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Young EFL Learners' Awareness of Second Language Phonemic Inventory and Mediation Strategies

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Abstract

This study proposes the implementation of phonological drills along with awareness exercises to help young Spanish-speaking EFL learners notice second language (L2) phonological forms not present in their first language (L1). To do this, a qualitative case study was done, which observed a class of 20 third and fourth graders throughout a period of eight weeks. During this time, phonological drills focusing on the English vowel contrasting pair /iy/ versus /ɪ/ were implemented. Along with the drills, focus on form, noticing, and awareness exercises were done to help the learners notice and produce the target sounds. The class was looked at from a Complex-Dynamic Systems Theory lens, with the philosophical background of Collaborative Relations of Power and Edge of Chaos Theory to help aid the learning process at all times. The study found that phonological drill-type exercises, (a behaviorist technique), along with the manipulation of instructional conditions, a (cognitive-interactionist approach), helped raise the learners' phonological awareness from having shown *little to no evidence on awareness* in the beginning, to having shown *substantial evidence of awareness* by the end of the eight-week intervention. The study re-examines the concept of drilling and shows that drill-type exercises, along with awareness and noticing exercises, have an impact on learners' perception and production of L2 phonemic baggage not present in their L1.

Resumen

Este estudio propone la implementación de ejercicios fonológicos de repetición, junto con ejercicios de percepción fonológica para ayudar a jóvenes hispano-hablantes que están aprendiendo inglés como una segunda lengua, a darse cuenta de formas fonológicas de la lengua meta (L2) que no están presentes en su lengua materna (L1). Para esto, se llevó a cabo un estudio de caso cualitativo, que observó a una clase de 20 estudiantes de tercer y cuarto grados a través de un período de ocho semanas. Durante este tiempo, ejercicios fonológicos de repetición contrastando los sonidos de las vocales en inglés /iy/ versus /ɪ/ fueron implementados. Junto con los ejercicios de repetición, otros ejercicios de percepción, enfoque en la forma, y de notar características fueron realizados para ayudar a las personas estudiantes a darse cuenta de los sonidos a reproducir y reproducirlos fonológicamente. La clase fue observada desde un lente de Teoría de los Sistemas Complejos-Dinámicos (CDST por sus siglas en inglés), con la fundamentación filosófica de usar las Relaciones Colaborativas de Poder y la Teoría del Borde del Caos para ayudar al proceso de educativo. El estudio encontró que los ejercicios fonológicos de repetición (una técnica conductista) junto con la manipulación de las condiciones de instrucción en clase (una propuesta cognitivo-interaccionista), ayudaron a elevar el nivel de conciencia fonológica en los participantes de haber mostrado *poco o nada de evidencia de conciencia* fonológica en cuanto a los sonidos propuestos, a mostrar *evidencia sustancial de conciencia* al final de la intervención de ocho semanas. Este estudio re-examina el concepto de ejercicios de repetición y demuestra que el uso de estos ejercicios de repetición junto con otros ejercicios de percepción puede tener un impacto en la percepción y producción fonológica de las personas estudiantes.

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I. Introduction

This work is a qualitative case study dealing with pronunciation instruction and perception among young EFL learners who have Spanish as their native language. Firstly, I give an overview on pronunciation instruction. Secondly, I present differences between English and Spanish vowel sounds and define the concept of linguistic transfer. Lastly, the research question is presented.

Ever since the onset of Communicative Language Teaching (CLT), which emphasizes meaning over form, pronunciation, once a central concern of language teaching, has been sidelined (Pennington, 2021, p. 3). Second language (L2) phonology is a complex process that encompasses pronunciation and perception (Gass et al., 2013, p.154). To understand the acquisition of an L2, the differences between the native language (NL) and target language (TL) must be observed. At least “some of a learner’s pronunciation of the L2 is clearly attributable to the NL” (ibid.). Ladefoged (2010) defines phonology as: “the systems and patterns of sounds that occur in a language. It involves studying a language to determine its distinctive sounds.” (p. 33). In addition, Jenkins (2007) states: “phonological problems regularly get in the way of successful communication in international contexts” (p. 78). In other words, pronunciation involves perception and L1 influence, and phonology deals with the distinctive sounds any given language has, and so phonology is important to make ourselves effectively understood.

Pronunciation is important not only because of intelligibility, “but also in the wider social context of how people demonstrate their identity and position themselves in communicative situations” (Dixon, 2020, p. 223). How we speak becomes part of our identity. Furthermore, “[r]ecent research has shown that pronunciation errors and accentedness have a strong influence on employability and promotion opportunities” (Newton, 2018, p. 343). Parallel to this, there is a level of expected proficiency regarding pronunciation for candidates who take high-stake tests such as the International English Language Testing System (IELTS), and the Test of English as a Foreign Language (TOEFL). While it is true that everyone has a right to the

manifestation of their own culture, identity, and choice as to how to speak any language they choose, and that language is a living, changing entity, it is also true that the differences between languages (and therefore pronunciations) should be noted, studied, and understood.

The narrative case study developed here focuses specifically on raising awareness of L2 phonemic inventory not present in the first language (L1) for Spanish speaking young EFL learners in a non-formal classroom environment, which is further described in the methodology section. The model of pronunciation for all practical purposes on this paper was the Standard American English (SAE) because this is the variant that the student participants were being taught.

1.1 English and Spanish Vowel Sounds

Spanish and English differ in their vowel inventory. The English vowel sound system has twenty vocalic sounds. Twelve are considered pure vowels. Of those 12, seven are simple (/ ɪ, e, æ, ʌ , ɒ , ʊ , ə /), and five are complex (/iː, ɜː, ɑː, ɔː, uː/). Pure vowel sounds are “sounds which remain constant and do not glide” (Roach, 2001, p.21). Table 1 shows the twelve pure vowel sounds in English with examples.

On the other hand, the Spanish vowel system has 19 vocalic sounds. Five are pure vowels /a, e, i, o, u/ and the rest are diphthongs. Diphthongs are sounds which consist of a movement or glide from one vowel to another. Pure vowels in Spanish can be further divided into two groups, strong vowels /a, e, o/ and weak vowels /i, u/. Regarding Spanish, Harmer (1969) mentions: “Each vowel has one pure unvarying sound. It must always be given its full value, whether it bears the stress or not. The English tendency to diphthongize single vowels must be strictly avoided” (p.1). Table 2 shows the pure vowel sounds in Spanish.

Table 1

The twelve pure vowel sounds in English

Simple: / ɪ, e, æ, ʌ , ɒ , ʊ , ə /	**Complex: /iː, ɜː, ɑː, ɔː, uː/**
/ ɪ / give	/ iː / meet
/ æ / paddle	/ ɜː / nervous
/ ʌ / done	/ ɑː / dark
/ ɒ / bottle	/ ɔː / four
/ ʊ / look	/ uː / foolish
/ ə / heavy	
/ e / measure	
/ æ / paddle	

Table 2

Pure vowel sounds in Spanish

Strong	**Weak**
/a/ casa	/i/ impulso
/e/ espejo	/u/ cupo
/o/ oro	

As we can see, Spanish and English have a very different phonetic inventory. At the same time, the differences between both vowel systems seem to indicate that these phonemic variations are in fact subtle calibrations of some very similar sounds. Flege et al. (1997), in mentioning differences between both vowel systems, contribute: “L2 error analyses indicate the

following pattern of misidentification of English vowels spoken by native speakers of Spanish: intended /ɪ/ to [i], /ɛ/ to [e], /æ/ to [a].” (p. 442)”. Schwarz et al. (2016) shed more light upon the matter:

> A more fundamental issue is the fact that the English vowel system is quite dense from a typological standpoint, and includes a number of uncommon vowels (e.g., /æ ɒ ʌ/), and difficult contrasting pairs (e.g., /uː/ vs. /ʊ/). Thus, learners from most L1 backgrounds will have to learn to produce new vowel sounds, and to perceive acoustic distinctions that are absent from their first language. (p.182)

So we have two phenomena: first, the fact that “[t]ypically, at least two English vowels share the ‘phonetic space’ occupied by one Spanish vowel” (Coe, 2001, p. 91). This is arguably the reason why Spanish-speaking English learners will typically categorize these similar, but distinctly different sounds, as the nearest equivalent of their L1 (Flege, 1992, 1995). And second, that learners of the L2 will have to produce new vowel sounds, and to perceive acoustic distinctions that are absent from their L1 (Schwartz et al., 2016, p.182).

In this paper, I set out to investigate if through drilling (i.e., constant repetition) and other awareness activities in class we can raise learners’ awareness of L2 phonemic inventory not present in their L1. Through metalinguistic tools, such as graphs, awareness exercises, and languaging, it is my intention to prime the learners in order to maximize the work done through drills and awareness exercises of two specific target vowel sounds: the complex, tense sound /iy/ as in *l<u>ea</u>ve*, and the simple, lax, sound /ɪ/ as in *l<u>i</u>ve*. Priming is understood here as a process whereby presentation of an item influences the processing of a subsequent item, either making it easier to process (positive priming) or more difficult (negative priming) (Kim, 2017, p. 128). The symbols /iy/ and /ɪ/ have been selected among the possible IPA symbols, because the use of the /iy/ symbol makes it easy to distinguish it from Spanish /i/, and the use of the "y" emphasizes the less visible glide in that sound.

