campos, Caetano & Laus-Gomes (2023) to indicate the choices that have been made and that constitute the question of this research (see Table 1).

Table 1: Structure of the systematic review question
 in the field of education without comparison of interventions

Question	What has been published about the interaction between teachers and deaf students in Brazil and Portugal?	
Abbreviation	Description	Question components
P	Population or problem	Teacher and deaf student
I	Intervention or design	Brazil and Portugal
C	Comparison of interventions	No
O	Outcome	Productions about the interaction

Source: Adapted from Campos, Caetano & Laus-Gomes (2023).

According to Freire-Ribeiro and Mesquita (2020), the relationship between the members of the teaching-learning process is a determining factor of educational success. Therefore, the aim of this systematic literature review is to map the production of knowledge about the interaction between teachers and deaf students in Brazil and Portugal.

To carry out this research, we used the methodological strategies of the systematic literature review, according to the PRISMA 2020 guidelines (Page *et al.*, 2021) and the assumptions presented by Gomes and Caminha (2014), Galvão and Ricarte (2019) and Almeida & Cruz-Santos (2022). The search was conducted in Brazilian and Portuguese universities repositories, using Portuguese and English as the language of publication. We took into account that these filters would return significant research on the interaction between teachers and deaf students in Brazil and Portugal.

2. Literature Review

Lacerda (2006) and Souza & Lacerda (2023) highlight the prejudice that exists in teachers' attitudes towards deaf students because they do not know sign language. The lack of sign language skills leads to limitations in communication, interaction and the establishment of the teacher-student relationship, as linguistic prejudice is still evident among the majority of educational professionals (Lacerda, 2006).

The presence of a deaf student in the classroom often implies the presence of an educational translator-interpreter, in which case, in addition to the teacher, there is another professional who will work together to promote the communicative accessibility of the deaf student.

However, as postulated by Jesus (2020), there are situations where only a professional sign language translator-interpreter is available. This situation does not guarantee the promotion of inclusion, perhaps access to the social, cultural, linguistic and interpersonal knowledge that comes from the school environment. Furthermore, many teachers still put all the responsibility for deaf students on these professionals.

However, it is important to note that the translator-interpreter is not the professional responsible for the pedagogical, curricular and training aspects related to the deaf student. This is the responsibility of the class teacher or teachers.

Faced with the limitations resulting from the inclusion of deaf people in mainstream classrooms, the bilingual proposal emerges as an educational approach anchored in sociological, philosophical and political concepts that recognize the bilingual and intercultural condition in which deaf people live. It is, therefore, assumed that the bilingual teacher, by mastering sign language, will be able to get closer to and interact with the deaf student.

In the study by Nantes (2012), the author points out, from the reports of deaf students, that pedagogical practices in higher education do not guarantee access to scientific knowledge and that communication and interaction between teachers and students are insufficient.

In this sense, Lacerda (2006) points out that in the educational context, diverse and interventionist actions are needed to create a culture of cooperation between deaf and hearing students, between teachers and between interpreters, with a view to effective actions that meet the specific needs of the students present in the classes, especially those who require communication mediation in order to relate and interact.

There is a consensus in the literature that the lack of communication and interaction between deaf students and their teachers, as well as between deaf students and their classmates, has a negative impact on their schooling (Dorziat, 2004; Lacerda, 2006; Silva, 2009).

Therefore, it is important to map the research that deals with the interaction between teachers and deaf students in order to show what has been published and what gaps still exist in this area of knowledge, with a view to deepening further discussions on this topic.

3. Methodology

In order to consider the central objective of this research and to obtain data on the study objective, we chose the systematic literature review (SLR) as the type of investigation, according to the PRISMA 2020 guidelines (Page *et al.*, 2021), contextualizing them with the stages of execution applied to qualitative research in the field of education.

According to Galvão and Ricarte (2019), systematic literature reviews must follow specific protocols in order to contribute to the quality of research. In this way, the authors indicate some essential stages that should make up the development of the research, which are: the delimitation of the research question that will be used in the review; the choice of databases to consult and obtain material; the elaboration of search strategies; the selection of texts and the systematization of the information found.

