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## Creation and use of signs composed by deaf people: a study with students of the Language-Libras course at UFPI

Criação e uso de sinais compostos por surdos: um estudo com alunos do curso Letras-Libras da UFPI

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**Abstract:** The aim of this study is to analyze the linguistic and contextual regularities that lead to the acceptability and creation of compound signs in Brazilian Sign Language (Libras) by deaf students on the Language-Libras course at the Federal University of Piauí (UFPI). To this end, we carried out a qualitative study based on the morphological aspects of Libras and Portuguese, with an emphasis on describing the linguistic and contextual regularities underlying the perception of three deaf students in the first term of the course. We catalogued and mapped 55 compound signs and checked which were the same or different to those listed in the references by Quadros and Karnopp (2004), Felipe (2006), Takahira (2012), Minussi and Takahira (2013), Figueiredo Silva and Sell (2009) and the *Novo deit-Libras* dictionary by Capovilla et al. (2009). In the analyses we identified linguistic and contextual regularities in deaf students' perceptions of the acceptance and creation of compound signs that related to the following factors: linguistic economy, cultural factors, visual perceptions, conceptual and contextual perceptions, and understandings of the world and language learning.

**Keywords:** Libras morphology. Compound signs. Deaf students. Linguistic regularities.

**Resumo:** O objetivo deste estudo é analisar as regularidades linguísticas e contextuais que conduzem à aceitabilidade e à criação de sinais compostos em Língua de Sinais Brasileira (Libras) por alunos surdos do curso Letras-Libras da Universidade Federal do Piauí (UFPI). Para tanto, realizamos uma pesquisa qualitativa tomando como base aspectos morfológicos da Libras e da Língua Portuguesa, com ênfase na descrição das regularidades linguísticas e contextuais subjacentes à percepção de três alunos surdos do primeiro período do referido curso. Catalogamos e mapeamos 55 sinais compostos dos quais verificamos quais eram iguais ou quais eram diferentes aos contados nas referências de Quadros e Karnopp (2004), Felipe (2006), Takahira (2012), Minussi e Takahira (2013), Figueiredo Silva e Sell (2009) e do dicionário Novo deit-Libras de Capovilla et al. (2009). Nas análises identificamos regularidades linguísticas e contextuais subjacentes à percepção dos estudantes surdos sobre a aceitação e criação de sinais compostos relacionados aos seguintes fatores: economia linguística, fatores culturais, percepções visuais, percepções e compreensões conceituais e contextuais de mundo e aprendizado da língua.

**Palavras-chave:** Morfologia da Libras. Sinais compostos. Alunos surdos. Regularidades linguísticas.



#### **1** Introduction

Man, as a social being, inevitably needs to communicate with his peers, as this is one of the characteristics that defines him as such. However, when we imagine linguistic interactions, we almost always start from a pre-established model, structured in a linguistic system that can be verbalized through the vocal system. This system is perceived as the only and absolute model capable of meeting everyone's communication needs equally. However, daily, we meet different realities since we understand a multitude of resources that constitute communication systems. These are inscribed as systems of linguistic signs, such as the Brazilian Sign Language (Libras).

In relation to these sign systems, possibilities open up for carrying out research, especially when taking into account the teaching in Deaf Communities<sup>1</sup>. For deaf people, the teaching and learning process inevitably imposes the linguistic and educational singularities of Libras as their first language. Such singularities need to be systematically uncovered and recorded, in order to better improve teaching practices related to this form of linguistic interaction, given that there are variations in its real uses in specific communities and situations. It is with this scope that, in the present investigation, we take as our object of study one of these realities objectified in a particular communication system, that is, the linguistic and contextual regularities that lead to the acceptability and creation of signs composed in Libras by deaf people.

The motivation to develop this study came from living together and, consequently, observing the particularities that emerged in situations of dialogue with deaf students in the Language-Libras course at the Federal University of Piauí (UFPI). In these situations, we have observed that they often do not seem to recognize certain compound signs contained in dictionaries, academic research and books related to Libras. In place of these signs, they use other signs to obtain the same validity and meaning and, thus, interact with their peers. Having observed these occurrences, we ask the following question: what linguistic and contextual regularities lead to the acceptability and comprehension of compound signs in LIBRAS by deaf students in the Language-Libras course at UFPI?

To answer this question, we propose a study with the aim to verify the linguistic contexts favorable to the acceptance of certain compound signs already conventionalized in Libras and the non-acceptance of others, thus providing the creation of new signs to the detriment of those already existing in the system. The study seeks theoretical support in morphological studies of Libras and Portuguese, based on scholars such as Quadros and Karnopp (2004), Felipe (2006) and Basilio (2007; 2014). From a methodological point of view, we took as collaborating subjects in the study three students who, in 2018, were attending the first period of the Language-Libras course at UFPI. In order to carry out the study, we opted for a qualitative methodology with an analytical-descriptive approach. For data collection, we used non-verbal images that represented compound signs found in the literature, and images that, in our opinion and experience, could generate compounds. All images were projected for the appreciation of the participants of this study.