1.2 Transfer

There are properties of the L1 that influence or transfer into the production and perception of an L2, most notably in the realm of accent (Archibald, 2018, p.11). Transfer in second language acquisition (SLA) refers to the role of the NL (Gass et al. 2013, 79). We transfer what we know from our previous experience and apply it to the new. Transfer from L1 affects how Spanish-speaking learners conceptualize and produce L2 phonemic inventory.

New sounds that are not part of the L1 are drawn like a magnet to the closest L1 speech prototype. Flege (1995) worked upon the concepts of similarity and dissimilarity, and claimed that “L2 sounds that are similar/equivalent to L1 sounds are difficult to acquire, because the learner does not perceive them or classify them as different and, hence, does not set up a new category of contrast” (p. 239). Flege’s Speech Learning Model (1992, 1995) states that category formation becomes blocked by a mechanism of equivalence classification. This subsuming or lack of categorization of the new sounds can lead to fossilization of incorrect vowel sounds in the L2. Fossilization happens when interlanguage (IL) ceases to develop short of identifying fully with the target language (Tarone, 2018, p. 748). Interlanguage is defined by Selinker (1972) as a separate linguistic system to express meaning in a language someone is in the process of learning. Tarone goes on to say that IL “differs systematically from both the native language and the target language” (ibid). This means that the language system settles into an in-between state where growth has become stagnated.

What concerns us here is that there seems to be an internalization of interlanguage structures that might become a habit for the speaker, and that they will not produce a target sound effectively, if another similar sound has already taken the place of the desired and expected phonemic category (Coe, 2001, p. 91; Flege, 1995, p. 239; Schwartz et al., 2016, p.182). Thus, the aim of pronunciation instruction is that 1) learners do not fall into the formation of inaccurate phonetic habits (subsuming and/or inexistent/incorrect categorization) when

producing L2 vowel sounds; and 2) that any fossilization that might have already started to happen in the form of inaccurate sounds produced by the learner be detected, and an attempt made to suppress and/or reverse these habits.

Against this backdrop, the purpose of this case study is to better understand, describe, and develop stimulus response phonological drill-type techniques that draw upon Edge of Chaos (Oekerman, 1997), to raise awareness of L2 phonemes not present in L1 of young Spanish speaking EFL learners in a non-formal education classroom setting in Costa Rica. At this stage in the research, Edge of Chaos is generally defined as “a paradoxical state, between order and chaos, where the system operates at its highest level of functioning, where the information processing takes place, where risks are taken and new behavior is tried” (p. 222). In the above context, I want to research the following question:

How can drills be used to help young Spanish-speaking EFL learners become aware of L2 phonetic inventory not present in their L1?

I answer this research question by combining a series of techniques, theories and approaches that deal with second language acquisition (SLA) that include Behaviorism, the Cognitive Interactionist Approach, the Sociocognitive Approach, Edge of Chaos Theory, and Complex-Dynamic Systems Theory (CDST).

II. Theoretical Framework and Literature Review

2.1 Overall Theoretical Framework

This study will call on a series of interrelated theories. For the design and implementation of the drills and other activities, I draw from behaviorism, the cognitive-interactionist approach, the socio-cognitive approach, and the edge of chaos theory. To examine the implementation of the phonics drills, I will rely upon complex-dynamic systems theory (CDST).

Behaviorism

Drawing on Russian psychologist Ivan Pavlov's findings, John B. Watson (1913) coined the term behaviorism. E.L. Thorndike (1898) proved that "stimuli occurred after a behavior had an influence on future behaviors" (Brown, 2006, p. 83). Thorndike's Law of Effect paved the way for Skinner (1938) to expand on what Pavlov, Watson, and Thorndike had already achieved: an adherence to the scientific method in observing behavior and relating it to learning theories. Behaviorism seeks to offer stimuli that elicit expected behavior from a subject. For this study, the pronunciation drills and other activities are based on the importance of the effects that follow a response, which is especially relevant to the practice of pronunciation. Via this practice, learners received behavior strengthening reinforcements such as prompts, video flashcards, corrective response, positive and negative reinforcement, and recast solicitation, to help them notice the difference between L1 vowel sounds and the target L2 vowel sounds.

Cognitive-Interactionist Approach

Several concepts in the cognitive-interactionist approach to L2 are relevant to this case study. Among these: Instructed Second Language Acquisition (ISLA) and the manipulation of instructional conditions, *metalinguistic awareness* (Goo, 2012), the role of *input* and *output* (Swain, & Lapkin, 1995), the role of *interaction* (McDonough & Trofimovich, 2009; Trofimovich,

2016), *noticing, focus on form, corrective feedback* (Lyster et al., 2013), *priming* (McDonough & Trofimovich, 2009), *uptake* or *modified output* (McDonough, 2005), *working memory, recasts* (Goo, 2012), among others (for a complete list of authors see Kim, 2017, p.132). Table 3 shows the definitions of the aforementioned terms.

Table 3

Concept	Definition
Metalinguistic awareness	the ability to think and reflect on language as a system.
Input	the language that learners are exposed to and receive from their environment.
Output	the language that learners produce themselves, either through speaking or writing.
Interaction	the dynamic exchange between learners and their environment.
Noticing	the conscious awareness and recognition of linguistic features in the input by the learner.
Focus on form	explicit attention to specific linguistic forms during instruction or language practice activities.
Corrective feedback	the information provided to learners to address errors or inaccuracies in their language production.
Priming	a process whereby presentation of an item influences the processing of a subsequent item, either making it easier to process (positive priming) or more difficult (negative priming).
Uptake (modified output)	the process by which learners incorporate new linguistic forms, structures, or vocabulary into their language repertoire after receiving input or feedback.
Working memory	the cognitive system responsible for temporarily storing and manipulating information during language learning tasks
Recasts	a type of corrective feedback provided by interlocutors in response to learners' language errors that involves reformulation of utterances by the learners.

Source: Adapted from Kim, Y. (2017, p. 128)

Concepts and definitions of the cognitive interactionist approach.

It is widely accepted in SLA that interaction fosters language development (Mackey, 1999, Lyster & Saito, 2010; Plonsky & Gass, 2011). By creating impulse-response drills and other activities that foster interaction, uptake in pronunciation can occur. Drawing from Vygotsky's Zone of Proximal Development (ZPD) (1978), I cued the learners for a response, thus promoting noticing of L2 phonetic forms. Instructed Second Language Acquisition (ISLA) allows us to focus the attention of the learner by manipulating instructional conditions: e.g., visual cues, soliciting recasts, modeling, and giving corrective feedback. This fosters executive attention (Goo, 2012). This cognitive-interactionist approach to teaching uses Language Related Episodes (LREs) that can lead to greater levels of metacognition and subsequent language development by the learners.

Sociocognitive Approach

The sociocognitive approach views human beings as ecological, adaptive organisms, continuously and dynamically adapting to their environment. Cognition is a node in an ecological network and must be aligned with its environment as part of a relationship (Atkinson, 2011, p. 143). This approach envisions cognition as an open system, the implication for SLA being that learning is viewed as an adaptive process of ecological alignment. It places learning within situated activity systems. The sociocognitive approach implies that we learn through environmental action and stimulus. This involves dynamic adaptivity to, or alignment with the environment. These concepts are of importance in the present study, as the phonetic drills and other practices are based on understanding the class as an ecological system, where constant interaction promotes alignment to the target linguistic forms.

Edge of Chaos

The science of complexity is a cross-disciplinary approach to understanding the dynamics of systems that interact with their environment, wherein individuals learn from experience and

modify their behavior as a result. These systems follow a set of rules with two subsystems: a dominant (legitimate) one that has to do with the main task, and a recessive (shadow) one that operates outside the system's primary task and tries to undermine it. The dynamic tension that is generated between the two systems eventually comes into what is called a phase transition, also referred to as the "edge of chaos": a narrow space between order and chaos. In this sense, edge of chaos is "a paradoxical state, characterized by risk, exploration and experimentation […] where the system operates at its higher level of functioning, where the greatest information processing takes place, where risks are taken and new behavior is tried out" (Ockerman, 1997, p. 220). This narrow space would seem optimal for learners to become receptive to new information. The implementation of the drills and other pronunciation practices can create edge of chaos situations in class dynamics, to help students, and the class as a system, to open up and process the information being received, and to internalize it in the best possible way.

Complex Dynamic Systems Theory (CDST)

CDST is influenced by Gleick's (1987) chaos/complexity theory with the following implications: Language is a dynamic, open, adaptive, self-organizing, nonlinear system. CDST focuses on the interplay between "the emergence of structure on one hand, and process on the other […] It sees complex behavior as arising from interactions among many components - a bottom-up process based on the contributions of each, which are subject to change over time" (Larsen-Freeman, 2011, p. 52). Drills seem like an ideal fit to observe these characteristics.

