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An attempt at reducing L1-L2 ortho-phonological interference through consciousness-raising activities

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Janaina Fernanda de Almeida

AN ATTEMPT AT REDUCING L1-L2 ORTHO-PHONOLOGICAL INTERFERENCE THROUGH CONSCIOUSNESS-RAISING ACTIVITIES

O presente trabalho em nível de mestrado foi avaliado e aprovado por banca examinadora composta pelos seguintes membros:

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Certificamos que esta é a **versão original e final** do trabalho de conclusão que foi julgado adequado para obtenção do título de Mestre em Inglês: Estudos Linguísticos e Literários.

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To my dear students,
who inspire me to keep learning.

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RESUMO

Estudos anteriores sobre a influência ortográfica na pronúncia da segunda língua (L2) demonstram que a ortografia é uma variável importante no processo de aprendizagem de alunos alfabetizados, visto que pode gerar efeitos na percepção e produção dos sons da L2. Conforme os estudos, os aprendizes tendem a confiar em seu conhecimento ortográfico prévio para decodificar novos itens da L2, o que pode resultar na aplicação de padrões incorretos, especialmente quando a língua-alvo apresenta muitas inconsistências entre as correspondências de grafemas e fonemas (BASSETTI, 2008; SILVEIRA; GONCALVES, 2021). Com base nesse pressuposto, o presente estudo busca investigar os efeitos da ortografia na pronúncia de aprendizes brasileiros de inglês, bem como os resultados de um período instrucional abordando regras de correspondência grafo-fonêmicas do inglês com o objetivo de ajudar os aprendizes a melhorar sua pronúncia. Dessa forma, este estudo foi estruturado em fases de pré-teste, intervenção e pós-teste, e recrutou 11 alunos com nível intermediário de proficiência em inglês, matriculados no programa de Cursos Extracurriculares da Universidade Federal de Santa Catarina. Seis dos participantes integraram o grupo Experimental do estudo, participando das aulas com foco nas regras de correspondência grafo-fonêmica em língua inglesa. Os demais participantes fizeram parte do grupo Controle e não participaram das sessões de instrução com a pesquisadora. Para coletar as produções orais dos participantes e assim poder analisar a influência ortográfica nas pronúncias e os efeitos do tratamento para o grupo Experimental, foram utilizadas duas tarefas: uma de repetição retardada de sentença, a qual apresentou apenas insumos orais, e uma tarefa de leitura de sentença, conduzida por meio de insumos escritos. Os resultados das tarefas demonstraram que os participantes foram influenciados negativamente pela presença das formas ortográficas na tarefa de leitura. Já as pontuações mais altas na tarefa de repetição indicam que a disponibilidade da forma oral das palavras ajudou os participantes a produzi-las com mais acurácia. No entanto, mesmo nessa condição, que não apresentou a forma escrita das palavras e os participantes tiveram suas produções moduladas pela pronúncia de um falante nativo, os resultados revelam certa dificuldade com a pronúncia das palavras-alvo, indicando também um possível efeito da ortografia nas produções da tarefa de repetição. Quanto aos efeitos do tratamento, o grupo Experimental apresentou melhorias em sua pronúncia após a instrução. No entanto, a diferença entre os resultados dos testes dos dois grupos foi estatisticamente significativa apenas na tarefa de repetição, tornando assim os efeitos do tratamento menos evidentes. Além disso, os testes revelam que o grupo Experimental conseguiu estender parte do conhecimento adquirido para palavras não praticadas, as quais apareceram somente no pós-teste. Portanto, os resultados desta pesquisa corroboram estudos anteriores na área e sugerem que regras de correspondência grafo-fonêmica podem ser ensinadas como parte da aula de pronúncia de modo a evidenciar o mapeamento correto dos sons e letras do idioma. Assim, essa instrução pode ajudar os alunos a melhorar tanto a pronúncia de palavras individuais, quanto suas habilidades de decodificação na língua-alvo.

Palavras-chave: Ensino de pronúncia em L2. Relações Grafofonológicas em inglês. Consciência fonológica.

ABSTRACT

Previous studies investigating the orthographic influence on second language (L2) pronunciation demonstrate that orthography is an important variable in the learning process of literate learners, as it can have effects on the perception and production of L2 sounds. According to the studies, learners are likely to rely on their prior orthographic knowledge for decoding unfamiliar L2 items, which can result in the application of incorrect patterns, especially when the target language presents many inconsistencies between grapheme-phoneme relationship (e.g., BASSETTI, 2008; SILVEIRA; GONCALVES, 2021). Based on this assumption, the present study investigates the effects of orthography on the pronunciation of English by Brazilian learners, as well as the outcomes of an instructional period designed to address English grapho-phonemic rules in an attempt to help the learners improve their pronunciation. Therefore, this study followed a pre-test, intervention, and post-test design, and recruited 11 English learners with an intermediate level of proficiency from the Extracurricular Courses program at the Federal University of Santa Catarina. Six participants were assigned to the Experimental group and engaged in instructional classes to discuss some English grapho-phonemic rules. The other participants integrated the Control group and did not participate in instructional sessions with the researcher. For collecting the participants' oral productions and, hence, analyzing the influence of orthography on their pronunciation and the treatment effects for the Experimental group, two tasks were used: a delayed sentence repetition task (DSR), presenting only auditory input, and a sentence reading task, conducted utterly via written input. The results from the tasks show that participants were negatively influenced by the orthographic input in the reading task. While the higher scores on the DSR tasks indicate that the availability of auditory input helped the participants to produce the target words more accurately. Yet, even in this condition, which lacked written input and the participants had their productions modulated by the input of a native speaker, the scores reveal some difficulties with the pronunciation of the target words, also indicating a possible effect of orthography on the productions of the DSR task. As for the treatment effects, the Experimental group showed some gains on their overall pronunciation after the instruction. However, the difference in their scores from the Control group was only statistically significant in the results of the DSR task, consequently making the outcomes of the treatment less evident. The tests also reveal that the Experimental group was able to extend part of their knowledge to novel words, which only appeared in the post-test. Therefore, the main findings from this study corroborate previous studies in the area and suggest that English grapho-phonemic relations can be taught within the pronunciation class in order to raise awareness of the correct mapping of letters and sounds. As a result, such instruction can help L2 learners not only improve the pronunciation of individual words but also improve their decoding skills in the target language.

Keywords: L2 pronunciation teaching. English grapho-phonological relations. Phonological Awareness.

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1 INTRODUCTION

One of the most significant challenges in learning a second language (L2) is mastering a new phonological inventory. Such a challenge is partially explained by the difficulties in acquiring sound contrasts that are not part of the learner's first language (L1) and in dealing with grapho-phonemic relationships that are inconsistent or different from their orthographic knowledge (LIMA JR; SILVEIRA, 2020).

In the first regard, language learners have already tuned their phonological representations according to the sounds present in their L1 and are likely to initially rely on these representations for perceiving and producing the sounds from an L2 (FLEGE, 1995, FLEGE; BOHN, 2021). Consequently, for accurate perception and production of new sounds, learners need to surpass the established L1 neural connections and notice the differences between the L1 and the target language phonemes, even when these contrasts are not very salient (ELLIS, 2002 cited in KIVISTÖ-DE SOUZA, 2017). As following the hypotheses and postulates from the Speech Learning Model (FLEGE, 1995) and the revised model (SLM-r) (FLEGE; BOHN, 2021), L2 speech learning requires ample time, and the learning process can be influenced by individual variables and the nature of the target language input that learners are in contact with.

When it comes to literate learners, besides the influence of the L1 phonology, their orthographic knowledge can equally have some effects on the L2 phonological development since they are sensible to the interaction of the specific grapho-phonemic rules from the two languages (BASSETTI, 2008, YOUNG-SCHOLTEN; LANGER, 2015). Bassetti (2008) explains that just as "L2 auditory input is modulated by the presence of another phonological system in the learner's mind, L2 orthographic input is also modulated by the presence of another orthography" (p. 205). However, the influence of orthography on L2 pronunciation is a recent enterprise, which had gained attention only after the 2000s by the realization that the orthographic component can have effects on "all aspects of L2 phonology, including perception, production, and acquisition of L2 sounds and words" (BASSETTI; ESCUDERO; HAYES-HARB, 2015, p. 02).

On this account, the relation between L1-L2 orthography should be also considered as an important variable for pronunciation learning, especially in settings where learners are highly exposed to written input from the early stages of the learning process (BASSETTI, 2008). As pointed out by some authors, L2 learners tend to resort to their L1 orthographic knowledge

when dealing with unfamiliar grapho-phonemic rules in the L2 (e.g., BASSETTI, 2008; SILVEIRA; GONCALVES, 2021; OLIVEIRA, 2015). However, the relationship between graphemes and phonemes is not alike for all languages that follow the alphabetic system. Each language can have its specific rules, and by resorting to their L1 orthographic knowledge when decoding new L2 items, learners may not apply the right grapheme-phoneme rule.

Moreover, the effects of orthography on learners' pronunciation are modulated by the consistency between graphemes and phonemes of both L1 and target language writing systems (BASSETTI, 2008; SILVEIRA, GONÇALVES, 2021). The term *orthographic depth* is applied to describe this consistency by classifying languages in a continuum of more transparent – languages with grapheme-phoneme correspondences that follow a more regular (e.g., one-to-one) relationship – to opaque orthographies, whose mapping of letters and sounds is very inconsistent (KATZ; FROST, 1992; PYTLYK, 2016). English, for example, qualifies for a relatively complex orthographic system, featuring words that have the same spelling but are sometimes pronounced differently (e.g., the verb *'tear'* and the noun *'tear'*), as well as incongruent spellings that are pronounced identically (e.g., *meet* and *meat*) (KATZ; FROST, 1992).

Portuguese, on the other hand, is considered to have a more transparent orthographic system, although some of its correspondences may vary depending on the context. For example, the grapheme <s> corresponds to both /s/ and /z/ phonemes in words such as *sol* and *casa*, respectively. However, sound-letter correspondences in Portuguese orthography are, in general, far more predictable than the correspondences from the orthographic system of English (LIMA JR; SILVEIRA, 2020).

Given the differences in the transparency status of the two orthographic systems, a Brazilian Portuguese (BP) learner of English is likely to expect a more consistent relationship between sounds and letters in the target language, as following their previous experience with a transparent orthographic system (SILVEIRA, GONÇALVES, 2021). For this reason, they may resort to their L1 orthography while decoding and recoding words in English. In the cases of mismatches (between L1 and L2 grapheme-phoneme correspondences), the rehearsal of the pronunciation via orthography tends to reinforce an imprecise perception of sounds since the orthographic representation can override the phonological form, leading the learner to misperceive some sounds mapped on the specific spelling. That is, the interaction of the rules from the two orthographic systems can lead the learners to establish inaccurate mental representations for L2 phonemes, which, in turn, can also become non-target-like productions

(BASSETTI, 2008; CERNI; BASSETTI; MASTERSON, 2019; HAYES-HARB; NICOL; BARKER, 2010; TYLER, 2019).

From these considerations, language learners need to be aware of the correspondences between sound and spelling conventions in the L2 that differ from their previous orthographic knowledge, particularly when they have a more transparent orthography in the L1. By adopting Schmidt's *Noticing Hypothesis* (1990), which defends that one should consciously notice the target feature for learning it; learners need to notice the relationship between the written and spoken forms in the L2.

One way of helping English learners to realize the correct letter-sound correspondences is to approach the language grapho-phonemic rules as part of pronunciation instruction classes (CELCE-MURCIA; BRINTON; GOODWIN, 2010; SILVEIRA, 2007; SILVEIRA; ALVES, 2009). In a practical vein, consciousness-raising (CR) activities, defined as "techniques that encourage learners to pay attention to language form in the belief that an awareness of form will contribute indirectly to language acquisition" (RICHARDS; SCHMIDT, 2010, p. 119), could be implemented for addressing those opaque relations between English graphemes and phonemes. As defended by Celce-Murcia, Brinton, and Goodwin (2010), although many spelling and pronunciation connections in English may be abstract for language learners, such relationships are systemized by rules and, therefore, can be learned.

1.1 CONTEXT OF INVESTIGATION

Based on the discussion provided above, the present study investigates the effects of pronunciation teaching focusing on orthographic transfer in an attempt to improve the pronunciation of Brazilian learners of English as a foreign language (EFL). As seen, Brazilian EFL learners have to deal with many mismatches between their L1 orthographic knowledge and English grapho-phonemics rules, as the latter language has an opaque orthographic system. Moreover, the learners commonly receive great amounts of written input and make use of different written materials in English classes taught in Brazil (SILVEIRA, 2007). Meaning that they may resort to orthography as one (or the main) source when learning the pronunciation of new words and are likely to show some interference from their L1 orthographic system.

The population considered for this research was adult learners of English with an intermediate level of proficiency, recruited from the program of online extracurricular courses from the Federal University of Santa Catarina (UFSC). In view of the objectives, the

participants were organized into two groups (control and experimental) and took part in pre-test, intervention, and post-test phases. The intervention phase consisted of six instructional sessions for the Experimental group, addressing some problematic letter-sounds correlations in English with special consideration to the vowel sounds of the language inventory. In order to compare the effects of orthography on the participants' pronunciation, the tests consisted of two tasks: one in the format of sentence repetition, which was modulated by oral input but did not show the written forms of the words; and the other was a reading sentence task, which presented only the written form of the words.

1.2 OBJECTIVES

The main objective of the present study is to investigate the influence of grapheme-phoneme transfer by Brazilian EFL learners and to analyze the benefits of using CR activities in an attempt to make learners notice the discrepancies of grapheme-phoneme correlations.

As more specific objectives, this study also seeks:

1. To further understand the benefits of implementing CR activities to teach L2 pronunciation.
2. To examine if the students also improve their pronunciation of novel words (that were not presented during the treatment) after having received phonetic instruction through CR activities about grapho-phonemic transfer.

1.3 SIGNIFICANCE OF THE RESEARCH

L1-L2 ortho-phonological transfer has been addressed by previous studies (e.g., BASSETTI; ATKINSON, 2015; CERNI; BASSETTI; MASTERSON, 2019; SILVEIRA; ALVES, 2009; SILVEIRA, 2004, 2007; OLIVEIRA, 2015; YOUNG-SCHOLTEN; LANGER, 2015). Within this scope, however, we still observe a need for pedagogical guidance on how to prevent or reduce the negative effects of orthography on L2 pronunciation. Therefore, considering that the present study was developed in a classroom environment, it contributes with relevant pedagogical implications for pronunciation teaching in general, as well as ideas for bringing the discussion of English orthographic rules into the language class.

Secondly, the research design adopted for this study provides more data and insights concerning the effects of orthography on L2 pronunciation, with special consideration to

Brazilian EFL learners, in order to support some theoretical implications and enrich the literature.

Finally, it is important to stress that this work was conducted remotely through online instruction due to the restrictions caused by the global pandemic of Covid-19. Therefore, as a last contribution to the field, the study shows that ortho-phonetic transfer can be addressed in an online format as well.

1.4 RESEARCH QUESTIONS AND HYPOTHESES

Considering the objectives of the study, and regarding difficulties encountered by BP learners of English, this study is guided by three research questions (RQ):

RQ1: Do Brazilian learners of English manifest more difficulties in the pronunciation of words containing the graphemes <ou> (e.g., *tough*, *proud*) in a sentence reading task than in a delayed sentence repetition task?

RQ2: Does the use of Consciousness-raising activities about grapheme-phoneme correspondence help learners to produce the different vowel sounds for <ou> more accurately?

RQ3: Can learners extend the knowledge of grapho-phonemic rules to novel items after the teaching period?

Based on previous studies on the influence of orthography of L2 pronunciation (e.g., BASSETTI; ATKINSON, 2015; CERNI; BASSETTI; MASTERSON, 2019; SILVEIRA, 2007, 2012; OLIVEIRA, 2015; YOUNG-SCHOLTEN; LANGER, 2015), and on the role of pronunciation teaching (e.g., ALVES; MAGRO, 2011; SILVEIRA, 2004; SILVEIRA; ALVES, 2009; THOMSON; DERWING, 2014), the following hypotheses (H) were formulated to collaborate in answering the addressed questions above:

H1: Learners might not accurately pronounce the different vowel sounds containing <ou> in English words as they may try to apply a more consistent grapho-phonemic rule, by following their L1 orthography. While the digraph can be mapped on various vowels in English (YAVAS, 2011), it is either pronounced with the diphthong /oʊ/ or /o/ (e.g., *louça* as [ˈloʊsa] or as [ˈlosa]) in Brazilian Portuguese (BP).

As demonstrated by previous studies, such mismatches between the L1 and L2 grapho-phonemic relations can result in inaccuracies at the production level due to the transfer of the L1 patterns (e.g., OLIVEIRA, 2015; SILVEIRA, 2012). Therefore, given the differences in the

correspondences of the digraph <ou> in English and BP, the learners from this study might transfer an inaccurate pattern for the production of words containing the target graphemes.

H2: At the spontaneous level of communication, adult learners are likely to rely on the orthographic representations, even when written input is not provided (ESCUDERO; SIMON; MULAK, 2013; SILVEIRA, 2009). However, the participants are expected to have fewer errors in the delayed sentence repetition task than in the sentence reading task due to the availability of auditory input, and the lack of orthographic forms. This hypothesis is further based on Bassetti and Atkinson's (2015) series of four studies, whose results led to the conclusion that "orthographic forms affect experienced instructed learners' pronunciation of known words, albeit less so in immediate word repetition than in reading aloud tasks" (p. 67).

H3: Learners who receive explicit instruction and become aware of the discrepancies in English orthographic and phonological forms will be able to improve their pronunciation of the target and novel words. By contrast, learners in the Control group will show less improvement. This hypothesis is supported by previous studies showing that explicit instruction can help L2 learners deal with the opaque grapho-phonemic relations in English and, therefore, reduce L1 ortho-phonological transfer (e.g., RANGRIZ; MARZBAN, 2015; SILVEIRA; ALVES, 2009).

1.5 ORGANIZATION OF THE WORK

Following this introduction, the next chapter (*II*) presents the literature review, addressing the theoretical background and most important studies in the area to support this research. Chapter *III* outlines the research method of this study while detailing the participants, testing stimuli, instruments for data collection, intervention, procedures for data collection, and procedures for data analysis. In chapter *IV*, the statistical and descriptive results from the collected data are presented, revisiting the research questions and hypotheses. Chapter *V* discusses those results in light of previous research findings and theoretical discussions. At last, chapter *VI* draws on the main findings of this study, considering the research limitations, some pedagogical implications, and suggestions for future research.

2 REVIEW OF LITERATURE

This chapter aims to discuss the complexity of the learning process of L2 pronunciation while focusing on the specific difficulties for learners inserted in instructional learning settings. Therefore, the first section (2.1) provides an overview of this process, followed by a discussion on the role of consciousness (section 2.2) and pronunciation teaching (section 2.3) as a means to increase learners' awareness of the target language phonology. The second part of the chapter (section 2.4) centers on an important variable for L2 pronunciation learning: orthography, which is a great source of language input for instructed L2 learners. As attested in recent research findings (e.g., BASSETTI; ATKINSON, 2015; CERNI; BASSETTI; MASTERSON, 2019; OLIVEIRA 2015; YOUNG-SCHOLTEN; LANGER, 2015), such a contact with the orthographic forms may hinder a more accurate perception and production of L2 sounds due to the influence of the orthographic knowledge mastered in the L1. Therefore, empirical findings supporting this claim are detailed throughout the section, followed by a brief comparison between English and Brazilian Portuguese (BP) phonemes (section 2.5) in order to explain the target research structure of the present study.

2.1 L2 PRONUNCIATION SKILLS

The development of L2[1] pronunciation skills is not only a delicate process in learning a new language, but it also appears to be a distinct process from the acquisition of other language domains, such as syntax and lexicon. This notion comes from reported examples showing that a learner can acquire an excellent pronunciation in the target language while still lacking proficient grammatical and vocabulary knowledge. Whereas, in other cases, learners dispose of great mastery in syntax and lexicon, albeit having problems in communication due to pronunciation difficulties (CELCE-MURCIA; BRINTON; GOODWIN, 2010).

One major difference between the development of L2 pronunciation and other linguistic competences is that the former involves psychomotor skills. According to Kivistö-de Souza

[1] Although there is a great deal of discussion about the terms "second language" (L2) or "foreign language" (FL), which can be applied to denote different learning processes, no distinction will be made between the terms in this study. As defended by Ellis (1994), it is possible to use the term "L2" as neutral to refer to the process of acquiring a language in the context in which it is institutional (e.g., the official language of the country), as well as to the contexts of instruction in the classroom (e.g., studying English in Brazil). Likewise, the terms "learning" and "acquisition" will be used interchangeably.

(2017), developing an accurate L2 pronunciation requires both a precise perception of L2 sounds and the mastering of psychomotor skills for the articulatory movements in producing the sounds. Therefore, two crucial aspects to be considered are that L2 learners are heavily influenced by their prior phonological knowledge acquired in the L1 and they need to practice new articulatory movements, which might differ from those executed since infancy (KIVISTÖ-DE SOUZA, 2017; YOSHIDA, 2019).

In the first regard, Tyler (2019) stresses that not only the production of sounds is influenced by the learners' L1, but especially their perceptual skills start from the phonological contrasts present in their L1. In fact, during L1 acquisition, the speaker's brain develops a sort of "phonological filter," which enables, at one end, excellent efficiency in identifying perceptual contrasts in the sounds present in the language. On the other hand, it also acts as a barrier to an accurate perception of unfamiliar sounds that are not part of the speaker's L1 phonological inventory (BURNS; SEIDLHOFER, 2020; FLEGE, 1995; YOSHIDA, 2019).

Therefore, language input is a prerequisite for learning a new phonological system: through language exposure, learners can increase their awareness of the phonological contrasts present in the L2, while trying to ignore those L1 phonological aspects that are not helpful to the learning process (TYLER, 2019). However, as explained by Pennington (2021), this is not a simple and quick process, which "requires a high quality and quantity of L2 input, as well as sufficient opportunities for L2 use in communication, in order to reset perceptual and articulatory targets" (p. 04).

Moreover, besides the two aforementioned aspects (language exposure and practice), several factors can affect pronunciation ability, ranging from the learners' individual differences such as age, language aptitude, and motivation, to the learning context, which may differ widely in terms of exposure to the target language and instruction (MUÑOZ, 2008; SAITO; HANZAWA, 2016).

Hence, the discussion as follows will be granted on the premise that language exposure may not be sufficient for pronunciation improvement if learners do not attend to the specificities of the phonological information. According to Kivistö-de Souza (2015), a common view in the field of second language acquisition (SLA) is that attention has a central role in the process. However, considering that language input is firstly processed for meaning (VANPATTEN, 2009), attention to form tends to be dismissed, especially for less proficient learners, who have to employ more cognitive effort in understanding the message (VANPATTEN, 1994, cited in CARLET; KIVISTÖ-DE SOUZA, 2018). Likewise, each learner processes the language

instances differently, as one may or may not recognize and interpret some fragments, while others will not even hear the same fragments (SHARWOOD SMITH, 1993).

In this way, learners are likely to benefit from pronunciation instruction as a means to focus on the L2 sounds, increasing their phonological awareness and facilitating the achievement of a more target-like performance in the target language (CARLET; KIVISTÖ-DE SOUZA, 2018). However, to achieve improvement at the production level as well, learners still have to practice articulating the L2 sounds so as to build up new muscle memory and produce speech in a more effortless manner (YOSHIDA, 2019); meaning that pronunciation learning takes time and it requires extensive practice.

Considering the complexity of the process, it is not surprising that language users manifest different degrees in their pronunciation ability. Following this perspective, the difficulties faced by L2 instructional learners in delivering fluent and intelligible L2 speech can be partially explained due to insufficient opportunities for practicing their oral skills in real communicative situations and reduced exposure to the target language input (CARLET; KIVISTÖ-DE SOUZA, 2018). As pointed out by Muñoz (2008), in typical language learning settings:

> (i) instruction is limited to 2–4 sessions of approximately 50 minutes per week; (ii) exposure to the target language during these class periods may be limited in source (mainly the teacher), quantity (not all teachers use the target language as the language of communication in the classroom) and quality (there is a large variability in teachers' oral fluency and general proficiency); (iii) the target language is not the language of communication between peers; and (iv) the target language is not spoken outside the classroom (p. 578 – 579).

Due to these limitations in authentic input and pronunciation practice, as well as time constraints, the influence of the learners' L1 phonological knowledge tends to be higher in instructional settings (BENSON, 2002). For this reason, instruction seems to be crucial to help learners acquire the L2 phonological system while dealing with the influence of their L1 (SILVEIRA, 2004). In line with this perspective, the role of consciousness in learning the phonological aspects of an L2 will be detailed in the next section, followed by a discussion on pronunciation teaching and its benefits, as attested from empirical research findings.

2.2 THE ROLE OF CONSCIOUSNESS

After important considerations made by Richard Schmidt on the role of consciousness for the development of a learner's interlanguage, research has shown that conscious processing

of L2 forms might be a required and facilitative condition for achieving a more target-like performance in the target language (SCHMIDT, 1990). The assumption was firstly supported by two case studies in which Schmidt documented the learning process of a Japanese EFL learner, and his own learning process of Portuguese (SCHMIDT, 2010). In the first study, Schmidt (1983 cited in SCHMIDT, 2010) observed that, despite developing quite good speaking skills in English, the Japanese speaker had a limited performance on other grammatical domains, such as morphology and syntax. This finding led to the conclusion that "at least in the case of adult learning of grammar, wholly unconscious learning of a language is probably not possible" (SCHMIDT, 2010, p. 724).

In the second study, conducted by Frota and Schmidt (1986 cited in SCHMIDT, 2010), Schmidt spent five months in Brazil and, during the period, he kept a personal journal and audio recordings for documenting his progress in the language (BP). Afterwards, the authors observed that some of the forms frequently present in the input were not fully acquired by Schmidt, unless he had consciously noticed them. Another important finding was that even when errors were corrected during a conversation with native speakers, the intervention had little or no effects because Schmidt was not aware that he was being corrected.

In light of those findings, the author advanced the *Noticing Hypothesis* to support the need for conscious processing for SLA. A central assertion of the hypothesis is that learners "must attend to and notice linguistic features of the input that they are exposed to if those forms are to become intake for learning" (SCHMIDT, 2010, p. 724). Likewise, it is necessary to notice the gap between one's own production and the target production. In other words, for overcoming errors present in their interlanguage, learners firstly have to "make conscious comparisons between their output and target language input" (SCHMIDT, 2010, p. 725).

The hypothesis proposed a new perspective for SLA, contradicting the prevailing theoretical view from the 1980s that learning an L2 was rather an unconscious process. Within Schmidt's proposal, it is not denied that, at some levels, processing can take place unconsciously, as in the cases of language comprehension and production. However, when it comes to language learning, the author strongly argues that *subliminal* (unconscious) learning is not possible (SCHMIDT, 1990). To explain his point of view, the author proposes the term consciousness as awareness, which is framed into three levels: perception, noticing, and understanding.

The lowest degree of awareness (*perception*) does not require focal attention because the stimulus is only registered at this level. *Noticing*, on the other hand, is the "conscious

registration of the occurrence of some event" (p. 29), and it is a prerequisite for the storage of the event information in long-term memory. According to Kivistö-de Souza (2015), it is at this level that learners can become aware of L2 forms by focusing attention on the target language input. The last level of awareness, *understanding*, "implies the recognition of a general principle, rule or pattern" (SCHMIDT, 1995, p. 29), and it permits the generalization across language instances (SCHMIDT, 2010). Therefore, at this level, learners can formulate hypotheses and think about the learned material (KIVISTÖ-DE SOUZA, 2015).

As regards the acquisition of L2 phonological forms, Silveira and Alves (2009) explain that beyond perceiving the acoustic signal itself, it is necessary that learners notice the differences between their L1 and the target language phonologies. According to the authors, making learners aware of the L2 forms facilitates a more target-like production and, although learners might not be able to produce the target sound in a spontaneous manner right after noticing its correct realization, they are likely to achieve a more target-like pronunciation under speech monitoring. Hence, these monitored productions are important for practicing the target forms and they provide a model for the accurate pronunciation until reaching the automatized level, where monitoring is not required anymore.

In sum, Schmidt's work defends that *noticing*, as a conscious cognitive effort for registering specific language instances, is necessary and sufficient for converting L2 input in intake. That is, learners must consciously attend to input in order to learn how to use the target language. *Understanding*, on the other hand, is facilitative but not required (SCHMIDT, 2010). These notions sustain the claim that "both explicit and implicit learning of generalizations are possible" (SCHMIDT, 2010, p. 727).

It seems necessary then to draw a distinction between the two learning processes, as well as the differences between *implicit* and explicit *knowledge*. In essence, implicit learning happens as a natural process such as L1 acquisition, in which the child extracts all the knowledge necessary to communicate just by experiencing the language, whereas instruction is not required (N.C. ELLIS, 2007). Explicit learning, by contrast, is "a more conscious operation where the individual makes and tests hypotheses in search for a structure" (N. C. Ellis, 1994 cited in ELLIS; LOEWEN; ERLAM, 2006). This can take place in naturalistic or instructed L2 settings.

Although the two processes can be part of the L2 learning course, N. C. Ellis (2007) argues that what adult L2 learners can acquire "implicitly from communicative contexts is typically quite limited" (p. 18). Consequently, adult learners frequently have to resort to

consciousness and explicit knowledge during their learning process, especially for achieving language accuracy.

In relation to the terms implicit knowledge and explicit knowledge, the former is the "knowledge that learners are only intuitively aware of and that is easily accessible through automatic processing" (ELLIS; LOEWEN; ERLAM, 2006, p. 340). Explicit knowledge, conversely, is defined as the "knowledge that learners are consciously aware of and that is typically only available through controlled processing" (ELLIS; LOEWEN; ERLAM, 2006, p. 340).

These two kinds of knowledge, however, are not conflicting. According to Ellis, Loewen, and Erlam (2006), language users might have both implicit and explicit representations for the same linguistic feature. Therefore, just as a linguist can formulate and verbalize detailed rules following their L1 tacit knowledge, one can also automatize the knowledge acquired by means of language instruction (ELLIS; LOEWEN; ERLAM, 2006). For example, Dekeyser (2003 cited in ELLIS, 2005) explains that explicit knowledge processing can be automated and become more similar to the nature of implicit knowledge through language experience and usage.

Following the reasoning, language learners in formal learning settings customarily benefit from explicit instruction as it can provide the basis for using the language. In addition, form-focused instruction can facilitate the noticing of patterns in the input, which, otherwise, would demand ample time due to the typical reduced amount of input and practice opportunity in L2 classes. Such claims have also been empirically attested in studies investigating the role of noticing for L2 learning. For instance, a recent study (NAVIDINIA; MOBARAKI; MALEKZADEH, 2019) attested that EFL learners significantly improved grammatical, phonological, and lexical-semantic accuracy after receiving instruction to increase noticing of their speaking performance in the target language. During the study, the experimental group had to perform noticing tasks besides the regular class instruction, which involved recording their oral production and analyzing their errors with the help of the teacher. In a pre-test and post-test design, the authors observed that this group significantly reduced the number of speaking errors in the post-test (after the instructional period), whereas such an effect was not verified with the participants in the control group (who had not experienced the noticing tasks).

The finding from Navidinia, Mobaraki, and Malekzadeh (2019) is in line with Ögeyik's (2017) conclusion after reviewing (within a Narrative meta-analysis) 41 empirical studies on noticing treatments. The author selected studies covering several tasks to foster noticing on

different language aspects, carried out with L2 learners of different languages and backgrounds. In brief, the author argues that not all aspects of the L2 can be taught explicitly; however, language instruction is important because it permits the learner to focus attention on the language form(s).

These results sustain the importance of providing the context for learners to notice the L2 phonological forms accurately and/or the gaps in their speech production. On this account, teachers could implement consciousness-raising activities when focusing on the target pronunciation aspects. The following section will then address the theoretical discussion defending using this kind of activity in L2 classes.

2.2.1 Consciousness-raising activities

The term *consciousness-raising* was coined by Sharwood Smith (1981), referring to the use of explicit teaching to draw learners' attention to specific linguistic forms in the target language. Following the author's view, consciousness-raising can be seen as a shortcut to the learning process of adult learners, who usually seek more explicit information about the language system. Accordingly, "by revealing some pattern or system in the target language, the teacher holds out the promise of a shortcut as far as learning is concerned, in other words a shorter and more effective way of mastering a structure (via practice, of course)" (SHARWOOD SMITH, 1981, p. 160). Nevertheless, the author importantly emphasizes that:

> The guidance, where consciousness-raising is involved, can take more or less time or space and it can be more or less direct and explicit. It is one thing, for example, to set up an illustrative pair of examples and draw the learner's attention to the relevant distinctions using verbal or non-verbal (visual) 'hints' and quite another thing to give a formal rule couched in traditional metalinguistic terms and thereby appeal also to the learner's cognitive analytic capacities. In both cases the learner is being made conscious of some aspect of the language itself but the manner varies (SHARWOOD SMITH, 1981, p. 161).