The study is organized as follows. First, we discuss the theoretical aspects that serve as the basis for the study. Then we present the data collection process and the analysis of the data collected, accompanied by the respective discussions. Finally, the final reflections are based on the considerations related to what was observed.

#### 2 Grammar, lexicon and word formation

In this discussion, we adopt the perspective that language "is both a social product of the faculty of language and a set of necessary conventions adopted by the social body to enable individuals to exercise this faculty" (SAUSSURE, 2012 p. 41). In this way,

<sup>&</sup>lt;sup>1</sup>The Brazilian Deaf Community is made up of deaf people, deafblind people, people with hearing impairments, deaf people with high abilities or giftedness or with other associated disabilities, and of hearing people. For this community, Libras is a verbal language, just like Portuguese language is. For the deaf, it is their natural language and first language, whereas Portuguese, in its written form, is their second language. Hearing members of the deaf community (signers who fight for deaf causes, such as family members, teachers, interpreters, etc.), have Portuguese as their natural language and first language, and Libras as their second.

language, more than a system of static signs, presupposes use in real communicative situations and, considering this use, is subject to rules. These rules apply to the formation of words to the dimension of sentence elaboration.

Words in both oral and signed languages arise, firstly, through the union of phonemes that make up morphemes, a linguistic dimension studied by morphology. Houaiss (2011, p. 648) emphasizes that "morphology is the study of the formation and inflections of words." Basílio (2014, p. 14) points out that "morphology is traditionally defined as the part of grammar that studies the form of the word" and for Quadros; Karnopp (2004, p. 86) "it is the study of the internal structure of words or signs, as well as the rules that determine the formation of words". Basílio (2014, p. 14) points out that "morphology is traditionally defined as the part of grammar that studies the form of the word"; and for Quadros and Karnopp (2004, p. 86), morphology "is the study of the internal structure of words or signs, as well as the rules that determine the formation of words."

The set of words in a language makes up its lexicon, which is available for speakers to use according to their linguistic needs. Basílio (2014, p. 9) suggests that "the lexicon categorizes the things we want to communicate about, providing units of designation for the words we use in constructing utterances". With specific reference to Libras, Quadros and Karnopp (2004) suggest that the lexical structure of this language is complex, since it has some properties that are not found in spoken languages. With regard to these properties, the authors address

> A specific aspect of the modality of the sign language lexicon is the separate system of constructions with classifiers that participate heavily in the formation of new words. Although the term classifier is used, these constructions differ from spoken languages, and aspects of their construction are extremely influenced by the visual-spatial modality. (QUADROS; KARNOPP, 2004, p.93).

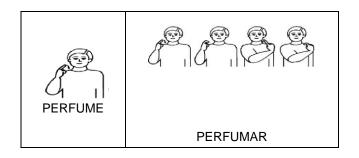
But even with these differentiations, the lexicon in both spoken and signed languages is not just a collection of words for us to memorize and use.

Therefore, in order to make the lexicon more dynamic, human languages use word formation processes that allow new words to emerge within the lexical structure, taking advantage of pre-existing structures.

These word formation processes are important to make the lexicon effective, because otherwise, with uncontrolled lexical expansion, we would be unlikely to memorize a multitude of new terms, which would make language an inefficient communication system, since it would overload our memory and prevent us from developing automatic, natural and fluid communication.

#### 3 The word formation process in Libras

Specifically, when it comes to the word formation processes in Libras, Quadros and Karnopp (2004) suggest that there are descriptions of derivational and inflectional processes, as well as processes involving combinations by composition (agglutination and juxtaposition) and incorporation. In derivation, a new sign is created when the grammatical class is changed. Quadros and Karnopp (2004, p. 96) consider that, in this process, "a new sign is formed in order to use the meaning of an existing sign in a context that requires a different grammatical class". According to the authors, a common type of derivation in Libras is that which derives nouns from verbs or vice versa, in which the "movement of the nouns repeats and shortens the movement of the verbs" (QUADROS; KARNOPP, 2004, p. 97). Examples include:



Source: (CAPOVILLA; RAPHAEL; MAURÍCIO, 2009, p. 1727).

When it comes to flexion and incorporation, Xavier and Neves (2016) point out that:

The processes that result in the modification of the form of some Libras

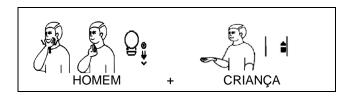
signs are similar to what is called inflection in spoken languages, precisely because they do not result in the formation of a new word [...]. In Libras, these cases include those in which the form of the sign is modified when it incorporates quantity, negation, argument and intensity. (XAVIER; NEVES, 2016, p. 131)

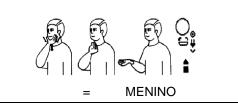
According to the authors, in Libras there can be the incorporation of a numeral, negation, location, incorporation of format (of the object) and intensity. They state that in the incorporation processes, the signs arising from these processes do not seem to be regular, since "their low productivity and occurrence with specific lexical items make this process similar to cases of derivation in spoken languages and not to those of inflection" (XAVIER; NEVES, 2016, p. 141).