By following the aforementioned steps, we outline a methodological framework that contributes to the reliability of the research and reduces the occurrence of bias (Gomes & Caminha, 2014).

According to Campos, Caetano and Laus-Gomes (2023), the implementation of SLR in qualitative research in the field of education must meet strict criteria and have transparent and reproducible objectives.

Another important feature of SLR, pointed out by Gomes and Caminha (2013), is the interpretation of the results obtained and the conclusions drawn from the content mined. In this way, well-structured reviews can help to identify gaps in educational research, reveal under-explored areas, and provide guidance for new investigations.

3.1 Sources of Information and Eligibility Criteria

The repositories used as sources of information were Annual Reviews, DOAJ, Scielo, Scopus, Web of Science and Willey Interscience. The search was limited to publications from 2013 to 2023, in order to characterize the productions of the last decade, and with the filter for publications from Brazil and Portugal.

3.2 Procedures

We defined the following search descriptors: teacher, pupil, student, deaf, and interaction. The search period was from 16 September to 16 October 2024.

In all the databases, we searched with the descriptors in two languages, first in Portuguese (teacher and student and deaf and interaction) and then in English (teacher and student and deaf and interaction). It should be emphasized that a priori we considered all the search indexes (author, title, abstract and keywords).

The search on the Scopus platform was carried out with the following selected filters: year 2013 to 2023; type of document: limited to articles; and country and/or territory, we selected Brazil and Portugal.

It should be noted that the first time the database (Scopus) was searched using descriptors in Portuguese, no papers were found; the second time, using descriptors in English, papers were found.

The option of using SLR requires planning and systematizing information about the research, so we present Table 2 below, according to Galvão and Ricarte (2019) and Almeida and Cruz-Santos (2022), which shows the main steps used, as well as a description of each one and the choices made in this research.

Table 2: Initial research protocol with stages, description and what will be done as part of this research

Systematic review protocol		
Stages	Description	Research
Delimitation of the Question	What you want to research	To identify research on the interaction between teachers and deaf students in Brazil and Portugal.
Basic selection Data	Databases to be consulted	Annual Reviews, DOAJ, Scielo, Scopus, Web of Science and Willey Interscience.
Elaboration Strategy Search	Technological methods and mechanisms	Use of descriptors (teacher, student ⁱⁱ , deaf, interaction).
Selection of Information	Process that may have different stages, including reading the information desired	Reading the titles of the documents, reading the abstracts and a general critical analysis of the documents.
Systematization and Gathering Information	Reading and collection of comparable information	Proposal of some descriptive steps: number of papers by descriptor, purpose of the studies analyzed and preliminary research data.

Source: Adapted from Galvão & Ricarte (2019) and Almeida & Cruz-Santos (2022).

3.3 Eligibility Criteria

Table 3 shows the inclusion criteria (IC) and exclusion criteria (EC) for this study.