In this way, consciousness-raising (henceforth CR) activities widely differ from the traditional memorization of rules, metalinguistic prescriptions. On the other hand, learners can still benefit from the use of conscious application of rules from form-focused instruction through CR activities, which may help them to improve accuracy, expedite their development, and destabilize fossilized forms in interlanguage (ELLIS, 2003). These initial discussions endorsed the view that "attention to form paired to meaningful practice activities has a positive effect on acquisition" (LÓPEZ-BARRIOS; DEBAT, 2006, p. 182). As a result, there has been

a growth of pedagogical practices aiming at enhancing learners' consciousness of the target language through the use of CR activities (KIVISTÖ-DE SOUZA, 2017).

Ellis (2002) further explains that the primary goal of CR activities is to develop knowledge at the explicit level[2] without, necessarily, developing immediate gains in language use. Likewise, the activities may request the learner's oral output or may not, depending on the type of exercise. By way of illustration, the main characteristics of this kind of instruction are summarized by Ellis (2002, p. 168) in the five points as follows:

> 1) There is an attempt to isolate a specific linguistic feature for focused attention. 2) The learners are provided with data which illustrate the targeted feature and they may also be supplied with an explicit rule describing or explaining the feature. 3) The learners are expected to utilise intellectual effort to understand the targeted feature. 4) Misunderstanding or incomplete understanding of the grammatical structure by the learners leads to clarification in the form of further data and description or explanation. 5) Learners may be required (although this is not obligatory) to articulate the rule describing the grammatical structure.

CR activities also seem to be in line with Schmidt's view on awareness in SLA, and they can favor noticing through techniques such as inferring rules from examples and observing differences between how the language is used by the learner and native speakers (RICHARDS; SCHMIDT, 2010). Such techniques, in turn, serve as a guide for learners to draw up new hypotheses from the language instances and to better understand the rules of language use. CR activities can also develop learner's autonomy by encouraging them to discover how the language works (LÓPEZ-BARRIOS; DEBAT, 2006, p. 185).

Moreover, despite its common association with grammar teaching (e.g., ELLIS, 2002), teachers can adapt CR activities to work with different language domains. For instance, Yufrizal, Wisastra, and Nainggolan (2017) reported that 26 Indonesian EFL learners had shown significant improvement in their speaking accuracy in three aspects: pronunciation, grammar, and vocabulary, after the implementation of CR strategies aiming at improving their speaking performance in English.

In keeping with this discussion, the next section will discuss pronunciation instruction as the broad context for implementing CR activities as a means to focus specifically on pronunciation aspects of a given language.

[2] As discussed in the previous section, it is important to recall that explicit teaching and explicit knowledge are distinct terms. Thus, although explicit teaching is expected to result in explicit knowledge, it may not. Likewise, explicit knowledge can result from either explicit teaching or other actions, such as self-studying, for instance.

2.3 PRONUNCIATION INSTRUCTION

Along the years of SLA research, pronunciation instruction has been valued as more or less required depending on the underlying theory. For example, teaching methods of the 19th century (the so-called Grammar Translation Method) ranked the written aspects of the language as the gist of L2 learning. Hence, learners were mainly instructed in reading and translating texts, whereas the development of speaking skills was not prioritized (MURPHY; BAKER, 2015) and, consequently, pronunciation instruction was not considered as an important matter (CELCE-MURCIA; BRINTON; GOODWIN, 2010).

Following Murphy and Baker (2015), a refinement of this initial view was provided along with the foundation of the International Phonetic Association in Paris (during 1886-1889), as imposing the need for novel teaching approaches on account of the global advances enabling a worldwide communication. One of the crucial contributions of the association was the development of the International Phonetic Alphabet (IPA), which allowed the transcription of phonemes and their features into symbols. The association also proposed some core principles to guide pronunciation teaching and, as follows the first principle, speaking skills should be a priority in language classes. Under the other principles, teachers should receive training in phonetics in order to support their practices.

This shift of focus to pronunciation enabled the establishment of an analytic-linguistic approach for pronunciation teaching in contrast to the intuitive-imitative approach. According to Celce-Murcia, Brinton, and Goodwin (2010), the former approach allows an explicit focus on the language sounds and rhythms, by utilizing tools, such as the IPA, for the instruction of the phonemic information and articulatory gestures. The intuitive-imitative approach, on the other hand, was the one applied in the late 19th century, and it implied that pronunciation teaching had to follow the stages of exposure, imitation, and mimicry of a native speaker model, without explicit teaching of the theoretical aspects. The novel analytic-linguistic techniques, however, did not replace the former ones. They were rather complementary, which resulted in a variety of teaching ways and techniques with little consensus (MURPHY; BAKER, 2015).

Derwing and Munro (2005) explain that the lack of empirical research on the topic until the 1960s, as well as the disconnection between later research findings and teaching practices, hampered the achievement of a general understanding of how to integrate pronunciation instruction into L2 classes. According to the authors, “much less research has been carried out on L2 pronunciation than on other skills such as grammar and vocabulary, and instructional

materials and practices are still heavily influenced by commonsense intuitive notions" (p. 380). Consequently, incongruent assumptions on how to work on pronunciation were established and endorsed by the teachers' intuition and experiences (DERWING; MUNRO, 2005).

Given this scenario, it comes as no surprise that most language teachers do not receive formal training in this regard. In turn, pronunciation instruction is not a common practice observed in English classes taught in Brazil (ALVES; MAGRO, 2011; SILVEIRA, 2004). Alves and Magro (2011) also recognize that teaching pronunciation can be time-consuming, as it requires planning and preparation, in addition to great familiarity with the phonological aspects of the target language. Therefore, if teachers do not feel confident about their knowledge of the language sounds, they are likely to feel discouraged by trying to implement activities focusing on pronunciation. Another point that challenges teachers is that the course books and instructional materials do not provide many adequate pronunciation activities, nor do they usually consider the specific implications of the learners' L1 for the acquisition of L2 sounds (SILVEIRA, 2004).

Under those circumstances, it has been observed that in the few moments when pronunciation is focalized, it is common to be planned in a decontextualized way and as a mere repetition of words (ALVES; MAGRO, 2011). Notwithstanding, this context might be improved in the following years due to the various studies on pronunciation instruction reporting improvement on both segmental and suprasegmental features of the L2 (LEE; PLONSKY; SAITO, 2020; PENNINGTON, 2021; ZHANG; YUAN, 2020). In a similar vein, Alves (2021) argues that a new paradigm in pronunciation teaching arises from the contributions of Levis (2005, 2018) in defense of the primacy of intelligibility and comprehensibility in L2 speech production. Therefore, practices towards pronunciation teaching may receive a more significant space within the pedagogical environment in the future as an outcome of relevant research findings.

Previous studies also suggest that gains in phonetic improvement are more recurrent when pronunciation instruction is explicit[3] rather than implicit[4] (GORDON; DARCY, 2016). As concluded by Thomson and Derwing (2014) after reviewing 75 studies on L2 pronunciation

[3] Magro and Alves (2011), referring to the previous work from Zimmer, Silveira, and Alves (2009) and Alves (2009), argue that the term *explicit instruction* should be applied in a broad sense to include both the explanation of the target linguistic aspects and the pedagogical techniques applied to help students use these aspects.

[4] One example of *implicit instruction* for pronunciation is the use of implicit feedback such as *recasts*. According to Long (2006, p. 2, apud Ellis, Loewen, and Erlam, 2006, p. 341), the term *recast* is defined as "a reformulation of all or part of a learner's immediately preceding utterance in which one or more non-target like (lexical, grammatical etc.) items are replaced by the corresponding target language form (s), and where, throughout the exchange, the focus of the interlocutors is on meaning not language as an object."

instruction, explicit instruction is highly beneficial for the acquisition of L2 phonological patterns because "it orients learners' attention to phonetic information, which promotes learning in a way that naturalistic input does not" (p. 340).

As an illustration, Gordon and Darcy (2016) observed that explicit instruction helped English learners acquire higher comprehensibility scores on a delayed repetition task. The authors intended to compare the effects of both explicit and implicit approaches to pronunciation improvement by learners from different L1 backgrounds. During the treatment, participants in the groups of explicit instruction received informed phonetic explanations about the target features, accompanied by audio samples and visual aids. Sequentially, they practiced analyzing such features through several tasks (e.g., recognition, discrimination, and minimal-pair drills), followed by a production practice in controlled activities. At last, the groups also had the opportunity to practice the target features in both fluency activities and communicative tasks with colleagues. By contrast, the non-explicit group was instructed without explicit phonetic explanations or detailed analysis of the target features. Their practice consisted mainly of drill tasks, followed by fluency and communicative activities.

All the instructional treatments lasted for a total of four hours within three weeks. Even with this short period of instruction, participants in the explicit groups showed a significant improvement in the post-test as measured by comprehensibility scores. The same, however, was not attested with the non-explicit group. Thus, the overall results indicate that the explicit approach seems to yield more production gains and, in conclusion, the authors argue that

> […] an explicit pronunciation curricular component, integrated in oral communication classes – including both segmental and suprasegmental pronunciation features – can significantly improve comprehensibility, even in a short period of time. These results demonstrate that it is possible to effectively instruct L2 learners in pronunciation in real classroom contexts and in a short time frame, without the need for a long or intensive dedicated pronunciation course (GORDON; DARCY, 2016, p. 84)

In a similar fashion, Silveira and Alves (2009) reported two experiments investigating the effects of explicit instruction on the acquisition of the English inflectional past morpheme (-ed)[5] by Brazilian undergrad students and EFL learners. The first experiment, conducted by

[5] Yavas (2011) explains that "although prefixes and suffixes often change their pronunciation from one word to another depending on the phonological environment (allomorphy), their spelling is generally kept constant" (p. 241). In the case of the past tense marker, the suffix -ed has three predictable pronunciations: 1) it is realized with the schwa insertion when it is preceded by the alveolar stops (/t/ and /d/), for example in the verb "attempted" ([əˈtemptəd]); 2) it is realized with the voiceless alveolar stop /t/ after voiceless phonemes, for example in the verb "liked" ([ˈlaɪkt]); and 3) it is realized with the voiced alveolar stop /d/ after voiced phonemes, for example in the verb "seemed" ([ˈsimd]). The author further clarifies that "since these different pronunciations can be predicted by a few phonological rules, only a single spelling is needed in the orthography" (YAVAS, 2011, p. 241).

Alves (2004), had seven participants with an intermediate level of proficiency in English, who attended two weeks of instruction with a focus on the target structure. The study was organized in a pre-test and post-test design. Therefore, participants first completed the pre-test, consisting of three tasks: 1) a story reading, 2) a reading task accompanied by a grammatical judgment task, and 3) an interview. Sequentially, there was the instruction period during which participants studied and compared the syllabic structures of English and BP, received explanations regarding the phonological contexts of the morpheme, and practiced the target structure in controlled and communicative activities. Four weeks after the end of the instruction period, the first post-test was applied and, after another two months, a delayed post-test was also applied to analyze whether the participants maintained the improved scores. The two post-tests consisted of the same tasks detailed in the pre-test. The overall score of the post-tests shows that participants improved their production of the past morpheme in both reading tasks and in the interview. Likewise, they kept the better scores in the delayed post-test, indicating that the instruction yielded long-term gains.

Silveira (2006) carried out the second experiment, and it was also designed in pre- post-tests, with an instructional period in between to focus on the English past morpheme. The tests used in the study employed a perception task (to identify the number of syllables in the target words) and a production task (a dialogue reading task). Therefore, during the instruction sessions, which last about two hours, participants completed several activities to practice their perception of the target sounds according to the phonological contexts and practice producing the sounds. The author observed that the 16 participants improved at the two levels (perception and production) after receiving the instruction on the phonotactic rules of the morpheme, although perceptual gains were relatively higher. According to the author, this finding suggests that the participants were aware of the different pronunciations of the morpheme. Still, they were only able to produce the sounds accurately under monitoring. Since a delayed post-test was not applied in the experiment, it is not possible to confirm if participants automated these gains in production afterward, as it would be expected to happen through practice.

The two studies reported in Silveira and Alves (2009) show that teaching sound-spelling correspondences can help learners perceive the different phonemes represented by the same spelling, and by understanding the context of the phonological rules, they can monitor their pronunciation to improve segmental production[6].

[6] How individual sounds (vowels or consonants) are realized in a target language.

More recently, Rangriz and Marzban (2015) conducted a study focusing specifically on the effects of letter-sound correspondence instruction for Iranian EFL learners. Also following a pre-test, intervention, and post-test design, the authors had 60 participants chosen by convenience sampling and randomly divided into two groups (experimental and control). All the participants were at beginner levels of English proficiency, and their ages ranged from 18 to 22 years old. The treatment consisted of a 16-week instruction period, containing sessions for informed explanations and practice, as well as review sessions. During the treatment, participants in the experimental group received instruction on both English consonant and vowel sounds and their corresponding graphemes. The control group, by contrast, did not receive any instruction in this regard. The pre- and post-tests encompassed parts of the Core Phonics Survey, a test usually administered to children during their literacy process with the purpose of assessing their phonics skills. The authors also added some pseudowords in the subsets of the survey used in the experiment, and the survey results reveal that participants had comparable knowledge of the target aspects in the pre-test. However, after the instruction period, the experimental group significantly improved in producing both real and pseudowords, while the control group did not show further gains. Therefore, the authors claim that "due to the instruction on letter-sound correspondence awareness, English pronunciation of Iranian EFL [learners] has improved" (RANGRIZ; MARZBAN, 2015, p. 42).

Such a finding corroborates again the claim that L2 learners can benefit from pronunciation instruction that also addresses the orthography component. According to previous studies, language teachers should try to increase learner's awareness of the specific relation between sounds and graphemes in the target language and discuss how such rules may differ from the grapho-phonemic correspondences present in their L1 (CELCE-MURCIA; BRINTON; GOODWIN, 2010; SILVEIRA; ALVES, 2009; SILVEIRA, 2007, 2012, YOSHIDA, 2019).

Another key point when considering pronunciation instruction is that it does not necessarily result in immediate and automatized gains at the production level. Rather, as stated in Silveira (2004), it "has an important role as a tool to help learners gradually acquire the L2 phonological system. The results of pronunciation instruction are likely to appear first in controlled environments and ultimately, it is hoped, in spontaneous speech" (p. 17). Accordingly, besides the instruction, learners still need considerable practice in order to automatize the more target-like productions (CARLET; KIVISTÖ-DE SOUZA, 2018; SILVEIRA; ALVES, 2009).

In this perspective, explicit instruction appears to be crucial for signaling the learners' difficulties, so as they can focus on the specific aspects that hamper their pronunciation. As defended by Couper (2011) "the focus of successful pronunciation teaching is on ensuring that learners understand not just that there is a problem with their pronunciation but also precisely where the problem lies" (p. 176). Under this concern, the pedagogical intervention should be elaborated from an initial investigation considering the learners' specific needs and learning variables, such as their L1, age, and learning purposes, as well as the aspects they seem to dominate already (BURNS; SEIDLHOFER, 2020; DARCY, 2018).

In the long run, it seems necessary that language teachers receive more training on how to work on pronunciation along with a background on the influence of the learners' own L1, since it places the greatest difficulties for learning the new phonological system (SILVEIRA, 2004). Likewise, it is important to bear in mind that the main goal of language instructors while dealing with pronunciation is to find the balance between accuracy and fluency (SILVEIRA, 2004), which requires extensive practice. Awareness of the L2 phonology is highlighted, therefore, as one aspect for improving accuracy in L2 pronunciation (KIVISTÖ-DE SOUZA, 2015). In this way, the students' awareness should be raised towards the differences between the phonological systems of both languages, and focus mainly on the aspects that they seem to be not aware of (ALVES; MAGRO, 2011; KIVISTÖ-DE SOUZA, 2017).

The same applies to the component of orthography; that is, learners should notice that the relations between sounds and spelling in the L2 that differ from the grapho-phonemic rules mastered in L1. In this direction, Silveira (2007) argues that "instruction should focus on helping learners avoid transferring inappropriate L1 grapheme-phoneme patterns into the L2, as well as on helping them to recognize the patterns that are adequate for the L2" (p. 174). Considering letter-sound correspondences seems to be especially relevant in instructional settings where learners have great contact with written materials; as more exposure to orthographic input may reinforce an inaccurate perception and production of L2 sounds (BASSETTI, 2008; TYLER, 2019).

In the following sections, we will detail how written input can affect L2 pronunciation and discuss relevant empirical findings in order to evidence why language teachers should consider its influence when teaching L2 pronunciation.

2.4 THE EFFECTS OF ORTHOGRAPHY ON L2 PRONUNCIATION

L2 learners in classroom settings are usually exposed to not only the phonological forms of the target language but also to the orthographic forms, which are used to represent the language sounds and words in a writing system (BASSETTI; ESCUDERO; HAYES-HARB, 2015). On the one hand, this exposure to orthography allows learners to have a visual analysis of the target language phonology. On the other hand, it sometimes provides a flawed representation (TYLER, 2019), as no orthographic system has an exact one-to-one correspondence of graphemes-phonemes. Therefore, researchers have been debating on the role of orthography for L2 speech development as either a facilitative factor or a hindrance. For example, some Brazilian researchers (see SILVEIRA, 2007, 2009, 2012; ZIMMER, 2004) have suggested that written input negatively influences the production of L2 sounds since learners transfer the correspondences between sound and spelling from their L1 to the production of L2 items. By contrast, other authors argue that orthographic representations can help literate learners due to their great reliance on visual input for the acquisition of novel items (e.g., ERDENER; BURNHAM, 2005). For example, Hayes-Harb, Nicol, and Baker (2010) put forward that orthographic input can facilitate the acquisition of a phonemic contrast that does not exist in the learner's L1 inventory.

The rationale behind these two standpoints is the differences in the learners' L1 and L2 and factors such as transparent versus opaque orthographies; meaning that the inclusion of orthographic input might assist learners of some languages, whereas the same effect is not observed in others. This matter is better understood through the concept of *orthographic depth*, which has shown that learners are likely to benefit when both L1 and L2 are transparent systems, that is, languages whose correspondences of letter-phoneme are more consistent (ERDENER; BURNHAM, 2005). On the other hand, language systems with inconsistent grapho-phonemic rules can result in a decrease in accuracy and/or delay for word recognition (PYTLYK, 2016).

Likewise, it is agreed that literate language users cannot avoid orthographic processing: even when a word is only presented aurally, they automatically try to access its written form in the mental lexicon (ESCUDERO; SIMON; MULAK, 2013; SILVEIRA, 2009). Therefore, orthography may either hinder or facilitate L2 pronunciation learning. It depends on the type of new orthographic relations learners will have to deal with and their own L1 orthographic knowledge.

To better understand the varying relations between sounds and spellings among languages, let us think about the sound /f/, present in both English and BP phonological inventories. This sound is always represented[7] by the grapheme <f> in the orthographic system of the latter language (e.g., *faca, esfera, tarefa*); however, it is mapped on at least five different graphemes or digraphs in English orthography. As described by Yavas (2011), the sound can be spelled with <f> (e.g., *fork*), <ff> (e.g., *different*), <gh> (e.g., *tough*), <ph> (e.g., *photo*) and <pph> (e.g., *sapphire*). Consequently, it seems harder for a Brazilian learner of English to familiarize themselves with these opaque relations in English than it would be for the English speaker to learn this specific BP grapho-phonemic rule.

In a widely cited study, Erdener and Burnham (2005) investigated how such differences between language orthographies may affect nonnative speech. The authors tested two groups of Turkish and Australian participants, whose first languages are respectively transparent and opaque. The objective was to examine how both groups would produce non-words in Spanish (transparent language) and in Irish (opaque language) under four experimental conditions: auditory-only (only auditory input), auditory-visual (with video-recorded facial expressions), auditory-orthographic (auditory and orthographic input), and auditory-visual-orthographic (auditory and orthographic input plus video-recorded facial expressions). The results showed that when the orthography was absent, Turkish speakers made fewer errors. When seeing the orthographic forms, the Turkish group was better at producing non-words in Spanish, which is also a transparent language as their L1. However, the Australian group outperformed the Turkish group when the orthographic stimuli came from the opaque language (Irish), and their performance was quite similar for both Spanish and Irish non-words. From this, the authors concluded that written input is beneficial for pronunciation improvement when the L2 has a more transparent orthographic system, but it might not be the case for speakers of L1s with opaque orthographies. They claim, therefore, that it seems better to avoid written input at the initial stages for L2 learners of opaque languages, especially if they have a transparent orthographic system in the L1.

Nevertheless, it is not simple to avoid orthographic input in L2 classes since the coursebooks and materials usually provide extensive exposure to written form. As a consequence, L2 learners are frequently exposed to written forms from the earliest learning stages (BASSETTI, 2008). According to Silveira (2009), this exposure implies that 1) learners

[7] Borrow words might be an exception to this rule, for example, the English word “smartphone” keeps its original spelling when used by BP speakers.

will probably have a written representation for the majority of learned words, and 2) they might be influenced by these representations even in the absence of orthographic input. In other words, once the associations between letters and sounds are established, it is very challenging to put orthographic influence aside and perceive the phonemes themselves (GOMBERT, 1996 cited in PYTLYK, 2016).

These assumptions support the claim that orthographic and auditory input interact (BASSETTI, 2008; ZIMMER, 2004). However, while native speakers are only affected by orthography-internal factors, L2 language users are also sensible to the interaction of both L1 and L2 written systems (BASSETTI, 2008, YOUNG-SCHOLTEN; LANGER, 2015). As exemplified by Zimmer (2004), Portuguese learners of English might face difficulties in reading aloud because both languages share the same alphabetic system and, yet, each of them has its specific relations between graphemes and phonemes. Consequently, a great reliance on L1 grapho-phonemic rules while decoding L2 words can affect the learners' mental representations of L2 phonemes, and if the learner does not establish target-like representations, these non-accurate mental representations are likely to become non-accurate production of the underlying phonemes (BASSETTI, 2008; HAYES-HARB; NICOL; BARKER, 2010).

Bassetti (2008) further explains that is possible to observe the influence of orthography on L2 learners' pronunciations when the target inaccuracies

> are not attested in native children's early phonology, and cannot be explained in terms of effects of L1 phonology or universals of phonological acquisition. Rather, these can be attributed to the influence of a phonological form based on a non-targetlike recoding of L2 orthographic input (p. 205).

These mismatches in L2 word recoding are notably observed when learners encounter unfamiliar items and try to guess their pronunciation from the print. The same happens in the opposite direction, that is, when learners resort to L1 grapho-phonemic rules in an attempt to spell new L2 words (HAYES-HARB; NICOL; BARKER, 2010). As a result, Tyler (2019) explains that the perception of some phonemes is affected by their orthographic representation and reinforced every time the word is read, leading the learners to internalize an inaccurate phonological form for such a word and, in turn, producing inaccurate pronunciations.

Therefore, in the following section, we will see recent studies investigating the imprecise realization of L2 sounds as a result of the presence of orthographic input, either due to the interaction of grapho-phonemic rules of the learners' L1 and L2 or due to the inconsistency between sounds and spellings in the target language.

2.4.1 Studies on orthographic influence and L2 pronunciation

In 2004, Silveira investigated, as part of her doctoral research experiment, the role played by orthography on the production of word-final consonants of English by beginner Brazilian learners. In line with her hypothesis, the author observed that orthography tends to increase the insertion of an epenthetic[8] vowel sound in word-final consonants. This observation derived from the finding that "words containing the silent "e" [e.g., *ate*] triggered more epenthesis than those ending in the consonantal grapheme [e.g., *at*]" (SILVEIRA, 2004, p. 119).

The author further investigated this effect of epenthetic vowels in another study focusing on the same target structure (final consonants of English words) and with a similar participant population (Brazilian beginner learners of English) (SILVEIRA, 2007). Yet, in this study, Silveira aimed at analyzing the effects of both task-type and orthography on the production of the target words. To this end, the author had a group of 10 participants perform three different production tests, consisting of two reading aloud tasks, for which the participants read a list of sentences (first test) and a dialogue (second test); and engaged in a guided interview (third test) with the researcher to obtain data from more natural productions. The analyses of the participants' oral productions corroborate the researcher's previous finding, indicating that orthography affected "the production of word-final consonants, not only with the reading tasks, but also with the speaking task" (SILVEIRA, 2007, p. 171). The author, however, stresses that even in the guided interview, participants were exposed to the written input provided by the questions. Consequently, the presence of the written words may have increased the epenthesis rate on the speaking task as well.

Silveira's initial findings are significant because they express the need to take the orthography variable into consideration when teaching pronunciation in L2 classes. The author further highlights that it is especially necessary to consider it when working with tasks that provide learners with written input, as seeing the written forms tends to trigger more influence of orthography on oral productions (SILVEIRA, 2007).

More recently, Oliveira (2015) hypothesized that BP learners' orthographic knowledge would influence their perception and production of the graphemes <s> and <ss> in English

[8] As defined by the *Longman Dictionary of Language Teaching and Applied Linguistics*, the term *epenthesis* refers to "the addition of a vowel or consonant at the beginning of a word or between sounds" (RICHARDS; SCHMIDT, 2010, p. 199). It is also a systematic process for L2 students, in which students try to follow an L1 pattern when dealing with differences in the two language systems. For example, BP learners of English often insert a vowel sound in initial /s/ clusters (e.g., [isˈtɑp] for the word "stop"), as these clusters are not allowed in their L1 (SILVEIRA, 2004).

words[9]. Therefore, to test the hypothesis, the author recruited 74 PB learners of English to complete one or more of the four experiments developed to analyze the influence of L1 orthography, 1) on the learners' ability to write English words containing <s> or <ss>, 2) on their perception of the sounds mapped on the target graphemes, and 3) on their production of the sounds mapped on the target graphemes. The author also aimed to analyze whether this influence would be reduced or eliminated when students received auditory input to model the pronunciation of the target words.

Therefore, for the first test, the participants' task was to transcribe some auditory words into their orthographic form. In the second test, they had to transcribe a list of new items and identify the target sound of another list of words (presented with both orthographic and auditory forms). The third test consisted of a repetition task, in which participants first repeated the words without seeing the orthographic forms and then repeated the same list with the presence of both auditory and written forms of the words. For the final test, participants first read a list of words aloud and then repeated the procedure after listening to their auditory forms as well.

The data obtained from the four tests supported Oliveira's (2015) central hypothesis that differences in the grapho-phonemic rules of two language systems can affect L2 learners' auditory perception and lead to deviant oral productions. The author also noted that this influence tends to be very frequent in cognate words, such as "basic" ("*básico"* in BP), and borrowed words already incorporated into the lexicon of the L1, for example, "mouse". Finally, the author points out that receiving auditory input is essential to reduce the influence of the L1 orthographic knowledge, even though learners still show some level of influence of the orthographic forms after being modeled by the auditory input.

These findings are very relevant and bring some pedagogical implications for reflecting on English teaching and materials for Brazilian EFL learners (OLIVEIRA, 2015). However, although the author mentions that all the participants were graduate students with some experience with English learning, he did not report or employ any measure to control for the variable of English proficiency. Hence, it is not possible to know whether learners at more advanced levels would perform similarly or not.

Bassetti and Atkinson (2015) also carried out four experiments pertaining to different effects of orthographic influence on the pronunciation of L2 learners of English. All the studies

[9] According to Oliveira (2015), the grapheme <s> in intervocalic contexts is always realized as /z/ in BP (e.g., *bá*s*ico* /ˈbazikʊ/). However, the graphemes <s> and <z> can be realized as /s/, /ʃ/, /z/ or /ʒ/ in English items (e.g., *loo*s*e* /lus/, a<u>ss</u>ure /əˈʃʊr/, *lo*s*e* /luz/ and measure /ˈmɛʒər/).

were conducted with young Italian adults who had been learning English for around ten years in instructional settings. In the first study, the authors investigated orthography-induced epenthesis due to silent letters in a straightforward design, which required 14 participants to perform a reading aloud task and a word repetition with auditory and orthographic input task, containing eight target words with silent letters. The main finding of the study was that, on average, 85% of the participants inserted the epenthetic sounds in their oral productions when performing the reading aloud task. Interestingly, the participants also pronounced the silent letters even after hearing the accurate pronunciation as modeled by a native speaker in the repetition task, although the rate was reduced to 56% in this condition. This final observation corroborates Oliveira's (2015) finding that auditory input can reduce but not eliminate the established influence of orthography on L2 pronunciation.

The second study analyzed similar orthographic effects on vowel duration under the hypothesis that the Italian learners would produce the same vowel with a shorter or longer duration depending on the orthographic forms. For example, the vowel sound in the word "seen" would be realized with a longer duration than the vowel sound in the word "scene," as the first is spelled with a digraph for representing the target phoneme. In the experiment, the authors had seven pairs of words containing the same vowel phoneme, but differing in their spellings, either as a singleton or as a digraph. Fifteen participants performed a reading aloud task to test their realization of the target words within a carrier sentence. The results from the task show that participants produced the words' duration as was predicted by the authors.

In study 3, the authors examined the realization of 21 regular verbs in English, which are all spelled with the inflectional suffix <ed>. Despite the congruent orthographic form, the past morpheme is produced with different phonemes depending on the phonological context. However, according to the authors' hypothesis, the Italian learners would produce similar sounds for all the target verbs by inserting a vowel sound even in the contexts of the final sounds /t/ and /d/. To test the hypothesis, the participants performed a verb paradigm production task, in which they had to produce the base form, the past forms, and the 3rd person singular form from a verb list. The analyses (through IPA transcriptions) revealed that the 15 tested participants indeed changed the pronunciation of the past tense morpheme to varying degrees, indicating the insertion of a vocalic segment and voicing to match their pronunciation to the orthographic form, as predicted by the authors.

The final study (study 4) tested the pronunciation of English homophonic words (e.g., *sun* versus *son*). The authors considered that if the learners produced such words distinctively,

such an effect would be only due to the influence of the orthographic forms. Accordingly, "there is no reason to expect different pronunciations of homonymous pairs, such as *palm* (tree) and *palm* (hand), which share both phonological and orthographic forms. Different pronunciations are only to be expected when the orthographic forms differ" (BASSETTI; ATKINSON, 2015, p. 86). Therefore, 14 participants produced the 12 pairs of homophones in two conditions: 1) after hearing the production of a native speaker and 2) in a reading task without auditory input. The results of the tasks show that the participants produced, on average, 40% of the items as non-homophonic words. Moreover, the authors observed that, similar to the results obtained in study 1, the mean percentage of non-homophonic realization was doubled in the reading condition compared to the repetition condition.

Bassetti and Atkinson's (2015) findings reveal significant orthographic effects on the pronunciation of experienced L2 learners, who have been receiving formal instruction in the L2 from a very young age and for about ten years. It seems, therefore, that these orthographic-induced inaccurate productions are hard to overcome and might arouse pervasive effects. Consequently, the authors argue that "models of L2 phonological development should take into account orthography as an important variable affecting L2 speech production, which has mostly not been done so far" (p. 90). As seen in studies 1 and 4, the orthographic effects are less attested in the absence of written input or if learners have a native model to mirror their production. In this way, it is possible to consider that orthography might have greater effects on learners inserted in instructional settings since they tend to be in frequent contact with written texts and do not receive much native input in terms of quantity or quality.

Nevertheless, similar effects have been observed equally in natural learning settings. For example, Silveira (2012) tested again the effects of the orthography variable with 31 BP speakers of English who had been living in an English-speaking country for at least 1 year. The participants' length of residence, however, varied a lot, ranging from one to 22 years. To investigate the influence of orthography on the participants' pronunciation, the author used a sentence reading task, which contained 30 carrier words with the target structure of the final consonant sounds /m, n, l/ written in the contexts of final graphemes (e.g., *su<u>n</u>*) or followed by the silent "e" (e.g., *bo<u>ne</u>*). The results of the task showed again a similar effect as previously observed by Silveira (2004, 2007): increased rates of epenthetic vowel sounds in the condition of the final silent "e". On the other hand, the author observed that the silent –e grapheme can also yield a more target-like production of the target consonants in some contexts, as "it tends to inhibit the production of certain phonological processes (Vocalization of Nasal and

Delateralization)" (p. 30). These results endorse two interesting findings: 1) the same item (silent –e grapheme) can cause a facilitative or hindering effect, and 2) even language learners in an immersion learning setting continue to resort to their L1 orthographic knowledge when recoding L2 words.

Comparable results were also obtained in a longitudinal study, conducted by Young-Scholten and Langer (2015) with three American secondary school students learning German in a naturalistic context. The participants of the study were living with host families and attending local secondary schools in Germany. During the school year, the first author met the learners individually and monthly to record their productions in elicitation tasks and in informal conversations. In their learning context, the participants were the only native English speakers, and, accordingly, the vast majority of the language input they were exposed to came from native speakers of German. Likewise, they received minimal explicit instruction on the L2. Albeit the propitious learning context, the authors observed that the learners' segmental production[10] also showed some influence of the orthographic input with which they come into contact in the regular classes. According to the authors, the grapheme <s> in word-initial position (e.g., *sie*) is realized as /z/ in German. However, in the recorded samples, the German learners had changed the phoneme realization to [s], which is in line with the underlying grapho-phonemic rule from their L1 (English).