In compounding, the focus of our research, word formation occurs when two or more lexical morphemes are joined together to form a new morpheme, that is, a new word with a different lexical meaning from the elements that gave rise to them. In this case, there are two compounding processes:

> Juxtaposition - the constituents are not modified in the compound formation; their phonic integrity is not altered, as in guardaroupa (wardrobe) and passatempo (free time); Agglutination - there is suppression of the phonemes of one of the elements of the compound or loss of tonicity (a stressed syllable becomes unstressed), as in aguardente (água [water] + ardente [ardent]) and pontiagudo (ponta [tip] + agudo [acute]). (TAKAHIRA, 2012, p. 263).

In juxtaposition, the morphological constituents that gave rise to the compound are not changed in their phonic and morphological constitution. This phenomenon can be observed in the compound HOMEM^CRIANÇA (boy), which is made up of the juxtaposition of the sign HOMEM + CRIANÇA. See the following example:





Source: (CAPOVILLA; RAPHAEL; MAURÍCIO, 2009). Felipe (2006) cites three types of juxtaposition identified in Libras, which are:

> a) Juxtaposition of two lexical items, that is, two signs that form a third free form, for example in the lexical items CAVALO [horse]^LISTRA-PELO-CORPO [body stribe] (CAVALO [horse] + LISTRA-PELO-CORPO [body stripe] = "zebra" [zebra]); MULHER^BEIJO-NA-MÃO (MULHER BEIJO-NA MÃO = "mãe" [mother]); CASA^ESTUDAR (CASA + ESTUDAR "escola"[school]). [...]

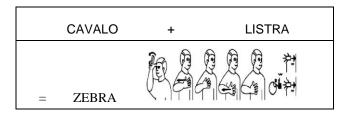
> b) Juxtaposing a classifier with a lexical item. This process was found when researching the Libras Dictionary (2005). In this process, the classifier is not a gender marker and functions as a clitic. Examples of this process are the signs: coisa-pequena [thing-small]^PERFURAR [to drill] "alfinete"[pin]; coisa-pequena [thingsmall]^APLICAR-NO-BRAÇO [TO-APPLY-TO-ARM] "agulha" [needle] [...]

> c) Juxtaposition of the manual spelling of the Portuguese word with the sign that represents the action performed by the noun, which, in the semantic seat of the verbal action, would be its instrumental case. Example: COSTURAR-COM-AGULHA [to sew with needle]^ A-G-U-L-H-A [needle] "agulha" [needle]. (FELIPE, 2006, p. 207).

As we have seen, the author describes three types of compounding in Libras, in which she uses lexical items, free morphemes, which are juxtaposed or agglutinated to form a new lexical item. Thus, in agglutination there will be a phonetic or morphological loss in the union of the lexical items that form the compound. This is observed in the compound CAVALO^LISTRA (zebra), which is formed by the agglutination of the signs CAVALO + LISTRA(cl). In this case, the sign CAVALO that has a duplicated semicircular movement will suffer suppression in this parameter, and LISTRA will suffer a repetition (duplication) of the sign. As it is shown below:



Signo [ISSN 1982-2014]. Santa Cruz do Sul, v. 48, n. 93, p. 130-149, mai/ago. 2023. http://online.unisc.br/seer/index.php/signo



Source: (CAPOVILLA; RAPHAEL; MAURÍCIO, 2009). According to Quadros and Karnopp (2004) there are three morphological rules used in the compounding process in Libras:

> 01) Contact rule: Often a sign includes some kind of contact, either on the body or on the passive hand. In compounds, the first, second or the only contact is maintained. This means that if two signs occur together to form a compound and the first sign makes contact, this contact tends to remain. If the first sign does not make contact, but the second does, this contact remains in the compound. [...]. Examples of this rule include ESCOLA [school] (casa [house] + estudar [to study]).

> 02) Single sequence rule: When compounds are formed in Brazilian Sign Language, internal movement or repetition of movement is eliminated. The PAI [father] and MÃE [mother] signs (on their own) show repeated movement. However, if the PAI+MÃE signs occur together to form a compound sign denoting PAIS [parents], the repetition or inward movement of the finger is eliminated.

03) Non-dominant hand anticipation rule: When two signs are combined to form a compound, it often happens that the passive hand of the signer anticipates the second sign in the compounding process. For example, in the BOA [good] + NOITE [night] sign, the non-dominant hand appears in the neutral space in front of the signer with a hand configuration that surrounds the compound sign.

(QUADROS; KARNOPP, 2004, p. 104-105)

What we should note when compounding signs is that the meaning of the compound sign is always distinct from the meanings of the signs that gave rise to it, and it is not possible to predict the meaning of the compound sign from the meanings of the signs that formed it. As an example of this separation of meaning through compounding naming, we have in Libras the sign CASA^ESTUDAR (school), whose semantic/in-dictionary meaning based on the trilingual dictionary of Capovilla et al. (2009, p. 971) is: "educational establishment", and this sign is composed of the signs

CASA [house] + ESTUDAR [to study], in which the sign CASA, according to the same dictionary, means: "construction intended for the dwelling of a family unit" (CAPOVILLA et al., 2009, p. 532) and ESCOLA [school], whose semantic meaning, according to this dictionary, is: "to apply one's intelligence to the study of. Analyze, examine thoroughly (subject, literary work, artistic work, etc.)" (CAPOVILLA et al., 2009, p. 1010). As we can see from the examples here, the meaning of the "whole" CASA^ESTUDAR is far removed from the meaning of the signs that gave rise to the compound sign.