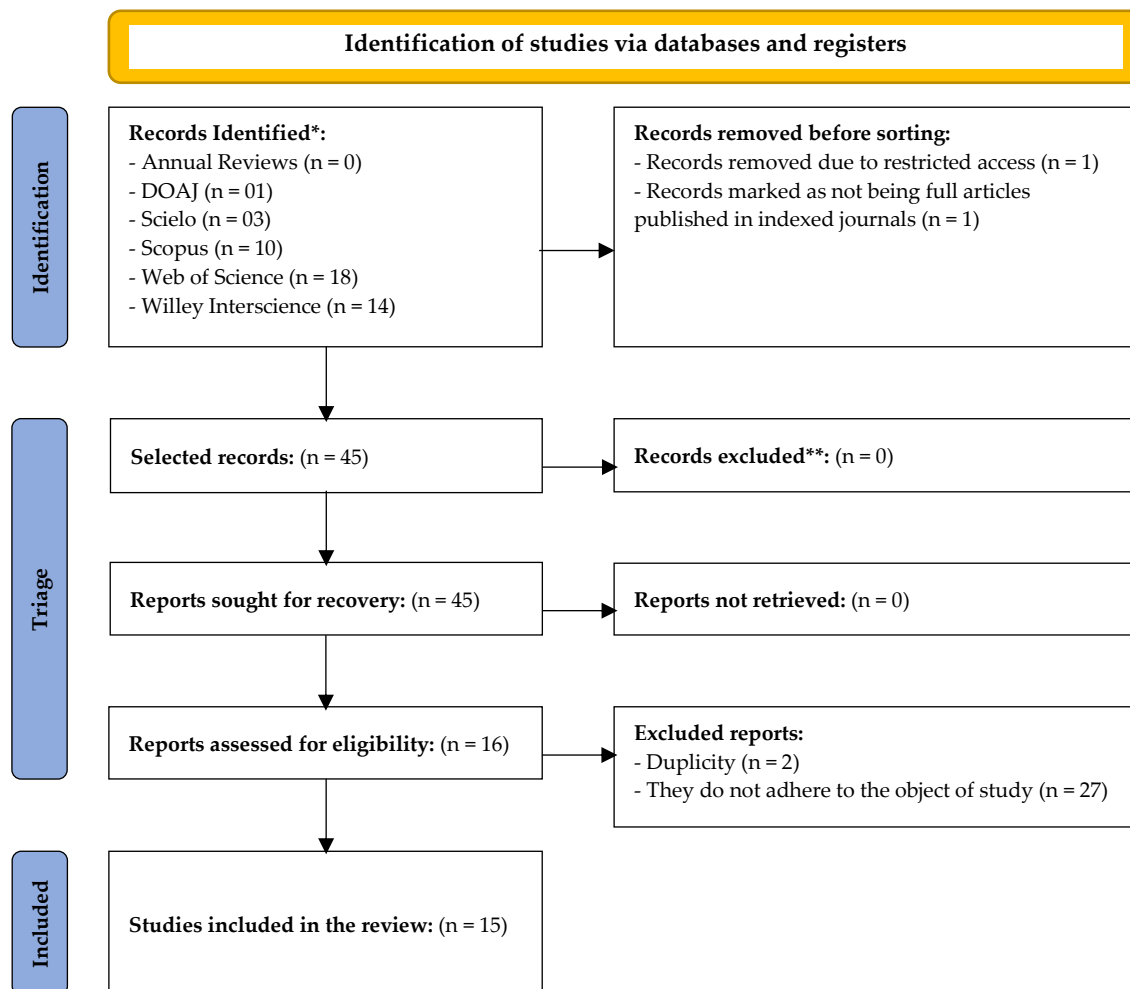
Table 3: Initial research protocol with stages, description and what will be done as part of this research

Inclusion Criteria (IC)	Exclusion Criteria (EC)
Full papers published in indexed journals	Papers published in conference proceedings
Articles published between 2013 and 2023	Unpublished articles in the 2013 - 2023 timeframe
Articles published in Portuguese and English in Brazil and Portugal	Articles published in Portuguese and English in other countries
Articles available on the Web without restricted access	Articles available on the Web with restricted access
Only research that presents aspects related to the interaction between teacher and deaf student in the title, abstract or body of the text.	Research that presents aspects related to the teacher and the deaf student other than interaction

ⁱⁱ We used the word 'student' as a search descriptor and as a synonym for the descriptor 'learner' in order to find research that used either term to refer to the learner in both Portuguese and English language publications.

Finally, we present below a diagram (see Figure 1) of the PRISMA 2020 methodology with the corresponding identification of the studies and databases used in this research.

Figure 1: Diagram used for systematic reviews according to PRISMA 2020



Legend: n (equals the number of studies)

* Where possible, consider reporting the number of records identified in each database or record searched (rather than the total number in all databases/records).

** If automation tools were used, indicate how many records were deleted by a human and how many were deleted by automation tools.

In the Willey database, the search returned 14 papers, but of these 14, there were 02 collections of scientific events that were not included because they did not meet the inclusion criteria.