Larsen-Freeman (2011) concedes that complexity theory shares with the Vygotskyan perspective that higher mental functions emerge during social interactions, and is interested, moreover, in how minds affect the social contexts they operate in (p. 66). The cognitive-interactionist approach, the sociocognitive approach, and CDST share common links in how they view SLA. They support an ecological view of the classroom, where a network of knowledge resorts to "adaptive imitation" where learners adapt to patterns. Larsen-Freeman

concludes that language use and acquisition are mutually constitutive. This means that we get better at language by using it. Repeated pronunciation of phonetic forms will allegedly strengthen these forms in the learners.

CDST guided analysis of data collected via observations, focused talks, and artifacts. Specifically, analysis focused on identifying how the learners change their use of L2 vowels through exposure to stimulus-response, within socially constructed drilling dynamics. That is, using the CDST lens, I intended to account for phenomena showing how directed pronunciation practice can evidence characteristics of the classroom as an ecological system. Under this guise, ZhaoHong (2023) mentions nine assumptions to validate CDST research: sensitive dependance on initial conditions; complete interconnectedness; nonlinearity in development; reorganization through interaction with the environment; dependance on internal and external resources; constant change with temporary attractor states; iteration (critical dependency on previous level of development, Vygotsky, I+1); change through interaction and internal organization; and emergent properties (p. 1398). These assumptions, again, seem optimal to observe through drilling activities and other pronunciation practice.

2.2 Literature Review on Pronunciation Instruction

Phonology and Pronunciation

As was mentioned in the introduction, ever since the onset of Communicative Language Teaching (CLT), pronunciation and pronunciation instruction have been sidelined (Pennington, 2021, p. 3). At the same time, there has been a historical development of pronunciation pedagogy, all while contexts of English in the twenty-first century are rapidly shifting (Dixon, 2020, p.221). Among this usage-based view of language learning, where context and socialization have become central, multilingual orientations to pronunciation have replaced completive and nativistic views. Instead, language learning is viewed as a never-completed phenomenon, one in which performers have multiple models of speech. Within this view, “all

speakers' linguistic competence and performance are recognized to be affected by their multiple languages" (Pennington, 2021, p 5).

Speakers who have English as their L1 are now a minority in the stage of global communication: they represent less than a quarter of the world's population of English speakers. It is estimated that one billion people speak English as an L2 globally (Pennington, 2021, p. 5). Intelligibility and communicative effectiveness have replaced accuracy as a focus (ibid, p. 3). Task-based approaches have combined communicative tasks with focus-on-form (an instructional approach that integrates attention to linguistic elements within the context of meaningful communication), and high attention has been paid to advanced learners, in very specific areas and contexts. Lastly, technological advances have greatly impacted the linguistics field, and will continue to do so.

In an article dealing with the state of the art in pronunciation teaching (Pennington, 2021), 'focus-on-forms' (an instructional approach that emphasizes the explicit teaching of discrete linguistic forms in isolation), awareness-raising, and controlled practice (Long, 1991, 2015) are mentioned as important factors in pronunciation teaching. The article ends stating that, since younger learners seem to have a greater aptitude for the intake of pronunciation, it is important to move away from the "nearly exclusive emphasis on relatively advanced or late-stage learners and to intensively investigate pronunciation teaching at the early stage of language learning, with attention to developing appropriate pronunciation methodology for beginners" (Pennington, 2021, p.17). A call to challenge standard practices with norm-breaking ones, to experiment, and to actively research pronunciation teaching in beginner-level learners is also made (ibid). This case study aims to fill the age-gap mentioned in the article above, and is a response to the call of this particular element in the field that has been under-implemented and neglected: young EFL learners.

As mentioned in the introduction, L2 analyses have shown the following sounds are commonly misidentified in English by native speakers of Spanish: intended /ɪ/, Spanish [i];

intended /ɛ/, Spanish [e]; intended /æ/, Spanish [a] (Flege et al., 1997, p. 442). Moreover, the English vowel system includes the following uncommon vowels (e.g. /æ ɒ ʌ/) and contrasting pairs (e.g. /u:/ vs. /ʊ/, / ɪ / vs /i:/) (Schwarz et al., 2016, p. 182). The selected vowel sounds for this study are the complex, tense vowel sound /iy/ as in *sea*, and the simple, lax vowel sound /ɪ/ as in *give*. As mentioned, native speakers of Spanish will commonly use a Spanish [i] when the intended sound is /ɪ/. Through the drills and intervention, I increase the learners' level of awareness regarding the correct use of these two sounds.

Pronunciation Instruction

Seeing that time is always an issue regarding the curriculum, one proposal is for "systematic integration of pronunciation in content-based teaching" (e.g., Brown, 2008; Levis & Grant, 2003; Morley, 1991). Relatively few studies have described integrated approaches in oral communication courses (Darcy et al., 2021, p.112). In a study by Darcy et al. (2021), results showed that integration can take place in a number of ways, including the teaching of pronunciation as part of the lesson plan, or as integrated activities and instruction that expanded on course content (p. 115). Activities that were in the lesson plan (embedded), as well as activities that were not in the lesson plan (scattered) were used for pronunciation instruction. It was found that "integrating pronunciation instruction has the potential to draw students' attention to pronunciation for a significant amount of class time, without disconnecting it from the course objectives" (p. 124). Among other findings, the authors conclude that paying attention to pronunciation in every class, even if it is just in a reactive manner, is important. This attention exposes students to pronunciation and helps to instill in them a sense that pronunciation matters when speaking and learning an L2.

Darcy et al. (2021) point out that the integration of pronunciation instruction did not occur at the expense of other course goals: "[o]n the contrary, as reported by the teacher of the experimental groups in our study, pronunciation instruction is likely to have helped with

bottom-up listening skills, and so appears to be beneficial to the other course goals as well" (p. 124). In their conclusions, the authors explain that documenting how pronunciation is integrated into the classroom is important because it helps make informed decisions to train teachers, and it also helps the SLA field better understand how pronunciation can be taught without taking time away from other subjects.

Drawing on Darcy et al. (2021), this case study took advantage of scattered activities, utilizing them as transitions in regular classes. Scattering activities helped students maintain interest and focus on the subject at hand. They also helped the learners to experience the edge of chaos, where excitement levels are elevated into a facilitating anxiety mode. Facilitating anxiety is defined by MacIntyre and Gardner as a type of anxiety that can positively influence performance in certain situations. Research has demonstrated that 'facilitating anxiety' is likely to have a positive effect on linguistic performance (Johnson 2018, note 1). Broadly speaking, the research on facilitating anxiety and the research on edge of chaos share commonalities, like the fact that both facilitating anxiety and edge of chaos can act as a driving force, pushing learners to make the necessary effort to succeed in tasks. Both facilitating anxiety and edge of chaos are seen as a form of stimulus that heightens awareness and concentration, leading to better performance under pressure.

Drills and Pronunciation Practice for Intake

"Intake" in SLA refers to the language input that learners actively notice and internalize during the process of learning a second language (Reinders, 2012, p. 28; p. 64; Carroll, 2001, p.10; Gass, 1997, p. 5; Van Patten, 2002, p. 757; for a complete list of definitions, see Reinders, 2012). Archibald (2018) posits: "Robust input cues are more likely to become intake" (p. 19). Drills are by nature robust input cues. In fact, drills in language learning have parallels to drilling in music learning/pedagogy, where the repetition of movements, sounds, and exercises, favor working memory, as well as muscle memory. Relatedly, Castro-García (2014) considers the

effects of spaced learning in EFL classroom environments. Looking into memory, she cites Tileston (2004, p. 34) in saying, “the episodic memory system requires little intrinsic motivation to store information for years - forever, if it is rehearsed periodically” (p. 244). This means that by repeating drilling exercises separated through time, we have a good opportunity to tap into the long-term memory systems of the learners with minimum resistance.

At this point, I call upon the distinct characteristics of pronunciation drills and exercises with regards to the rest of the skills (listening, speaking, reading, writing) and sub-skills (grammar, vocabulary and pronunciation) in language: Research indicates that “meaning can be a greater source of learning difficulty than form” (Han, 2014, p. 479). In my view, this means that of all the skills and sub-skills, pronunciation being related to sound and sound being pure form, is at an advantage to be taught and learned over those skills and sub-skills that involve complex meaning connections. You do not need to have a complex underlying understanding to know why a sound is pronounced the way it is as opposed to, say, a grammar rule that explains that the past continuous is used for an action which began in the past and was still going on when another event occurred. The production of a sound deals with imitation and imitation only, and not with any kind of complex semantic, syntactic, or grammatical rules. Regarding learnability (Wexler & Culicover, 1980) and what is to be acquired, Archibald goes on,

> Abstract representations must be acquired, and it is critical to remind ourselves that these values cannot always be read directly off the input signal. There are no invariant acoustic cues for the acquisition of verbs, or complementizers, or aspect, or tense. While this lack of direct environmental cueing of linguistic representations may be seen as unsurprising in the domain of morphosyntax or semantics, it is, perhaps, less obvious in the domain of phonology as well. (Archibald, 2018, p.19)

Again, phonology is signaled out for having more surface characteristics than other skills and sub-skills of language, which enable it to be a good choice for meaningful drilling-type

exercises. What is more, in this example, we can make a direct relation between the abstract representations that can be read off input signals. We do have the possibility of having invariant acoustic cues for the production and acquisition of sounds (e.g., recorded models for repetition). Visual and acoustic cues can be constructed for such purposes, as was the case in my study.