Silveira's (2012) and Young-Scholten and Langer's (2015) studies evidence that even if having immersion for learning the L2, the influence of the L1 orthographic knowledge can still have some effects on the learners' pronunciation. Therefore, these findings reinforce again the "need for providing learners with pronunciation instruction that includes some sort of orthographic component to raise their awareness of the different sound-spelling correspondences in English and their L1" (SILVEIRA, 2012, p. 31).

Finally, Cerni, Bassetti, and Masterson (2019) argue that these widely reported effects of orthography on the pronunciation of L2 items appear to be "established in the early stages of learning L2 words" (p. 43). The authors investigated orthographic effects on the duration of sounds similar to Bassetti and Atkinson's (2015) study 2, but here the focus was on consonant sounds. Unlike the vowel segments, the English consonantal inventory does not make distinctions between short and long consonants, contrary to the Italian consonantal system. Therefore, the authors raised the hypothesis that the Italian learners of English would apply this distinction of duration when learning new spoken words in the target language, as duration

[10] How individual sounds (vowels or consonants) are realized in a target language

distinctions in consonant segments are part of their L1 phonology. According to the authors, the distinction is also signaled by Italian orthography, in which consonant sounds of longer duration are spelled with double letters, whereas the contrasting sound (shorter in duration) is spelled as a singleton consonant. To test the hypotheses, the authors created 20 pseudowords by changing the initial consonants of real words in English and creating two items, spelled either as singleton or as double consonants. As an illustration, the word "finish" was recoded to "prinnish" and "prinish". Both actual words and pseudowords were paired up and used during the experiment, which consisted of a learning phase and a testing phase. Therefore, 48 teenagers with advanced levels of English participated in the two phases, divided into two groups (Phonology/ Phonology & Orthography). The only difference in the treatment for the groups was that the Phonology group learned the target words and pseudowords only through auditory input and illustrative images, whereas the Phonology & Orthography group was also presented with the written forms.

The overall results of the learning phase show that the participants who saw the orthographic forms learned more pseudowords than the Phonology group. However, in the testing phase, which employed a Picture naming task, the Phonology & Orthography group realized the consonants with longer durations when spelled with double letters, contrasting to the singleton spellings. Conversely, the Phonology group did not show statistical differences regarding stimulus conditions. From this, the authors concluded that the presence of orthography in learning new words drove very experienced English speakers to produce a sound that does not exist in English and, hence, that was not part of the oral input they were exposed to. The authors assume, therefore, that the orthographic input might have yielded to a "perceptual illusion, such that L2 speakers perceive - and therefore learn - a novel word as containing a long consonant if it is spelled with double letters. This is due to recoding the L2 orthographic word using L1 grapheme-phoneme conversion" (CERNI; BASSETTI; MASTERSON, 2019, p. 43).

A final caveat, however, has to be made since all the studies presented, except Young-Scholten and Langer's (2015) study, were carried out with Brazilian or Italian learners of English, whose L1 has more transparent writing systems. Consequently, the strong orthographic effects reported above might have been increased due to the influence of the previous experience of the learners with phonological relations that are more transparent (BASSETTI; ATKINSON, 2015).

Conversely, other factors beyond orthographic depth also seem to modulate the influence of orthography on L2 pronunciation. For example, while investigating the activation of orthographic knowledge during speech production, Gonçalves and Silveira (2020) observed a possible frequency effect. The authors carried out an experiment employing an artificial lexicon with 36 BP English bilinguals, who reported having an Intermediate or high proficiency level in English. The study consisted of an initial testing phase, in which participants learned 22 pseudowords following both opaque and transparent grapho-phonemic English relations. After learning the stimuli, the participants took part in the testing phase and performed a picture-naming task. For the task, participants saw the learned pictures (on the computer screen) and had to say the corresponding spoken form as quickly and accurately as possible.

In order to analyze the scores obtained from the task, the authors included the participants' response latencies as a continuous variable and the orthographic consistency of the stimulus, divided into two levels (consistent and inconsistent). The results demonstrated that the degree of consistency of the orthographic pseudowords influenced the participants' performance on the task since response latencies were shorter for the consistent conditions, while participants took longer to name the inconsistent items. From this, the authors argue that "lexical selection involved the activation of orthographic codes as if orthography were a compensatory mechanism to assist lexical selection in speech production" (p. 1484). In other words, the authors say that this activation effect compensated for the participants' lack of skill in computing the grapheme-phoneme correspondences in the inconsistent conditions. However, such an effect might have been due to a frequency effect, rather than only the inconsistency of the grapheme-phoneme combinations. As explained by the authors, "the degree of activation of orthography in this particular case is rendered higher because of the low graphophonic frequency, thus motivating an orthographic effect" (p. 1482).

Gonçalves and Silveira's (2020) main finding adds to the complexity of the mapping of phonological and orthographic forms. As seen so far, the process is mainly modulated by the consistency of the relations between graphemes and phonemes. However, the frequency of the forms seems to have some influence (GONÇALVES; SILVEIRA, 2020); as well as the underlying task participants have to perform. For instance, reading aloud tasks tend to yield more significant orthographic effects (BASSETTI; ATKINSON, 2015; OLIVEIRA, 2015). Moreover, in a classroom environment, every learner's production is part of the oral input presented in the class (BASSETTI, 2008). Hence, if one frequently pronounces something inaccurately, other learners might perceive this realization as correct and might replicate it,

meaning that orthographic-induced realizations may also be reinforced in the "input from fellow students and possibly teachers" (BASSETTI; ATKINSON, 2015, p. 86).

Another point raised by Bassetti and Atkinson (2015) is that, in some cases, learners are not aware of the underlying grapho-phonemic rule because it is not part of their native orthographic system, and they have not received explicit instruction in this regard. Therefore, learners can benefit from instruction on the L2 grapho-phonemic rules as a way to help them focus on the correct mapping of the phonological forms onto orthography. This instruction would be especially beneficial in the initial stages of vocabulary learning since, as observed by Cerni, Bassetti, and Masterson (2019), learners tend to rely significantly on the orthographic forms when learning new words.

From the discussion above, it is possible to summarize that although the availability of orthographic forms is likely to accelerate L2 vocabulary learning, great contact with written input into the learning process can also result in pronunciation drawbacks, such as addition, replacement, or changes of sounds in the L2 pronunciation. Thinking more specifically about Brazilian learners, the discrepancies between English sound-letter relations compared to their L1 orthographic system place another challenge for learning the language phonology, which already challenges Brazilian learners with new sounds that are not part of their L1 inventory. Thus, these differences in the grapho-phonemic rules should also be addressed in L2 classes to help learners learn the target language pronunciation more accurately.

On this account, the present study seeks to investigate the influence of orthography on the pronunciation of Brazilian EFL learners and analyze the outcomes of using CR activities in order to increase their awareness of English grapheme-phoneme relations. Therefore, the following section outlines a brief comparison between the vocalic inventories of both languages, along with the presentation of the target research structure of this study.

2.5 TARGET RESEARCH STRUCTURE

By comparing the inventory of English and BP phonemes, it is possible to acknowledge that the phoneme-grapheme mapping process is more complex in English since it has more phonemes mapped onto the same alphabetic system as used in BP. For example, English has 24 consonant phonemes (YAVAS, 2011), whereas there are 19 phonemes in the inventory of BP consonants (CRISTÓFARO-SILVA; YEHIA, 2009). The vowels are yet more difficult to describe due to the differences caused by English varieties. The focus here, therefore, will be

on the variety of American English, which accounts for 12 monophthongs: /i, ɪ, e, ɛ, æ, ʌ, ə, ɑ, ɔ, o, u, ʊ/, and three diphthongs: /aɪ, aʊ, ɔɪ/.

BP, on the other hand, has only seven oral vowels /i, e, ɛ, a, ɔ, o, u/, but it also has five nasals vowels /ĩ, ẽ, ã, õ, ũ/. Moreover, the language has a total of 20 diphthongs, accounting falling diphthongs (/aɪ, eɪ, ɛɪ, oɪ, ɔɪ, uɪ, aʊ, eʊ, ɛʊ, oʊ, iʊ, ãɪ, õɪ, ũɪ, ẽɪ, ãʊ/) and the rising ones (/ɪɐ, ɪe, ɪʊ, ɪo/) (CRISTÓFARO-SILVA; YEHIA, 2009).

As seen, whereas BP has a lot of diphthongs, its inventory lacks some of the vowels present in American English. The difficulties caused by these phonological differences is further amplified when considering that all the phonemes have to be correlated with spelling forms. According to Yavas (2011), the borrowed Roman Alphabet provides only five letters representing the vowels, a, e, i, o, u; because it was sufficient for the Latin inventory. Since English has more oral monophthongs, the mapping of these vowels presents some irregularities. For instance, the same letter can represent more than one sound and different vowel-letter combinations are used, the so-called 'digraphs', to represent varying vowels (YAVAS, 2011).

Therefore, by looking at the two languages, it is presumable that some digraphs may result in pronunciation difficulties for BP learners of English, especially when the spelling is present in both orthographic systems, but is pronounced differently in the two languages. For example, in American English, the digraph <ou> presents many inconsistencies in its pronunciation and can be mapped on at least five different vowels: /aʊ/ (*ab<u>ou</u>t*), /ʌ/ (*c<u>ou</u>ple*), /ɔ/ (*<u>ou</u>ght*), /o/ (*th<u>ou</u>gh*), and /u/ (*s<u>ou</u>p*) (YAVAS, 2011, p. 240). By contrast, in BP <ou> is either realized with the diphthong /oʊ/[11] or as /o/[12] (e.g., *louça* as [ˈloʊsa] or as [ˈlosa]). The latter case is due to the process of monophthongization, which shifts the diphthong vowel quality to a monophthong realization (SEARA; NUNES; LAZZAROTTO-VOLCÃO, 2011). This reduction of the diphthong has been widely discussed and it was acknowledged as a very frequent process that happens in any phonological context, and it is almost a categorical pronunciation (see CRISTOFOLINI, 2011; HORA, 2012). As explained by Bagno (2007), the BP diphthong /oʊ/ is only pronounced in situations that the speaker is monitoring speech production, or during aloud reading, in which the presence of the orthographic form refrains the monophthongization.

[11] The BP diphthong (/oʊ/) is similar to the English high-mid, back vowel /o/, as present in the word boat (/bot/)

[12] It is important to clarify that the IPA symbol /o/ is used for both English and Portuguese vowels, although the sounds are not phonetically identical. As explained by Yavas (2011), "the vowel /o/, like /e/, is somewhat diphthongized and has a movement higher toward the end in production (hence the symbols /oʊ/ and /ow/ in some books)" (p. 85). The BP vowel, on the other hand, is a "pure sound" and it is not featured as diphthongized (GODOY; GONTOW; MARCELINO, 2006).

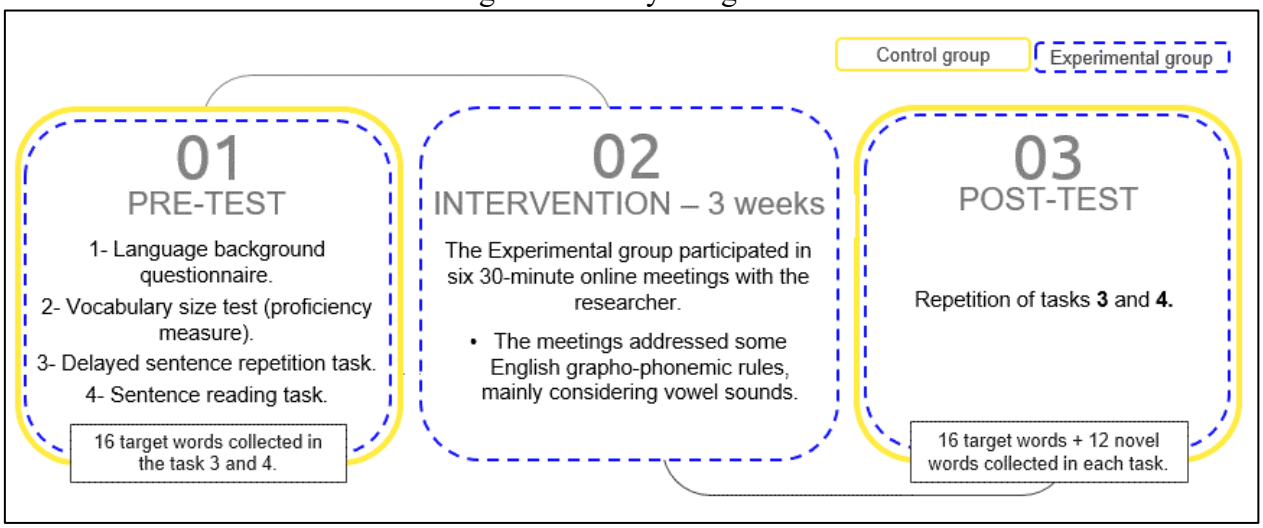
Despite the incongruent English pronunciation of <ou>, some regularities can be pointed out. The *Dictionary of the British English Spelling System* (BROOKS, 2015), for example, states that the most frequent pronunciation for <ou> is /aʊ/, corresponding to 48% of the words that are spelled with <ou>. Among the rest of the words, 29% is realized with the vowel /u/, and 6% of the words spelled with <ou> is pronounced as /ʌ/. The dictionary also acknowledges that <ou> is regularly pronounced as /ə/ when appearing in the adjectival ending <ous> (e.g., *anxious*, *famous*) (BROOKS, 2015, p. 415).

Considering then the inconsistent mapping of letters and sounds of English, such as the digraph <ou>, it seems that learners could benefit from instruction in order to help them deal with these opaque relations and produce the target sounds more accurately. Therefore, the present study is interested in investigating the influence of orthography on the pronunciation of the digraph <ou> in English words, as the digraph has a more categorical pronunciation in the participants' L1 (PB). As a second goal, it is expected to raise the participants' awareness of these inconsistencies and help them improve their production of the target words through CR activities.

3 METHOD

The aim of this chapter is to describe the research design of this classroom-based study: a pre-test, intervention, and post-test design where participants in the Experimental group attended English classes and were exposed to CR activities on English grapho-phonemic rules as part of the instruction. The following graph provides an illustration of the study design and the tasks completed by the participants:

Figure 1 – study design.



Source: elaborated by the author (2022).

In the next section, the participants of this study are presented, followed by a description of the testing stimuli (section 3.2), the instruments used in the data collection sessions (section 3.4), and the procedures followed for the data collection (section 3.5). The intervention and the specific sessions elaborated for the pronunciation instruction to the Experimental group are detailed in section 3.6. At last, section 3.7 discusses the procedures adopted in the study for the data analysis.

3.1 PARTICIPANTS

Initially, the researcher expected to recruit 30 Brazilian EFL learners older than 18 years old at an intermediate level of English proficiency. This level of proficiency was selected by considering that intermediate-level learners would already have some experience with the

orthographic form of English words, which was expected to help evidence the presumable influence of the orthographic knowledge on their pronunciation.

The participants in this study were students from the program of online extracurricular courses from the Federal University of Santa Catarina (UFSC). Nevertheless, the intended number of 30 participants was not reached, mainly due to restrictions caused by the covid-19 pandemic, which made it more difficult to reach out the potential participants. Likewise, since all procedures were conducted remotely and through e-mail exchanges, some of the students disappeared in between the study phases. Consequently, the study was concluded with 11 participants, who took part in all points of the data collection. Of this number, five participants integrated the Control group and six participants integrated the Experimental group.

These participants were recruited from two intact classes at the same level (level 7 from the English extracurricular course at UFSC), administered by the same teacher. The two class groups were selected in view of their comparable learning context (same course level and teacher), and as they were already split into two different groups, the researcher assigned one to be the Control group and the other as the Experimental group from this study.

Afterward, the researcher received the teacher's permission to attend one of the regular classes from each group in order to present herself and the study. The researcher then invited all of the learners to participate in the study. Research flyers containing more details about the study and the researcher's contacts were also shared with the two groups of learners. It is noteworthy that the learners were not made aware of the existence of another group. As mentioned, they were recruited from two different intact classes to integrate the two groups and, therefore, were contacted separately and received only the information concerning their participation. For instance, learners invited to participate in the Control group were not informed about the pronunciation instruction sessions offered to the other group.

During the experiment, the two groups of participants performed the same data collection tasks. However, only the Experimental group took part in the pronunciation instruction sessions with the researcher. The treatment consisted of six online meetings of 30 minutes each to discuss some of the inconsistencies between English sounds and letters (see section 3.4). The meetings were held at extra class time, and scheduled 30 minutes before the regular class time of the learners so as to facilitate their attendance.

All the participants confirmed their participation through an Informed Consent Form. They also declared being over 18 years old and having normal or corrected-to-normal vision and hearing. Although their contribution to this study was also voluntary and not remunerated,

the participants who completed the data collection received a certificate attesting to their participation hours and an individualized feedback file on their English pronunciation. In addition, the learners from the Experimental group also received three hours of pronunciation instruction during the intervention period, expected to help them improve their English pronunciation skills.

Concerning participants' personal information reported in the background questionnaire and displayed in Table 1, six were female, and five were male. Their ages ranged from 21 to 51 years old (*M*=30.18 years). They also varied in their education level status, as there were five undergraduate students, three participants with a college degree, one participant with a Master's degree, and two participants who held a Ph.D. degree and were Professors from UFSC.

Table 1 – Vocabulary test and background questionnaire data

ID	**Age**	**Gender**	**Education level status**	**Voc. test scores**	**Daily English use (hours)**	**Weekly contact – auditory input (hours)**	**Weekly contact – written input (hours)**[13]
Experimental group							
01	21	F	CD	4970	1	8	2.5
02	37	F	CD	5598	.5	2	4.5
03	51	M	PhD	6248	1	4.5	4.5
04	24	M	HS	7176	1	3.5	1.5
05	21	M	HS	5757	2	4	1.5
06	22	F	CD	4477	.3	4.5	3
Control group							
07	23	F	HS	5912	3	15+	15+
08	42	M	PhD	7426	2	4	4
09	30	F	CD	4006	.2	3	1
10	30	F	M.A.	6187	5+	10	15+
11	31	M	HS	7265	2	9.5	8

Source: elaborated by the author (2022).
Notes: a) Gender: F= female, M=male; b) Education level status: HS= High School, CD= College Degree, M.A.= Master's Degree, PhD= Doctorate degree; c) the values form the vocabulary test scores ranged from 0 – 10.000.

As a language proficiency measure, participants performed a vocabulary test (see subsection 3.3.4), and the range of the scores obtained on the tests was 4006 to 7426

[13] The amount of time presented in the variables 'daily English use' and 'weekly contact with auditory and written input' is an estimate of participants' own answers on the background questionnaire, attempting to capture individual differences that may influence the results.

(*M*=5911, *SD*=1122). According to the authors of the test (MEARA; MIRALPEIX, 2017), these scores indicate that all of the participants were at least on an intermediate level of English proficiency.

Despite being enrolled in the same language course, as aforementioned, there is some variation among participants regarding their practices and experience with English. The average hours of daily use of English (involving the four skills: listening, speaking, reading, and writing) was 1.64. However, some participants stated that they made use of the language for less than half an hour a day, and one participant mentioned that she used it for more than five hours a day. Likewise, their weekly contact with auditory and written input from activities such as listening to music and podcasts, watching TV programs, reading, writing, studying, speaking, etc., varied considerably. Some participants appear to have a limited time of activities of around five hours per week, while others mentioned performing different activities throughout the week and therefore were in contact with auditory and written language input for more than 15 hours.

3.1.1 Linguist raters

In addition to the participants who enabled the data collection (as described above), this study had the collaboration of three linguistic raters to estimate the oral productions obtained in the data collection tasks. The linguistic raters were very experienced English speakers enrolled in the graduate program in English[14] at UFSC. They were contacted via email with the help request, and after showing interest in contributing to the study, they received the Informed Consent Form and individual instructions.

Their participation consisted of filling in a background questionnaire and concluding two rating sessions of about 40 minutes, in which they listened to the production of the target words collected with the two groups of participants and evaluated their accuracy on a 9-point Likert scale. They were not made aware that the assessed productions were from the same participants before and after a period of instruction.

The information declared on the background questionnaire is summarized in Table 2, and the three participants were also over 18 years old and declared having normal or corrected-to-normal vision and hearing.

[14] *Programa de Pós-Graduação em Inglês (PPGI).*

Table 2 – Background questionnaire information: linguistic raters

Age	Gender	Education level status	Experience with English learning (years)	Daily English use (hours)	Experience with a third language
22	M	CD	20	8	Spanish
29	M	CD	12	10	Spanish
38	F	M.A.	+20	5	Spanish

Source: elaborated by the author (2022).
Notes: a) Gender: F= female, M=male; b) Education level status: CD= College Degree, M.A.= Master's Degree.

The assessment procedures were also carried out online and, likewise the research participants, the linguistic evaluators received a certificate attesting to their participation in the study.

3.2 TESTING STIMULI

The present study focuses on the English digraph <ou> and how Brazilian learners of English pronounce words containing the digraph, given that this spelling is mapped onto five different vowel phonemes in English according to Yavas (2011): /aʊ/, /ʌ/, /ɔ/, /o/, and /u/. As a next step, the *Dictionary of the British English Spelling System* (BROOKS, 2015) was used to search for words with <ou> that contained one of these vowels. The dictionary was the primary searching source because it presents many examples and exceptions to all of the graphemes and combinations of graphemes used in English orthography, also enabling to search out the specific combination of letters in the middle of words. The researcher then selected seven words for each vowel sound category; nevertheless, the /o/ vowel was excluded due to the limited number of English words spelled with <ou> containing this sound. Thus, the testing stimuli consisted of a total of 28 target words (4 vowels times seven words). Out of this number, 16 target words (four from each sound category) appeared throughout the three phases (pre-test, intervention period, and post-test). In contrast, the 12 remaining words, so-called 'novel items', only appeared in the post-test phase and were presented along with the previous 16 items.

For the selection of the items, the initial criterion was finding monosyllabic words. However, some sound categories lacked a sufficient number of suitable monosyllabic words. Consequently, the criterion was altered to maintain the same syllable position for <ou>, presenting digraph at the first syllable. The only exception to this pattern was the item 'enough',

which had the digraph on the second syllable. The final list of the words selected as the stimuli for the tasks of the pre-test phase is displayed in Table 3[15]. The items are presented in alphabetical order and according to the corresponding target sound category.

Table 3 – List of target words and target sounds selected for the pre-test phase.

Target sound	Words containing <ou>	Phonological transcription
/aʊ/	Cloud	/ˈklaʊd/
	Doubt	/ˈdaʊt/
	Flour	/ˈflaʊər/
	Sound	/ˈsaʊnd/
/ʌ/	Cousin	/ˈkʌzn̩/
	Enough	/ɪˈnʌf/ or /əˈnʌf/
	Trouble	/ˈtrʌbl̩/
	Rough	/ˈrʌf/
/ɔ/	Bought	/ˈbɔt/
	Court	/ˈkɔrt/
	Fought	/ˈfɔt/
	Source	/ˈsɔrs/
/u/	Group	/ˈgrup/
	Route	/ˈrut/
	Soup	/ˈsuːp/
	Through	/ˈθru/

Source: elaborated by the author (2022).

The stimuli for the post-test contained all of the 16 target words displayed in the above table, plus 12 novel words. These new items correspond to three novel words for each of the target sound categories, controlled for not appearing during the treatment sessions. The inclusion of the novel words was to permit analyzing whether participants in the Experimental group were able to extend part of the knowledge gained to words that were not instructed during the intervention sessions. The novel words and their corresponding target sounds are shown in table 4.

[15] There were actually 20 target words in the data collection sessions (five words in each sound category). However, due to the amount of oral data collected, it was necessary to take out one item of each sound category to reduce the total of words in the subsequent analyses, which employed an auditory analysis by linguistic raters. This decision was taken after observing that the rating procedures would demand considerable time and could become an exhausting task for the raters, resulting in less reliable scores. Therefore, the words 'found', 'double', 'thought', and 'souvenir' were also part of the data collection but were not considered in the data analysis. The removal of those words followed the criteria of frequency and production difficulty. For example, the word 'souvenir' was removed as it is a very infrequent word, and the word 'thought' was removed because of participants' difficulty in producing the interdental fricative consonant (/θ/).

Table 4 – List of novel words (presented in the post-test phase).

Target sound	Words containing <ou>	Phonological transcription
/aʊ/	Pound Proud South	/ˈpaʊnd/ /ˈpraʊd/ /ˈsaʊθ/
/ʌ/	Couple Touch Tough	/ˈkʌpl̩/ /tʌtʃ/ /ˈtʌf/
/ɔ/	Course Mourn Sought	/ˈkɔrs/ /ˈmɔrn/ /ˈsɔt/
/u/	Coup Routine Troupe	/ˈkuː/ /ruˈtin/ /ˈtruːp/

Source: elaborated by the author (2022).

In addition to the target and novel words, five extra words containing the digraph <au> were presented as distractor words in the tasks of both pre-test and post-test phases. Distractor words were also included in the tasks in an effort to reduce the chances of the participants figuring out the context of the investigation and, hence, providing less reliable productions. The chosen words and their corresponding transcription are displayed in the following Table (5):

Table 5 – List of distractor words for the experiments.

Distractor words containing <au>	Phonological transcription
Aunt	/ˈænt/
Fault	/ˈfɒlt/
Laugh	/ˈlæf/
Sauce	/ˈsɒs/
Caught	/ˈkɔːt/

Source: elaborated by the author.

It is also worth of mentioning that the selected words were embedded in sentences created for the experiment, and all of these trial sentences were randomized in the organization of the tasks (see subsections 3.3.1 and 3.3.2). In this way, the same target sound did not appear in sequence during the experiments, which could otherwise give participants a clue of the expected sound.

3.3 INSTRUMENTS FOR DATA COLLECTION

The data collection was carried out entirely online, and the instruments for the experiments were 1) a delayed sentence repetition task (developed by FLEGE et al., 1995) and 2) a sentence reading task; in order to record the participants' output with and without the availability of written input. The participants also filled in a language background questionnaire and performed a vocabulary size test to provide further information regarding their English learning experience and proficiency level.

3.3.1 Delayed sentence repetition task

The primary purpose of the delayed sentence repetition (DSR) task is to elicit participants' oral productions of the target words through the repetition of sentences modeled by the output of an English native speaker. However, differing from a simple repetition task, the DSR was developed by Flege et al. (1995) in an effort to obtain a more reliable estimation of participants' natural productions, rather than a direct imitation from the oral stimulus presented to them during the task. Therefore, the organization of the audio files of each trial involves a question and its answer (containing the target word/structure), followed by the repetition of the question. Participants' task is then to repeat the answer after hearing the question for the second time. In this manner, such delay provided by the repetition of the question is intended to "prevent direct imitation from sensory memory", as discussed by Flege et al. (2006, p. 173).

In the present study, the target words were presented during the DSR task through the carrier sentence: "_____ is the next word". This structure was employed by Aliaga-García (2008), and considering its straightforward design, the same structure was implemented in this experiment. Therefore, all the trials were presented to the participants as follows:

Speaker A: What's the next word?
Native speaker: Cloud is the next word.
Speaker A: What's the next word?
Participants' response: "_____ is the next word."

Additionally, the five distracting words (see section 3.2) were presented in the same carrier sentences in an attempt to avoid bias in the context of investigation. The lists of the carrier sentences containing the target words and distractors for the pre-test and post-test are displayed in Appendix A.

The audio stimuli of the sentences were recorded with a male native speaker of English. The recording was also completed online through a web conference between the native

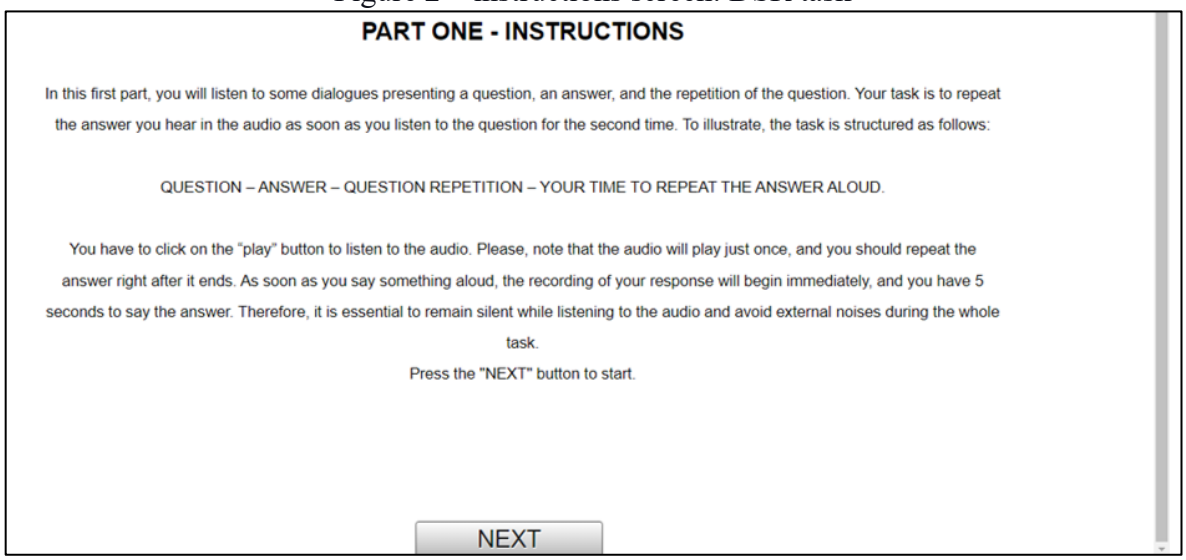
speaker and the researcher. Subsequently, the researcher extracted and treated all of the sentences and organized each trial stimulus along with the question audio file. The researcher was also the utterer for the question (Speaker A in the example above), thus providing a female voice.

Once the audio stimuli were prepared, they were added to the experiment on the online platform *Testable*[16]. This platform was used due to its friendly interface that allows the creation of a range of online experiments without the need for programming languages knowledge, and its function for the presentation of different types of stimuli, such as audio, images and texts.

Therefore, participants only needed a computer with Internet access for performing the task. The setup for the experiment did not allow participants to relisten to the audio stimuli. Therefore, they were supposed to provide their oral response right after listening to the question for the second time. Likewise, the recording of the response started only after the end of the audio stimulus and automatically with the participant's output. Participants had five seconds to repeat the response aloud in each trial and the stopwatch was programmed to start with any output after the stimulus presentation. In such a manner, participants were instructed to find a quiet and calm place to perform the task and avoid unintentionally setting off the recorder.

The following figures are screenshots of the task. Figure 2 shows the instruction screen and Figure 3 illustrates how the task trials were presented to participants:

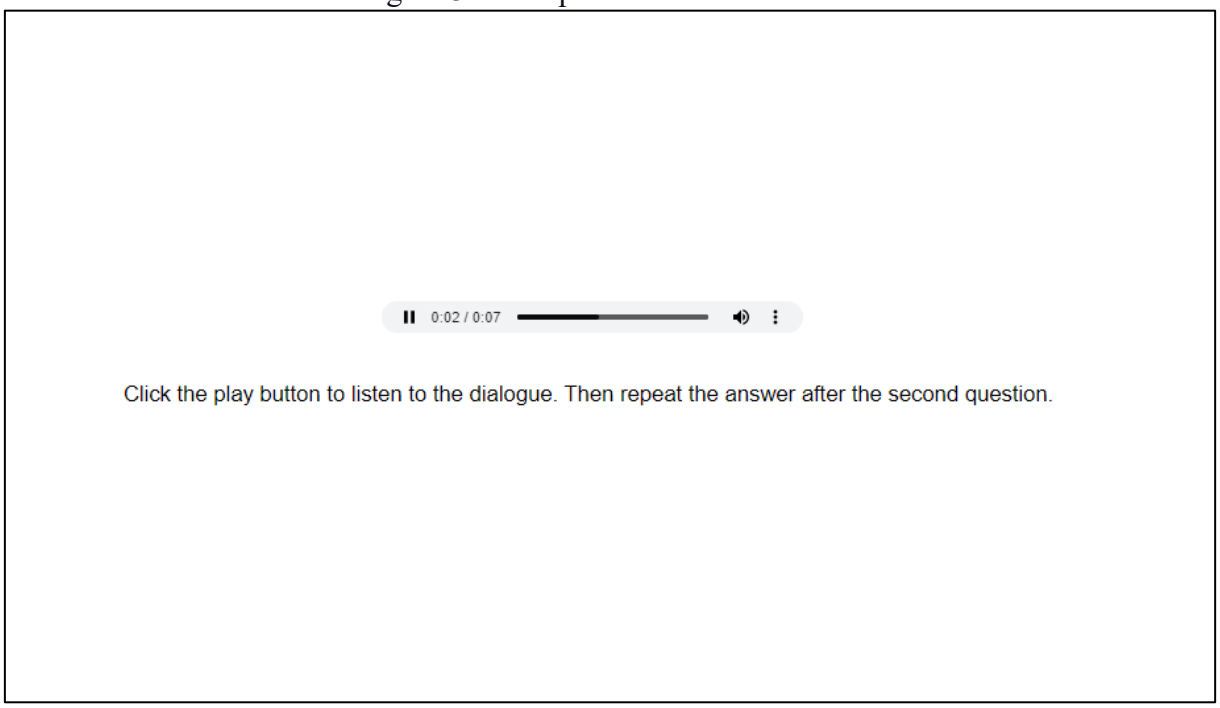
Figure 2 – instructions screen: DSR task



Source: elaborated by the author (2022).