4. Results and Discussion

Table 4 shows the tabulated data with the most important information about the retrieved studies. It shows the 15 included studies and their identification, the title, the author(s), the year of publication, the institution with which the first author is associated and the repository in which the study was published.

Table 4: Identification of the studies in the systematic literature review, title, author(s), year of publication, first author's institution and publication repository

ID	Title	Author(s) and year	Language of publication	Institution	Repository
P01	Dialogic interaction as mediation in the process of acquisition of written language by deaf people	Souza & Lacerda (2023)	Portuguese	Federal University of Pará	Scielo
P02	The inclusion of deaf students in mainstream education: the vision of a group of teachers from the state of Paraná	Guarinello <i>et al.</i> (2006)	Portuguese	Tuiuti University of Paraná	Scielo
P03	The image that regular school teachers have of deaf students learning	Silva & Pereira (2003)	Portuguese	Unicamp's Faculty of Education	Scielo
P04	Implications for deaf people in higher education	Gavaldão & Martins (2016)	Portuguese	São Paulo State University	Wiley
P05	"Is it to write Portuguese or Libras?": nuances of translanguaging in deaf language education	Nogueira (2023)	Portuguese	State University of Campinas	Scopus
P06	Cross-cultural interactions in the context of teaching Brazilian Sign Language (LIBRAS) as a second language in preschool	Prieto (2022)	English	Federal University of Santa Catarina	Scopus
P07	The inclusion of deaf students in Brazilian higher education: the case of a Pedagogy course	Sanches & Silva (2019)	Portuguese	Lusophone University of Humanities and Technologies	Scopus
P08	Interactions between deaf students, teachers and interpreters in physics classes: a Vygotskian perspective	Vargas & Gobara (2014)	Portuguese	Federal University of Mato Grosso do Sul	Scopus
P09	The language issue in the inclusion of deaf students in schools: an inclusive mainstream environment <i>versus an</i> exclusively hearing environment	Aspilicueta <i>et al.</i> (2013)	Portuguese	Federal University of Paraná	Scopus
P10	Inclusive education: the importance of interaction between teachers and deaf students at school	Franco (2016)	Portuguese	Federal Institute of Education, Science and Technology of Rondônia	Web of Science
P11	Martin Buber's I-you and I-that: social representations of teachers about deaf schooling	Lobato (2020)	Portuguese	Federal University of Pará	Web of Science
P12	The invisible student in physical education classes:	Alves <i>et al.</i> (2024)	English	University of Campinas	Web of Science

	voices from Deaf and hard of hearing students on inclusion				
P13	The inclusion and integral, omnilateral education of deaf students in physics classes	Aguiar & Castilho (2022)	Portuguese	Federal Institute of Maranhão	Web of Science
P14	Teaching-learning and teaching methodologies in Portuguese for the deaf from the perspective of inclusive education	Valadão <i>et al.</i> (2016)	Portuguese	Federal University of Viçosa	Web of Science
P15	Teaching Sciences and Biology for deaf individuals: investigating the context of teaching practice in regular classrooms of a municipality in the state of Paraná	Pimentel, Lucas & Luccas (2018)	English	State University of Northern Paraná	Web of Science

Legend: The abbreviation with the letter P in the first column corresponds to the identification used for each work found (01 to 15) and is used to refer to the studies in the description and subsequent tables.

This table shows that most of the studies were published in Portuguese (n=12) and only three in English (n=03). Among the studies we found, it was more common for the first author to be associated with Brazilian institutions (n=14), with only one study being published in Portugal and the first author having a link to a Portuguese institution (n=01). We observed a certain variation in the epistemological conception presented by the author(s) in the papers, so Table 5 identifies the general objective of each study and presents the theoretical conception of interaction presented in each study.