Drilling for the Teaching and Learning of Pronunciation

Kelly (2000) rescues the value of drills. He mentions there are two key sides to pronunciation teaching: the teaching of productive skills, and the teaching of receptive ones. He then states, “[d]rills, by way of example, are useful in the development of both kinds of skills […]” (p.13). He goes on to say that one of the main ways in which pronunciation is practiced in the classroom is through drilling, and that being able to drill *properly* (not *mechanically*) is a “basic and fundamental language teaching skill.” Kelly finishes by calling drilling an important tool in pronunciation work, and that it should be paid attention to at all learner levels: beginner, intermediate, and advanced (p.18).

As we can see, where drills have been criticized in other systems such as grammar; in pronunciation, they have been qualified as highly useful, because they can be used in a meaningful way in the classroom. In using drills, we have the opportunity to incorporate central concepts to SLA, like input, attention, noticing, awareness, solicitation of recasts, modified output or uptake, languaging, priming, and interactive alignment. Moreover, there is also the opportunity to use the class as a complex adaptive system, creating situations where excitement and expectation take the learners into an edge of chaos situation where systems operate at their highest level (Ockerman, 1997, p. 222).

I want to explore how these SLA concepts and constructs relate to CDST, as there are many parallels in how the Sociocognitive Approach, the Cognitive-Interactionist Approach, and CDST perceive alignment and interconnectedness. Research has made a call for “an eclectic approach to the study of SLD that unifies sociolinguistic and psycholinguistic perspectives" (Han

et al., 2023, p. 1398). Here, and under the CDST lens, SLA is deemed Second Language Development (SLD), to emphasize the fact that it is an ongoing process with no endpoint, where growth and decline are stable (ZhaoHong Han et al., 2023, p.1397).

In his article The complexity epistemology and ontology in second language acquisition: A critical review (2023), ZhaoHong Han mentions nine assumptions to validate CDST research empirically:

- Sensitive dependence on initial conditions;
- Complete interconnectedness; Nonlinearity in development;
- Change through internal reorganization and interaction with the environment;
- Dependence on internal and external resources;
- Constant change, with chaotic variation sometimes, in which the systems only temporarily settle into “attractor states”;
- Iteration, which means the present level of development depends critically on the previous level of development;
- Change caused by interaction with the environment and internal organization; and emergent properties (p. 1398).

All of the above are to be observed and categorized during drilling and other pronunciation activities, in an age group (young EFL learners) and a sub-skill (pronunciation) that has been under researched in CDST (HIver et al., 2022, p. 924; Pennington, 2021, p.17). My intention hereby is not to come to any conclusions or assumptions as to the definite need for a categorization of these phenomena under the CDST lens, but rather to show how they might be categorized under this lens, while at the same time illustrating how these are also basic tenets brought forth by the Sociocognitive and the Cognitive-Interactionist Approaches.

There has been criticism and skepticism, however, regarding drills over the last decades. In The Evidence is IN: Drills are OUT, Van Patten & Wong (2000) name drills as a counter-productive strategy for SLA (p. 404). They mention that as learners learning an L2, students must (a) develop a linguistic system, and (b) develop mechanisms for language production. In separating the question into (a) whether drills help to develop the underlying system, and (b) whether they are useful in promoting accuracy and fluency, the authors are making a concession to the fact that these two categories must be viewed and judged separately. It would be difficult to contest the fact that drills do, in fact, help to achieve accuracy and fluency in the field of pronunciation.

Also, criticism of drills and drilling techniques seems to always come from the perspective of grammar, or syntax, maybe even vocabulary. When it comes to pronunciation, we have seen that the evidence suggests that a focus on short drilling exercises for the integration of pronunciation in the classroom would be in fact beneficial, as long as they are done in a meaningful, non-mechanical way. While not all phenomena in language can be explained through the lens of behaviorism, this approach, combined with drilling, when complimented with other exercises, seems to be a viable technique for fine-tuning small differences in the production of very similar sounds in the L1 and L2.

Keeping an open mind as to what techniques and tools we can use from past theories and approaches, and how we can incorporate them into our workflow will always be a valuable mindset to be grounded on. In looking to the future, and in line with viewing the class as an open and adaptive system, Ockerman (1997) notes that:

> The science of complexity studies the dynamics of those systems that interact with their environment, learn from the experience, and modify their behavior as a result. This has particular relevance to the field of experiential education because, broadly speaking, our work is in assisting complex systems to learn, to grow, and to evolve. (p. 221)

We can see how concepts like interaction of a system with its environment, learning from experience, and modifying behavior are relevant to drills, pronunciation, and this paper. Through drilling, we can take a look at these concepts, while engaging the students in exciting activities, where they can learn to become aware of the new phonemic categories of the target language.

III. Methodology

The following section describes the research paradigm, design, and genre; the research context and participants; the data collection instruments and analysis methods; some ethical considerations; and my positionality statement.

3.1 Research Paradigm, Design, & Genre

This research project was framed under a constructivist paradigm, which acknowledges that there is not one given and definite reality, but multiple ones. These multiple realities are co-constructed between the study's participants and the researcher. This paradigm also implies that the data generated are also co-constructed between the participants of this investigation and the researcher. I assume here a view of the world in which, as Hatch (2002) states, "absolute realities are unknowable, and the objects of inquiry are individual perspectives or constructions of reality" (p. 15). Everyone experiences reality from their own specific viewpoint, which is based on a multiplicity of factors. It then follows that "knowledge is symbolically constructed and not objective; that understandings of the world are based on conventions; that truth is, in fact, what we agree it is" (Hatch, 1985, p. 161). This view implies that reality is co-constructed among all the participants of the study.

Apart from being based on a constructivist paradigm, this study was defined as a qualitative case study, whose purpose is merely descriptive. I chose a case study, defined as "the study of an issue explored through one or more cases within a bounded system (i.e. a setting, a context)" (Creswell, 2006, p. 73), because case studies "focus on context and dynamic interactions, often over time" (Marshall & Rossman, 2016, p. 67). Apart from this, the genre of case study allows the "flexibility to incorporate multiple perspectives, data collection tools, and interpretive strategies" (ibid). Case studies allow for a contextualized, deep understanding that favors intensity. The unit of analysis was a group of 20 learners set for intervention by way of phonological drills and other awareness exercises. Observing students in

their natural setting in order to understand how they make sense of phonics instruction allowed for a description of how they viewed and perceived the English language by comparing and contrasting it to the use of their native language.

I define this case study as qualitative, due to the nature of the phenomenon studied, which allowed for an emergent design that could respond in a flexible way to circumstances that surfaced along the way. Focus was narrowed down gradually, and concepts were defined during, and not prior to, the process (Dörnyei, 2007, p. 37). Adding to this, the observations were done through prolonged contact with the participants, and immersed in the natural environment of a non-formal classroom setting, where they have been receiving classes with me for two to three years, depending on the participant. A qualitative focus for this case study is a good match because the data gathered and the categories formed were generated from the ground up as they emerged, and analyzed inductively. This allowed for individual stories to come to light, in the form of the lived experience of the participants throughout the study. As I see reality as co-constructed and multidimensional, there were also multiple meanings to be discovered.

Furthermore, in applied linguistics, according to Dörnyei (2007), there is “a growing recognition that almost every aspect of language acquisition and use is determined or significantly shaped by social, cultural, and situational factors, and qualitative research is ideal for providing insights into such contextual conditions and influences” (p. 36). The question being asked in this study also required a qualitative approach, as it dealt with the matter of whether the participants developed a heightened sense of awareness through the manipulation of instructional tools in this natural setting. Thus, this study aimed to observe interactions that might add to a pool of data for further research entailing this specific sub-skill, in this specific age-range, with the categorization of techniques that can evidence parallels between Behaviorism, the Cognitive-interactionist approach, the Sociocognitive approach, and CDST. Finally, framing this case study as a constructivist qualitative case study, allowed me to put

forward a very detailed description of how the shared classroom reality unfolded, in a natural setting with a relatively small sample-size.