#### 4 Methodology

In this qualitative research with an analytical/descriptive approach, we collaborated with three deaf students from the first term of the Language-Libras course at UFPI. We chose 1st year students because we understand that, as they were beginning their linguistic studies in Libras, they had not yet been influenced by concepts about compound formation.

To obtain data for analysis, we used 45 projected non-verbal images that represented compound signs found in Quadros and Karnopp (2004), Felipe (2006), Takahira (2012), Minussi and Takahira (2013), Figueiredo Silva; Sell (2009) and the Novo deit-Libras dictionary by Capovilla et al. (2009); and other images (objects, actions, professionals, places, etc.) that, according to our experience with Libras and the local deaf community, could generate compounds. We also used a video camera, a cell phone, a slide projector and a laptop. We collected the data in a classroom known to the students so that they would feel comfortable and not be afraid to sign. They were shown the 45 images and asked to make the signs for them.

Once we had the data, we mapped the signs produced by the students and subdivided the images and signs into three categories: places/environments, higher level of generalization and professionals. We carried out analyses by category as we believe that categorization influences linguistic regularities.

#### 5 Profile of the deaf participants

this research. To keep the identity of the participants confidential, we call them student 01 (A1), student 02 (A2) and student 03 (A3) (see Table 01).

Three deaf students from the first term of the Language-Libras course at UFPI in 2018 took part in

Table 1: Profile of the three deaf	participants in the study
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Participants	Sex	Age	Born deaf	Born hearing	Age of deafness onset	Age of Libras learning	Where/how he/she learned Libras
A1	м	0	Yes	-	-	08	At CAS (having Libras classes and contact with fluent deaf people who attended CAS)
A2	F	5	No	Yes	03 (cause: Miningitis)	18	In a school in Piracuruca/PI, called Anísio
A3	F	3	No	Yes	04 (trauma caused by an accident)	24	He came into contact with three fluent deaf people in his first job

Source: Table produced by the authors.

In Table 1, participant A1 was born deaf and learned Libras since he was a child. The other participants were born hearing, lost their hearing in childhood before acquiring spoken language, and only learned Libras as adults. Quadros and Cruz (2011) discuss the process of language acquisition and report on the importance of deaf children having access to linguistic *input* in Libras as early as possible. Even deaf children of hearing parents should have access before the age of 4 to the linguistic *input* provided by fluent deaf people. The authors report that "children who are deprived of any form of *input* throughout the acquisition period [...] have cognitive, perceptual and social deprivation problems" (QUADROS; CRUZ, 2011, p.31).

# 6 Results and discussions: analysis of the students' compound signs

In this section we discuss the analyses and comparisons of the rejected signs (made differently from those in the literature) with the substitute signs (those produced by the students and do not appear in the literature), in which we identify what they have in common and what they have differently. Next, we look at the discussions by category of the signs analyzed in Tables 2 to 4. To facilitate the reading and understanding of the data, we call the references as follows: Dicionário Novo deit-Libras by Capovilla et al. (2009) as R1; Takahira (2012) as R2; Minussi and Takahira (2013) as R3; Figueiredo Silva and Sell (2009) as R4; Felipe (2006) as R5; and Quadros and Karnopp (2004) as R6.

#### 7 Sign analysis in the local/environmental category

In the places/environments category (Table 2), the students made 27 compounds, five of which (items 07, 12, 14, 19, 20) do not have equivalent signs in the references. Another five signs (items 04, 09, 17, 18) are the same as those in the references and 17 signs (items 01, 02, 03, 05, 06, 08, 10, 11, 13, 15, 16) are variants of the compounds in the references. We analysed the differences in the variations and noted

that the CASA [house] sign contained in nine compounds signs from the references (items 01, 02, 03, 04, 06, 09, 10, 11), only appeared in four compounds produced by the students.

Furthermore, we noticed that in the linguistic signs related to commercial premises, the sign CASA is replaced by the signs VENDER (to sell) and/or COMPRAR (to buy). There seems to be an influence on the linguistic perception of deaf students in this buying and selling relationship. For example, in the linguistic sign referring to a bakery, the Libras compound sign is formed by PÃO^VENDER^COMPRAR (BREAD^SELL^BUY); and for a butcher's shop, the compound sign is CARNE^ VARIO@^COMPRAR (MEAT^VARIOUS@^BUY).