[16] Testable is a software developed for the creation of a range of experiments, allowing the use of different types of stimuli, such as audio, images, texts, scales, etc. The software can be accessed on its website <https://www.testable.org/#>, and by creating an account, the researcher can develop and apply their online experiments. The platform however offers some different functions depending on the user's membership (free or paid).

Figure 3 – trail presentation: DSR task



Source: elaborated by the author (2022).

The responses were initially stored on the platform database and later accessed and downloaded by the researcher. Once all the data were safely stored on the researcher's personal devices, participants' responses were deleted from the platform. In sequence, the researcher extracted only the target words from the responses collected, which were submitted to the evaluation of the linguistic raters, so as to obtain the values for the subsequent statistical analyses. For the extraction of the target words, the researcher used the software programs *Praat*[17] and *Audacity*[18]. Finally, after extracting the target words, the researcher organized the data in another experiment to submit the productions to the evaluation of the linguistic raters in terms of pronunciation accuracy (see section 3.6).

3.3.2 Sentence reading task

In the sentence reading task, participants had to read aloud the sentences created for the experiment, which is a common approach observed in studies investigating orthographic effects on pronunciation (e.g., BASSETTI; ATKINSON, 2015; OLIVEIRA, 2015; SILVEIRA, 2007, 2012).

[17] <https://www.fon.hum.uva.nl/praat/>
[18] <https://www.audacityteam.org/>

For the organization of the task, the target words were placed at the end of the sentences scripted for the test. In an attempt to simplify participants' oral productions, the sentences were kept short, avoiding infrequent vocabulary and structures that were more complex. Yet, due to the grammatical class of part of the target words, two sentences were written in the passive voice. The sentences for the pre-test can be seen in the following Table (6).

Table 6 – Sentences for the sentence repetition task (pre-test).

Target sound	Target words	Sentences for the task
/aʊ/	Cloud Doubt Flour Sound	The sun is behind a **cloud**. I only have one **doubt**. Bread is made of **flour**. I don't hear any **sound**.
/ʌ/	Cousin Enough Trouble Rough	Let's visit my **cousin**. The food is not hot **enough.** The boy is in **trouble**. Last winter was very **rough**.
/ɔ/	Bought Court Fought Source	Happiness can't be **bought**. Let's go to the food **court**. The kids have never **fought**. Coffee is my power **source**.
/u/	Group Route Soup Through	I will join the **group**. Let's take the fastest **route.** I would like chicken **soup**. Excuse me, I'm coming **through**!
Distractors	Aunt Fault Laugh Sauce Caught	Let's visit my **aunt**. It is not your **fault**. She has a cute **laugh**. I would like extra **sauce**. The gang was finally **caught**.

Source: elaborated by the author (2022).

The stimuli for the post-test contained all of the 25 sentences displayed in the above table, plus 12 new sentences. As explained in the Testing Stimuli section (3.2), these new sentences presented three novel words for each of the target sound categories, which did not appear during the intervention sessions. The 12 new sentences scripted for the post-test are shown in the following Table (7):

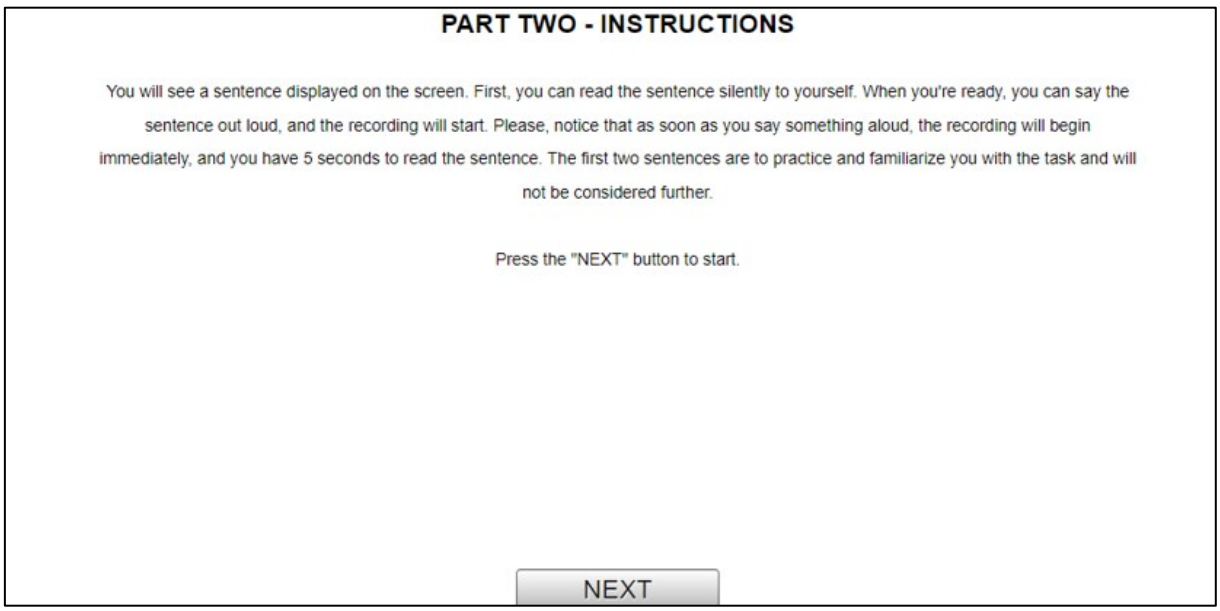
Table 7 – Sentences containing the novel words for the post-test.

Target sound	Target words	Sentences for the task
/aʊ/	Pound Proud South	The currency of the UK is the **pound**. Her parents are **proud**. The birds are flying **south**.
/ʌ/	Couple Touch Tough	They are a happy **couple**. I will keep in **touch**! The test was very **tough**.
/ɔ/	Course Mourn Sought	She's taking the final **course**. We should wait, not **mourn**. It's not the answer we **sought**.
/u/	Coup Routine Troupe	He's planning a **coup**. I love my **routine**! She's joining a dance **troupe**.

Source: elaborated by the author (2022).

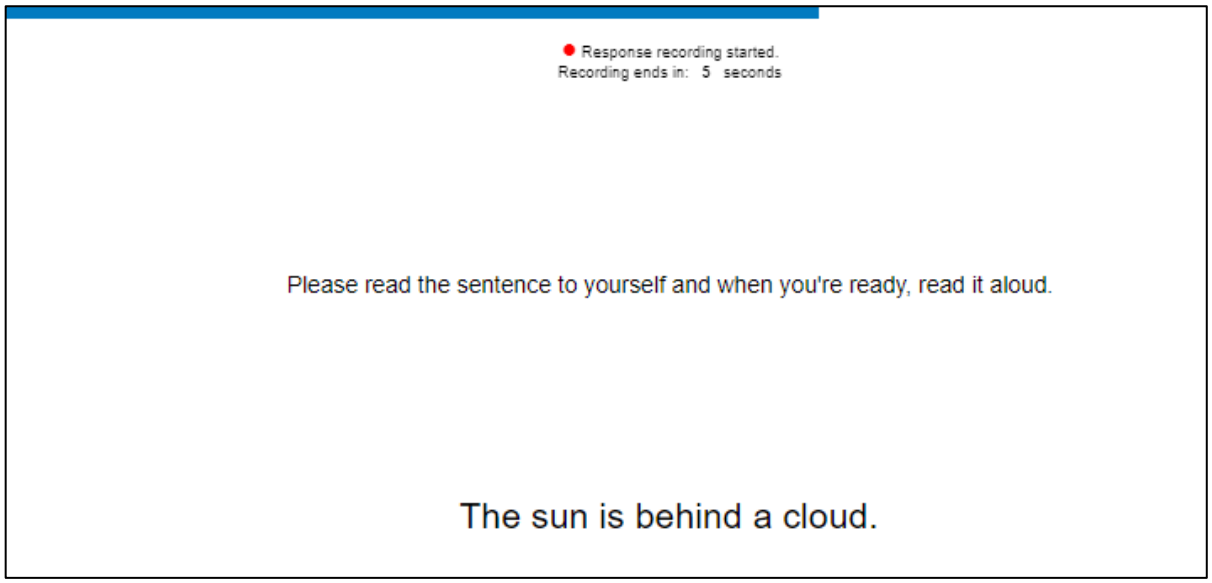
This task followed similar procedures from the previous task. Therefore, the reading task was also performed on the online platform *Testable*, but during its execution, participants saw only the sentences written on the computer screen, without any auditory stimulus. The figures below are screenshots of the task. Figure 4 shows the instruction screen and Figure 5 illustrates how the task trials were presented:

Figure 4 – instruction screen: sentence reading task



Source: elaborated by the author (2022).

Figure 5 – trail presentation: sentence reading task



Source: elaborated by the author (2022).

Participants had no time limit to silently read and understand the content of the sentences. Once they were prepared, they would read the sentence aloud. In such a manner, participants received explicit instructions to perform the task in a silent room and only start saying the sentence when feeling ready. Likewise, they had five seconds to read the sentence aloud (both stopwatch and recording would start right after any oral output).

The data storage was performed in the same way as in the previous task. As done for the previous task, the researcher used the software programs *Praat* and *Audacity* to extract the target words from the responses. Finally, the extracted words were organized in another experiment and shared with linguistic raters for assessment procedures (see section 3.7).

3.3.3 Language background questionnaire

The research participants also completed an online questionnaire asking for demographic and linguistic information, which was made available through the *Google Forms* platform (<https://docs.google.com/forms/u/0/>). The purpose of having such a questionnaire was twofold: to ensure that the participants fit into the research context and aid in interpreting the results of subsequent analyses. All the questions (inserted on the platform) from the background questionnaire for the research participants are presented in Appendix (B).

The group of linguistic raters completed an online questionnaire as well. Their version, however, was more straightforward and mainly concerned with their professional experience with the language. These questions are also displayed in Appendix (C).

3.3.4 V_YesNo vocabulary size test

In order to ensure that the research participants were at a similar level of English proficiency, the two groups of participants completed a task to estimate the size of their vocabulary knowledge in the language. The version chosen for the test was the V_YesNo vocabulary size test (MEARA; MIRALPEIX, 2017), which was developed with the purpose of evaluating one's lexical knowledge out of the 10.000 most frequent words in English.

According to Meara and Miralpeix (2017), during the test, the test-taker sees a total of 200 words, of which only half correspond to words that actually exist in English. These real words are a stratified sample from the list of the 10.000 most frequent words in the language. The remaining 100 items, on the other hand, are pseudowords created for the test. In this manner, the participant's task is to answer "yes" when they know the meaning of the presented word, or "next" for unknown words. The final score results from the affirmative answers given to the real words (*Hits*), subtracting the number of affirmative answers also attributed to pseudowords (*False Alarms*). Accordingly, each correct answer provided by the test-taker (*yes* for real words) suggests that he/she knows the equivalent of 100 words in English. This score, however, is reduced depending on the number of "yes" responses given to *False Alarms*.

The V_YesNo test was chosen as a proficiency measure for this study by taking into account the advantages of being a free test, with a straightforward and quick application (about 10 minutes), and availability for a remote application. To carry out the test, it is necessary to open the access link[19] on an Internet browser and fill in the initial boxes with an access code (which permits further access to the results of the test). The results are stored in the test system's central database, and access to this data is restricted to the initial code entered by the participant. In appendix (D), some screenshots are provided, exemplifying the layout of the test and the steps that the research participants went through.

Moreover, as highlighted by the authors of the test, vocabulary tests have shown that vocabulary size correlates with overall language proficiency since language users with greater vocabulary knowledge tend to perform better on the other language skills (ANDERSON; FREEBODY, 1981 cited in MEARA; MIRALPEIX, 2016). As such, the test is a good indicator of one's proficiency level, although it may not be suitable for high-stake testing situations. In this respect, a vocabulary test can be a reliable option as a way to confirm the already estimated

[19] <https://www.lognostics.co.uk/tools/V_YesNo/V_YesNo.htm>

level of the learners' proficiency, which fits the purpose of this research. That is, since the research participants from this study came from intact classes, they were already expected to have a similar level of English proficiency. Thus, the test was applied mainly to confirm that they are indeed at a similar level.

3.4 INTERVENTION

The intervention for the Experimental group consisted of six online meetings developed to provide participants with explicit pronunciation instruction regarding the problematic mapping between English orthographic and phonological forms, focusing mainly on vowel sounds. Each online meeting took approximately 30 minutes and they were not recorded, but the material prepared to guide the discussion (e.g., presentation files, activities, and extra resources) were shared with the group of participants. The researcher also sent regular reminders before the meetings.

The pronunciation lessons were planned after the communicative framework for pronunciation teaching proposed by Celce-Murcia, Brinton, and Goodwin (2010), which suggests five important steps for the pronunciation lesson: 1) *description and analysis*, 2) *listening discrimination*, 3) *controlled practice*, 4) *guided practice*, and 5) *communicative practice*.

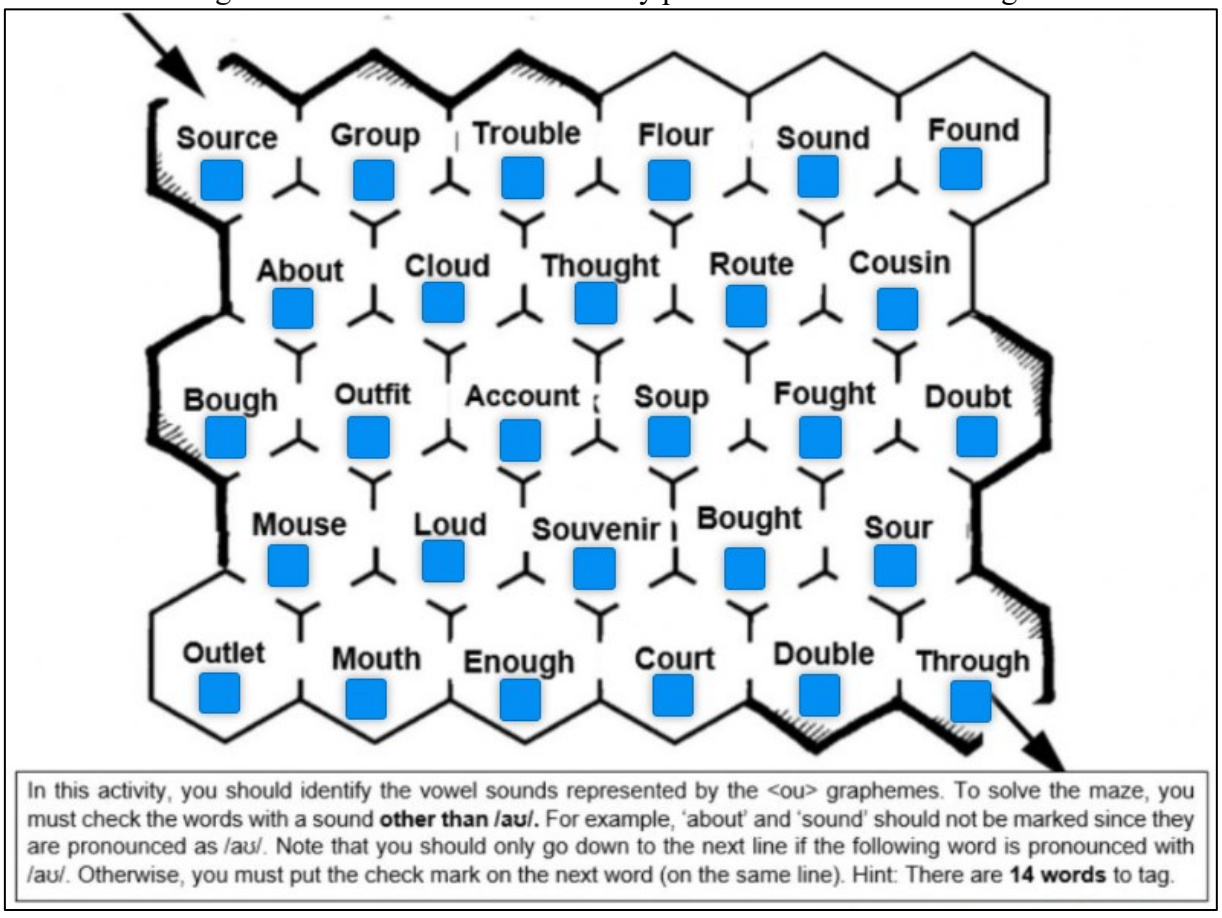
However, the *communicative practice* (step 5), in which learners should practice the target phonological features in tasks focusing on genuine information exchange, was not fully achieved due to time constraints. As mentioned, the lessons happened in short meetings of 30 minutes each, and different sounds and grapho-phonemic rules were discussed. Therefore, to contemplate all these aspects planned for the lessons, activities of a more communicative nature (focusing not only on form but also on the content) were not developed, as they would require more time. Despite the lack of communicative practice, other strategies, such as questioning and games, were used to engage participants more actively, encouraging their participation by reflecting on their own pronunciation, providing additional examples, and formulating rules.

Following the framework, as the first step (*description and analysis*), the learner should receive information on the production of the target feature and its occurrence context. In this way, some rules of the orthographic system of English, especially considering the vowel inventory and the target sounds under the study's investigation, were presented along with plenty of examples and exceptions. The participants also received informed explanations of

some other problematic letter-sound correlations in English, such as the schwa sound and silent letters. These discussions were organized around PowerPoint presentations, backing up the explanations with videos, phonetic symbols, and pictures to help evidence the target sounds.

For the *listening discrimination* practice, audio and videos were used to help the participants identify the possible sounds mapped on the target spellings. They also performed a more interactive activity to practice the perception of the different pronunciations for the digraph <ou>. The following Figure (6) is a screenshot of the activity[20], which was created using the website Live Worksheet. To solve the maze presented in the activity, participants should choose the words whose pronunciation had a different vowel sound than /aʊ/.

Figure 6 – Screenshot of the activity presented in the 4th meeting.



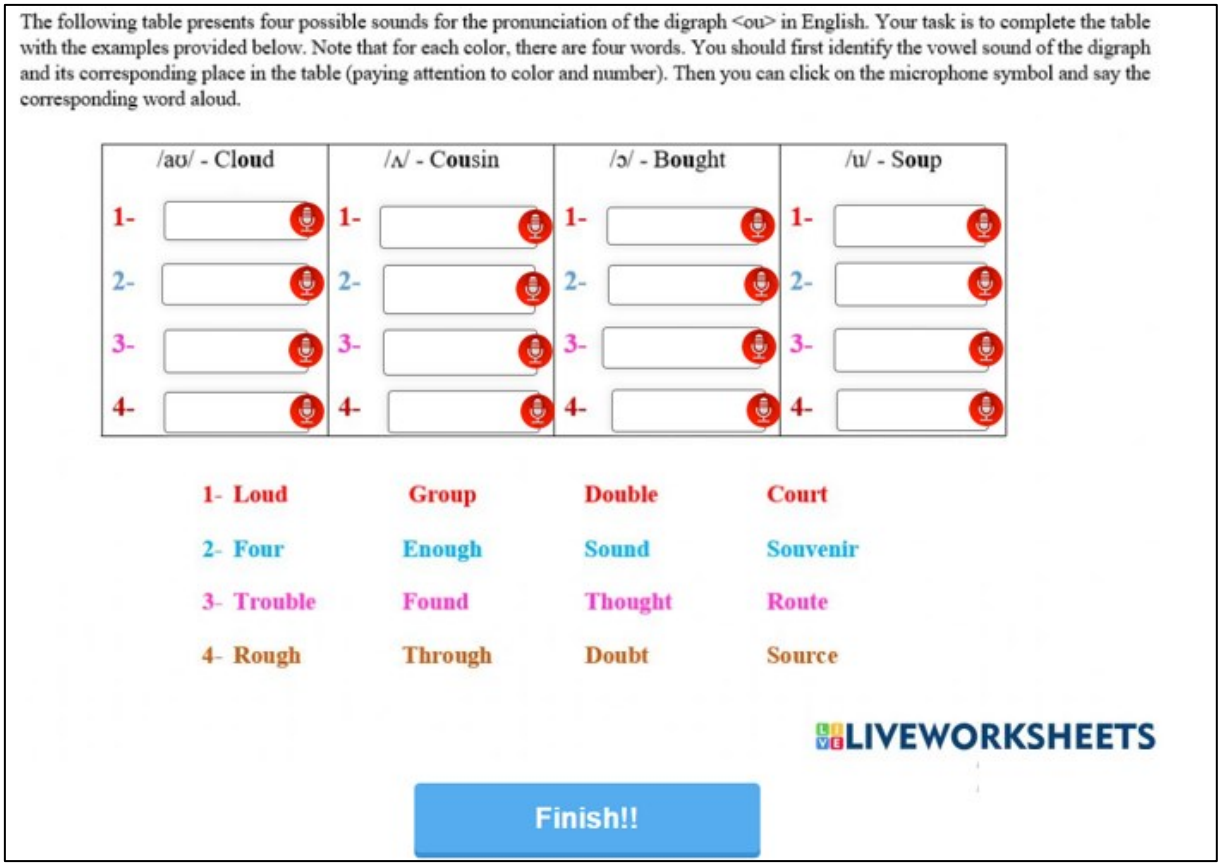
Source: elaborated by the author (2022).

For the *controlled practice*, different activities were planned, such as the use of tongue twisters and another activity developed by the researcher on the website Live Worksheet, which practiced both the perception and production of the target sounds. In this activity, participants

[20] This activity was adapted from the book "Pronunciation Games" by Mark Hancock (1995).

had to listen to the words and identify the target sounds to complete the chart by saying the corresponding word in the appropriate space. The activity is presented in the following figure (7):

Figure 7 – Screenshot of the activity presented in the 4th meeting.



Source: elaborated by the author (2022).

As stressed by Celce-Murcia, Brinton, and Goodwin (2010), feedback has an important role in the pronunciation lesson, which should be delivered in all of these practice moments, although its extent can vary and will depend on the kind of activity being performed. Therefore, it is worth mentioning that these activities created on the website also provided feedback on the participants' responses, showing the right and wrong options, and participants could complete the activities again if needed extra practice.

The fourth step, *guided practice*, can be observed in an activity game proposed in the last lesson of the intervention, in which one participant used a set of words representing the letters of the alphabet to spell their family members' names, while the others had to guess the name. As it was a game, the first participant that decoded the name correctly got a point. The words selected for this activity were items that participants had practiced previously, thus providing the opportunity to review the pronunciation of the words.

This section presents the overall structure of the pronunciation lessons developed and taught by the researcher to the Experimental group. However, the detailed planning of each session, including its specific objectives and procedures, as well as the materials elaborated and adapted by the researcher are presented in appendix (J).

3.5 PROCEDURES FOR DATA COLLECTION

As the present study was structured in pre-test and post-test phases, with the instruction period in between, participants were assessed immediately before and after the treatment, meaning that they took part in two moments of data collection. Previously to any task, however, the researcher contacted the two groups of learners and explained the events in which they would be participating. The learners who showed interest in collaborating with the study received the Informed Consent Form (*Termo de Consentimento Livre e Esclarecido* - TCLE) through the *Google Forms* platform.

The learners were instructed to read the document with attention and solve any possible question in relation to the experiment before submitting their acceptance. For registering the response to the TCLE document, participants had to select one of the options “I accept to participate in the study” or “I do not accept to participate in the study”, type their name and e-mail address in the corresponding places, and submit their response in the form. One copy of the document was automatically sent to the e-mail previously provided by the participant, and they were instructed to save their copy carefully. The information contained in the document of TCLE can be seen in Appendices E and F, respectively the information presented to the participants of the Experimental group and to the participants of the Control group.

After receiving confirmation of the TCLE document, the researcher forwarded (via e-mail) the instructions and access links for the tasks to each participant according to the stages of the research. All message exchanges were done individually and through the e-mail address provided voluntarily by the participant.

The initial step of the research was the first data collection session, named the pre-test phase of the study. For this session, participants completed the four tasks (described in section 3.3) in the following order:

1. Language background questionnaire.
2. V_YesNo vocabulary size test.

3. DSR task.
4. Sentence reading task.

Participants were expected to take approximately 10 minutes to read and fill in the language background questionnaire, which was shared through the same platform used for signing the Informed Consent form. All the questions were formulated in English, but participants were allowed to look up the meaning of unknown words, so as to understand what was being asked.

After completing the questionnaire, participants were instructed to take the V_YesNo vocabulary size test (MEARA; MIRALPEIX, 2017), which was expected to take about 15 minutes. Considering the method of the vocabulary test, participants received the instruction to press the "yes" button only when they were sure they knew the word since saying yes to nonwords would negatively affect their scores.

Sequentially, participants performed the DSR and the sentence reading tasks, which were presented one after the other in the same experiment on the platform *Testable*. The tasks were organized in a single experiment to guarantee that participants would complete them in the correct order (first the DSR task and then the reading task). This order was established in an attempt to avoid greater orthographic effects due to exposure to the written forms of the target words from the sentence reading task. Participants were also instructed to complete the two tasks at once to ensure that the platform would properly save the data from both tasks. The information containing on the instruction file shared with participants is shown in Appendix H.

As all the tasks were online, participants could complete them at the most convenient time within the specified period of a week. Therefore, the researcher forwarded the instructions explaining each task along with the access links and kept standby to quickly respond to any possible questions or issues concerning the execution of the tasks. The researcher also followed up on participants' advances and sent gentle reminders throughout the week. In estimation, this first phase of the data collection took approximately 40 minutes (10 minutes for the questionnaire, 15 minutes for the vocabulary test, and 15 minutes for the experiment of the DSR and reading sentence tasks), and the two groups of participants concluded it without any significant difficulties and within the established period.

After the collection of the pre-tests data, participants from the Experimental group attended to the instructional sessions with the researcher, which consisted of six online meetings hosted through the web conferencing platform *Zoom*. The meetings were twice a week, half an

hour before their regular class, and the data collection took place in the second semester of 2021.

As for the Control group, they did not participate in the instructional treatment and did not receive any kind of pronunciation instruction from the researcher. They were made aware of an interval of almost four weeks between their first instance of participation and the second part of the study. Therefore, the researcher explained that after completing the four initial tasks, they would wait, and the researcher would later send the subsequent instructions for the second phase. During the interval, none of the participants from this group contacted the researcher, and they kept on with their regular classes.

At the end of the treatment period, all the participants received instructions again, explaining that they were expected to perform the DSR and sentence reading tasks one more time. The tasks followed the same procedures described above: they were hosted in a single experiment on the platform *Testable* (first the DSR task, followed by the reading task), and participants should complete the two tasks right away. The output collected on these second-time tasks corresponded to the date of the post-test, and the stimuli for the tasks at this time presented 12 novel words in addition to the target words that appeared in the pre-test tasks. These novel words were controlled for not appearing during the intervention period, and the aim of having the novel stimuli at the post-test was to permit analyzing if learners from the Experimental group could extend the knowledge on grapho-phonemic rules to not-instructed words.

In addition, the order of the trials in these second-time tasks differed from the previous one. Therefore, the researcher mixed up all the trials containing the novel words and the trials containing the previous target words to ensure a different order. Participants took approximately 25 minutes to perform both tasks at this final phase. As organized initially, the tasks were asynchronous, and because of the exams week of the participants (from their regular course plan), the researcher established a more extended period of 12 days for them to carry out the experiment. The researcher also monitored the conclusion of the tasks and assisted participants by sending reminders and promptly answering questions, although none of the participants faced any problem during the experiment and completed it successfully.

After completing this final phase of the study, both groups of participants received a certificate to attest their participation and a personalized pronunciation feedback. The researcher carefully elaborated the feedback according to the samples from their oral responses from the data collection, and with audio recordings to exemplify the pronunciations in a target-

like manner. In the feedback file, the researcher also provided some more information concerning the study, as well as general tips and extra resources that could help the participants improve their pronunciation skills in English.

Once all of these steps of the data collection were completed and participants were properly thanked, the researcher moved on to the rating phase. As mentioned, the target words from the participants' oral productions collected in the pre-and post-tests were assessed by linguistic raters. For this reason, the researcher extracted the target words from the participants' oral responses with the help of the software programs *Praat* and *Audacity*. After extracting the target words, the data was organized into two tasks and submitted to the evaluation of three linguistic raters in terms of pronunciation accuracy (see section 3.6).

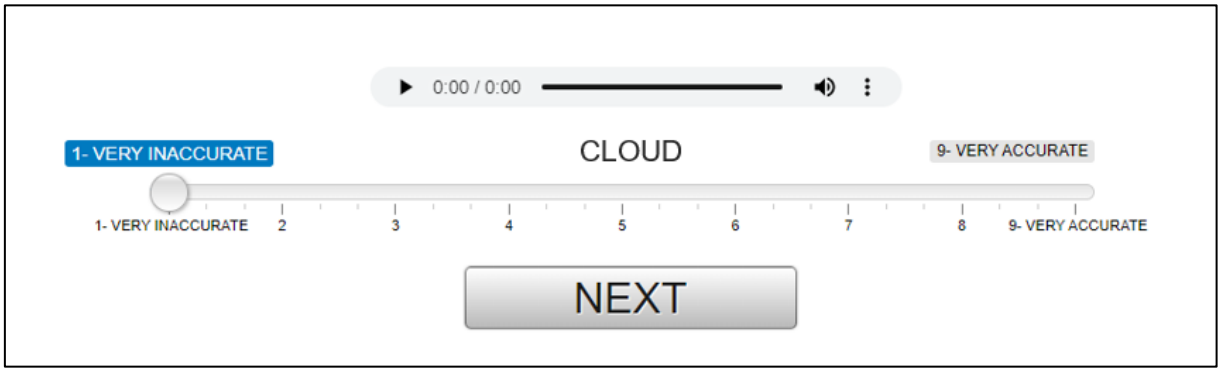
The procedures for listening and assessing the target words were also conducted remotely through the platform *Testable* again, as it supports a long load of audio sharing. The linguistic raters' task was divided into two sessions to avoid that the rating process would become too tiring. Hence, the three linguistic raters took part in two rating sessions: the first contained the words from the DSR tasks and the second contained the words from the reading tasks. In both rating sessions, all the items (T1-pre test and T2-post test) were presented in random order and the raters did not know they were rating the same people before and after an instructional period. Each session presented 484 uttered words (16 words from the pre-test + 28 words from the post-test × 11 participants), and, as an estimation, it took the raters approximately 40 minutes to complete each task. However, the total duration may have varied slightly depending on their individual execution, as there was not a set time interval for each item, and they could listen to the recordings more than once.

The group of linguistic raters equally received and signed the TCLE form to guarantee the consent of their participation and their rights as research participants. The procedures for reading and signing the term were the same as detailed above. However, the group had a different document (presented in Appendix G), with the specific information regarding their tasks and participation in the study. Additionally, the linguistic raters completed an online questionnaire (Appendix C), estimated to take about 10 minutes, which was forwarded before the first session of the rating process. Therefore, their collaboration with this research took, on average, 1 hour and 45 minutes (15 minutes for reading and signing the TCLE, 10 minutes for the online questionnaire, 40 minutes for the first rating session, and 40 minutes for the second rating session).

3.6 DATA ANALYSIS

In order to obtain a measure for the accuracy of participants' oral productions, this study adopted the subjective analysis of expert linguistic raters with linguistics and teaching backgrounds. For the assessment, the three linguistic raters (see subsection 3.1.1) listened to each target word and rated them in terms of pronunciation accuracy on a 9-point Likert scale. Lee, Plonsky, and Saito (2020) used similar assessment procedures, and, as proposed by the authors, the lower the value, the more imprecise the production. Likewise, the pronunciations perceived as more target-like should receive values closer to point '9'. As an illustration, a screenshot of the experiments prepared for the rating sessions is presented below:

Figure 8 – Screenshot: rating experiment.



Source: elaborated by the author (2022).

After the rating sessions had been successfully completed, it was still necessary to verify that the scores attributed by the raters in fact reflected inaccuracies in the production of the target graphemes. In other words, it was expected that the differences in the values assigned to each item would refer to the specific pronunciation of the vowels within the four sound categories, which was the investigation context of this study, and not due to difficulties in the production of some consonant sounds. For this reason, the researcher conducted an auditory perception analysis, evaluating only the target vowels in all items. The researcher then assigned values of '0' to items whose target vowels were inaccurate and '1' when perceiving the target vowels as accurate.

In sequence, Spearman's rank correlations were computed to attest to the required relationship between the variables containing the means from the linguistic raters and the auditory perception results. The tests confirmed a strong, positive correlation for the rating

scores and auditory perception results in the DSR task at T1 (*rho*=.810, *n*=11, *p*<.005, r^2=65), reading task at T1 (*rho*=.839, *n*=11, *p*<.005, r^2=70), DSR task at T2 (*rho*=.853, *n*=11, *p*<.005, r^2=72), and a positive moderate correlation for the reading task at T2 (*rho*=.599, *n*=11, *p*=.052, r^2=36). The correlation results confirm that the linguistic raters were mostly evaluating the target sounds, meaning that the values attributed by them fit the purposes of this study and were adequate for the following statistical tests.