3.2 Research Context and Participants

Research Context

The study took place in a family owned, non-formal educational setting, located in a suburban borough in Heredia. The neighborhood is surrounded by several Costa Rican middle-class districts and boroughs. People in the surroundings are conservative, and have mostly middle and low education levels. The population of these boroughs is a mix of small-town minded people, with middle-class professionals. Many families send their children to public schools, and most parents do not speak English, or do at very low proficiency levels. In the midst of this socioeconomic context, this non-formal education setting offers after-school classes for children ages 5 to 15. The setting takes advantage of the ideal ages for development of proficiency in English (Gass et al., 2013) and goes through a 7-to-10-year process with the learners, depending on the age at which they first begin coming to class here. Classes consist of two weekly sessions, two hours each. The four skills are worked on, and classes are divided into groups of anywhere from 15 to 23 students at a time. The premises consist of a classroom with a whiteboard and a large TV screen used as a class projector, a desk for the teacher, and 25 desks for students.

Outside the classroom there is another desk where a second teacher checks and pastes the homework on the students' workbooks, and assists the in-class teacher in anything he or she might need. Classes are taught by three teachers: one with 30-plus years of experience teaching English (and founder of the non-formal education setting), one with 23 years of teaching experience and UNA master's degree in *Gestión educativa y liderazgo*, and myself, with eleven years' experience teaching English to young learners. Lastly, there is a space before the classroom where the students have tables to sit at, a whiteboard and several games to play

with during recess such as puzzles, a mini-supermarket, whiteboard and markers, dollhouses, cars with racetracks, musical instruments, and many more. Figure 1 shows the premises.

Figure 1

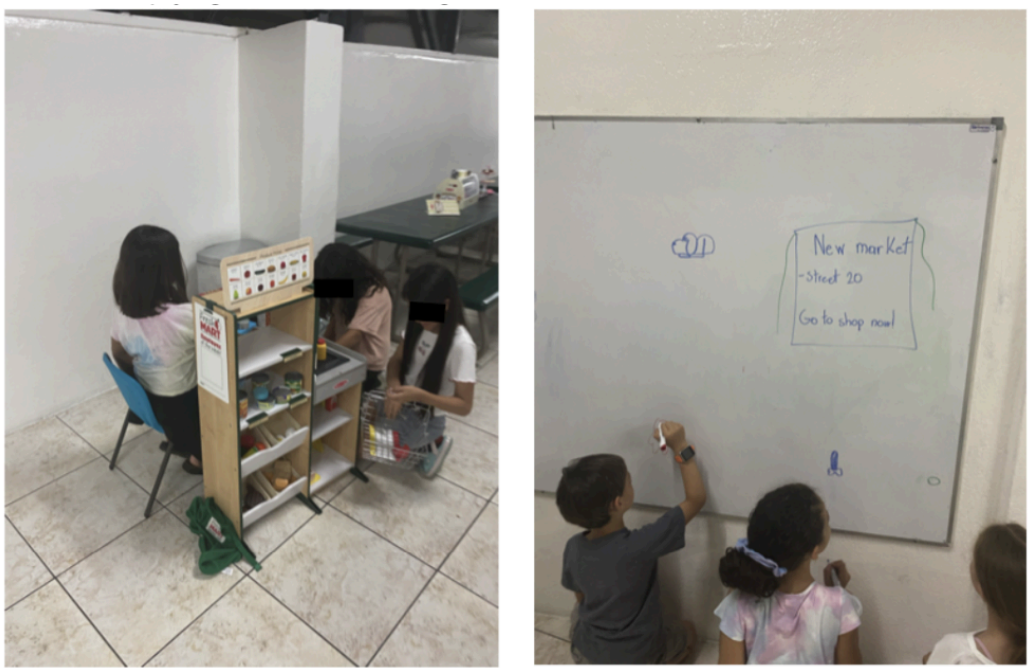
Leisure space and classroom in the non-formal education setting.

Research Participants

The learners are children between the ages of nine and 13. They come from middle-class families, and are highly motivated to improve their development of the English language. This level is called Level D, and is a mix of fourth and fifth grade students. Some learners in the level may not correspond to the actual grades mentioned, as they might have come into the program at a later time, and so they might be a little older than the student mean. Participants come from families of people who live in the boroughs nearby (Mercedes Norte, Barva, San Roque, San Juan, Santa Bárbara, San Lorenzo, San Joaquín de Flores), and the majority of the children who come attend public schools, although there are some who go to private schools. Their proficiency level is high when compared to the average Costa Rican learner in their same age-range who attends public schools. Figure 2 shows some third-grade learners enjoying leisure time at the premises. Learners are encouraged to interact in English.

Figure 2

Learners enjoy leisure time during recess.



I begin teaching my students at the third grade level, so the Level D learners have already had access to one or two years of the process that we follow. Still, they are very much in a formative stage regarding SLA. I am interested in the Level D group (fourth and fifth graders), since it is an age considered critical for SLA, and because of all the age groups in an SLA process, it is the one which has had less research done (Pennington, 2021, p.17).

3.3 Data Collection and Analysis

Data Collection

Data collection for this case study was done through participant observation, recollection of artifacts, and interviews in the form of focused talks. I conducted eight participant observations in the classroom. A total of 20 drills were tallied in 8 observation dates. Participant observation is defined as a qualitative data collection method that involves the researcher immersing themselves in the everyday life of the setting chosen for the study, entering the study's participants' world, and seeking their perspectives and meanings through ongoing interaction. Marshall and Rossman (2016) emphasize the importance of this method, highlighting that it allows researchers to observe and understand the behaviors, interactions, and processes within the research setting, allowing the researcher to learn from his own experience (p. 282).

This approach enables researchers to develop a deep understanding of the social context, behaviors, and experiences of the participants by actively engaging in the setting being studied. By observing, I also documented interactions in the classroom before, during, and after interventions. Systematic noting and recording of events, behaviors, and interactions included field notes, audio and video recording, transcriptions, memos, artifact collecting, and any other documentation technique that was within reach. Participant observations were conducted with the purpose of documenting if and how interactive alignment toward L2 phonemic forms

happens individually, as well collectively, hereby denoting awareness of a new phonemic category. Participant observation began on August 8th, 2024, with the introductory focused talks to gather their thoughts regarding language and pronunciation, and the implemented first drills, and went on once a week for a period of eight weeks until the last observation date on September 26th, 2024.

The study also included the collection of artifacts. Artifacts are described as objects that "individuals, organizations, families, agencies, townships, or larger social groups produce" (p. 311). The importance of collecting artifacts lies in that they provide valuable insights into the social, cultural, or personal contexts of the study participants. The collection of artifacts can be done routinely all through the learning process. Artifacts can take multiple forms and might include drawings, class work, spelling bee evidence, pictures, homework, jottings, paper-and-pencil tests, documents, records, audio and video recordings, and any written or observable manifestation of learners' perception and categorization of English vowel sounds and/or phonetic coding, be it in a formal, or informal classroom setting.

Finally, the study made use of interviews. In the literature, qualitative interviews are defined as a research method used to gather detailed information about a person's experiences, thoughts, feelings, and perceptions. Qualitative interviews emphasize understanding the meaning and context behind people's behaviors and attitudes. Qualitative interviews are viewed as a construction site for knowledge, where two or more individuals discuss themes of mutual interest (Kvale & Brinkmann, 2009, p. 2). The importance of conducting interviews for this study is that it was a way of gaining insight to the learners' feelings, thoughts, and appreciations regarding language, pronunciation, and differing vowel sounds between the L1 and L2. This provided information regarding the research question, specifically as to their awareness level of L2 vowel sounds not present in their L1.

According to Ajodhia-Andrews & Berman, Interviews allow us to listen to the voices of children (2009, p. 931). Interviews are intimate encounters that depend on trust (Marshall &

Rossman, 2016, p. 288). Conducting research with children and youth requires special considerations, such as the youth's dominant or preferred mode of communication, age, and the fact that many will not sit still for a long time. Marshall & Rossman also mention that "joining children and youth in some activity can create a climate for focused talks" (p. 306). They go on to say that the benefits of using "the projective technique of 'play' with younger children" (ibid.) Through several "Let's draw" focus groups, while the learners draw, they can be casually interviewed regarding their thoughts on the drills, vowel sounds, language, and "life in general" by way of focused talks, which are less intimidating and more natural to their setting than regular or in-depth interviews (Appendix A, Appendix B).

Data Analysis

In analyzing data gathered, a comprehensive approach encompassing inductive, axial, and deductive coding methodologies was used. Initially, inductive coding was employed to explore the raw data collected. During inductive coding, patterns, themes, and recurring elements related to phonetic acquisition and pronunciation accuracy were identified without imposing predefined categories. Secondly, axial coding was utilized to organize and refine the emerging themes and relationships between different aspects of individual alignment through class interaction during the processes observed. This entailed connecting codes and establishing linkages between concepts, facilitating a deeper understanding of how individual and classroom interactions regarding phonics instruction can be interpreted. The process of axial coding was guided by this study's theoretical framework. Finally, once there was a coding scheme, deductive coding was applied by introducing the data into a software analyzer (Dedoose) and using it to code all existing data. By integrating these three coding methodologies, the analysis offered an exploration of the relationship between instruction techniques and pronunciation outcomes, to inform classroom instruction practices regarding pronunciation.