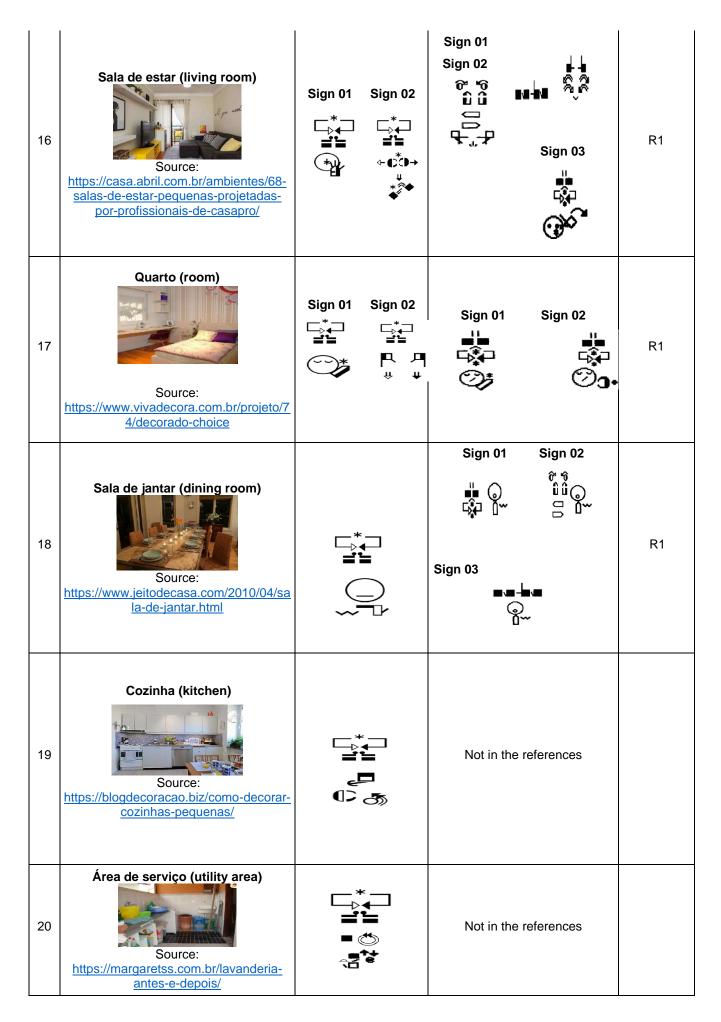
#	Linguistic sign in Portuguese	Signs produced by the students	Signs found in referenced glosses or in sign writing	Reference
01	Padaria (bakery)	C ₽°°°°d ₽°°°°d	Sign 01 Sign 02	R1
02	a-balanca-ideal-para-padarias-e- galerias-de-paes/ Papelaria (stationary) Image: Source: https://produto.mercadolivre.com.br/ML B-806165397-como-montar-papelaria- apostila-comece-certo-sebraeJM	Sign 01 Sign 02 ★★★★★★ ★★★★★ ★★★★★ ★★★★ ★★★★ ★★★ ★★ ★★ ★★ ★		R2, R3, R4, R1
03	Açougue (butcher shop) Final Source: http://guardiandf.com.br/2017/04/26/justi ca-aceita-denuncia-contra-59- investigados-na-operacao-carne-fraca/	Sign 01 Sign 02 ★★★★ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	CASA^VENDA^CARNE Açougue 01 Açougue 02	R2, R3, R4, R1

Table 2: Compounds regarding the local/environmental category.

04	Igreja Final Source: https://pt.wikipedia.org/wiki/Ficheiro:Igrej a da Miseric%C3%B3rdia de Viseu.jp	***	***	R1, R2, R3, R4
05	Farmácia (pharmacy) Farmácia (pharmacy) Source: https://cidadeverde.com/economiaeneg ocios/86383/teresina-tera-nova-rede-de- farmacias-e-abrira-dezenas-de- <u>empregos</u>	Sign 01 Sign 02 $ \begin{array}{c}  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & & \\  & & $	en en	R1
06	Sapataria ou loja de calçado (shoe shop)	Sign 01 Sign 02 ♥ ◎ □ ↓ ★ ★ ↓ ↑ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓		R1
07	Concessionária (concessionary) Source: <u>http://www.led10.com.br/conheca-</u> <u>estrategias-de-marketing-infaliveis-para-</u> <u>sua-concessionaria/</u>	<sup>\$</sup> <sup>\$</sup> \$ <sup>\$<sup>8</sup> <sup>2</sup><sup>4</sup>/<sub>4</sub> ⊳<sup>90</sup> <sup>∞</sup>d∎</sup>	Not in the references	

08	Cemitério (cemetery) Source: http://www.portalcaicara.com.br/cemiteri o-de-sao-sebastiao-prefeitura-convoca- familiares-de-sepultados-em-gaveta- publica/		MORTE^CRUZ Sign 01 Sign 02	R2, R3, R4 R1
09	Sala de aula ou escola (classroom or school)	Sala de aula Escola	None of the references contain the sign "classroom". In all of them there is the sign "school", using the signs:	R1, R2, R3,R4, R5, R6.
10	Asilo (asylum) Example 1 Asilo (asylum) Source: http://g1.globo.com/rs/rio- grande-do-sul/noticia/2014/01/asilo-faz- campanha-para-obras-de-ampliacao-no- rs-saiba-como-ajudar.html	** <b>``</b> @	CASA^GRUPO^VELHO	R2, R4
11	Orfanato (orphanage)		CASA^CRIANÇA^ADOTA	R2, R4

12	Salão de cabeleireiro ou salão de beleza (hairdresser's or beauty salon)		Not in the references	
13	Biblioteca (library) With the second state of	++ + + * *	Sign 01	R1
14	Livraria (bookshop) Source: http://www.curtamais.com.br/sao- paulo/saraiva-da-descontos-de-ate-80- em-livros-e-games	ᢏ ┙╺┙┿┿ ┢°°°°╣	Not in the references	
15	Oficina Mecânica (mechanics workshop) With the second seco		□ □ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	R1



Source: Table produced by the authors.