It is worth recalling that since there were three linguistic raters, each uttered word received three distinct values. Therefore, inter-rater reliability tests were also run to validate the internal consistency of the rated values and ensure their reliability. That is, to confirm that the raters agreed on their judgments under all conditions. According to Pallant (2005), a frequently used indicator of internal consistency is Cronbach's alpha coefficient, which should present a coefficient of above .7 to ensure the reliability of the scales. In agreement, the consistency of the ratings from this study was confirmed by a Cronbach's alpha coefficient of .829 for the first session ratings (items from the DSR tasks) and .879 for the second session ratings (items from the reading tasks). Once it was established that the three raters were consistent in their ratings, a mean value was calculated for each item from the three ratings.

In addition to the rating scores calculated from the values assigned by the linguistic raters, the researcher calculated the gain scores for each participant (from the Control and Experimental groups) to assess improvement from T1 to T2. The calculation was done separately for the two tasks by subtracting the tasks' pre-test rating scores from the post-test rating scores.

Sequentially, the rating scores and gain scores were organized within the variables to run the descriptive and inferential statistic tests. The software *SPSS* for *Windows* – version 20.0 was used for all statistical tests with the alpha level established at .05. The analyses encompassed comparisons between and within the groups in both tasks at the two data collection points, and considering the small number of participants in each group; non-parametric versions of the tests were adopted. Moreover, assumptions for normal distribution were not met in all dependent variables, as shown by skewness and kurtosis coefficients and significant values in the results of Shapiro-Wilk tests. Hence, Wilcoxon (for within-group comparisons) and Mann-Whitney U (for across-group comparisons) were the main tests used to help answer the research questions.

4 RESULTS

The present study was developed around two primary objectives: 1) to investigate the influence of grapheme-phoneme transfer by Brazilian EFL learners in a reading task in comparison to a more spontaneous task, and 2) to verify the effects of an instructional period on English grapho-phonemic rules and if the knowledge gained could be extended to non-instructed words. In this regard, this chapter aims to present the results obtained from the study, revisiting the research questions and hypotheses that were proposed in the method chapter. Therefore, each section of this chapter will address one of the research questions and present the descriptive and statistical results of the analysis.

4.1 PRE-TEST RESULTS

The first research question of this study – "Do BP learners of English manifest more difficulties in the pronunciation of words containing the graphemes <ou> (e.g., *tough*, *proud*) in a sentence reading task than in a DSR task?" – aimed to investigate the effects of orthographic influence on participants' oral production by comparing their pronunciation in the two tasks. Therefore, participants' scores from the two tasks at T1 were analyzed and compared. As the first step, the descriptive statistics from the two variables and the differences among the sound categories were calculated and presented respectively in Table 8 and 9.

Table 8 – Pre-test ratings across tasks.

Task type	*M*	*SD*	*Min.*	*Max.*
DSR task (*n*=11)	6.26	.91	4.17	7.77
Reading task (*n*=11)	4.66	.97	1.96	5.60

Source: elaborated by the author (2022).

Table 9 – Pre-test ratings across sound categories.

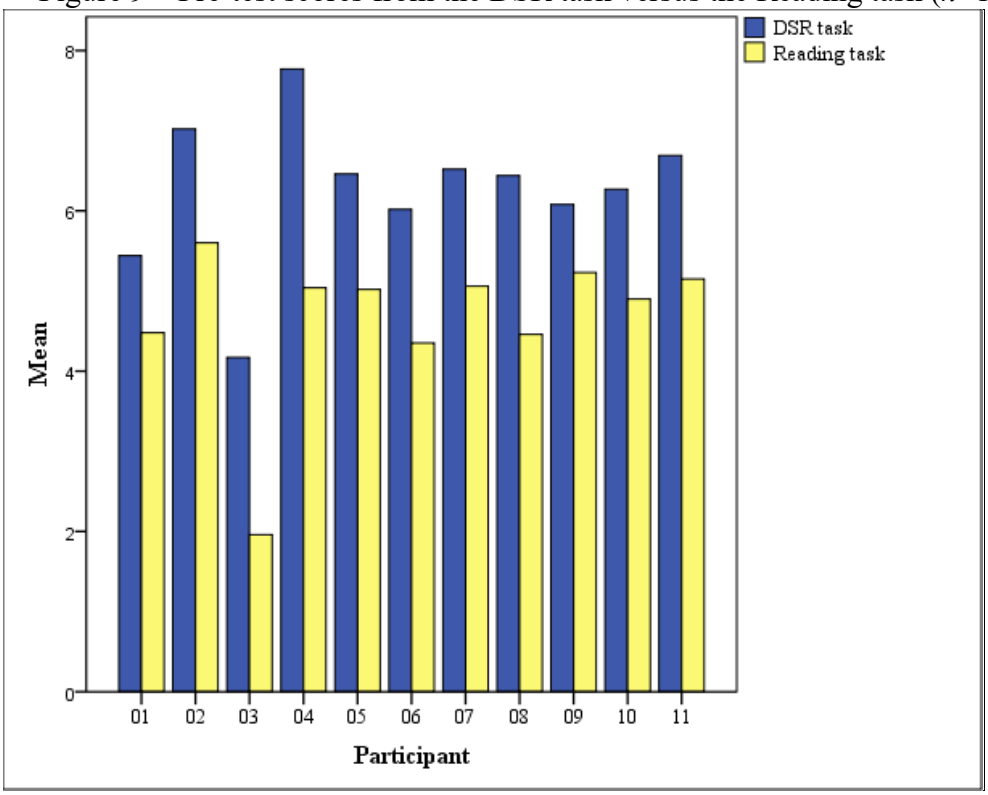
	DSR task (*n*=11)				**Reading task (*n*=11)**			
Sound	*M*	*SD*	*Min.*	*Max*	*M*	*SD*	*Min.*	*Max.*
/aʊ/	6.89	1.02	5.17	8.33	4.89	1.54	1.75	7.83
/ʌ/	6.93	.91	5.17	8.08	4.86	1.63	1.92	7.83
/ɔ/	5.53	1.84	2.92	8.67	4.17	1.65	1.83	7.67
/u/	5.64	.97	3.42	7.17	4.72	1.10	2.33	6.00

Source: elaborated by the author (2022).

According to the descriptive data from the pre-test results, participants seem to have performed better at the DSR task as demonstrated by the higher scores. In comparison, there was a difference of 1.6 points between the means from the DSR task (*M*=6.26) and the reading task (*M*=4.65). As for the sound categories, the higher scores are observed in the category of the vowels /aʊ/ and /ʌ/, indicating better performance in those conditions. However, it is also possible to notice some variance among the scores, especially in the cases presenting standard deviations up to 1 point. Likewise, in some cases, participants seem to have performed way below average, as indicated by the minimum values below 2 points (in the 9-point Likert scale). Overall, the pre-test scores were relatively high, which may be due to participants' previous experience with the pronunciation of some target words from the beginning of the study.

With the intent of confirming for statistical differences in the scores from the DSR and reading tasks from participants' pre-test and therefore answering the first research question, the researcher conducted a Wilcoxon test with the means of the two tasks. The test results reveal that the difference between the scores of the tasks was statistically significant (*Z*=-2.93, *p*<.005), and the eta squared statistic (.46) indicated a medium effect size. In the following graph, the differences between the performance in the two tasks can be visually observed, as well as the individual variation between the participants.

Figure 9 – Pre-test scores from the DSR task versus the Reading task (*n*=11).

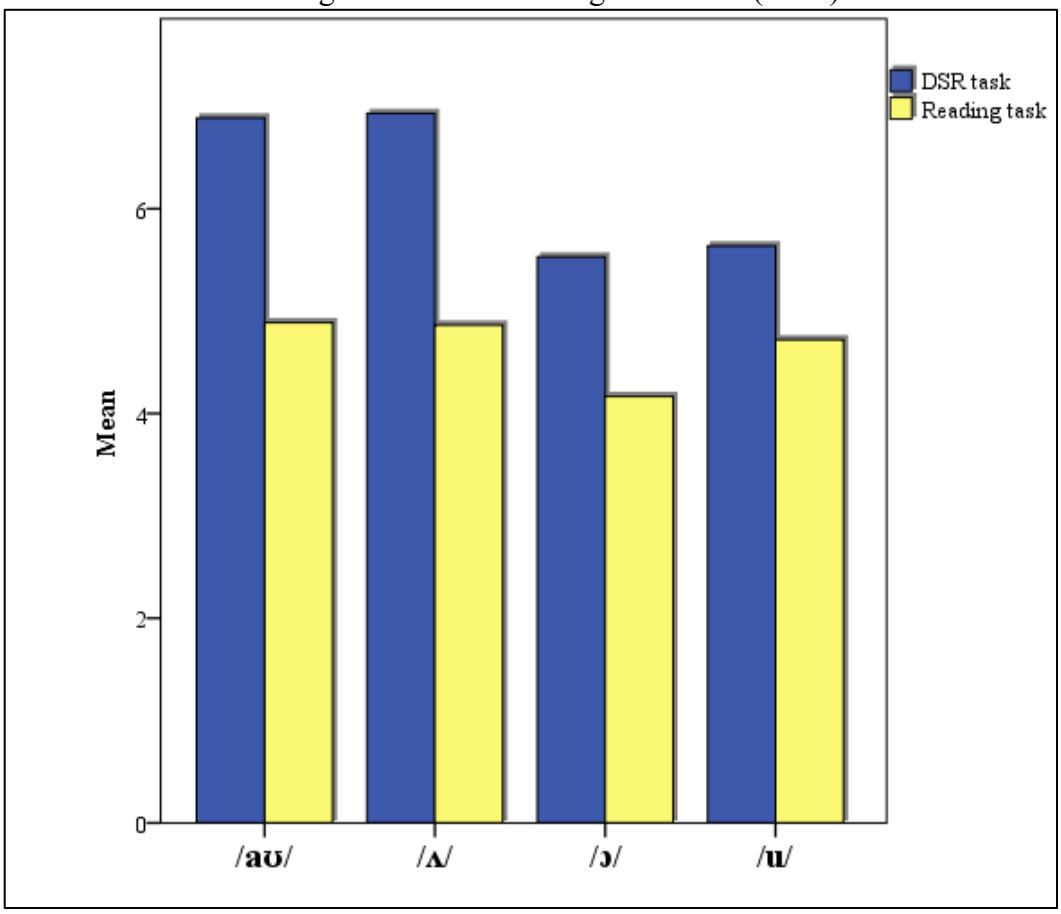


Source: elaborated by the author (2022).

These results corroborate the initial hypotheses that: 1) participants had fewer errors in the DSR task, most likely due to the availability of auditory input and the lack of orthographic forms and 2) that consequently, Brazilian EFL learners may transfer some of the letter-sound relations from their L1 to the production of English words.

In order to determine whether there were differences in the accuracy of production of the different sounds to depict the grapheme <ou>, the researcher ran Friedman tests as a complementary analysis to investigate whether there were significant differences between the four sound categories in each task. The results from the DSR task scores show that the /aʊ/ sound was produced significantly better than the other sounds (X^2[3]=13.69, p<.005). The words pronounced with /ʌ/ appear as the second sound that received the highest scores. As for the reading task, the results favored again the same sound categories (/aʊ/ and /ʌ/), however, this difference was not statistically significant (X^2[3]=3.330, p=.343). In the two tasks, the sounds /ɔ/ and /u/ received the lowest scores. The following graph illustrates these differences across the four sound categories on each task.

Figure 10 – Sound categories mean (n=11).



Source: elaborated by the author (2022).

These findings will be further discussed and compared with previous research in the subsequent chapter. In the following sections, the results from the RQ2 and RQ3 are presented.

4.2 POST-TEST RESULTS

The second research question – "Does the use of CR activities about grapheme-phoneme correspondence help learners produce the different vowel sounds for <ou> more accurately?" – intended to verify possible gains from the instructional period for the Experimental group. For this purpose, gain scores were calculated for each participant in both tasks by subtracting the pre-test scores from the post-test scores. However, before examining the gain scores, the researcher conducted Mann-Whitney tests to confirm that the two groups did not present significant differences in their overall scores at the onset of this study to determine that they would thus be comparable. The results of this preliminary analysis confirmed that the two groups had a similar performance in the DSR task at T1 (Z=-.365, p=.715), as well as in the reading task at T1 (Z=-.913, p=.361), meaning that participants started at a similar level and the post-test gains could be assessed.

In sequence, Mann-Whitney tests were performed in order to compare the gain scores of the two groups. The means and standard deviations are presented in Table 10. The test revealed a significant difference in favor of the Experimental group in the DSR task (Z=-2.008, p=.045), indicating that the gain scores for the Experimental group were slightly higher. However, the magnitude of the differences in these gain scores was small (eta squared=.16), and therefore, some caution is needed in interpreting these results. As for the reading task, even though the Experimental group gain scores were higher, the test failed to attest to a significant difference between the gain scores of the two groups (Z=-1.826, p=.068).

Table 10 – Gain scores: Experimental group versus Control group

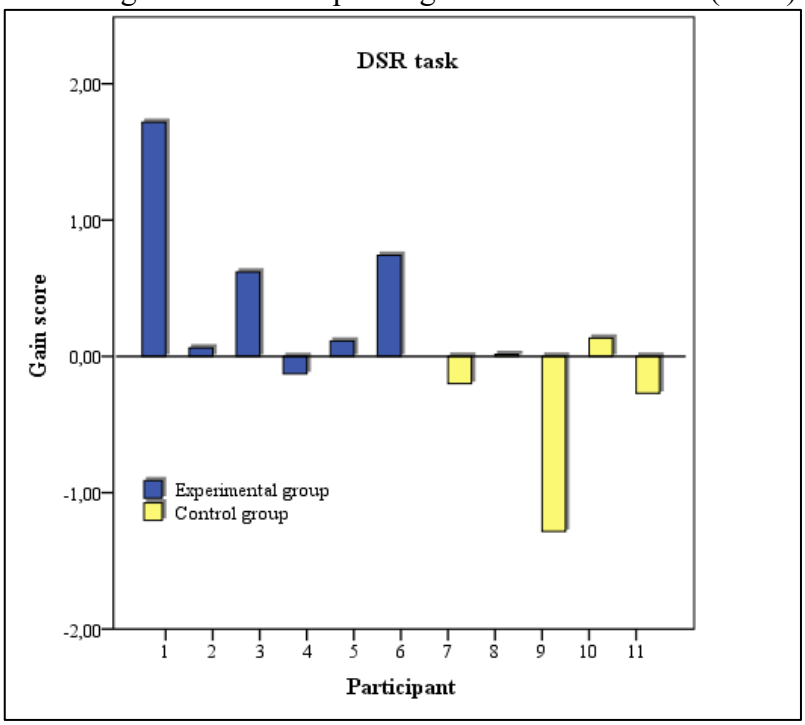
	DSR task		**Reading task**	
	M	*SD*	*M*	*SD*
Experimental group (n=6)	.52	.28	.58	.04
Control group (n=5)	.32	.25	.19	.20

Source: elaborated by the author (2022).

Although the difference between the gain scores for the two groups was not significant in the reading task, it is also not possible to state that participants did not improve their production after the instructional period. As seen by the means (in Table 10), participants from

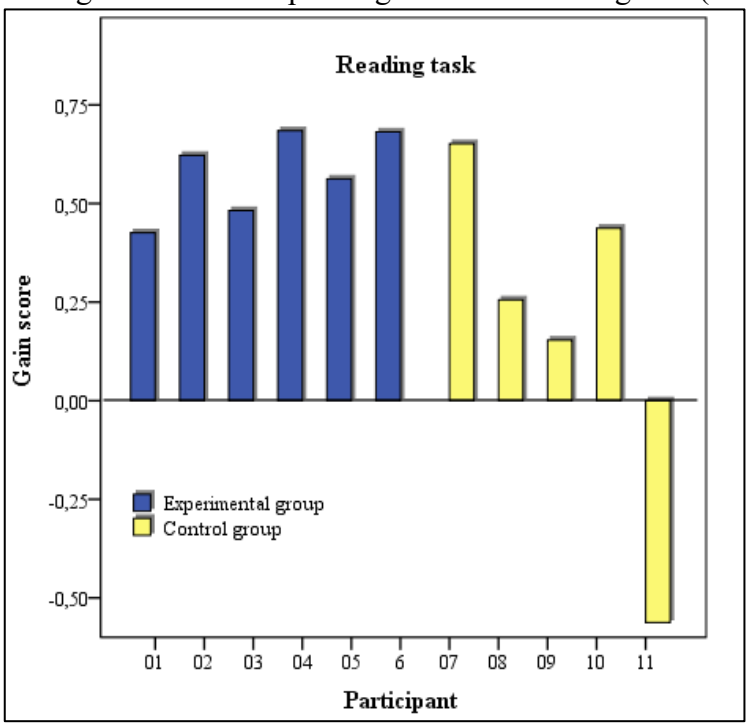
the Experimental group improved by more than .5 in both tasks. The following graphs illustrate participants' individual gain scores, comparing the groups in the two tasks:

Figure 11 – Participants' gain scores: DSR task (*n*=11).



Source: elaborated by the author (2022).

Figure 12 – Participants' gain scores: reading task (*n*=11).



Source: elaborated by the author (2022).

Overall, these results show that participants from the Experimental group had some improvement in their performance at the post-test. Nevertheless, the initial hypothesis (H3) that "learners who received explicit instruction would improve their pronunciation of the target words, whereas learners in the Control group would show minor improvement" was not fully confirmed, possibly due to the lack of statistical power. Such findings will be discussed more closely in the next chapter. Next, we will look at the production of the novel words, which were not part of the instructional period and appeared only in the post-test.

4.3 NOVEL WORDS

The last research question that guided this study (RQ3) – "Can learners extend the knowledge of grapho-phonemic rules to novel items after the teaching period?" – sought to investigate whether the participants from the Experimental group would be able to extend the knowledge gained during the instructional period to novel words. As a means to compare the production of the target words, which were part of the instruction, and the novel words, which had not appeared during the intervention period nor during the pre-test phase, the researcher calculated the post-test scores from the Experimental group under two conditions: old items and new items. Descriptive statistics of the scores are presented in Table 11.

Table 11 – Experimental group post-test: old items versus new items.

Task type	*Item*	*M*	*SD*	*Min.*	*Max.*
DSR task (*n*=6)	Old items	6.85	.89	5.19	7.73
	New items	6.42	1.16	4.25	7.53
Reading task (*n*=6)	Old items	4.94	1.42	2.23	6.15
	New items	5.05	1.32	2.72	6.33

Source: elaborated by the author (2022).

In order to compare the scores of the old and new items in the two tasks and answer the RQ3, Wilcoxon Signed Rank tests were carried out separately for the two tasks. The tests revealed no significant difference for the items from the DSR task (Z=-1.782, p=.750), nor for the items from the reading task (Z=-1.782, p=.750). These results indicate that participants from the Experimental group performed in a very similar manner for both types of stimulus (old and new items), which gives support to the initial hypothesis (H3) that the Experimental group would be able to extend some of the knowledge from English grapho-phonemic rules to words

that were not instructed. Such findings will receive additional consideration in the following chapter.

This chapter provided a description of the results of the statistical tests and analyses employed to investigate the data collected in the present research. In sequence, all of the results presented above will be discussed in depth in the discussion chapter, with reference to previous findings from studies in the area.

5 DISCUSSION

The present study investigated the influence of orthography on Brazilian EFL learners' pronunciation by comparing their production under two conditions: in a DSR task, which was modeled by native oral input and did not present the written form of the target words; and in a reading task, which was conducted utterly via written input. As a second goal, this study investigated the effects of an instructional period designed to address some English grapho-phonemic rules and help the participants to realize the correct mapping of sounds on the <ou> digraph, in an attempt to improve their pronunciation of the target words.

The results corroborated the initial hypothesis that participants would be negatively influenced by the availability of the orthographic form in the reading task and, hence, would achieve a better performance in the DSR task. These results are in line with findings from previous studies examining the effects of orthography on different production tasks with learners of English (e.g., BASSETTI; ATKINSON, 2015; SILVEIRA, 2007; 2009; OLIVEIRA, 2005). As acknowledged by the researchers, mismatches in the orthographic systems of English and the learners' L1 are likely to yield non-target-like productions, such as the addition or replacement of sounds.

In the present study, likewise, participants received scores that were higher in the DSR task compared to the overall scores of the reading task. Interestingly, all of them performed in a very similar manner in both tasks. For instance, even those participants who obtained higher scores on the pre-test showed a similar decrease in the scores on the reading task. These findings thus indicate that the availability of auditory input from a native speaker as a model helped the participants to pronounce the target words more accurately, while the reading task resulted in more pronunciation difficulties, as following previous research results (e.g., BASSETTI; ATKINSON, 2015).

Participants' individual scores, however, varied considerably as regards individual differences in their pronunciation skills and/or familiarity with the pronunciation of the target words at the onset of the study. Since the testing stimuli consisted of real words, and some of them were more frequent words (e.g., *through* and *sound*), it is plausible that participants had some prior knowledge on part of the words elicited in the test. On the other hand, the means of the two tasks in the pre-test reveal some difficulties in their overall performance, indicating that a significant portion of the pronunciation of the words was less familiar to the participants.

It is also noteworthy that even in the DSR task, in which participants were exposed to the phonological form of each word, scores remained close to the middle of the Likert scale (*M*=6.26, *SD*=.91) leaving scope for improvement. Such an observation gives support to the claim that although auditory input is of great importance in helping to reduce pronunciation inaccuracies due to mismatches between orthographic and phonological forms, it may not eliminate all of the effects of orthography. As such, the results from the DSR task seem to follow previous research findings, indicating that learners can have their pronunciation influenced by orthography even after being modeled by target-like auditory input and/or in the absence of the written forms (e.g., BASSETTI; ATKINSON, 2015; OLIVEIRA, 2015).

As for the differences in the production accuracy of the four sound categories, results showed that the words containing the sounds /aʊ/ and /ʌ/ were rated as more accurate. The first sound was expected to receive higher scores since, according to Brooks (2015), the diphthong /aʊ/ is the basic phoneme for the digraph <ou>, and almost half of the words spelled with the digraph is pronounced as /aʊ/. Therefore, learners were more acquainted with this grapheme-phoneme relation presumably due to its greater recurrence.

The sound /ʌ/, on the other hand, is far less frequently mapped on the target spelling. As described by Brooks (2015), this sound only appears in 6% of the words spelled with the digraph <ou>. Consequently, the results favoring the sound category /ʌ/ are more intricate and may be attributed to the specific choice of words containing the sound rather than to the regularity of the mapping of this sound on the digraph <ou>.

In the sequence of the ranked scores comes the sound /u/, followed by the sound /ɔ/, which received the lowest ratings. According to Brooks' (2015) description, the sound /u/ appears more frequently in words spelled with <ou> in comparison to the sounds /ɔ/ or /ʌ/. However, words containing /u/ and the target spelling are often French in origin, which may have caused some confusion to the participants, yielding difficulties in their pronunciation. As for the last sound, /ɔ/, it only appears in specific contexts, such as in the irregular form of past verbs spelled with <ough> (e.g., *fought*, *bought*, *sought*, etc.) or in some words spelled with the graphemes <our> (e.g., *court* and *source*). In trying to interpret the low scores for this sound category, it seems that participants were not very familiar with the contexts of the sound /ɔ/ represented by the digraph <ou> at the pre-test phase of this study.

To reiterate, this study followed a pre- and post-test design, with an instructional period in between for the Experimental group. During this period, the group received instruction on some problematic mappings of English sounds and spellings and practiced the target words

of the study. The Control group, in contrast, did not receive any kind of instruction. The aim of the post-test was then to compare possible gains from the instruction for the Experimental group. However, as seen in the previous chapter (IV), the results of the participants' tests were inconclusive.

On one hand, the Experimental group improved their production by more than .5 points on the two post-test tasks, which can be interpreted as an effect of the instructional sessions. On the other hand, the comparison of the gain scores of the two groups revealed only a small significant difference for the DSR task and no significant difference for the reading task. When analyzing participants' scores individually, two facts can add to the interpretation of the small differences between the two groups: 1) one of the participants (participant 04) from the Experimental group performed surprisingly well at the DSR task in the pre-test, and consequently, did not show further gains at this condition in the post-test; 2) one participant from the Control group (participant 07) performed surprisingly well at the reading task at the post-test, which had an effect on the overall score of the group at this condition. In other words, the different behavior of one participant in a sample size this small can substantially affect the results of the group when observed through mean scores.

Another aspect that must be considered is the duration of the instructional period. The Experimental group participated in six short sessions of about 30 minutes each over a three-week period. The meetings were held online and centered on PowerPoint presentations on different aspects of English phonology and orthographic rules. The discussions were guided by the researcher, while participants were encouraged to participate actively by formulating rules, reflecting on their own pronunciation, and carrying out activities. However, considering that different sounds were practiced and raised awareness to their spellings, it appears that a longer period of instruction and further opportunities to practice the target sounds could have helped to evidence the effects of the treatment, especially in the reading task productions, in which the availability of the written input tends to amplify the influence of orthography.

As discussed in chapter II, although instruction is expected to improve L2 learners' pronunciation skills, it does not necessarily lead to immediate, automated gains at the production level. Preferably, pronunciation instruction should be seen as a tool to facilitate the acquisition of L2 phonology in a gradual manner (SILVEIRA, 2004). It is pertinent to recall that the focus of this work was at the production level, and other skills, such as the perception of the target sounds, were not tested. However, if considering that in order to automate gains at the production level, learners need considerable practice (CARLET; KIVISTÖ-DE SOUZA,

2018; SILVEIRA; ALVES, 2009); the participants from this study might have improved in other areas than production. Thus, the short period of instruction might not have been enough to automatize some of the target pronunciations. This hypothesis, however, was not tested due to the study design.

Moreover, the learning context and individual variables can also influence learner performance to different extents (MUÑOZ, 2008; SAITO; HANZAWA, 2016). The participants in this study were in a similar formal learning context as they were all enrolled in the same language course. Yet, as presented in section (3.3), some variation was observed regarding their daily practices and experience with English. For example, some participants declared being used to performing different activities in English, such as attending classes and lectures and watching TV programs, while others declared a limited contact with the language apart from the class time. Therefore, individual variables may also have had some effects on the results, particularly given that there was a period of almost one month between the two data collection points.

To put it concisely, the overall results of the post-test show that the instructional period designed for the study helped participants from the Experimental group to improve their pronunciation of the target words. The gains, however, were less evident probably due to one or more of the following concerns:

1) The short-term format of the instruction, which addressed many sounds and rules within a period of three weeks. Considering that pronunciation learning takes time and requires great contact with the target language input and practice opportunities, it is possible that a longer period of instruction would have yielded more effects for the Experimental group.

2) Lack of statistical power as a consequence of the reduced number of participants who completed the study in each group.

3) Participants' individual variables, such as their practice time and contact with English out of the class. As seen in section (3.2), some participants declared having very limited contact with English in their daily routine, while others had great contact with English and used the language in different activities during the week.

In addition, the analyses of the novel words presented in the post-test revealed that the Experimental group was able to extend part of the knowledge gained on English grapho-phonemic rules to words that had not been trained. Based on the non-significant differences in the results for the two types of stimuli (old and new), the group performed in a very similar manner for the words practiced during the instructional period and the novel words that only

appeared at the post-test. The availability of the native input in the DSR task may have facilitated the production of the novel words from that task. However, participants also showed similar performance with the novel words from the reading task, despite not having auditory input to modulate their production. Under these circumstances, the rules and patterns discussed during the instructional period may have assisted them to decode some of the novel words at the post-test.

These results demonstrate that instruction on grapho-phonemic rules can help L2 learners to not only improve the pronunciation of individual words but also help with decoding tasks so that they can make use of grapho-phonemic rules when decoding unfamiliar words. As pointed out by Celce-Murcia, Brinton, and Goodwin (2010), given the opaque status of English orthography, grapheme-phoneme correlations can be a challenge for English learners. While there are rules systematizing these relationships, which can help L2 learners handle some opaque relationships between English graphemes and phonemes, they also have to deal with many exceptions, requiring memorization of the specific phonological and orthographic forms. However, in any of these situations, of exceptions or systematized rules, learners can benefit from instruction in order to signal the target mapping of sounds and letters and thus reduce potential inaccuracies at the production level.

In short, the results from this study support the claim that orthography is an important variable in the process of L2 pronunciation learning, which can bring on some difficulties in the pronunciation of learners on an intermediate level of proficiency. In the same direction, this study provides more evidence in favor of pronunciation instruction that also addresses the grapho-phonemic rules of the target language. As seen, explicit instruction on the mapping of English letters and sounds can help learners identify how these relationships differ from the ones present in their L1 and deal with exceptions in the target language. In such a manner, this kind of instruction seems especially necessary in the cases where learners have previous experience with a transparent orthographic system and will deal with a more opaque orthography in the L2, as is the case for Brazilian learners of English.

The reflection on the pedagogical implications of the study, as well as the research limitations and suggestions for future research, will be addressed in more detail in the following and last chapter of this work.

6 CONCLUSIONS

This final chapter aims to summarize the main findings of the study and present a reflection on the pedagogical implications for pronunciation instruction regarding the study's scope and results. Finally, the research limitations of this investigation will be considered alongside with some suggestions for future research.

6.1 SUMMARY OF THE RESULTS AND PEDAGOGICAL IMPLICATIONS

This study investigated the influence of orthography on the pronunciation of Brazilian learners of English at an intermediate level of proficiency, showing that the orthographic component had some effects on the productions of these learners. Therefore, an important finding from this study is in relation to the type of tasks learners have to perform. Following previous research findings, task type is a predictor of the effects of orthography on L2 pronunciation since seeing the written forms of the words tends to amplify the influence of orthography on L2 pronunciation (e.g., BASSETTI; ATKINSON, 2015). As expected, the population of learners investigated in this study obtained higher scores in the task presenting only the oral form of the target words compared to the task that only presented the orthographic forms. Given these points, while tasks that feature orthographic input are likely to amplify orthographic transfer and yield inaccurate productions for language users, exposure to target-like language input is likely to reduce these effects. However, participants also showed some deviation in their productions in the DSR task, which only presented auditory input from a native speaker, indicating a possible influence of orthography even in the absence of the written input.

Such findings were also observed in previous studies and raise important pedagogical implications. To begin with, it is common for language learning contexts in Brazil to use materials that feature a lot of written input, implying that this population of learners is likely to have their pronunciation more influenced by mismatches between phonology and orthography. Considering that just receiving auditory input may not be enough to overcome production inaccuracies caused by the application of incorrect grapho-phonemic rules, it is possible to emphasize again the need for instruction on this matter.

The instructional sessions designed in this study demonstrate in a more practical vein that grapho-phonemic rules can be addressed within pronunciation instruction classes.

Likewise, the outcomes of this instruction as the intervention for the Experimental group provide some empirical evidence of the benefits of teaching grapheme-phoneme relations as part of the L2 pronunciation class. As a conclusion, orthography should be seen as a source for pronunciation teaching and not as a hindrance. Through instruction, the language teacher can help the learner to realize the correct mapping of English sounds and letters and signalize the exceptions that they need to memorize. In such manner, learners can reflect on their pronunciation, noting possible inaccuracies due to orthographic influence and, in the long term, improve their decoding skills in the target language to make use of the rules learned when encountering new vocabulary.

As observed by Cerni, Bassetti, and Masterson (2019), language learners use orthography as an important source for learning vocabulary. Therefore, helping them to deal with exceptions and different grapho-phonemic rules in the L2 would be of great importance from the early stages of the learning process in order to avoid internalizing imprecise pronunciations of newly encountered words. Likewise, considering the many irregularities of English orthography from a pedagogical point of view, it is also important to emphasize to learners the need to verify the phonological form of new words through relevant auditory input, rather than just guessing the pronunciation from the orthographic form.

The lesson plans elaborated in this study (Appendix J) provide some ideas for activities and how to work with the English grapho-phonemic rules to engage students in a more interactive way, which could be both applied for online or face-to-face classes, as well as for small or bigger groups of learners. It is also important to emphasize that these classes were designed more in accordance to research purposes, without knowing the students or following an outline of their specific difficulties and needs. Nevertheless, to ensure better results, pronunciation classes must be designed by taking into account the needs of the learners after diagnosing possible difficulties in their perception and production of the phonological aspects of the L2, as currently defended by some authors (e.g., BURNS; SEIDLHOFER, 2020; DARCY, 2018).

In summary, this study defends that pronunciation instruction should be seen as a shortcut for the learner to notice the specific phonological aspects of the target language and the gaps in their production. More specifically to the study scope, increasing learners' awareness of the correct mapping of sounds and letters seems of great relevance for their development in the L2. From this perspective, teacher training should also encompass some focus on grapho-phonemic rules, in order to make the professional more prepared to approach

these rules in the language class. By knowing in advance which grapho-phonemic rules of the L2 may cause some difficulties for the learner, the language teacher can draw their attention to the specific mappings when presenting new words or in tasks that involve written input and, as a result, avoid the internalization of inaccurate patterns. For the cases of more experienced learners, it might be necessary to help them identify and review some of these grapheme-phoneme relationships and provide more context to practice.