The analysis of the data provided around 65 codes which emerged from the transcriptions and artifacts of eight observation sessions along a two-month period. These codes were grouped into six categories, and these categories were themselves grouped into three main themes. For each of the categories, three codes were selected as the most relevant. The first theme showed how mediation strategies in the classroom can have an impact on learners' level of awareness regarding L2 phonetic forms. The two categories under this theme were: 'Mediation', and 'Cognitive output'. The second theme had to do with the learners' preconceived perceptions on pronunciation, and how despite these perceptions, an awareness of L2 phonemic categories does not necessarily imply accuracy in their production. Lastly, a third theme that emerged from the data analysis process had to do with intervening factors which could be considered as determiners of accuracy, according to the observations and their results. Two categories dubbed 'Intervening factors' and 'Awareness vs accuracy' will show how aptitude, agency (motivation), and practicing can give us insight into the effectiveness of the process in the case of the former; and how there was either no, little, some, or substantial evidence of awareness in the case of the latter. By comparing the results of these written tests implemented at different stages of the process against the oral utterance tests, I present some conclusive evidence regarding the research question of how drills can help young EFL learners become aware of L2 phonemic inventory not present in their L1. It is important to point out that these tests were not validated, since they were taken directly from a university level pronunciation textbook.

3.4 Ethical Considerations

Approval from the director and owner of the non-formal education setting was secured, and I was given carte blanche to implement the research process. Rapport with the students was already established, since I had been their teacher for at least two years. As soon as they begin the third grade, they are immersed in my teaching methodology which includes singing,

dancing, clapping, and engaging deeply in a classroom where collaborative relations of power ensue (J. Cummins, 2013) and we are all equal, with joy and happiness as the guiding values of the process. They feel safe in this space, and they know that they are encouraged to step forward and try their best without any fear of being judged or mistreated in any way.

Research involves collecting data from people. Israel & Hay (2006) add, ”[r]esearchers need to protect their research participants; develop a trust with them; promote the integrity of research; guard against misconduct and impropriety that might reflect on their organizations or institutions; and cope with new, challenging problems" (cited by Creswell, 2018, p. 87). To accomplish the above, several measures were taken. Confidentiality was secured for the participants and identity was protected. No real names were used in the research. Reciprocity was implemented as the learners all benefited from the implementation of phonics drills, and the data collected belongs to all involved. Informed consent was obtained from both the learners and their guardians, ensuring that they understood the purpose, procedures, and potential risks of the study (Appendix C). Participants' privacy and confidentiality was rigorously protected by anonymizing data and securely storing all research materials. Participation in this study was voluntary, with the option to withdraw at any time without any negative consequences. Additionally, the study was designed to protect the young learners from any harm or discomfort, including psychological stress or negative impacts on their confidence in language learning.

Trustworthiness

Trustworthiness was established by the use of triangulation, thick description, and prolonged engagement. First, triangulation of sources was achieved using three different tools for data collection, namely participant observation in the classroom, focused talks, and the recollection of artifacts. Secondly, thick description provides the reader the opportunity to witness the lived experience of the researcher and participants vicariously. This description was detailed and entailed no judgements, that will allow the reader to see transparently whether

what the researcher claims to be happening is truly happening. Lastly, prolonged engagement with the setting and participants allowed for the setting to be portrayed in a natural, unobtrusive manner. In the case of the setting and most of its participants, this engagement has been going on for years. Other elements that contributed to the study's trustworthiness are the external editing by an assigned professor, and by the TFG (*trabajo final de graduación*) committee, as well as a solicited and assigned external reader.

Positionality Statement

I identify as a white male Costa Rican, son of Chilean immigrants. I view myself as a trilingual speaker (native Spanish, English C1 level, and German B2). I have also been studying music from the age of five. This means I have a very deep connection to sounds, how they are perceived, and how they are generated. My expertise includes ten years of teaching young EFL learners in a family-owned, non-formal education setting, and this has allowed me to design and observe the result of my own methodologies regarding the four skills. I align myself with several of the available paradigms at different levels: I view myself as a constructivist, because I am at the same level as my students in terms of power; I am a critical theorist, so long as this entitles viewing education as a means for emancipation for all individuals, and not just a select gender, race or class (in the term emancipation I include the concept of emancipation from all our acquired forms of belief structures, not only emancipation seen as a socio-political phenomenon); and I view myself as a post-structuralist, because I refuse to align myself fully to any one paradigm, as this would be too monolithic. I believe there is no set reality, that reality is in fact ever changing, and that there is no way to have access to the full spectrum of reality if we do not consider realms other than the ones our five senses entail. My positionally regarding the participants is that of a participant observer. I am an insider that has been cultivating a relationship with them for many years. Power relations are as horizontal as they can be. I am a facilitator of knowledge, an accomplice in their learning. Above all, classes must be engaging for

the learner. Learners have an obligation to assume the responsibility for their own learning process, but this in no way means that I, as a facilitator, am above them. On the contrary. I work as an igniter of motivation, trying to connect to their interests as individuals, nurturing their interests and paying close attention to any insecurities and fears they might have. My motivation in choosing this topic was the fact that I think pronunciation should be a choice to be made upon informed understanding, and not a collateral damage borne of a lack of awareness.

IV. Findings

This section narrates the findings of what went on through the eight-week intervention and observation period to answer the question: *How can drills be used to help young Spanish-speaking EFL learners become aware of L2 phonetic inventory not present in their L1?* Through analysis of the artifacts and focused-talks, it was found that: 1) a combination of mediation strategies had an impact on the learners' output; 2) although learners come to class with perceptions regarding pronunciation, awareness does not necessarily imply accuracy; and 3) intervening factors like aptitude and agency can be regarded as determiners of accuracy.

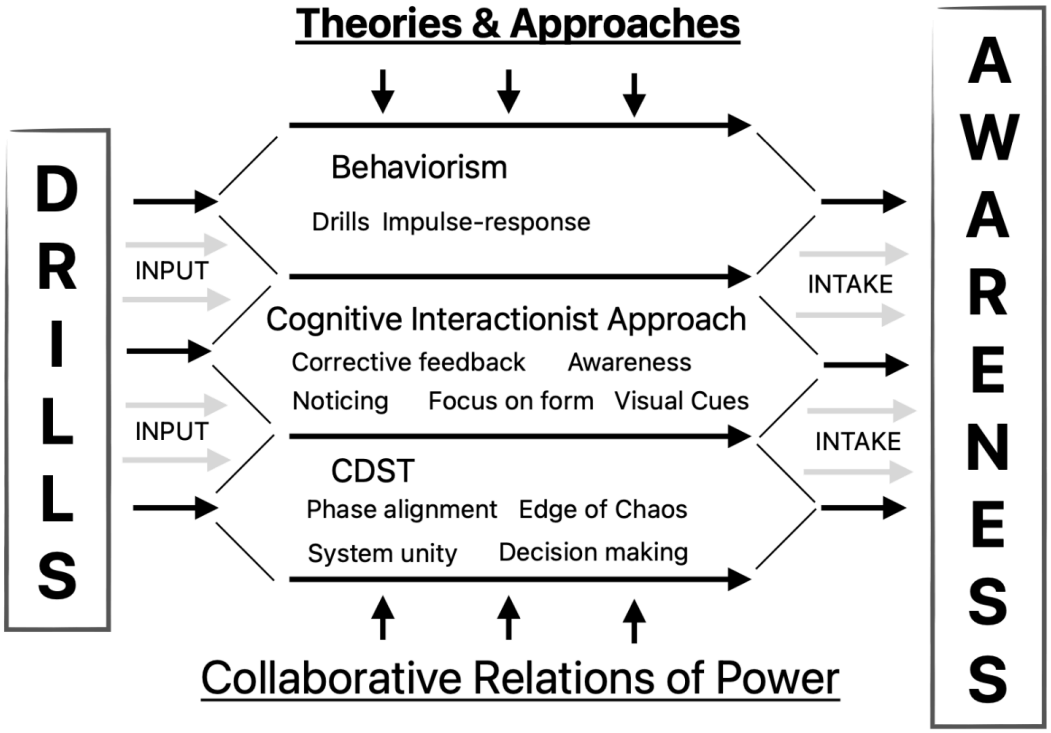
4.1 The Impact of Mediation Strategies on Learners' Phonemic Awareness

The time was set for the observations to begin at the non-formal education setting, where students of various ages come for after-school English classes. A combination of approaches was the way forward in implementing the pronunciation drills: A pedagogical mediation based on system-unity and collaborative relations of power in the classroom seeking to raise EFL young students' awareness of L2 phonetic forms. Through a combination of behaviorist and cognitive-interactionist techniques, and using a Complex Dynamic Systems Theory (CDST) lens, I engaged the learners in an eight-week pronunciation intervention process, working with them once a week in phonemic awareness-raising activities. Figure 3 below shows a diagram of the main concept and proposed course of action.