In the signs that kept the linguistic base CASA in the compound, we realize that they represent signs related to the meaning of welcoming, accommodation and home. The four compounds identified were: CASA^CRUZ (HOUSE^CROSS) (church), CASA^ESTUDAR (HOUSE^TO STUDY) (school), CASA^IDOSO (HOUSE^OLD PERSON) (asylum); and CASA^CRIANÇA-DORMIR (HOUSE^CHILD-TO SLEEP) (orphanage). Also, in this same category, we observed that for the signs referring to places that offer buying and selling services or actions concerning personal and aesthetic use, the students used the SHOP sign in the compounding. This type occurred in two signs (items 06, 12) referring to the signs SHOP^HIGH-HEEL(cl)^SLIPPER(cl) (shoe store) and CORTAR-CABELO(CI)^LOJA (TO CUT-HAIR(CI)<sup>^</sup>SHOP) (the hairdresser's). Another linguistic fact observed was in relation to rooms or internal environments in homes and institutions, in which the signs realised by the students matched those of the references. In these cases, the basis of the compound

is the SQUARE sign, combined with the sign that visually or functionally represents the room or the internal environment as in: QUADRADO^ASSISTIR (SQUARE^TO-WATCH) (living room); QUADRADO^COZINHAR (SQUARE^KITCHEN) (kitchen); QUADRADO^ESTUDAR (SQAURE^TO-STUDY) (classroom).

# 8 Analysis of the signs for the highest level of generalisation category

In this category, we found that of the 11 students' compounds, six signs (items 01, 03, 04, 05, 07, 08) are the same as in the references, using the VÁRI@/DIVERS@ sign plus one or two characterizing signs that represent the set of hyperonyms. In other words, the choice of this categorizing sign seems to depend on linguistic influences suffered by the users such as: cultural issues, visual perceptions, world understanding (linguistic sign + understanding of the signifier and signified), issues linked to language teaching (that sign which they learned first, or which was presented first during the Libras learning period).

	category.					
#	Linguistic sign in Portuguese	Signs produced by the students	Signs found in referenced glosses or in sign writing	Reference		
01	Fruta (fruits) Fruta (fruits) Source: https://www.vidaeacao .com.br/quanto-mais- frutas-da-estacao- menos-consumo-de- agua/		MAÇÃ^DIVERS@ ◯ ♀ ♥ ♥ ♥	R2, R4 ,R1		

 Table 03: Compounds by the participants and in the references for the highest level of generalization category.

02	Animais (animals) <b>Source:</b> http://www.mimiveg.co m.br/animais/	ੴ ∳ €-f=≫ੇ &=ੈ1→	LEÃO^DIVERS@ Sign 01 Sign 02 Sign 02 Sign 03 Sign 04	R2, R4, R1
03	Comida (food) Comida (food) Source: <u>https://www.</u> baressp.com.br/event <u>os/domingo-tem-</u> comida-mineira-buffet- <u>de-salada-e-</u> <u>sobremesa-no-</u> <u>inconfidentes-bar-</u>	┍┍┍╕ ╺╴┍┍╴┊┊╣╴┲╺	COMIDA^DIVERS@	R4
04	Roupas (clothes)	╄┺ ╓┺┊┊╗╼	ROUPA^DIVERS@	R2, R2
05	Ferramentas (tools)		╡	R1

06	Móveis (furniture)	** ■=¯■ ⊹⊏=°°,∜=⊐+	Sign 01 Sign 02	R1
07	Eletrodomésticos	€	Sign 01 Sign 02	R1
08	Brinquedos (toys)	Sign	ଽ୵ୖୣୣ ୲ୡୢୖୄୢ୲ଽୄୗ ୶⊡=୬ୖୢ୕ୡ୕⊓୲≁	R1
09	Jóias (jewelry)	┍╘╘ <sup>€</sup> <sup>€</sup>		R1
10	Material escolar (school material)		Not in the references	

Source: Table produced by the authors.

In this sense, we can see, for example, that concerning the sign "fruit" (item 01, Table 3) the students' sign is a compound formed by MAÇÃ + VÁRI@ (APPLE + VARIOUS@), even though the apple is not a typical fruit of our region, nor the most common to be seen. In this case, possibly, the influence was the learning of the language. Hence, with this sign, the apple becomes a prototypical fruit. Among the other compounds, one sign (item 10) does not appear in the references, and four signs (items 02, 06, 08. 09) are signed using a categorizer different from the references. This result leads us to infer that the factors concerning language teaching and visual perception may be influences the on convention/acceptance of these signs in this category. For example, we have the word "animals", which references compounds: appear in the as LEÃO^VÁRIO@ (LION^VÁRIOUS@), GARRA(CL)^VÁRIO@ (CLAW(CL)^VÁRIOUS@). In students' signing appears the compound PORCO<sup>V</sup>ÁRIO<sup>®</sup> (PIG<sup>V</sup>ÁRIOUS<sup>®</sup>), leading us to realize that in this example visual perception is what influences them, since the pig is a very common animal in the region where they live.