6.2 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

A significant limitation of this study was the number of participants in each group. As the study was conducted online and designed in three phases, some participants did not complete all of the phases and, hence, their data could not be used in the analyses. Another limitation was in relation to the treatment, in which only the Experimental group was engaged in instructional sessions. Therefore, it would be interesting to replicate a similar study design and apply it to greater groups of learners and maybe design different treatments for each group, in order to make it more evident the effects of the instruction on grapho-phonemic rules in comparison to a different pronunciation focus on the instruction.

Concerning the study design, a suggestion when using stimuli composed of real words is to carefully control for factors inherent to the selected words, such as their frequency. In this study, the selected target words were not controlled by this criterion, since some of the sound categories investigated had a limited number of words. Consequently, this was also another limitation of the study, as it was not possible to analyze adequately whether or to what extent the frequency of the target words facilitated the participants' production, although it may have had some effects.

It is also noteworthy that the participants from the present study came from a background of great experience with a transparent orthographic system (Portuguese). Therefore, some caution is needed in generalizing the findings from the study, as another population of learners, who have a more opaque orthography in the L1, for example, may show significant differences in their performance.

Moreover, the participants were at an intermediate level of proficiency, and all of them were receiving formal language instruction through online group classes. In this way, a similar investigation with learners from other learning contexts may have different outcomes. As another suggestion for future research, it would be interesting to investigate the effects of

orthography on the pronunciation of other population of learners who come from varying language backgrounds and learning contexts. More specifically, an investigation with more advanced learners could provide important insights for this discussion, in an attempt to verify if the effects observed in this study can be reduced in the course of more experience in the use of the target language. Likewise, language users who speak more than two languages may also reveal some insights regarding the complexity of grapheme-phoneme mappings.

Despite the aforementioned limitations, the results reported in this study contribute to the discussion of orthographic influence with an investigation with a specific sample of learners and provide some data on the pronunciation of the digraph <ou>, which, to the best of the researcher's knowledge, has not received much attention so far. In addition, the study contributes with some insights to the area of pronunciation teaching, providing a more practical view for approaching grapho-phonemic rules as part of pronunciation classes.

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APPENDIX A – List of carrier sentences for the DSR tasks

PRE-TEST		POST-TEST	
Target sound	**Sentences**	**Target sound**	**Sentence**
/aʊ/	**Cloud** is the next word. **Doubt** is the next word. **Flour** is the next word. **Sound** is the next word.	/aʊ/	**Cloud** is the next word. **Doubt** is the next word. **Flour** is the next word. **Pound** is the next word. **Proud** is the next word. **Sound** is the next word. **South** is the next word.
/ʌ/	**Cousin** is the next word. **Enough** is the next word. **Trouble** is the next word. **Rough** is the next word.	/ʌ/	**Couple** is the next word. **Cousin** is the next word. **Enough** is the next word. **Touch** is the next word. **Tough** is the next word. **Trouble** is the next word. **Rough** is the next word.
/ɔ/	**Bought** is the next word. **Court** is the next word. **Fought** is the next word. **Source** is the next word.	/ɔ/	**Bought** is the next word. **Course** is the next word. **Court** is the next word. **Fought** is the next word. **Mourn** is the next word. **Sought** is the next word. **Source** is the next word.
/u/	**Group** is the next word. **Route** is the next word. **Soup** is the next word. **Through** is the next word.	/u/	**Coup** is the next word. **Group** is the next word. **Route** is the next word. **Routine** is the next word. **Soup** is the next word. **Through** is the next word. **Troupe** is the next word.
Distractors	**Aunt** is the next word. **Caught** is the next word. **Fault** is the next word. **Laugh** is the next word. **Sauce** is the next word.	Distractors	**Aunt** is the next word. **Caught** is the next word. **Fault** is the next word. **Laugh** is the next word. **Sauce** is the next word.

APPENDIX B – Language background questionnaire: research participants

Personal information

1. Full Name: _____ Age: _____
2. Birthplace (city and state): _____
3. Email: _____
4. Currently occupation: _____
5. Gender: ( ) male ( ) female.

6. What is the highest level of education you have received?
   ( ) High school
   ( ) College degree
   ( ) Master's degree
   ( ) Doctorate

7. Do you have any corrected hearing or vision problems that you are aware of?
   ( ) No ( ) Yes (please specify which): _____

Linguistic information

1. Do you speak any other language (besides Portuguese and English? Which? _____

2. How long have you been studying English? _____

3. Do you receive formal language instruction (e.g., language courses, English classes at the university, etc.)? Explain it: _____

4. At what age did you start learning English? _____

5. Have you ever traveled abroad? ( ) yes ( ) no
   If yes, where and how long did you stay there? _____

6. Estimate how many hours do you daily use English (involving listening, writing, reading or speaking activities): _____

7. Which skill do you practice the most?

( ) Writing
( ) Reading
( ) Listening
( ) Speaking

8. Which of the skills do you have more difficulties in performing?

( ) Writing
( ) Reading
( ) Listening
( ) Speaking

9. Check the corresponding estimation you spent doing any of these activities in English during last week.

Activity	None	30 min.	Up to 1 hour	2 - 4 hours	5 - 7 hours	8 - 10 hours	+ 10 hours
1- Listening to music or podcasts.							
2- Attending class or lectures administered in English.							
3- Watching any kind of TV program with audio and subtitles in English.							
3- Reading (books, reports, articles, newspapers, etc.).							
4- Studying grammatical rules.							
5- Studying new vocabulary.							
6- Speaking to another person (either a teacher, other language users, or a native speaker).							
7- Practicing oral skills in other ways (e.g., singing, delivering oral presentations, performing “listen and repeat” tasks).							
8- Writing (e.g., text messages, e-mails, word lists, or more elaborated texts).							

APPENDIX C – Language background questionnaire: linguistic raters

Personal information

1. Full Name: _____ Age: _____
2. Birthplace (city and state): _____
3. Email: _____
4. Currently occupation: _____
5. Gender: ( ) male ( ) female.

6. What is the highest level of education you have received?

( ) High school
( ) College degree
( ) Master's degree
( ) Doctorate

7. Do you have any corrected hearing or vision problems that you are aware of?

( ) No ( ) Yes (please specify which): _____

Linguistic information

1. Do you speak any other language (besides Portuguese and English? Which? _____

2. How long have you been studying English? _____

3. At what age did you start learning English? _____

4. Have you ever traveled abroad? ( ) yes ( ) no
If yes, where and how long did you stay there? _____

5. Are you an English teacher? ( ) yes ( ) no
If yes, how long have you been teaching? _____

6. Are you currently teaching English? ( ) yes ( ) no
If yes, please answer the following questions:

- What is the age range of the students you teach? _____
- What is the average level of English proficiency of the students you teach? _____
- How many hours do you teach a week? _____

7. Can you estimate how many hours do you daily use English (involving listening, writing, reading or speaking activities)? _____

8. Check the corresponding estimation you spent doing any of these activities in English during last week.

Activity	None	30 min.	Up to 1 hour	2 - 4 hours	5 - 7 hours	8 - 10 hours	+ 10 hours
1- Listening to music or podcasts.							
2- Attending class or lectures administered in English.							
3- Watching any kind of TV program with audio and subtitles in English.							
3- Reading (books, reports, articles, newspapers, etc.).							
4- Studying grammatical rules.							
5- Studying new vocabulary.							
6- Speaking to another person (either a teacher, other language users, or a native speaker).							
7- Practicing oral skills in other ways (e.g., singing, delivering oral presentations, performing “listen and repeat” tasks).							
8- Writing (e.g., text messages, e-mails, word lists, or more elaborated texts).							

APPENDIX D – V_YESNO vocabulary size test screenshots

1. The access link[21] for the test was forwarded individually to each participant, together with the instructions and the specific access code (which enabled access to the test data). Participants were instructed to enter the access code in the two information boxes, as shown in the following screenshot.

2- To start the test, participants clicked on the "start" button. Right after, the testing words were presented (which were either a real word or a pseudoword), and their task was to press the 'yes' button if they knew the meaning of the displayed word or the 'next' button if they are unsure of its meaning.The test had a total of 200 words and, at the end of the test, participants were able to view their final score. Subsequently, the researcher accessed and interpreted each participant's scores.

[21] https://www.lognostics.co.uk/tools/V_YesNo/V_YesNo.htm

APPENDIX E – TCLE for participants from the Experimental group

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Eu, Janaina Fernanda de Almeida, aluna do Programa de Pós-Graduação em Inglês da Universidade Federal de Santa Catarina, gostaria de convidá-lo(a) a participar da minha pesquisa de dissertação, orientada pela Professora Dra. Hanna Kivistö-de Souza. Nosso projeto de pesquisa é intitulado "O processo de ensino/aprendizagem de pronúncia em inglês", e tem como objetivo a investigação de fatores que influenciam a aprendizagem fonológica em um novo idioma. Buscamos também pesquisar estratégias que possam favorecer esse processo, a fim de contribuir com implicações pedagógicas para o ensino de pronúncia em aulas de inglês.

Peço, por gentileza, que você leia este documento atentamente e tire quaisquer dúvidas em relação às etapas da pesquisa antes de concordar em participar do estudo. Caso você aceite fazer parte da pesquisa, os links de acesso para as etapas do estudo serão enviados de maneira individual pelo pesquisador a cada participante. O envio se dará através do e-mail voluntariamente fornecido pelo participante ao final deste documento.

Quanto ao seu papel na realização desta pesquisa, você irá completar quatro tarefas de coleta de dados, passará por um período de instrução, e ao fim, repetirá duas das tarefas realizadas inicialmente. Na primeira etapa, você irá: (i) responder um questionário com algumas informações pessoais e sobre sua experiência com a língua inglesa; (ii) fazer uma tarefa que estima quantas palavras você conhece em inglês; (iii) fazer uma tarefa em que você irá escutar áudios em inglês contendo uma pergunta e resposta, e você irá repetir em voz alta a resposta e gravá-la; (iv) fazer uma tarefa em que você lerá e gravará sentenças em inglês.

No período de instrução, você participará de seis sessões em que discutiremos aspectos relacionados à pronúncia do inglês americano. As sessões ocorrerão em ambiente virtual e de forma síncrona, nas quais veremos explicações e exemplos, além de praticar a pronúncia de alguns sons e palavras específicas em atividades interativas. Também será disponibilizado materiais extras com o conteúdo das aulas e outros recursos para serem acessados posteriormente. Mas não será feito registro de seus dados durante este período de instrução e as sessões online não serão gravadas.

Na última fase, você irá fazer novamente as tarefas de repetição de sentenças (iii) e de leitura de sentenças (iv), como descrito acima. Portanto, estima-se que o tempo a ser destinado para o cumprimento de todas as tarefas seja de cerca de uma hora; em média 30/40 minutos para a primeira etapa, e 30 minutos para a segunda. Todos os procedimentos se darão de forma online, e será necessário o uso de um computador com acesso à Internet. Você também poderá completar as tarefas em horário que for mais conveniente, mas sugerimos que você encontre um lugar confortável e apropriado, sem que haja muito barulho durante as gravações.

Após cada etapa, seus dados ficarão inicialmente registrados nas plataformas utilizadas, sem que haja qualquer registro de imagem. Posteriormente, será feito o download de todas amostras de dados (respostas do questionário e dados das tarefas) e os arquivos serão armazenados em dispositivos pessoais dos pesquisadores, como computadores e HD externos portáteis. Assim que os dados estiverem devidamente armazenados, suas informações serão excluídas das plataformas online.

Ressalta-se, por fim, que algumas palavras das suas produções orais coletadas nas tarefas (iii) e (iv) serão avaliadas por avaliadores linguísticos. Os pesquisadores selecionarão partes de cada áudio de voz coletado e extrairão algumas palavras para serem compartilhadas em arquivos de áudios com o grupo de avaliadores. Observe, no entanto, que os avaliadores linguísticos não terão acesso a informações pessoais que possam revelar a sua identificação

como participante. Eles apenas escutarão as amostras de áudios de forma aleatória (com as suas e demais produções orais coletadas) com a finalidade de fornecer valores para as análises de dados posteriores. Portanto, os avaliadores fornecerão um parecer restrito conforme o objetivo desta pesquisa, sem haver qualquer outra forma de julgamento em relação às amostras de áudios escutadas.

Os riscos ou desconfortos associados à participação desta pesquisa são baixos. Contudo, sua participação pode causar cansaço mental, nervosismo, ansiedade, constrangimentos e aborrecimentos, os quais são fatores comuns em situações de aprendizagem e/ou que envolvam avaliações. Assim, você estará exposto(a) a esses possíveis desconfortos durante as sessões de coleta de dados e durante as sessões de instrução. Além disso, visto que a coleta de dados será feita de forma on-line, você estará exposto(a) aos riscos característicos do contato remoto por meio eletrônicos e ambientes virtuais e precisará, por ventura, lidar com limitações tecnológicas. Similarmente, existe a possibilidade de quebra de sigilo e privacidade, ainda que de maneira involuntária e não intencional. Para minimizar o risco de quebra de sigilo e privacidade, seu nome será substituído por um código em todos os dados coletados, e somente os pesquisadores terão acesso ao restante das informações que possam levar a sua identidade. Para minimizar os demais efeitos, você poderá notificar o pesquisador de quaisquer desconfortos no decorrer de todas as atividades, e tem o direito de não responder quaisquer questões, sem que haja necessidade de justificar a decisão. Você também poderá, a qualquer momento, desistir de participar da pesquisa. Se fizer isso, todos os seus dados e informações serão descartados pelos pesquisadores.

Conforme regulamenta a legislação brasileira, sua participação nesta pesquisa será voluntária e não remunerada, e não acarretará, de forma alguma, em prejuízos ou em privilégios. No entanto, os participantes receberão um Certificado de Participação em Pesquisa contemplando todas as horas demandadas e um feedback personalizado sobre a sua pronúncia em inglês, com a intenção de ajudá-los a melhorar a sua habilidade no idioma. Vale lembrar ainda, que todos participarão de um período de instrução que pode igualmente favorecer o aprimoramento da sua habilidade de pronúncia em língua inglesa.

Os pesquisadores se colocam à disposição para esclarecimentos, antes, no decorrer e após a pesquisa, comprometendo-se a acompanhar e assistir os participantes durante todo o processo, bem como a manter a confidencialidade das informações fornecidas. Os resultados da pesquisa poderão ser divulgados em eventos ou publicações científicas, mas não haverá nenhuma identificação dos participantes. Você terá garantia de livre acesso às informações da pesquisa e poderá entrar em contato com os pesquisadores para obtê-las.

Caso haja algum dano material ou imaterial, devidamente comprovado, advindo da pesquisa, este documento garante o reparo ao dano que deve ser pago de acordo com a Resolução 510/16. É direito dos participantes ainda o ressarcimento de quaisquer despesas advindas de sua participação na pesquisa. Portanto, você poderá entrar em contato com um dos pesquisadores caso necessite de algum ressarcimento ou reparo de dano.

Por fim, asseguramos que esta pesquisa está submetida aos critérios das Resoluções 466/12, 510/16 e suas complementares e, também, passou pela aprovação do Comitê de Ética em Pesquisa com Seres Humanos (CEPSH) da Universidade Federal de Santa Catarina.

Para seu conhecimento: “O CEPSH é um órgão colegiado interdisciplinar, deliberativo, consultivo e educativo, vinculado à Universidade Federal de Santa Catarina, mas independente na tomada de decisões, criado para defender os interesses dos participantes da pesquisa em sua integridade e dignidade e para contribuir no desenvolvimento da pesquisa dentro de padrões éticos” (https://cep.ufsc.br/). Para maiores informações, você pode contatar o CEPSH: Prédio Reitoria II, R: Desembargador Vitor Lima, nº 222, sala 401, Trindade, Florianópolis/SC, CEP 88.040-400, Contato: (48) 3721-6094, cep.propesq@contato.ufsc.br.

Em caso de dúvidas sobre a pesquisa ou para mais informações, você pode entrar em contato diretamente com a pesquisadora assistente Janaina Fernanda de Almeida através do e-mail janainafernandadealmeida@gmail.com ou pelo telefone celular (47) 99959-4690. Você ainda pode contatar a pesquisadora responsável pela pesquisa, a Professora Dra. Hanna Kivistö-de Souza, através do e-mail hanna.kivistodesouza@gmail.com ou pelo telefone (48) 3721-9288. O endereço profissional dos pesquisadores situa-se na sala 111 do prédio B do Centro de Comunicação e Expressão, Universidade Federal de Santa Catarina, Campus Reitor João David Ferreira Lima, s/n, Trindade, 88040-900, Florianópolis - SC, Brasil.

Se você estiver de acordo em participar desta pesquisa, clique no campo abaixo “Aceito participar desta pesquisa”. Logo após, você verá uma seção para informar seu nome completo e endereço de e-mail. Por fim, você deve confirmar novamente sua participação e que você tem mais de 18 anos, bem como entendimento das informações presentes neste termo. Para afirmar a confirmação dessas informações, você precisa clicar em “Aceito participar desta pesquisa”. Feito isso, uma via deste documento será automaticamente enviada para o seu e-mail e da pesquisadora assistente (Janaina Fernanda de Almeida). Recomenda-se manter sua via armazenada em local seguro, e de fácil acesso, pois este documento garante seus direitos como participante da pesquisa. Caso você não deseje participar da pesquisa, clique em “Não aceito participar da pesquisa”.

APPENDIX F - TCLE for participants from the Control group

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Eu, Janaina Fernanda de Almeida, aluna do Programa de Pós-Graduação em Inglês da Universidade Federal de Santa Catarina, gostaria de convidá-lo(a) a participar da minha pesquisa de dissertação, orientada pela Professora Dra. Hanna Kivistö-de Souza. Nosso projeto de pesquisa é intitulado "O processo de ensino/aprendizagem de pronúncia em inglês", e tem como objetivo a investigação de fatores que influenciam a aprendizagem fonológica em um novo idioma. Buscamos também pesquisar estratégias que possam favorecer esse processo, a fim de contribuir com implicações pedagógicas para o ensino de pronúncia em aulas de inglês.

Peço, por gentileza, que você leia este documento atentamente e tire quaisquer dúvidas em relação às etapas da pesquisa antes de concordar em participar do estudo. Caso você aceite fazer parte da pesquisa, os links de acesso para as etapas do estudo serão enviados de maneira individual pelo pesquisador a cada participante. O envio se dará através do e-mail voluntariamente fornecido pelo participante ao final deste documento.

Quanto ao seu papel na realização desta pesquisa, você irá participar de duas fases de coleta de dados. Na primeira etapa, você irá: (i) responder um questionário com algumas informações pessoais e sobre sua experiência com a língua inglesa; (ii) fazer uma tarefa que estima quantas palavras você conhece em inglês; (iii) fazer uma tarefa em que você irá escutar áudios em inglês contendo uma pergunta e resposta, e você irá repetir em voz alta a resposta e gravá-la; (iv) fazer uma tarefa em que você lerá e gravará sentenças em inglês.

Já na segunda etapa, você irá fazer novamente as tarefas de repetição de sentenças (iii) e de leitura de sentenças (iv), como descrito acima. Portanto, estima-se que o tempo a ser destinado para o cumprimento de todas as tarefas seja de cerca de uma hora; em média 30 minutos para a primeira etapa e 30 minutos para a segunda. Todos os procedimentos se darão de forma online, e será necessário o uso de um computador com acesso à Internet. Você também poderá completar as tarefas em horário que for mais conveniente, mas sugerimos que você encontre um lugar confortável e apropriado, sem que haja muito barulho durante as gravações.

Após cada etapa, seus dados ficarão inicialmente registrados nas plataformas utilizadas, sem que haja qualquer registro de imagem. Posteriormente, será feito o download de todas amostras de dados (respostas do questionário e dados das tarefas) e os arquivos serão armazenados em dispositivos pessoais dos pesquisadores, como computadores e HD externos portáteis. Assim que os dados estiverem devidamente armazenados, suas informações serão excluídas das plataformas online.

Ressalta-se, por fim, que algumas palavras das suas produções orais coletadas nas tarefas (iii) e (iv) serão avaliadas por avaliadores linguísticos. Os pesquisadores selecionarão partes de cada áudio de voz coletado e extrairão algumas palavras para serem compartilhadas em arquivos de áudios com o grupo de avaliadores. Observe, no entanto, que os avaliadores linguísticos não terão acesso a informações pessoais que possam revelar a sua identificação como participante. Eles apenas escutarão as amostras de áudios de forma aleatória (com as suas e demais produções orais coletadas) com a finalidade de fornecer valores para as análises de dados posteriores. Portanto, os avaliadores fornecerão um parecer restrito conforme o objetivo desta pesquisa, sem haver qualquer outra forma de julgamento em relação às amostras de áudios escutadas.

Os riscos ou desconfortos associados à participação desta pesquisa são baixos. Contudo, sua participação pode causar cansaço mental, nervosismo, ansiedade,

constrangimentos e aborrecimentos, os quais são fatores comuns em situações de aprendizagem e/ou que envolvam avaliações. Assim, você estará exposto(a) a esses possíveis desconfortos durante as sessões de coleta de dados. Além disso, visto que a coleta de dados será feita de forma on-line, você estará exposto(a) aos riscos característicos do contato remoto por meio eletrônicos e ambientes virtuais e precisará, por ventura, lidar com limitações tecnológicas. Similarmente, existe a possibilidade de quebra de sigilo e privacidade, ainda que de maneira involuntária e não intencional. Para minimizar o risco de quebra de sigilo e privacidade, seu nome será substituído por um código em todos os dados coletados, e somente os pesquisadores terão acesso ao restante das informações que possam levar a sua identidade. Para minimizar os demais efeitos, você poderá notificar o pesquisador de quaisquer desconfortos no decorrer de todas as atividades, e tem o direito de não responder quaisquer questões, sem que haja necessidade de justificar a decisão. Você também poderá, a qualquer momento, desistir de participar da pesquisa. Se fizer isso, todos os seus dados e informações serão descartados pelos pesquisadores.

Conforme regulamenta a legislação brasileira, sua participação nesta pesquisa será voluntária e não remunerada, e não acarretará, de forma alguma, em prejuízos ou em privilégios. No entanto, os participantes receberão um Certificado de Participação em Pesquisa contemplando todas as horas demandadas e um feedback personalizado sobre a sua pronúncia em inglês, com a intenção de ajudá-los a melhorar a sua habilidade no idioma.

Os pesquisadores se colocam à disposição para esclarecimentos, antes, no decorrer e após a pesquisa, comprometendo-se a acompanhar e assistir os participantes durante todo o processo, bem como a manter a confidencialidade das informações fornecidas. Os resultados da pesquisa poderão ser divulgados em eventos ou publicações científicas, mas não haverá nenhuma identificação dos participantes. Você terá garantia de livre acesso às informações da pesquisa e poderá entrar em contato com os pesquisadores para obtê-las.

Caso haja algum dano material ou imaterial, devidamente comprovado, advindo da pesquisa, este documento garante o reparo ao dano que deve ser pago de acordo com a Resolução 510/16. É direito dos participantes ainda o ressarcimento de quaisquer despesas advindas de sua participação na pesquisa. Portanto, você poderá entrar em contato com um dos pesquisadores caso necessite de algum ressarcimento ou reparo de dano.

Por fim, asseguramos que esta pesquisa está submetida aos critérios das Resoluções 466/12, 510/16 e suas complementares e, também, passou pela aprovação do Comitê de Ética em Pesquisa com Seres Humanos (CEPSH) da Universidade Federal de Santa Catarina.

Para seu conhecimento: “O CEPSH é um órgão colegiado interdisciplinar, deliberativo, consultivo e educativo, vinculado à Universidade Federal de Santa Catarina, mas independente na tomada de decisões, criado para defender os interesses dos participantes da pesquisa em sua integridade e dignidade e para contribuir no desenvolvimento da pesquisa dentro de padrões éticos” (https://cep.ufsc.br/). Para maiores informações, você pode contatar o CEPSH: Prédio Reitoria II, R: Desembargador Vitor Lima, nº 222, sala 401, Trindade, Florianópolis/SC, CEP 88.040-400, Contato: (48) 3721-6094, cep.propesq@contato.ufsc.br.

Em caso de dúvidas sobre a pesquisa ou para mais informações, você pode entrar em contato diretamente com a pesquisadora assistente Janaina Fernanda de Almeida através do e-mail janainafernandadealmeida@gmail.com ou pelo telefone celular (47) 99959-4690. Você ainda pode contatar a pesquisadora responsável pela pesquisa, a Professora Dra. Hanna Kivistö-de Souza, através do e-mail hanna.kivistodesouza@gmail.com ou pelo telefone (48) 3721-9288. O endereço profissional dos pesquisadores situa-se na sala 111 do prédio B do Centro de Comunicação e Expressão, Universidade Federal de Santa Catarina, Campus Reitor João David Ferreira Lima, s/n, Trindade, 88040-900, Florianópolis - SC, Brasil.

Se você estiver de acordo em participar desta pesquisa, clique no campo abaixo “Aceito participar desta pesquisa”. Logo após, você verá uma seção para informar seu nome completo e endereço de e-mail. Por fim, você deve confirmar novamente sua participação e que você tem mais de 18 anos, bem como entendimento das informações presentes neste termo. Para afirmar a confirmação dessas informações, você precisa clicar em “Aceito participar desta pesquisa”. Feito isso, uma via deste documento será automaticamente enviada para o seu e-mail e da pesquisadora assistente (Janaina Fernanda de Almeida). Recomenda-se manter sua via armazenada em local seguro, e de fácil acesso, pois este documento garante seus direitos como participante da pesquisa. Caso você não deseje participar da pesquisa, clique em “Não aceito participar da pesquisa”.

APPENDIX G - TCLE for participants from the linguistic raters

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Eu, Janaina Fernanda de Almeida, aluna do Programa de Pós-Graduação em Inglês da Universidade Federal de Santa Catarina, gostaria de convidá-lo(a) a participar da minha pesquisa de dissertação, orientada pela Professora Dra. Hanna Kivistö-de Souza. Nosso projeto de pesquisa é intitulado "O processo de ensino/aprendizagem de pronúncia em inglês", e tem como objetivo a investigação de fatores que influenciam a aprendizagem fonológica em um novo idioma. Buscamos também pesquisar estratégias que possam favorecer esse processo, a fim de contribuir com implicações pedagógicas para o ensino de pronúncia em aulas de inglês.

Peço, por gentileza, que você leia este documento atentamente e tire quaisquer dúvidas em relação a sua participação antes de concordar em participar do estudo. Caso você aceite fazer parte deste estudo, você terá o papel de avaliador linguístico e ajudará com o processo de estimação de produções orais. Assim, você analisará como foi realizada a pronúncia de palavras em língua inglesa, estimando um valor entre 1-9 para pronúncias totalmente imprecisas a pronúncias mais precisas. Todos os itens para avaliação serão apresentados através de áudios em uma plataforma online e a tarefa será realizada em duas sessões para que o processo não se torne tão cansativo.

Também será pedido para que você responda a um breve questionário com algumas informações pessoais e sobre sua experiência com a língua inglesa, o qual será apresentado por meio de um formulário online antes de iniciar a primeira sessão da tarefa.

Estima-se que o tempo a ser destinado para a sua participação na pesquisa seja de cerca de 1 hora e 30 minutos. Sendo, em média, 10 minutos para ler e responder o questionário, 40 minutos para a primeira sessão de avaliação e 40 minutos para a segunda. No entanto, o tempo para realização das tarefas de avaliação pode variar um pouco pois você poderá completar a tarefa com calma e escutar cada áudio quantas vezes forem necessárias, sem um intervalo de tempo estabelecido para avaliar cada item. Você também poderá realizar a tarefa no horário que for mais conveniente, mas sugerimos que encontre um lugar confortável e apropriado, sem que haja muito barulho ou distração.

Caso você aceite fazer parte da pesquisa, os links de acesso e demais instruções para a realização das tarefas serão enviados de maneira individual pelo pesquisador para o seu endereço de e-mail, fornecido ao final deste documento. As suas respostas de cada tarefa ficarão inicialmente armazenadas nas plataformas utilizadas. Após a conclusão das duas etapas, os pesquisadores acessarão as suas respostas de avaliação e do questionário (através das plataformas) e farão o download de todos esses dados, os quais serão então armazenados em dispositivos pessoais dos pesquisadores, como computadores e HD externos portáteis. Assim que os dados estiverem devidamente armazenados, suas informações serão excluídas das plataformas utilizadas.

Os riscos ou desconfortos associados à participação desta pesquisa são baixos. Contudo, sua participação pode causar cansaço mental, nervosismo e ansiedade por estar no papel de avaliador. Além disso, como as tarefas serão feitas de forma on-line, você estará exposto(a) aos riscos característicos do contato remoto por meio eletrônicos e ambientes virtuais e precisará, por ventura, lidar com limitações tecnológicas. Similarmente, existe a possibilidade de quebra de sigilo e privacidade, ainda que de maneira involuntária e não intencional. Para minimizar o risco de quebra de sigilo e privacidade, seu nome será substituído por um código e não aparecerá nos arquivos de dados. Para minimizar os demais efeitos, você poderá notificar o pesquisador de quaisquer desconfortos no decorrer da tarefa e tem o direito

de não responder a quaisquer questões, sem que haja necessidade de justificar a decisão. Você também poderá, a qualquer momento, desistir de participar da pesquisa. Se fizer isso, todos os seus dados e informações serão descartados pelos pesquisadores.

Conforme regulamenta a legislação brasileira, sua participação nesta pesquisa será voluntária e não remunerada, e não acarretará, de forma alguma, em prejuízos ou em privilégios. No entanto, os participantes receberão um Certificado de Participação em Pesquisa.

Os pesquisadores se colocam à disposição para esclarecimentos, antes, no decorrer e após a pesquisa, comprometendo-se a acompanhar e assistir os participantes durante todo o processo, bem como a manter a confidencialidade das informações fornecidas. Os resultados da pesquisa poderão ser divulgados em eventos ou publicações científicas, mas não haverá nenhuma identificação dos participantes. Você terá garantia de livre acesso às informações da pesquisa e poderá entrar em contato com os pesquisadores para obtê-las.

Caso haja algum dano material ou imaterial, devidamente comprovado, advindo da pesquisa, este documento garante o reparo ao dano que deve ser pago de acordo com a Resolução 510/16. É direito dos participantes ainda o ressarcimento de quaisquer despesas advindas de sua participação na pesquisa. Portanto, você poderá entrar em contato com um dos pesquisadores caso necessite de algum ressarcimento ou reparo de dano.

Por fim, asseguramos que esta pesquisa está submetida aos critérios das Resoluções 466/12, 510/16 e suas complementares e, também, passou pela aprovação do Comitê de Ética em Pesquisa com Seres Humanos (CEPSH) da Universidade Federal de Santa Catarina.

Para seu conhecimento: “O CEPSH é um órgão colegiado interdisciplinar, deliberativo, consultivo e educativo, vinculado à Universidade Federal de Santa Catarina, mas independente na tomada de decisões, criado para defender os interesses dos participantes da pesquisa em sua integridade e dignidade e para contribuir no desenvolvimento da pesquisa dentro de padrões éticos” (https://cep.ufsc.br/). Para maiores informações, você pode contatar o CEPSH: Prédio Reitoria II, R: Desembargador Vitor Lima, nº 222, sala 401, Trindade, Florianópolis/SC, CEP 88.040-400, Contato: (48) 3721-6094, cep.propesq@contato.ufsc.br.

Em caso de dúvidas sobre a pesquisa ou para mais informações, você pode entrar em contato diretamente com a pesquisadora assistente Janaina Fernanda de Almeida através do e-mail janainafernandadealmeida@gmail.com ou pelo telefone celular (47) 99959-4690. Você ainda pode contatar a pesquisadora responsável pela pesquisa, a Professora Dra. Hanna Kivistö-de Souza, através do e-mail hanna.kivistodesouza@gmail.com ou pelo telefone (48) 3721-9288. O endereço profissional dos pesquisadores situa-se na sala 111 do prédio B do Centro de Comunicação e Expressão, Universidade Federal de Santa Catarina, Campus Reitor João David Ferreira Lima, s/n, Trindade, 88040-900, Florianópolis - SC, Brasil.

Se você estiver de acordo em participar desta pesquisa, clique no campo abaixo “Aceito participar desta pesquisa”. Logo após, você verá uma seção para informar seu nome completo e endereço de e-mail. Por fim, você deve confirmar novamente sua participação e que você tem mais de 18 anos, bem como entendimento das informações presentes neste termo. Para afirmar a confirmação dessas informações, você precisa clicar em “Aceito participar desta pesquisa”. Feito isso, uma via deste documento será automaticamente enviada para o seu e-mail e da pesquisadora assistente (Janaina Fernanda de Almeida). Recomenda-se manter sua via armazenada em local seguro, e de fácil acesso, pois este documento garante seus direitos como participante da pesquisa. Caso você não deseje participar da pesquisa, clique em “Não aceito participar da pesquisa”.