The diagram shows how pronunciation drills were used to generate robust input cues. Techniques were based on a combination of Behaviorist, Cognitive Interactionist Approaches, and CDST. At the end of the process, the aim was to have this input become intake to generate awareness in the young EFL learners at the non-formal education setting. Awareness of L2 phonetic forms would lead to uptake in their phonological output abilities.

Figure 3

Theories and approaches informing this research.



Mediation Strategies

Fourth and fifth grade students have class from 5 to 7 pm. Today is the first intervention. As always, decisions are borne out of a spur-of-the-moment creative flow (Oekerman, 1997). I know complete interconnectedness is important, and that the way of playing the game changes the game (Waldrop, 1992; Larsen-Freeman, 1997). I decide to prepare a worksheet with two columns where we will write a set of 28 previously prepared minimal pairs (MPs) contrasting the two target sounds /iy/ and /ɪ/. Figure 4 shows the worksheet.

First, I will model the drill (i.e., pilot the drill with the students for the first time). Then, we will do a focused talk on the topic of pronunciation and the difference between the target sounds. As they talk and I gather the learners' impressions on pronunciation, we will write the

definitions of each word on the list. Finally, the learners will pick a set of two MPs to draw the meanings of the words. The aim of the intervention is to present the target sounds and to create a focus on form and opportunities for noticing (Schmidt, 1990) through metalinguistic awareness (Swain, 1995). Figure 5 shows an example of one of the completed worksheets.

Figure 4

Worksheet one: minimal pairs.

Pronunciation practice

Minimal pairs

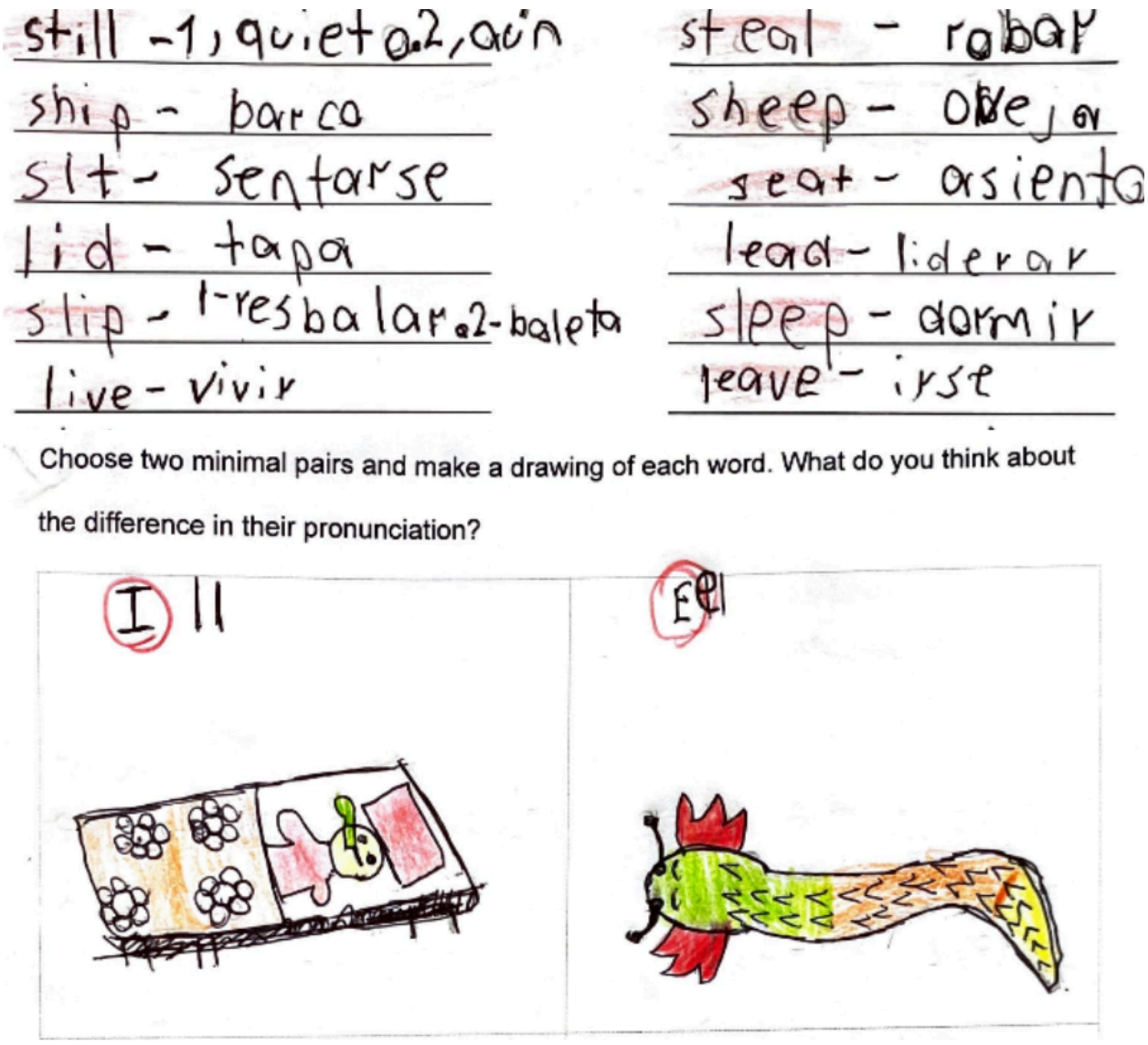
Minimal pairs are words that sound alike, but have different pronunciation. Practice writing down the meanings of the following words, and think about the difference in pronunciation between them. Have fun!

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Choose two minimal pairs and make a drawing of each word. What do you think about the difference in their pronunciation?

Figure 5

Details of a completed minimal pair worksheet.



The modeling of the first drill (Drill 0) represents the starting point to mark where the learners stand in terms of awareness regarding the target sounds. At the end of the eight-week process, I will measure learners' phonemic and phonetic awareness with written and oral tests, to see if and how drills worked.

Intervention one (Thursday, August 8, 2024): the rains have started, and the learners start arriving one by one. The participants and I know each other well; I have been teaching them for over two years now. They are part of our multi-year process as we give young learners access to four more hours of English per week, apart from what they get at their formal schools. This particular group comes Tuesdays and Thursdays from 5:00 to 7:00 p.m. As I set up the cellphone in the back of the class for recording audio, two students (CR7 and Doner) comment that they think they are being recorded. The learners are relaxed but expectant.

My classes here are based on a Collaborative Relations of Power principle that power is not of a limited quota to be distributed amongst those who have more than others, but that power is indeed of an unlimited quota, and that this quota grows collectively as we empower each other (Cummins, 2013). The implications of this principle are that we can build communities of empowerment instead of communities of competition. Therefore, in my classes, relations of power between the learners and myself are horizontal. We are all together in the adventure of learning. We pull through together. In a situation where power relations are horizontal, I am a facilitator and motivator. Mistakes are welcome as learning opportunities, we celebrate each other's individual characteristics, and these individual characteristics are part of our identity as a group. We are one system, made up of individuals and their freedom of choice to make the learning process whatever they desire it to be.

As I hand out the worksheets, the learners are surprised and expectant. “Why didn’t you tell us there was a surprise quiz?”, asks Skibidi. “Anyone with wrong answers will be sent outside to run around the block under the rain”, I reply jokingly (thunder claps at a distance). Edge of chaos must be kindled at any opportunity. Edge of chaos implies that possibilities are open and endless. The belief in the fact that at any point in time anything is possible is a very powerful idea. Awareness becomes heightened this way (Ockerman, 1997). The class faces work with optimism and joyfulness (Field note 1).

I explain that this is a pronunciation task. There is surprise among the learners. They want to know what this mystery assignment is all about. First, unity must be established. We must work as one group, one system (Larsen-Freeman, 1997). I decide to do a 1-2-3 out-loud count. We have done this before. I count 1, 2, 3 and then we clap together as a group. I pick up speed on two more counts, and on the last one I just count 1, 2, and we all clap where 3 would have gone. A recount of the exercise is transcribed in Figure 6. At this point, learners share their impressions on pronunciation as the first focused talk asking the learners their impressions on pronunciation ensues.

After the learners have shared their impressions, we do a first modeling of the drill. I point to the visual cues and the learners read the first cue aloud. We have done this before with random-word drills (not focusing exclusively on a set of sounds), so the learners know what to do. As research has shown, “little or no planning time leads to more talk and increasing amount of feedback provision between ESL learners” (Philip et al. 2006), and “task repetition would allow learners to allocate more cognitive resources to language rather than task content” (Bygate, 2001). At the same time, drilling these sounds is a form of auditory priming or presenting an item to influence the processing of a subsequent item (McDonough & Trofimovich, 2009).