#### 9 Signs regarding professional categories

Of the 18 students' compounds in this category, we found four (items 01, 02, 03) that do not appear in the references; one sign (item 14) which is the same as the one in the references; and 13 compounds (items 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 15) that are different. Analyzing the substitute compounds, we observed that to name the professional, these compounds are formed by PROFISSÃO/PROFISSIONAL the signs (PROFESSION/PROFESSIONAL); HOMEM/MULHER (MAN/WOMAN); TRABALHAR (TO WORK) plus the sign or classifier referring to the profession). In the signs contained in the references, it is common for simple signs or simple classifiers to appear that mark both the profession and the professional, leaving the distinction up to the context.

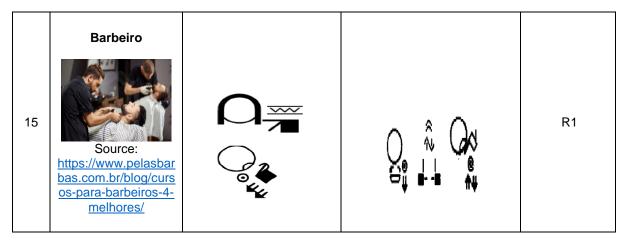
#	Linguistic sign in Portuguese	Signs produced by the students	Signs found in referenced glosses or in sign writing	Reference
01	Ginecologista Ginecologista Source: https://blogcamp.co m.br/ginecologista- online-para- solucionar-duvidas/	Sign 01 Sign 02 <sup>©</sup> <sup>©</sup> <sup>©</sup> <sup>©</sup> <sup>©</sup> <sup>↓</sup> <sup>↓</sup> <sup>↓</sup> <sup>↓</sup> <sup>↓</sup> <sup>↓</sup> <sup>↓</sup> <sup>↓</sup>	Not in the references	
02	Pediatra		Not in the references	

Table 04: Compounds by the participants and in the references for the professional category.

	Source: http://pcnacidade.co m.br/destaque/2018/ 08/unidade-de- saude-santa-regina- agora-tem- consultas-com- medico-pediatra/			
03	Geriatra		Not in the references	
04	Dentista		e (*** 	R1
05	Mecânico Mecânico Source: http://www.qrs.com. br/curso-de- mecanica- automotiva/	Sign 01 Sign 02	Sign 01 Sign 02	R1
06	Costureira Costureira Source: http://g1.globo.com/s p/campinas- regiao/concursos-e- emprego/noticia/201 6/09/auxiliar-de-	Sign 01 Sign 02	MULHER^COSTURA	R2, R3, R4

	limpeza-e-			
	<u>costureira-</u> encontram-vagas- <u>no-pat-</u> indaiatuba.html			
	Vigia/ Vigilante			
07	Source: http://prosecurity.co m.br/pronews/artigo- vigia-nao-e-vigilante/		HOMEM^VIGIA Sign 01 Sign 02	R2, R4 ,R1
	Policial			
08	Fonte: http://regiaonoroeste .com/portal/busca.ph p?pagina=379&busc a_portal=&data=&co dig_editoria=&data_ padrao=&codig_artic ulista=		Sinal simples	R1
09	Pedreiro Fedreiro Source: https://produto.merc adolivre.com.br/MLB -959222670-curso- mestre-de-obras- profissional- aprenda-a-ser- pedreiroJM	◎ <b>● ቓ</b> <b>♥ ₱</b> ₩₩ ## <b>□</b>	HOMEM^CONSTRUÇÃO	R4
10	Engenheiro Engenheiro Source: https://www.iped.co m.br/materias/cotidia no/engenheiro- civil.html		#C ₽¢	R1

11	Bombeiro Source: https://www.estrategi aconcrsos.com.br/bl og/bombeiro-pb- 2018-edital/			R4 , R1
12	Gari Source: https://goodlook1.wo rdpress.com/2009/0 3/01/profissao-gari/	© <b>◄</b> ₱ ₩₽ ₩₩₩ ₩₩ ₩ ₩	₽ ₽ ₽ ₽	R1
13	Cozinheiro ou Chefe de cozinha Source: https://portal- foodjobs.curriculum. com.br/destaque/mit os-e-verdades-da- profissao-de- cozinheiro/	© <b>◄</b> ♥ ₩► ₩↑ ₽ € \$	Sinal simples	R1
14	Garçom With the second state of the second st	┎┲╶᠅╺┎╱╵╧┓→╶┓ ╼──╢ <sup>°∼</sup>	┍╴┍╴┙ ┍╴┍╴┙	R1



Source: Table produced by the authors.

We verified that in the four compounds not contained in the references, and whose linguistic signs represent medical specialties (gynecologist, paediatrician and geriatrician), the students incorporated the sign for PESQUISAR/ANALISAR (TO SEARCH/TO ANALYZE). In three of these signs, the sign for MÉDICO/MEDICINA (DOCTOR/MEDICINE) appeared, and in one, the sign for SAUDE (HEALTH) combined with the specialty's categorizing sign. We noticed that for medical specialties, the compounds are made up of two to four signs, generally following the schemes: DOCTOR + TO RESEARCH + specialty (CHILD, ELDERLY) or TO RESEARCH + specialty (CHILD, ELDERLY).