Table 5: Presentation of the general objective of each study and the type of interaction concept used

ID	Objective	The theoretical concept of interaction presented by the author(s)
P01	To investigate the process of appropriation by deaf people of Portuguese as a second language in dialogue with a bilingual teacher through a learning diary.	A concept based on cultural-historical theory.
P02	Discuss the problems surrounding the inclusion of deaf students in mainstream education.	A concept based on general inclusive principles. ⁱⁱⁱ
P03	Analyze the image that regular school teachers have in relation to the learning of deaf students	A concept based on general inclusive principles.
P04	To describe and analyze the results of the survey of available production on the inclusion and accessibility of deaf students in higher education, in the CAPES database of theses and dissertations.	A concept based on general inclusive principles.

ⁱⁱⁱ This abbreviation will be used to refer to works based on the principles of inclusive education, which aims at an integrated education that considers the deaf individual in its multiple dimensions (physical, mental, intellectual, social and cultural), as well as interaction as an essential aspect for social interaction at school, for the development of skills and the acquisition of knowledge.

P05	Analysis of two moments of translingual interaction between deaf students and teachers in collective writing activities in a course teaching Portuguese as a second language to deaf young people and adults.	Conception based on linguistic principles.
P06	To describe interactions in an intercultural dialog between deaf teachers in training, hearing children and their hearing teacher in a second language learning context (LIBRAS).	Conception based on linguistic principles.
P07	To understand the process of inclusion of deaf students in the undergraduate course in Pedagogy, in Brazilian higher education.	A concept based on general inclusive principles.
P08	Analysis of the interactions between the student with deafness, the teacher and the interpreter in the classroom, as well as the role of these subjects in the deaf student's inclusion process.	A concept based on cultural-historical theory.
P09	Describe the language used between deaf students and other members of the school, focusing on different school environments: one that is exclusively hearing, with only one deaf student in the whole school; and another where there is a concentration of deaf students in the same school.	A concept based on linguistic principles.
P10	To investigate the importance of the affective interaction between teacher and student made possible by aspects of inclusive education for deaf people in the school context.	A concept based on cultural-historical theory.
P11	To analyze the Social Representations of teachers about the attitudes established with Deaf students in Breves - Pará.	Conception based on Martin Buber's philosophical principles about the I-Thou and I-Is attitudes.
P12	To investigate the inclusive process of deaf or hard-of-hearing students at school from the specific context of the PE class.	A concept based on dialogic and transgressive principles, according to DeLuca (2013).
P13	To include deaf students in the subject of Physics, favoring inclusion for their omnilateral and integral education.	A concept based on integral and omnilateral training, according to Ciavatta (2014).
P14	Report on a Portuguese language teaching experience developed from the research entitled: "Teaching-learning and teaching methodologies for deaf elementary school students in the city of Viçosa - MG	A concept based on general inclusive principles.
P15	To investigate how science/biology is taught to deaf students in the city of Cornélio Procópio-PR and what difficulties students, teachers and sign language interpreters encounter in the context of school inclusion.	A concept based on general inclusive principles.

Based on the data obtained, we observed that each study used a theoretical framework to discuss interaction. Three studies (P01, P08 and P10) used the principles of the social interactionist theory proposed by Vygotsky (1994). An example is P01, in which Souza & Lacerda (2023) point out that in order for the deaf to appropriate written language, the teacher must take into account the linguistic and communicative condition of the student, because with significant and consistent experiences, writing can be transformed into higher mental processes.

Six papers are based on the legal, ontological, epistemological and pedagogical principles that advocate inclusive education: P02, P03, P04, P07, P14 and P15. These

studies share the inclusive concept that all students have the right to a quality education that guarantees not only the right to enrolment and access to school, but also that the right to learn is realized, taking into account the specific needs of deaf students.

Three studies (P05, P06 and P09) refer to communication accessibility through Libras as a way of promoting meaningful interactions in educational environments and show that the social interactions generated within the school and its surroundings play an important role in the schooling process. These studies use the principles of language education for the deaf.

Studies P11, P12 and P13 were not included in the groupings made, so we will briefly describe the approach used by each of them.