APPENDIX H – Participants' instructions

INSTRUCTIONS

Thank you for your interest in our research project "O processo de ensino/apredizagem de pronúncia em inglês". As explained in the consent form, you will participate in two data collection sessions. Your participation at this point consists of completing four simple tasks, which will take you approximately 35 minutes. You can do the tasks at a time of your convenience. However, notice please that you should complete them **by Sep 7 (Tuesday), 2021**. Before you start each task, it is also important to check that your computer and internet are working and that you find a calm and silent place. Please complete the tasks in the order described below

Task 1 – Background Questionnaire

The first task is to complete a questionnaire in Google forms. You can access the questionnaire here. You will have some questions about personal information and your experience with English, considering your learning process and daily use of the language. If you prefer not to answer specific questions, please contact the researcher, and she will exclude them. Likewise, if you find it difficult to understand any of the questions, you can send a message to the researcher.

Task 2 – Vocabulary Test

In this task, you will see a word on the screen. Your task is to press 'yes' if **you know the meaning of the word** or 'next' if **you're unsure what it means**. There is no time limit to press the buttons, so you can complete the task calmly. You should also read the words with attention before pressing 'yes' or 'next,' as you cannot change the answer afterward. There are 200 words in the test, and they will be presented one after the other.

Before you start the test, however, you will see the following screen to enter a code:

This code is very important because it permits access to your final score. **Only the researchers** will have access to it. You should then type your individual code under 'enter your name here' and under 'enter your access code here'.

Your individual code is: _____.

After entering your code, you can press "start" to initiate the test.

Please find the test here.

Tasks 3 and 4 – Sentence repetition and Sentence reading

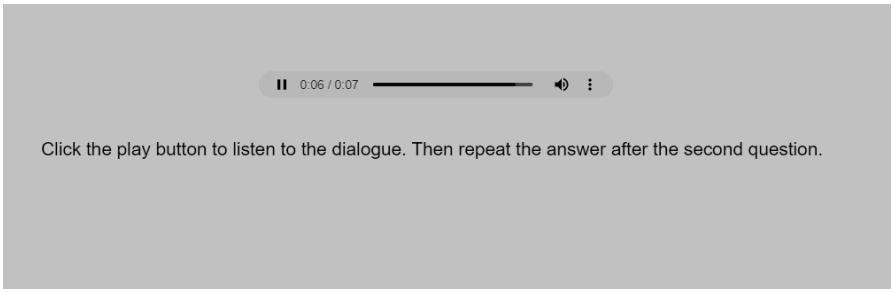
Please read all the instructions before accessing the tasks. The speaking task consists of two parts. The objective of the task is to record your voice, as explained in the consent form. Therefore, a pop-up notification will ask you to grant permission to use the microphone when entering the access link. Please, allow the website to use the microphone. Your microphone will be activated during the whole experiment. It is not necessary to have access to an external microphone, but you can use one if you have it.

Right after, you will see a screen to enter your Participant ID. Please write your full name on the corresponding space. In sequence, there will be the 'calibration screen' to test your microphone, and you should read the text displayed on the screen aloud. The experiment will then start, and you will see the specific instructions.

In the first part, you will complete a sentence repetition task. Your task is to listen to some short dialogues and repeat the answer you hear on them. As an illustration, each dialogue presents 1) a question, 2) the answer to the question, 3) the question again. You should repeat the answer after you listen to the second question. For example:

1) What color is the book?
2) The book is blue.
3) What color is the book?
4) Your time to repeat the answer ('the book is blue').

The following image is an example of the test:



Once you finish the sentence repetition task, you will see the instructions for the second part - the sentence reading task. For this task, you will see a sentence displayed on the screen. You can read the sentence silently to yourself first. When you are ready, you can say the sentence out loud, and the recording will start.

IMPORTANT: it is not possible to stop the experiment in the middle; otherwise, you will lose what you have completed. Therefore, you should complete the two tasks after accessing the website. When you finish the second task, you will see a note saying that the experiment recording is uploading. Please, wait and do not close the experiment tab while the recording is uploading. In sequence, you will see a thank you note. You can then close the tab.

Please access the tasks here.

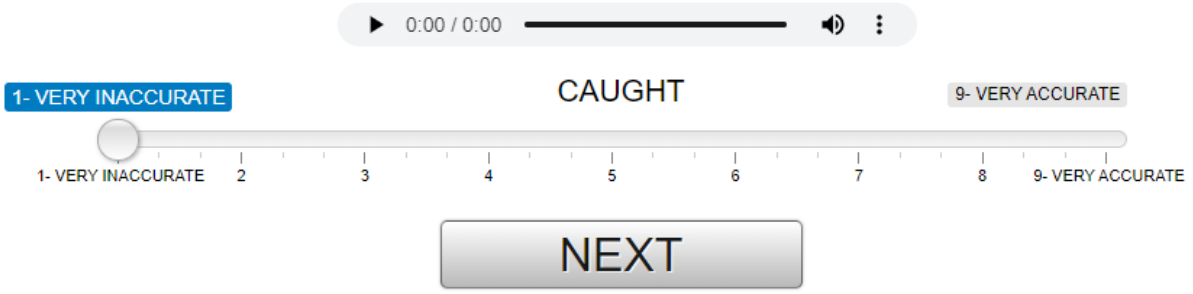
APPENDIX I – Linguistic raters' instructions

INSTRUÇÕES

Após acessar o experimento, você verá um campo inicial para completar com o ID do participante, o qual deve ser completado com o seu nome completo. Em seguida, você verá novamente as instruções detalhadas para a tarefa.

De forma geral, sua tarefa é escutar palavras em língua inglesa e avaliar o nível de precisão da pronúncia de cada uma. A avaliação será feita em uma escala de 9 pontos, em que os valores mais baixos devem ser atribuídos às pronúncias julgadas como mais imprecisas e os valores mais altos às pronúncias julgadas como mais precisas.

Todos os áudios serão iniciados automaticamente, mas você pode repeti-los clicando no botão de 'play'. A forma ortográfica de cada palavra também é providenciada logo abaixo do áudio para facilitar a compreensão. A imagem a seguir exemplifica como será a apresentação de cada item:



Após escutar a pronúncia, você irá escolher um valor na escala. Para selecionar o valor, basta clicar em cima ou arrastar o cursor. Em seguida, clique no botão 'NEXT' para prosseguir.

Observação: você não poderá retornar para uma palavra que já foi avaliada. Portanto, é importante verificar se o valor desejável foi selecionado antes de clicar em 'NEXT'.

APPENDIX J – Lesson plans and materials developed for the intervention

1st SESSION
THEME: English pronunciation vs. orthography
GENERAL OBJECTIVE: to raise students' awareness of the inconsistencies between the pronunciation and spelling forms of English.
SPECIFIC OBJECTIVES: **1.** To understand that a letter can represent more than one sound and a sound can be represented by more than one letter. **2.** To realize that it is not possible to (always) rely on the orthographic form to guess the phonological form, and it is more reliable to check out the pronunciation of new items. **3.** To discuss some resources that can be useful to get the target-like pronunciation of new words, such as IPA, online dictionaries, and text-to-speech software.
PROCEDURES: 1. Wait for students to enter the Web conferencing room and welcome them. **(4 min.)** 2. Introduce the discussion concerning spelling and pronunciation by calling attention to the words 'b**ough**', 'thr**ough**', '**rough**', '**cough**', and 'en**ough**', which all have the same sequence of letters 'ough', but differ on the sounds that are represented by those letters. These words exemplify the inconsistencies of English spelling and pronunciation. • Ask learners if they ever felt confusing when trying to decode new words in English. **(5 min.)** 3. Discuss why English orthography is so confusing (following the slide presentation). First, explain that it is important to understand the difference between a 'sound' and a 'syllable'. As a warm-up exercise, ask students to count the syllables present in the previous words, and then identify how many sounds. For example, "rough" has one syllable and three sounds. Then discuss the following points: • There are 26 letters and 44 sounds in English. In this way, different sounds are represented by the same letter. Can you think of any examples? • Moreover, the same sound can be represented by different letters. Can you think of any examples? • There are also letters that we do not pronounce, which are the so-called "silent letters". Can you think of any examples? **(6 min.)** 4. Share the link[22] with the cards containing examples of words written with silent letters, prepared with the website "quizlet.com". If interested, learners can save the link to take a look at the material later on.

[22] <https://quizlet.com/_9vr0fy?x=1jqt&i=3qaheb>. The material was elaborated by the researcher using the website *quizlet.com*.

(1 min.)

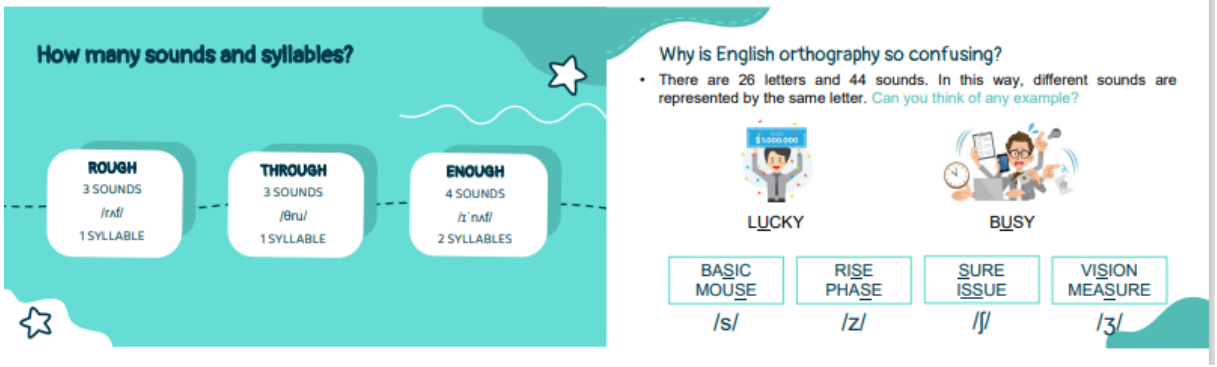
5. **Final remarks**: considering all these inconsistencies between pronunciation and spelling forms of English, it is very important to check out the pronunciation of new words, instead of trying to guess the phonological form from the written words. Ask students what they customarily do to check the pronunciation of new words and which tools they like to use. Suggest some others (if possible).

(2 min.)

REFERENCES

UMERA-OKEKE, Nneka. Spelling and phonetic inconsistencies in English: A problem for learners of English as a foreign/second language. **African Research Review**, v. 2, n. 1, p. 64-83, 2008.

Screenshots of the presentation prepared for the 1st session[23]:



[23] In the original PowerPoint documents, the function "animate bullet points one at a time" was used to facilitate the discussion and give learners the opportunity to answer.

- The same sound is also represented by different letters. Can you think of any example?

MEET

MEAT

FLOWER

FLOUR

- There are also letters that we do not pronounce. Can you think about of example?

WALK

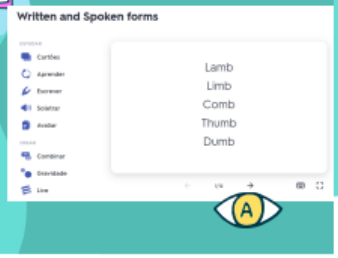
KNOCK

CASTLE

GUARD

More examples:

https://quizlet.com/_9vr0fy?x=1jqt&i=3qaheb



What do you do to check the pronunciation of new words?

Online dictionaries

Text-to-speech tools

IPA – International Phonetic Alphabet

REFERENCES

UMERA-OKEKE, Nneka. Spelling and phonetic inconsistencies in English: A problem For learners of English as a foreign/second language. **African Research Review**, v. 2, n. 1, p. 64-83, 2008.

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THANK YOU!

Do you have any questions?

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2nd SESSION
THEME: Comparison of the vowel inventory of English and BP
GENERAL OBJECTIVE: to raise learners' awareness to the sounds of English vowels in relation to their spellings.
SPECIFIC OBJECTIVES: 1. To increase learners' awareness of English vowel sounds. 2. To identify that spelling can also provide clues for distinguishing the contrasts of some vowel sounds. 3. To identify and understand some rules between the spelling and phonological forms of English vowels.
PROCEDURES: 1. Wait for students to enter the Web conferencing room and welcome them. **(4 min.)** 2. Provide a quick overview of the vowel inventory of English, comparing it with the seven oral vowels present in the vowel inventory of BP (/i, e, ɛ, a, ɔ, o, u/). This discussion will follow a PowerPoint presentation (Appendix B). The sounds will be presented with their symbols and example words as located in the vowel space for each of the languages. The learners will be encouraged to think about extra examples along with the discussion. **(6 min.)** 3. Explain that in some situations, the spelling form of the vowel can help to signalize the contrast between the sounds, as in the case of the digraph <ee> that always represents the sound /i/. In contrast, the grapheme <i> is usually mapped on the lax counterpart vowel (/ɪ/). Likewise, orthography can facilitate distinguishing the contrast between the vowels /æ/ and /ɛ/, as the first is only spelled with the grapheme <a>, and /ɛ/ is frequently spelled with the grapheme <e>. **(3 min.)** 4. Following the presentation, learners will listen to a set of sentences containing one-syllable words contrasting the sounds with the silent –e rule. The target words will be discussed separately, and learners should pay attention to the corresponding vowel sound. Learners will also be encouraged to practice saying the words. **(4 min.)** 5. After paying attention to the target sounds, learners should try to identify the pattern between the sounds and their spellings containing the "silent E" in order to formulate a rule. **(4 min.)** 6. Discuss the rules formulated by the students. **(3 min.)** 7. Learners will then receive a list of words and they should say the words aloud while trying to apply the silent –e rule.

(3 min.)

8. If there is still some available time, quickly show learners the websites: <https://seeingspeech.ac.uk/> and <https://app.speechace.co/placement/>, as a suggestion for further practice.

- The second website, particularly, is a good source for practice, as learners can perform the vowel sections of the pronunciation placement test available at the website. On the test, learners can listen to a pronunciation model, practice repeating the words, and receive instant feedback on their pronunciation. The feedback provided is well detailed, showing which sounds should be improved, and learners can also listen to their output with the recording feature.

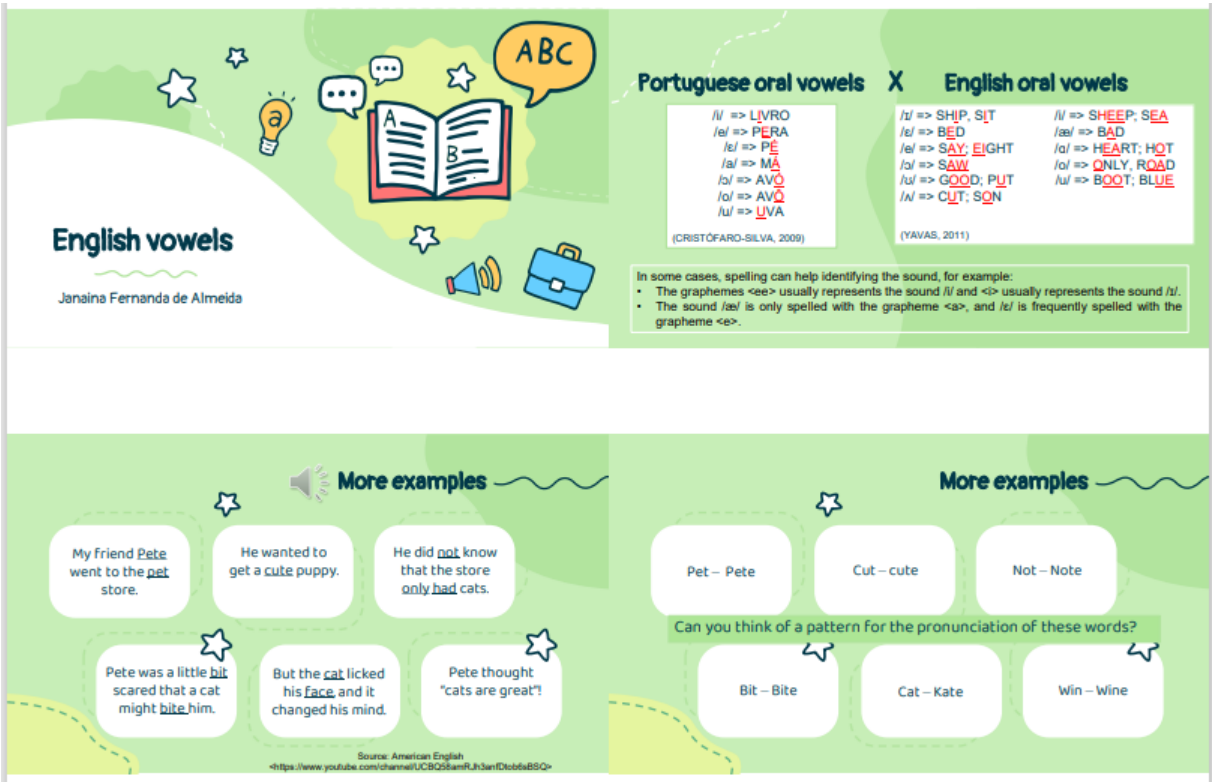
REFERENCES

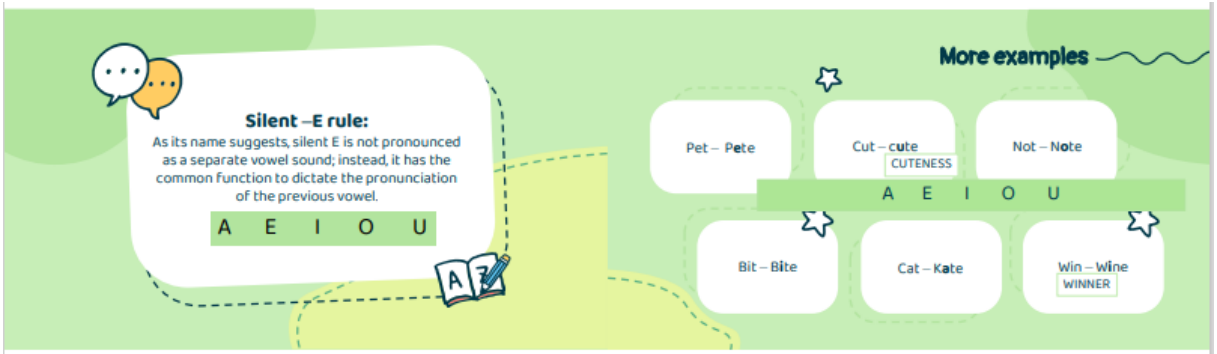
SILVEIRA, Rosane; ZIMMER, Márcia; ALVES, Ubiratã Kickhöfel. **Pronunciation Instruction for Brazilians: Student's Book**. Newcastle Upon Tyne: Cambridge Scholars Publishing, 2009.

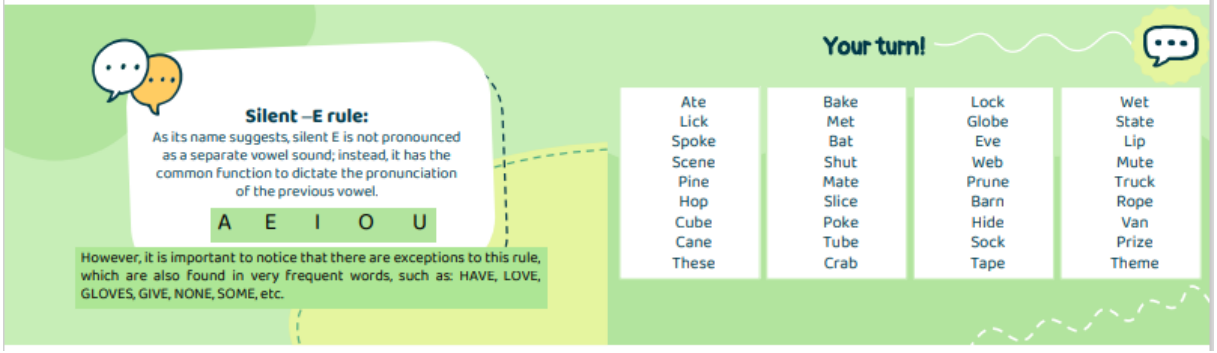
CRISTÓFARO-SILVA, Thaïs; YEHIA, Hani Camille . Sonoridade em Artes, Saúde e Tecnologia. Belo Horizonte: Faculdade de Letras, 2009. Disponível em <http://fonologia.org.> ISBN 978-85-7758-135-1.

OSEWALT, Ginny. **15 phonics rules for reading and spelling**. Retrieved from: <https://www.understood.org/en/learning-thinking-differences/child-learning-disabilities/reading-issues/phonics-rules-for-reading-and-spelling>. Accessed in: May, 28th 2021.

Screenshots of the presentation prepared for the 2nd session:







Suggestion – further practice

WEBSITES:

- Perception practice: https://www.englishaccentcoach.com/
- Production practice: <https://app.speechace.co/placement/>

VIDEO:

- <https://www.youtube.com/watch?v=5gkZWcp_aO8&t=4s>

APP:

- ELSA Speak - Learn English Pronunciation.

REFERENCES

CRISTÓFARO-SILVA, Thaís; YEHIA, Hani Camille . Sonoridade em Artes, Saúde e Tecnologia. Belo Horizonte: Faculdade de Letras, 2009. Disponível em <http://fonologia.org.> ISBN 978-85-7758-135-1.

OSEWALT, Ginny. 15 phonics rules for reading and spelling. Retrieved from: <https://www.understood.org/en/learning-thinking-differences/child-learning-disabilities/reading-issues/phonics-rules-for-reading-and-spelling>. Accessed in: May, 28th 2021.

SILVEIRA, Rosane; ZIMMER, Márcia; ALVES, Ubiratã Kickhöfel. **Pronunciation Instruction for Brazilians: Student's Book**. Newcastle Upon Tyne: Cambridge Scholars Publishing, 2009.

YAVAS, Mehmet. **Applied English phonology**. 2. ed. Oxford: Wiley-Blackwell, 2011. 336 p.

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THANK YOU!

Do you have any questions?

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CREDITS: This presentation template was created by Slidesgo, including icons by Flaticon, and infographics & images by Freepik.

3rd SESSION

THEME: Digraphs Vs diphthongs

GENERAL OBJECTIVE: raise learners' awareness to the sounds of English diphthongs (/aɪ/, /aʊ/ and /ɔɪ/) and their common spellings.

SPECIFIC OBJECTIVES:

1. To understand the difference between a diphthong and digraph in order to observe that "digraphs" in English orthography can also represent monophthong vowel sounds.

PROCEDURES:

1. Wait for students to enter the Web conferencing room and welcome them.

(4 min.)

2. Start the session by asking students if they know what a "diphthong" is.

3. In case they cannot explain it, provide (in a PowerPoint presentation) some definitions for them to choose the correct one, as:

- Words composed of only two letters.
- A sound formed by the combination of two vowels in a single syllable.
- Two consonant letters spelled in sequence.

(2 min.)

4. Students should observe that the term "diphthong" is used to account for the sound only. Sequentially, present the three English diphthongs, and practice the articulation of each sound with example words:

- /aɪ/: pie, high and cry
- /aʊ/: mouse, cow
- /ɔɪ/: boy, voice

Also, encourage them to think about other words containing one of the sounds.

(4 min.)

5. Draw learners' attention to the usual spellings of the three diphthongs, and ask, "how many letters are usually used to represent the diphthongs in written form?" – Expected answer "two letters".

- In sequence, discuss the term "digraph" simply as the combination of two letters to represent the vowel sound in written form. Learners should observe that, although the common spelling of English diphthongs usually display of two letters as in Portuguese (e.g., *peixe, pai, chapéu*); some digraphs are also used to represent single vowel sounds in English, for example in the word "book".

(4 min.)

6. Show the table with the digraphs and some examples. Ask students to identify the words containing diphthongs on the table (pie, lie, join, coin, boy, toy, out, loud, cow, and now).

(3 min.)

Activity: learners will practice the diphthong sounds through the following tongue twisters[24]:

- Clowns around town never frown even when they're down. Want to be a clown around town? Then never sound down and never frown.
- Kyle flies kites high, so high they're out of sight. When a bird flies by, they sigh and wonder why the kite's so high.
- What noise annoys an oyster most? A noisy noise annoys an oyster most.

7. Play the audios files of the tongue twister and give learners some time to practice. In sequence, challenge them to say one of the tongue twisters.

(13 min. remaining)

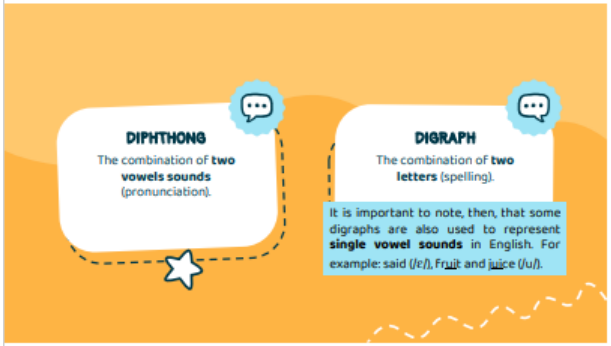
REFERENCES

BROOKS, Greg. **Dictionary of the British English Spelling System**. Cambridge: Open Book Publishers, 2015. 490 p.

YAVAS, Mehmet. **Applied English phonology**. 2. ed. Oxford: Wiley-Blackwell, 2011. 336 p.

Screenshots of the presentation prepared for the 3rd session:

[24] Source: <http://thesmallguidesite.com/pronunciation.html>

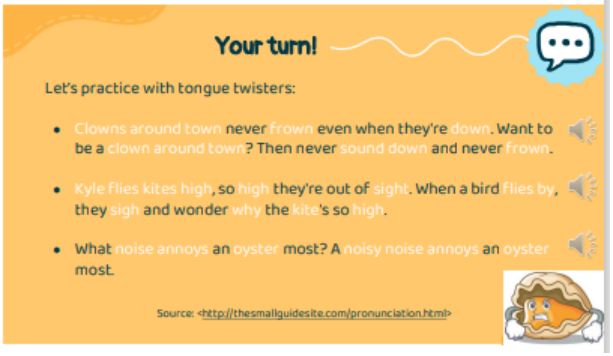


Can you find the examples containing diphthongs? (/aɪ/, /aʊ/ and /ɔɪ/).

Digraph	Key words
<ai>	aid, mail
<ay>	may, say
<aw>	draw, saw
<ea>	deal, lead
<ea>	bread, ready
<ee>	feet, meet
<ie>	brief, niece
<ie>	pie, lie
<oa>	boat, toast
<oi>	join, noise
<oo>	book, look
<oo>	boot, moon
<ou>	out, loud
<oy>	boy, joy
<ow>	low, show
<ow>	cow, now

Can you find the examples containing diphthongs? (/aɪ/, /aʊ/ and /ɔɪ/).

Digraph	Key words
<ai>	aid, mail
<ay>	may, say
<aw>	draw, saw
<ea>	deal, lead
<ea>	bread, ready
<ee>	feet, meet
<ie>	brief, niece
<ie>	pie, lie
<oa>	boat, toast
<oi>	join, noise
<oo>	book, look
<oo>	boot, moon
<ou>	out, loud
<oy>	boy, joy
<ow>	low, show
<ow>	cow, now



4th SESSION

THEME: Exceptions!

GENERAL OBJECTIVE: to understand that, although some general rules can facilitate recoding and decoding vowel sounds, there are many exceptions in English orthography.

SPECIFIC OBJECTIVES:

1. To identify and practice the perception of the most frequent sound for the digraph <ou>;
2. To identify and practice the perception of other vowel sounds mapped on the digraph <ou>.

PROCEDURES:

1. Wait for students to enter the Web conferencing room and welcome them.

(4 min.)

2. Start a discussion concerning the different correlations between vowel sounds and digraphs. Ask students to recall the table presented in the previous class. They should try to remember an example of two different sounds mapped on the same digraph (e.g., <ea> and <ie>). They can also think of other examples.

(3 min.)

3.Talk about the <ou> digraph, which is one of the most challenging digraph to guess, considering the number of different vowel sounds that can be mapped on it. Students will listen to a short song containing the chant "shout out loud from your big round mouth". Before the listening, tell learners that the vowel sound present in the chant words is the most frequent sound for the <ou> digraph.

Learners are expected to identify the sound /aʊ/. The instructor can recall that this sound is one of the diphthongs seen in the previous class. Then, ask students to remember the other representation the diphthong has in written form (<ow>).

(5 min.)

4. Challenge students to say the rhyme. Give two minutes for everyone to get prepared. Then, ask the whole group to say it aloud together.

(4 min.)

5. After identifying the most frequent sound - /aʊ/ (BROOKS, 2015), learners will try to identify the different pronunciations for <ou> in an interactive activity on the website Live Worksheet [25] (available at https://www.liveworksheets.com/1-ld1998351gu).

- Explanation of the activity.

(3 min.)

[25] This activity was adapted from the book "Pronunciation Games" by Mark Hancock (1995) to focus on the specific sounds. In order to create an online version, the researcher used the website "Live Worksheet Maker". The audio of the activity only works on Google Chrome and Mozilla Firefox browsers.

To solve the maze in the activity, learners need to mark the words whose pronunciation has a different vowel sound than /aʊ/. Once learners finish the activity, they will receive immediate feedback, as programmed on the website.

- Time to complete the activity.

(+/- 8 min.)

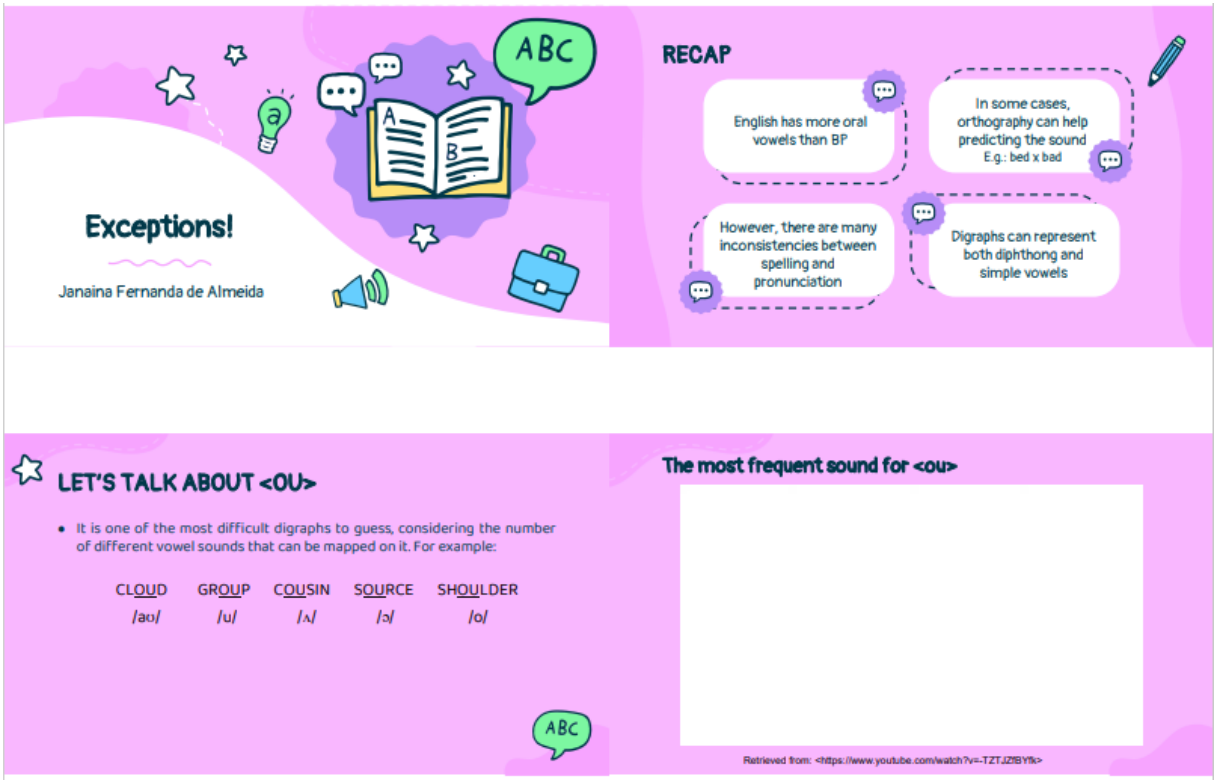
6. Discuss the activity with the group in the remaining minutes.

REFERENCES

BROOKS, Greg. **Dictionary of the British English Spelling System**. Cambridge: Open Book Publishers, 2015. 490 p.

HANCOCK, Mark. **Pronunciation games**. Cambridge University Press, 1995.

Screenshots of the presentation prepared for the 4th session:



"Shout out loud from your big round mouth".

LET'S SAY THE RHYME!

LET'S TALK ABOUT <OU>

- It is one of the most difficult digraphs to guess, considering the number of different vowel sounds that can be mapped on it. For example:

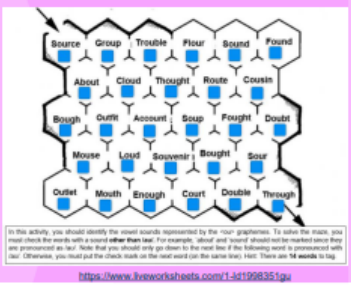
CLOUD	GROUP	COUSIN	SOURCE	SHOULDER
/aʊ/	/u/	/ʌ/	/ɔ/	/o/

- The sound /aʊ/ is the basic sound for the digraph <ou>. 48% of the words that have these graphemes are pronounced with this sound (/aʊ/) (BROOKS, 2015).