In this category, we also identified the differences between the rejected signs and the substitutes produced by the students. In the sign referring to the dentist, the compound is made up of RESTAURAR-DENTE(cl) + MÉDICO (TO RESTORE-TOOTH(cl) + DOCTOR), while in the references it is made up of FARMÁCIA/REMÉDIO + RESTAURAR-DENTE(cl) (FARMACY/REMEDY + TO RESTORE-TOOTH(cl)). This rejection is possibly due to the students' understanding of the dentist profession as a medical specialty, in which case the determining factor for this production seems to be their world understanding or conceptual understanding of the dentist sign.

As for the other signs rejected within the professionals category, the compositions of the references include the sign HOMEM (MAN) plus the sign catalyzing the profession, or only the catalyst appears as a simple sign, leaving it up to the linguistic context to differentiate profession, between service or professional. In the 13 substitute compound signs, in 05 (items 05. 09. 11, 12, 13) the PROFESSION/PROFESSIONAL sign appears followed by the differentiating sign or classifier, for example, we noticed that in the reference the signs "engineer" and "engineering" have the same simple sign and in the production of the deaf students the compound ENGINEERING^WORKING appeared, to distinguish the profession from the professional. Of the 13 substitute compound signs, in five (items 05, 09, 11, the sign PROFISSÃO/PROFISSIONAL 12. 13) (PROFESSION/PROFESSIONAL) appears followed by the differentiating sign or classifier. For example, in the reference the signs "engineer" and "engineering" have the same simple sign, and in students' production the ENGENHARIA^TRABALHAR compound (ENGINEERING^TO WORK) appeared to distinguish the profession from the professional.

The visual factor is a possible linguistic influence within the professionals category, because in seven compounds referring to the signs *mechanic, seamstress, watchman, policeman, waiter and barber* (items 05, 06, 07, 08, 14, 15), the compounds are formed by the sign that carries the meaning of the profession, plus the sign that marks the action or a visual characteristic of the professional. For example, in the sign for mechanic, the compound is CONSERTAR^CARRO (REPAIR^CAR), for watchman is VIGIAR^APITAR-PARAR(cl) (TO WATCH^TO WHISTLE-TO STOP(cl), and for policeman is POLICIA^ARMA(cl) (POLICE^GUN(cl)).

#### **10 Final considerations**

In this study, we describe and analyse aspects of the Brazilian Sign Language (Libras), presenting, for example, the formation of compound signs by deaf people from a specific community: students on the Letters-Libras course at the Federal University of Piauí (UFPI) in Teresina-PI, based on the following question: what linguistic and contextual regularities lead to the acceptability and comprehension of compound signs in Libras?

As a result, 55 composite signs were identified and grouped into three categories: (1)locations/environments, (2) higher level of generalisation and (3) professionals. In the analyses of the categories, we observed some linguistic and contextual regularities underlying the deaf students' perceptions, which were: linguistic economy, cultural factors, visual perceptions, conceptual and contextual understandings of the world and language learning (how the sign was taught and learnt).

We realised that in the places/environments category, regularities related to linguistic economy, perceptions and conceptual and contextual understandings of the world stand out. In the "things in the world" category, we identified cultural issues, visual perceptions, conceptual and contextual understandings of the world and language learning. And in the professionals category, we observed the regularities of linguistic economy, visual perceptions, conceptual and contextual understandings of the world.

Therefore, the analyses show us that the linguistic community researched uses some compound signs that differ from the reference works, namely: Quadros and Karnopp (2004), Felipe (2006), Takahira (2012), Minussi and Takahira (2013), Figueiredo Silva and Sell (2009) and Capovilla et al. (2009), which reveals a local linguistic variation. This leads us to conclude that, unlike the works mentioned above, the process of forming compound signs in Libras does not always follow a linguistic uniqueness, and can be influenced by: linguistic economy, cultural factors, visual perceptions, conceptual and contextual

understandings of the world, as well as language learning (how the sign was taught and learned), which favour the emergence of new variations, strengthening Libras as a living and dynamic language.

Notably, we realise that the studies of morphology and sociolinguistics help us to strengthen Libras' status as a native-verbal and human language. The formations of compound signs vary depending on the linguistic community, and by recording these variations, we can realise that the formation of these signs is a determining factor in the structure and formation of the Libras lexicon, thus contributing to the evolution of this language.

Some research into the structure of sign languages has considered these issues previously analysed, but there is still much to be investigated. In this way, we believe that this work can constitute a theoretical framework in the study of the linguistics of Libras, broadening the conceptual and methodological basis in the field of applied linguistics research and providing us with a more solid understanding of the linguistic functioning of Libras. Thus, this work tends to add to existing work in the area, as well as bringing recognition and appreciation to local linguistic variations, contributing to the teaching of Libras in the municipality of Teresina, Piauí. Creation and use of signs composed by deaf people: a study with students of the Language-Libras course at UFPI

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