In P11, Lobato (2020) presents an excerpt from his Master's thesis, in which he used the theoretical-methodological framework of the Theory of Social Representations according to Moscovici (2003) in order to highlight teacher actions related to interpersonal attitudes between teachers and students in the school context. Based on the contrasting attitudes experienced, such as love and hate, respect and disrespect, closeness and distance, the author uses philosophical presuppositions related to the principle words I-Thou and I-Thou, as part of the human movement, to try to understand the attitudes established between teachers and deaf students in the context of the regular school.

In P12, Alves *et al.* (2024) anchor their research in the understanding of inclusion presented by DeLuca (2013), in which the author proposes an interdisciplinary framework for understanding inclusion based on four perspectives: special education and disability studies, multiculturalism and anti-racist education, gender and feminist education, and queer studies.

In P13, Aguiar & Castilho (2022) advocate for an education that forms the human being in its integral physical, mental, cultural, political and scientific-technological sense, according to Ciavatta (2014).

Table 6 provides a general characterization of the studies, with aspects related to the research methodology, the tools used to gather information, and the type of analysis carried out.

Table 6: General characterization of the studies found in the systematic literature review

ID	Type of research	Instrument(s) used	Type of analysis
P01	Qualitative	Learning diary	Analysis based on the indicative paradigm
P02	Qualitative/ Quantitative	Questionnaire	Not defined
P03	Qualitative	Interview and observation	Thematic and categorical content analysis
P04	Qualitative	Bank of theses and dissertations	Analysis of scientific productions according to the approach to the production of meanings and discursive practices
P05	Qualitative	Participant observation, videotaping, notes and field diaries	Translingual analysis

P06	Ethnographic	Participant observation, questionnaire and diary	Analysis based on Uwe Flick's cyclical process.
P07	Qualitative	Interview and observation	It doesn't define, but uses categories
P08	Qualitative	Observation	Categorical Content Analysis
P09	Qualitative	Observation and videorecording	Not defined
P10	Qualitative	Semi-structured questionnaire	Not defined
P11	Qualitative	Observation and interview	Content analysis
P12	Qualitative	Semi-structured interview	Thematic analysis
P13	Qualitative/ Quantitative	Semi-structured interviews and questionnaires	Not defined
P14	Qualitative	Observation and field diary	Not defined
P15	Qualitative	Semi-structured interview	Textual Discourse Analysis

Table 6 shows that most of the studies were qualitative (P01, P02, P03, P04, P05, P07, P08, P09, P10, P11, P14, P15), two were qualitative-quantitative (P12 and P13), and only one was ethnographic (P06).

The tools used to collect information were varied, including the use of field diaries, notes, questionnaires, interviews, observation, participant observation and videotaping. In terms of the type of analysis used, six studies (P02, P07, P09, P10, P13 and P14) did not define the analysis used in the body of the text, three studies (P03, P08 and P11) used content analysis according to Laurence Bardin and six studies (P01, P04, P05, P06, P12 and P15) used different analyses to deal with the information obtained.

Table 7 shows the main results of each study. We can see that there is a variation in the research between the positive aspects related to the interaction between the teacher and the deaf student, as well as the limitations and difficulties arising from the lack of interaction between them in the classroom.

Table 7: Main research findings related to the interaction between teacher and deaf student/student

ID	Results related to interaction between teacher and deaf student/student
P01	<i>"...how the writing changed and came closer to the standard of the Portuguese language taking into account the interaction with the teacher that took place through comments and corrections..." (p. 06)</i>
P02	<i>"regarding the difficulty of interaction, 16.6% of the teachers associated this difficulty with lack of attention, disinterest, not doing the activities requested by the teachers" (p. 323)</i>
P03	<i>"... I feel I can't help anymore because it's limited for me, also because I don't know the language of the deaf, so it's difficult..." (p. 12)</i>
P04	<i>"...points out that teachers avoid communicating with deaf students, and leave this interaction to the interpreter." (p. 03)</i>
P05	<i>"... At the end of the presentation, the teacher agreed with of Lia's summary and took the opportunity to explain that what had been done in Libras should be done in a one-paragraph text in Portuguese." (p. 13)</i>
P06	<i>"... the children and teachers transformed sign language into a living and flexible entity that involved them in a significant teaching and learning process." (p. 19)</i>
P07	<i>"...the deaf make an effort to communicate with teachers and hearing colleagues, but there is still a barrier due to the lack of knowledge about LIBRAS on the part of teachers and hearing colleagues." (p. 09)</i>
P08	<i>"There is practically no direct relationship between the teacher and the student, and this happens in all schools." (p. 08)</i>