ABC

LET'S PRACTICE

In this activity, we will practice identifying sounds. Therefore, you should pay attention to the words that are not pronounced with the /aʊ/ sound. For example, "source" is pronounced with /ɔ/ .

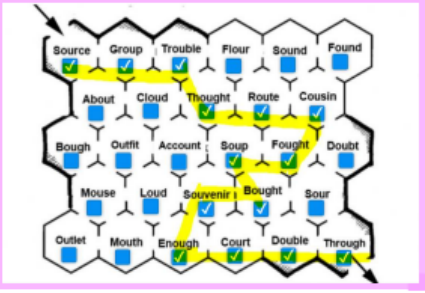


https://www.liveworksheets.com/1-id1998351gu

LET'S PRACTICE

CLOUD	GROUP	COUSIN	SOURCE
/aʊ/	/u/ ✓	/ʌ/ ✓	/ɔ/ ✓

ANSWER KEY



How was the activity?

REFERENCES

BROOKS, Greg. Dictionary of the British English Spelling System. Cambridge: Open Book Publishers, 2015. 490 p.

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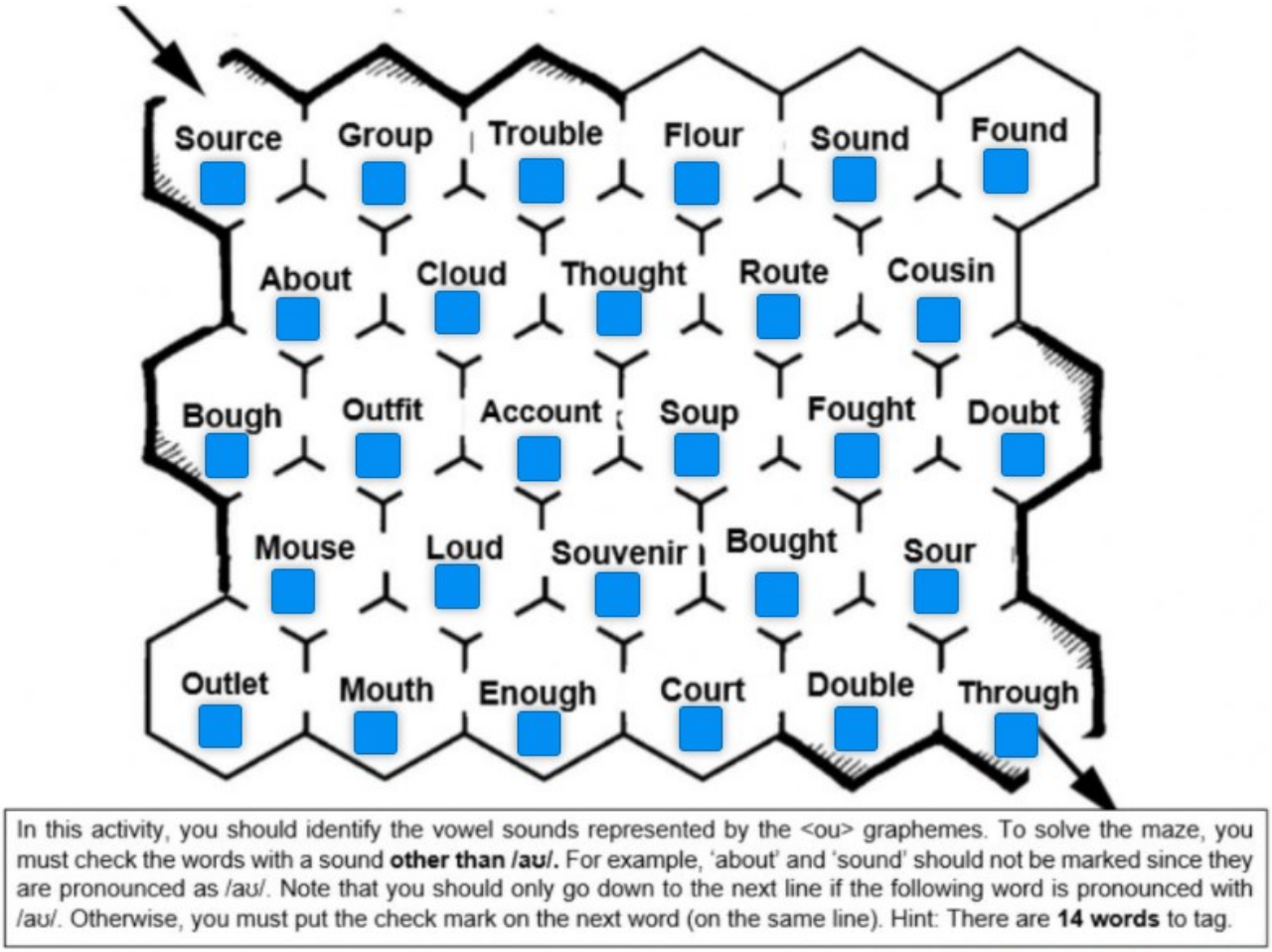
THANK YOU!

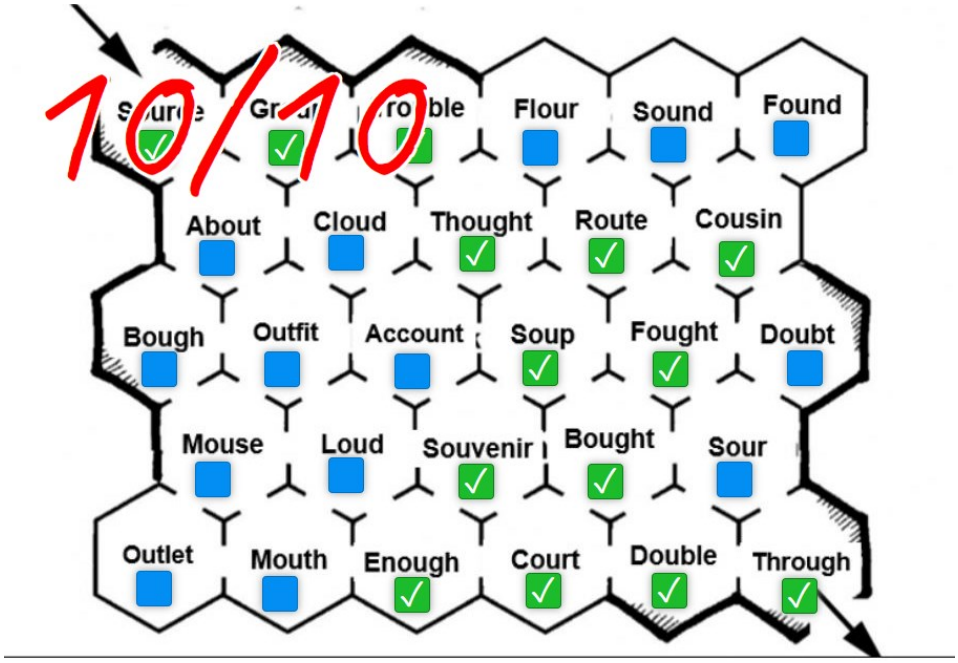
Do you have any questions?

janainafernandadealmeida@gmail.com
(47) 99959-4690

Screenshots of the activity:



- The learners also received immediate feedback to check their responses:



5th SESSION

THEME: Finding a pattern to the pronunciation of <ou>

GENERAL OBJECTIVE: to discuss some patterns that may facilitate memorizing the vowel sounds mapped on the digraph <ou>.

SPECIFIC OBJECTIVES:

1. Increase learners' awareness of the different sounds that can be mapped on the digraph <ou>.

PROCEDURES:

1. Wait for students to enter the Web conferencing room and welcome them.

(4 min.)

2. Start the class by recalling that the pronunciation of the digraph <ou> can be tricky as it can be mapped on different vowel sounds. Ask students if they can remember any example, as discussed in the previous class. (PowerPoint presentation)

- Provide some other examples with the corresponding phonetic symbols of the target vowel sound. To make this more dynamic, show the symbol, pronounce the corresponding sound, and ask students to think of a word with the same sound represented by <ou>.

(5 min.)

3. Present and discuss the following patterns as observed from the examples provided by Brooks (2015). These hints are intended to provide some patterns to facilitate the internalization of the target sound of the digraph in individual words.

- The past form of irregular verbs containing <ought> is pronounced as /ɔ/. Examples: b**ought**, f**ought**, br**ought**, th**ought**, and wr**ought**.
- The sequence <our> usually sounds as /ɔ/— examples: f<u>ou</u>r, s<u>ou</u>rce, and c<u>ou</u>rt. However, there are exceptions to this pattern, such as the words flour, sour, hour.
- When the graphemes <ou> are followed by '**n**' followed by '**t**' or '**d**', such as c<u>ou</u>nt and gr<u>ou</u>nd, they are likely to sound as /aʊ/. More examples: m**ount**, f**ound**, r**ound**, f**ount**ain, disc**ount**, m**ount**ain, am**ount**, etc.
  However, there are exceptions to this pattern, as the word "country".
- The digraph <ou> sounds like /u/ mainly in source or borrowed words, which tend to sound like French words—examples: gr**ou**p, s**ou**venir, r**ou**te, s**ou**p.
- The sound /ʌ/ might be the most difficult to show a pattern as only a small portion of words containing <ou> is pronounced with this sound. One tip that could help to remember such pronunciation could be to put the words that rhyme together. For example, rough and enough / double and trouble.
- The modal verbs 'w**ou**ld', 'sh**ou**ld', and 'c**ou**ld' are pronounced as /ʊ/ (the more relaxed 'u' sound).

(10 min.)

4. Finally, learners will apply these patterns to solve the activity in the Appendix (G) (available at <https://www.liveworksheets.com/1-ph2083908q>). In this activity, they will practice both listening to and producing the target words.

- Explanation of the activity.

(3 min.)

Learners will have to identify the corresponding sound of the digraph <ou> in 20 words. To help them perceive the target sound, they can listen to all the words as much as they need. After identifying the sound, they have to click on the microphone symbol and say the corresponding word aloud to complete the chart. Once learners finish the activity, they will receive immediate feedback, as programmed on the website.

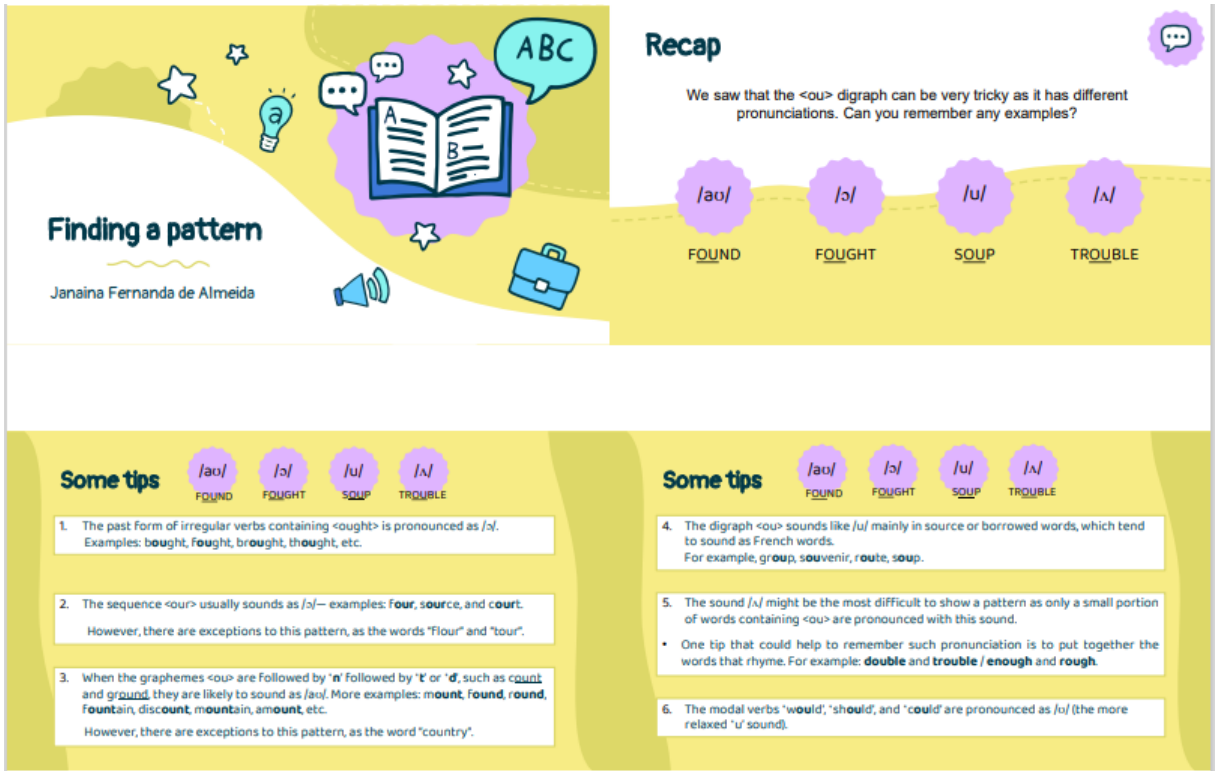
- Time to complete and discuss the activity.

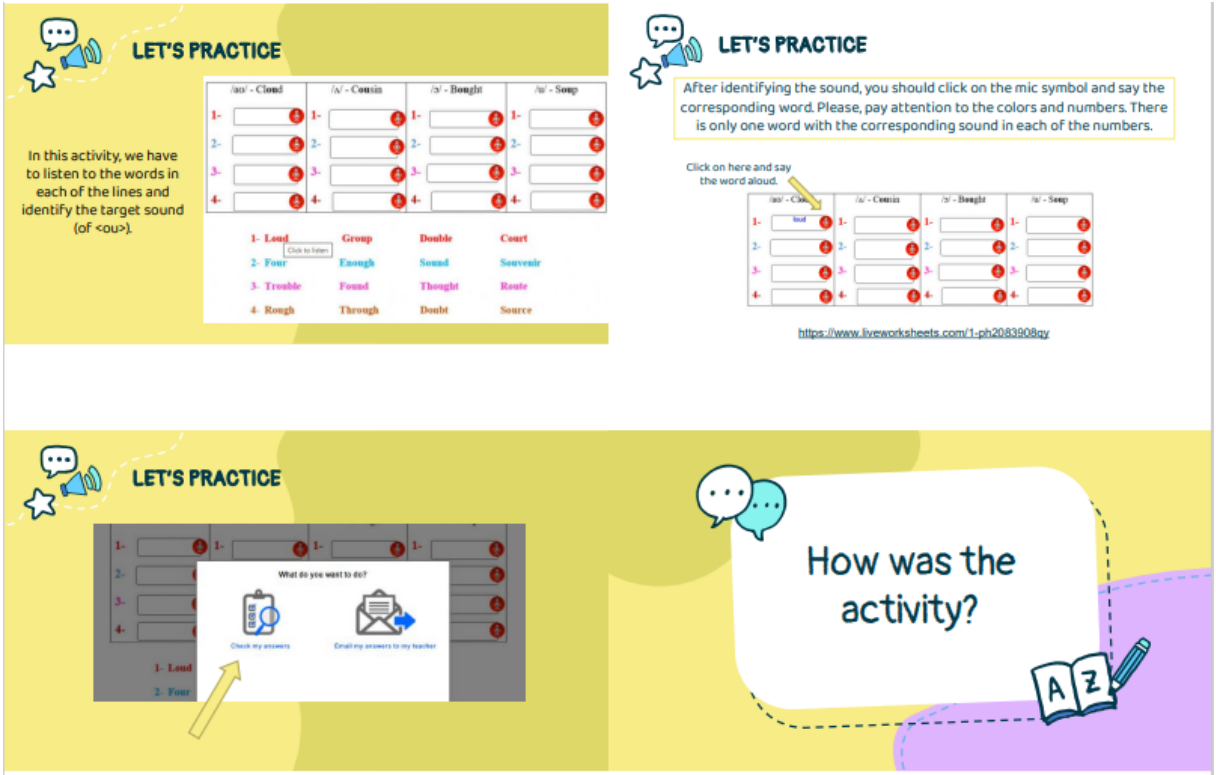
(the rest of the class)

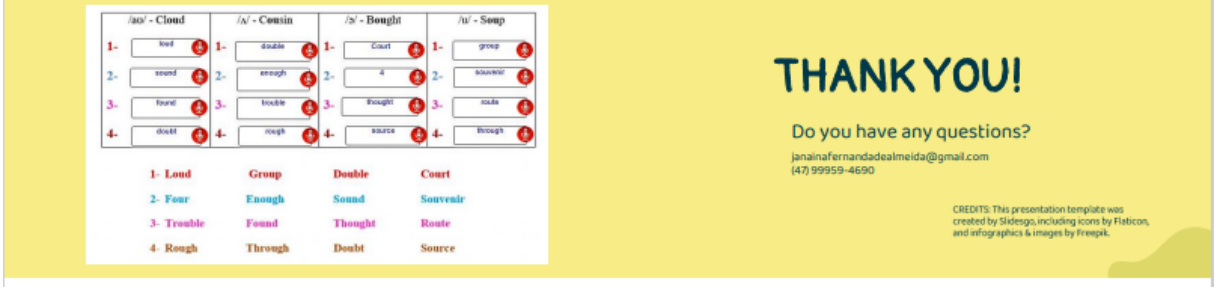
REFERENCES

BROOKS, Greg. **Dictionary of the British English Spelling System**. Cambridge: Open Book Publishers, 2015. 490 p.

Screenshots of the presentation prepared for the 5th session:




LET'S PRACTICE
In this activity, we have to listen to the words in each of the lines and identify the target sound (of <ou>).
/aʊ/ - Cloud
/ʌ/ - Cousin
/ɔ/ - Bought
/u/ - Soup
1- Loud
2- Four
3- Trouble
4- Rough
Group
Enough
Found
Through
Double
Sound
Thought
Doubt
Court
Souvenir
Route
Source
LET'S PRACTICE
After identifying the sound, you should click on the mic symbol and say the corresponding word. Please, pay attention to the colors and numbers. There is only one word with the corresponding sound in each of the numbers.
Click on here and say the word aloud.
https://www.liveworksheets.com/1-ph2083908qy
LET'S PRACTICE
What do you want to do?
How was the activity?


ANSWER KEY
/aʊ/ - Cloud
/ʌ/ - Cousin
/ɔ/ - Bought
/u/ - Soup
1- Loud
2- Four
3- Trouble
4- Rough
Group
Enough
Found
Through
Double
Sound
Thought
Doubt
Court
Souvenir
Route
Source
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THANK YOU!
Do you have any questions?
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(47) 99959-4690
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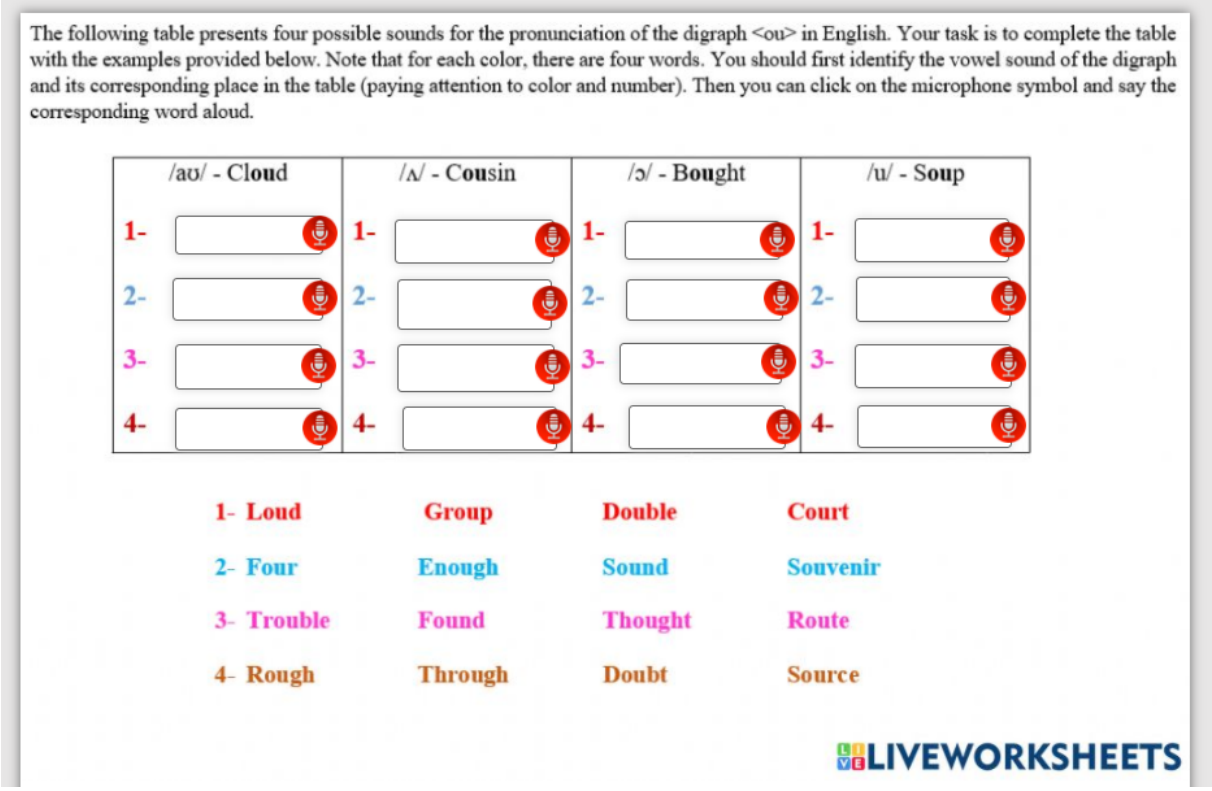
Screenshots of the activity:



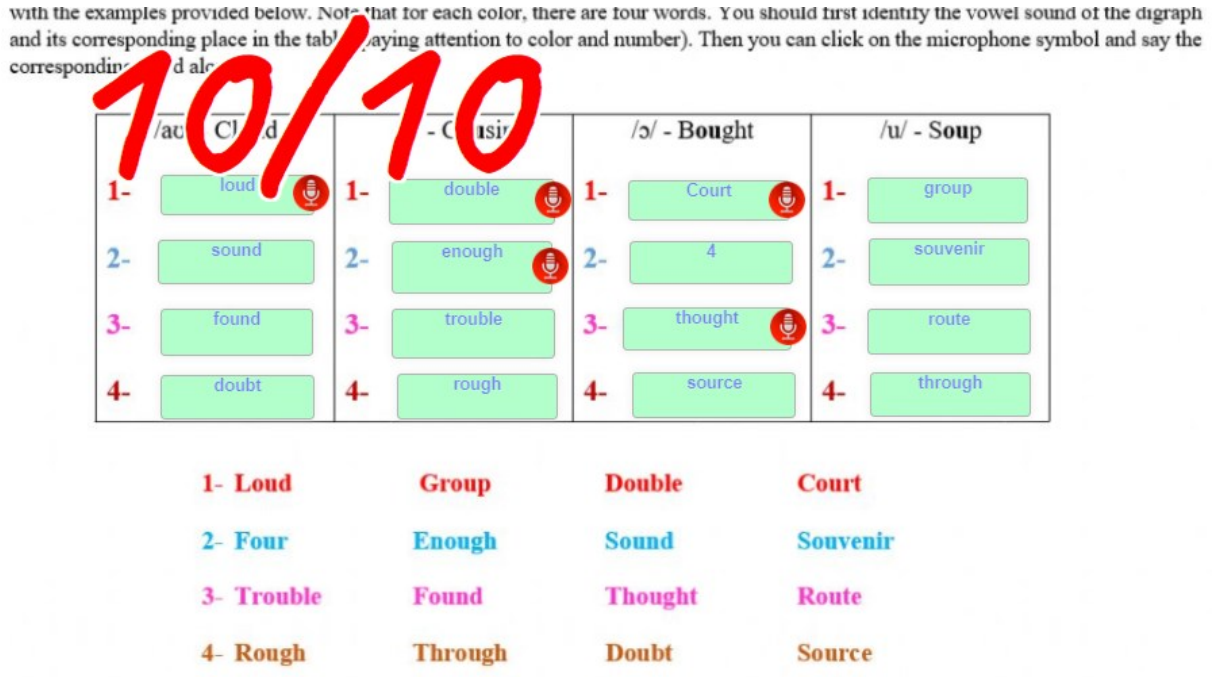
The following table presents four possible sounds for the pronunciation of the digraph <ou> in English. Your task is to complete the table with the examples provided below. Note that for each color, there are four words. You should first identify the vowel sound of the digraph and its corresponding place in the table (paying attention to color and number). Then you can click on the microphone symbol and say the corresponding word aloud.

	/aʊ/ - Cloud	/ʌ/ - Cousin	/ɔ/ - Bought	/u/ - Soup
1-				
2-				
3-				
4-				

1- Loud	Group	Double	Court
2- Four	Enough	Sound	Souvenir
3- Trouble	Found	Thought	Route
4- Rough	Through	Doubt	Source

LIVEWORKSHEETS

- The learners also received immediate feedback to check their responses:



with the examples provided below. Note that for each color, there are four words. You should first identify the vowel sound of the digraph and its corresponding place in the tab aying attention to color and number). Then you can click on the microphone symbol and say the correspondin d alo

10/10

	/au Cl d	- C usi	/ɔ/ - Bought	/u/ - Soup
1-	loud	double	Court	group
2-	sound	enough	4	souvenir
3-	found	trouble	thought	route
4-	doubt	rough	source	through

1- Loud	Group	Double	Court
2- Four	Enough	Sound	Souvenir
3- Trouble	Found	Thought	Route
4- Rough	Through	Doubt	Source

6th SESSION

THEME: Review and the schwa sound

GENERAL OBJECTIVE: practice pronouncing words containing the digraph <ou> and the sound /ə/.

SPECIFIC OBJECTIVES:

1. To increase learners' awareness of the schwa sound, understanding that it is the most frequent vowel sound in English and that it can be mapped on various graphemes.
2. To raise learners' awareness to the changes in vowel quality in connected speech.
3. To review some of the rules discussed in the previous classes.

PROCEDURES:

1. Wait for students to enter the Web conferencing room and welcome them.

(4 min.)

2. Start the class with a final pronunciation tip – the schwa sound (/ə/). This vowel sound has already been presented in the second meeting; however, it might be interesting for learners to focus on it. Therefore, to illustrate the target articulation of the sound, show an excerpt from the video produced by the YouTube channel 'Sounds American'[26].

Also explain that /ə/ is a very relaxed vowel sound and always appear in unstressed syllables.

- Provide some examples: above, believe, possible, bacon and lettuce.
- Highlight that since this is a frequent sound in English words and many graphemes can represent it, learners usually tend to be significantly influenced by the written form. According to Godoy, Gontow, and Marcelino (2006), Brazilian Portuguese learners often mispronounce words such as generous, production, and illusion. Encourage learners to think about how they would produce those words and ask them to practice the items.
- Highlight that the digraph studied in the previous class (<ou>) can be equally pronounced as /ə/, for example, in adjectives ending with the suffix <ous> (e.g., generous). Therefore, learners should pay attention to their pronunciation of such adjectives.
- Also, mention that an unstressed vowel can be pronounced with the sound /ɪ/, especially when it is spelled with the graphemes <e> and <i>. Therefore, the word "believe", for example, can be pronounced either as [bəˈliːv] or as [bɪˈliːv].

(5 min.)

3. Mention that the schwa sound is also very common in the reduced forms of words such as articles and prepositions. For example, "a book", "the boy", "to me". To make it more illustrative, learners will listen to an audio recording showing how words are fully pronounced separately by comparison with connected speech.

- Provide some more examples of function words and their reduced form and/or ask learners to think of different examples.

(3 min.)

[26] < https://www.youtube.com/c/SoundsAmerican>

4. Finally, mention that the schwa sound might be perceived as the vowel /ʌ/. Discuss how the two sounds differ, showing a picture of the lip position in the production of each sound so that learners can visualize the differences better. Likewise, compare the two sounds in additional examples and give learners the opportunity to practice them.

(3 min.)

5. Final activity: students will see a list of words they have practiced in the previous classes, as well as words containing the target sound from this class (the schwa sound). Each of these words will be displayed by a specific alphabet letter (A-Z). Therefore, learners will use the words to spell their family members' names (e.g., parents or siblings), and the rest of the group will pay attention and try to decode the names. This activity can be also carried out as a game: the first student to guess the correct name in each round gets a point.

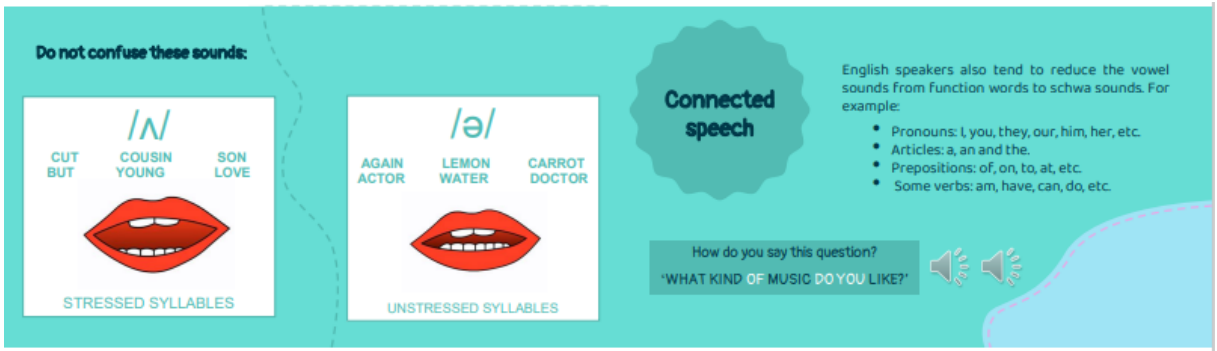
(15 min.)

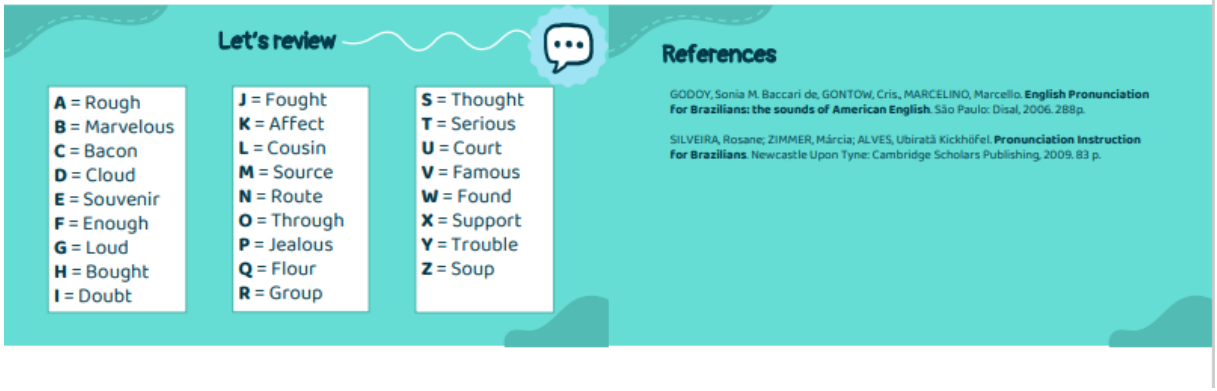
REFERENCES

GODOY, Sonia M. Baccari de, GONTOW, Cris., MARCELINO, Marcello. English **Pronunciation for Brazilians: the sounds of American English**. São Paulo: Disal, 2006. 288p.

SILVEIRA, Rosane; ZIMMER, Márcia; ALVES, Ubiratã Kickhöfel. **Pronunciation Instruction for Brazilians**. Newcastle Upon Tyne: Cambridge Scholars Publishing, 2009. 83 p.

Screenshots of the presentation prepared for the 6th session:


Do not confuse these sounds:
/ʌ/
CUT BUT
COUSIN YOUNG
SON LOVE
STRESSED SYLLABLES
/ə/
AGAIN ACTOR
LEMON WATER
CARROT DOCTOR
UNSTRESSED SYLLABLES
Connected speech
English speakers also tend to reduce the vowel sounds from function words to schwa sounds. For example:
Pronouns: I, you, they, our, him, her, etc.
Articles: a, an and the.
Prepositions: of, on, to, at, etc.
Some verbs: am, have, can, do, etc.
How do you say this question?
'WHAT KIND OF MUSIC DO YOU LIKE?'


Let's review
A = Rough
B = Marvelous
C = Bacon
D = Cloud
E = Souvenir
F = Enough
G = Loud
H = Bought
I = Doubt
J = Fought
K = Affect
L = Cousin
M = Source
N = Route
O = Through
P = Jealous
Q = Flour
R = Group
S = Thought
T = Serious
U = Court
V = Famous
W = Found
X = Support
Y = Trouble
Z = Soup
References
GODOY, Sonia M. Baccari de, GONTOW, Cris., MARCELINO, Marcello. English Pronunciation for Brazilians: the sounds of American English. São Paulo: Disal, 2006. 288p.
SILVEIRA, Rosane; ZIMMER, Márcia; ALVES, Ubiratã Kickhöfel. Pronunciation Instruction for Brazilians. Newcastle Upon Tyne: Cambridge Scholars Publishing, 2009. 83 p.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