P09	"Most of the interactive events in the classroom took place between the students and not between the deaf student and the teacher." (p. 08) "...linguistic interactions in the schools studied are restricted and not very effective." (p. 10)
P10	"... the main factor is the lack of communication in the teaching environment between hearing and deaf people. This is mainly due to the lack of knowledge of the Brazilian Sign Language (LIBRAS) by the dominant group, making the relationship distant, with little affection and motivation for the teaching-learning process." (p.14)
P11	"According to the teachers' reports, this climate of interaction or interlocution occurs through communication in Libras with the Deaf students." (p. 12)
P12	"The PE teacher does not communicate with the hearing impaired student, delegating this function to the interpreter..." (p. 12)
P13	"...the teacher declared his interest in participating in the interaction of hearing students with ES through interactive gymkhanas." (p. 10) "For the necessary changes to take place, attitudes of political struggle are needed, and bilingual practice in the school allows the interaction of ES with the entire hearing school community." (p. 15)
P14	"...the difficulties we encountered during our time at the school revealed a lack of interaction between the teacher and the deaf student." (p. 19)
P15	"the main difficulty for teachers is the lack of preparation to work in classes that include deaf people, which affects not only the interaction with the students, but also the teaching of Science and Biology." (p. 01)

In studies P01, P05, P06, P11 and P13, the authors found results that confirm the positive aspects related to the interaction between teachers and deaf students and highlight the effects on the learning process and the building of relationships between hearing and deaf people. For example, in research P01, Sousa & Lacerda (2023) used pedagogical strategies adapted for deaf students to teach written language through diaries written by deaf students and corrected by the teacher, who interacted through comments and corrections. The results showed that appropriate pedagogical practices can lead deaf students to appropriate writing and develop reasoning.

In P02, P03, P04, P07, P08, P09, P10, P12, P14 and P15, the authors presented limitations related to the difficulty hearing teachers have in interacting with deaf students due to their lack of mastery of Libras. In study P02, the participants reported a lack of attention and disinterest on the part of the deaf students. The lack of direct communication with the deaf student appeared several times in the results, confirming the communication barrier that exists in classrooms with deaf students and showing that the presence of a sign language interpreter alone does not promote educational inclusion.

5. Recommendations

Based on the knowledge gained from the systematic literature review on the interaction between teacher and deaf student, future research should consider the following suggestions:

- Didactic-pedagogical strategies that favour the interaction in the classroom between teacher and deaf students and between deaf students and listeners;
- Proposals for in-service courses that discuss collaborative work and environments that favour the inclusion of deaf and hearing people;

- Greater dissemination of Libras and Portuguese Sign Language in the school context, with the aim of broadening and guaranteeing linguistic specificities at school;
- The creation of spaces for dialogue or conversation circles between deaf and hearing people to discuss linguistic differences and the specific needs of each person.

6. Conclusion

The aim of this study was to carry out a systematic literature review on the interaction between teachers and deaf students in Brazil and Portugal.

Most of the studies found point to limitations, barriers and obstacles that hinder the interaction between teachers and deaf students and consequently affect their learning. Therefore, we can see that there are many challenges that need to be overcome in order for there to be an effective interaction between the teacher and the deaf student, such as greater dissemination and appropriation by listeners of Libras and Portuguese Sign Language in continuing education courses, the use of appropriate pedagogical strategies in classes with deaf students enrolled, greater responsibility on the part of the teacher towards the deaf students in the class and the search for collaborative partnerships.

Although there is little research on the positive potential of the interaction between the teacher and the deaf student, this is an aspect that needs more attention, as we need to provide quality education to these students who are already enrolled in school classes and thus guarantee them the realization of their rights as learners.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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