As I pass the slides, the learners read the next MP aloud as a group, and so on. This establishes unity and cohesiveness. The class is working as a system. “Complex systems are open and adaptive” (Larsen-Freeman, 2011, p. 51). One or two students are making an effort to try and differentiate the target sounds (vowel sounds /iy/ vs /ɪ/). The rest are pronouncing the vowels exactly the same. As the drill progresses, the class seems to shift by way of ecological alignment (organisms adapting to their environment by aligning to it) (Atkinson, 2011), or phase transition (the undermining of a dominant system by a shadow

Figure 6

Establishing unity.

T: Ok 1, 2, 3…!

[Only I clap. I repeat the command which they have heard before in other classes]

T: [faster, in a commanding way] 1, 2, 3

C: clap!

T: 1, 2, 3

C: clap!

[System is established]

[I ask sts the date.]

Hermione: [gives the date]

Skibidi: asks in English whether the month is 7 or 8

2:45 min

Teacher passes list. [check class list for Aug 8 to see absentees]

3:30 min

[Calmer this time]

T: Ok, once again, ONE, TWO, THREE

Sts: CLAP!

T: [kindly]… Thank you…

T: This is a pronunciation practice. We're going to do a pronunciation practice. Is that ok?

St*: Yes!*

Note: T stands for teacher, C for class, and Sts for Students.

subsystem, also called the edge of chaos) (Ockerman, 1997) towards the wrong pronunciation. The majority of the learners end the drill off-target, confidently pronouncing both sounds /iy/. This is the more natural sound for them: it is quite similar to our Spanish vowel sound /i/. I will take this as the starting point to measure the learners' level of awareness regarding the

difference between the English vowel sounds /iy/ vs /ɪ/. In this first modeling of the drill (Drill 0), the learners showed: *little to no awareness.*

Four more drills ensue during this class (Drills 1-4). We discuss the sounds. After the third drill, we take our time to write down all the meanings and single out the differences in spelling and pronunciation in all MPs. Also, the learners pick out two sets of MPs, write the words and draw their meanings, signaling the place where the pronunciation between the two words changes. Instances where learners talk about, question, and self-correct language use are known as Language Related Episodes (LREs; Swain and Lapkin, 1998). Awareness levels increase with every subsequent drill. By the end of the fourth drill "there seems to be awareness of two distinct sounds. Most students seem to be achieving target, or very close to target, pronunciation" (Field note 1). Impulse-response techniques, along with the manipulation of instructional conditions to bring noticing, attention, and awareness to the learners have impacted learners' output (Kim, 2017, p. 132). We will see whether this response remains sustained over time. Figure 7 shows a visual cue with the word meanings. Figure 8 shows a choral repetition drill.

Figure 7

Visual cue with meanings and signaled vowel sounds.

Figure 8

Choral repetition drill.

T: Ya, OK… Still

Class: Still

T: Steel

Class: Steel

[T. models pronunciation, Sts repeat.]

T: Ship
Class (C): Ship

T: Sheep
C: Sheep

T: Sit
C: Seet

[short pause]

T: Sit [clarification recast]
C: Sit

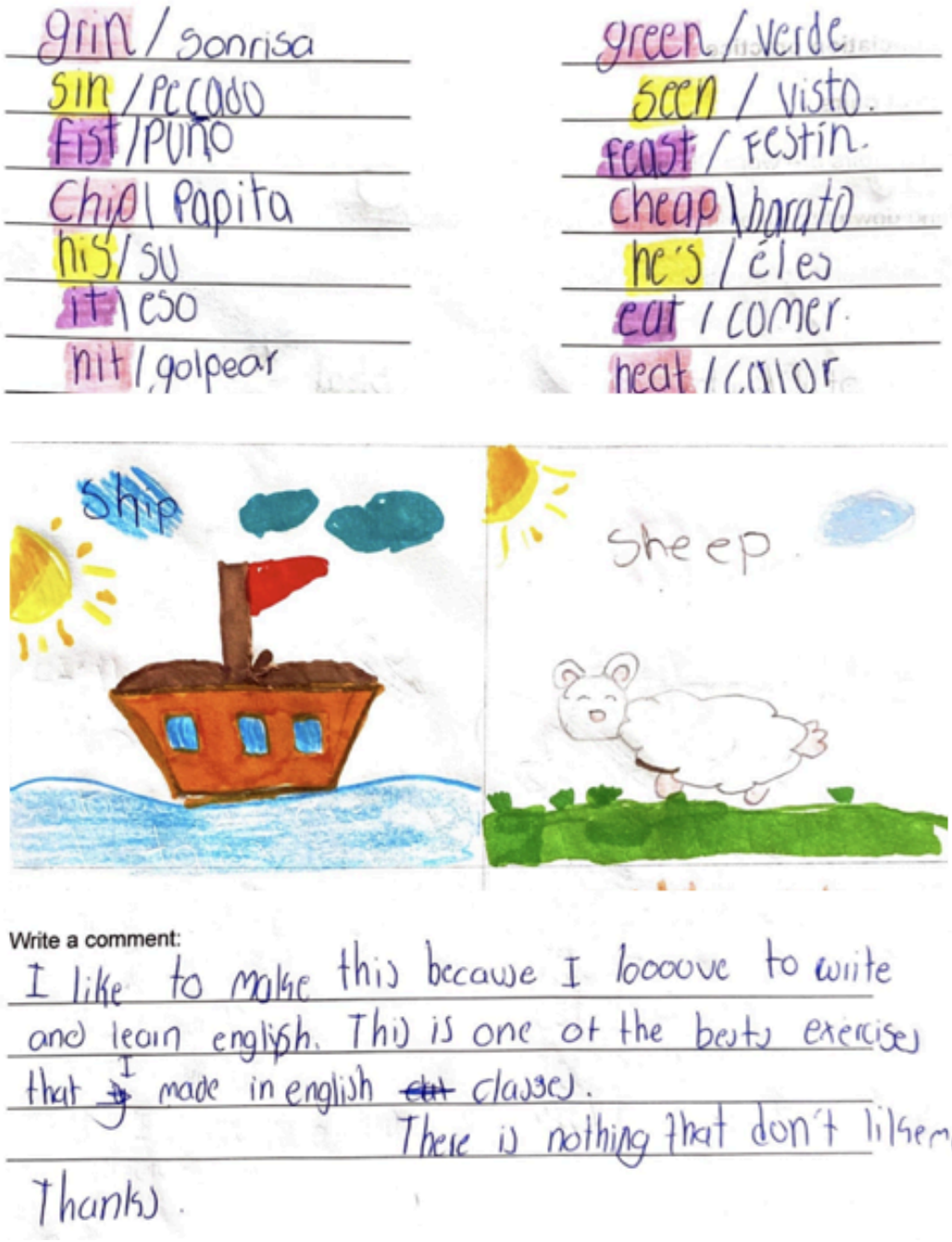
T: Seat
C: Seat

Here you can see how all the drills are based on visual cues fed to a screen by the teacher. They are rhythmic in manner. Drill one shows a choral-repetition drill. All the elements of the drills are based on impulse-response principles.

This first observation lasts for one hour. It is two minutes past the hour and already time for recess. Figure 9 shows different ways learners completed the worksheets. I ask the learners to hand in their worksheets: “Do I have all the worksheets? Please hand all the worksheets back.” Skibidi asks, “Can we go to recess?” I reply, “Do I have all the worksheets?… You can go to recess.” *Intervention one ends.*

Figure 9

Different ways learners filled in the worksheets.



Cognitive Output

The goal of the intervention process was to affect the learners' output by making them aware that sounds /iy/ and /ɪ/ belong to different categories than the vowel sounds they use in their L1 (Flege, 1995). Although some learners could not produce the difference between the two target sounds, their cognitive output (any type of indication that the learner knows that there must be a difference between the two target sounds) provided evidence that they had developed some awareness. Sometimes their linguistic output was off target, but their behavior made it clear that they knew they were supposed to change something in the utterance. They just seemed not able to grasp how to produce the desired sound.

Corazón de Lunita y Estrellita's (CLE) final oral test was a clear example of this. She was given a set of 4 MPs to read aloud, and a set of two sentences to read aloud as well. The objective was to see if she would recognize and achieve the target vowel sounds in the cues. Figure 10 shows CLE's oral test.

Figure 10

CLE's final oral test.

MPs

Still - Steal: off target - epenthesis on steal

Slip - Sleep: off target - epenthesis on both - both sounds / iy /

Pitch - Peach: off target - short pause before second one - both sounds / iy /

Fill - Feel: off target - short pause before second one - both sounds / iy / - self correction off target - some awareness - no accuracy

Sentences

Does he still steal?: off target - short pause before second one - both sounds / iy / - some awareness - no accuracy

Is there a seat to sit in?: off target - both sounds / iy /

Figure 10 shows that in the first MP, there is epenthesis (adding an /e/ in front of the /s/ sound) on the second word. So, the word *still* is off target regarding the vowel sound /ɪ/, but without epenthesis. In the case of the second word, *steal,* the only change in pronunciation by CLE was the addition of an /e/ before the first sound /s/. Adding a vowel before words with an initial 's' immediately before a consonant is very common for Latino EFL learners (Hualde, 2005). This could indicate that CLE made an effort to pronounce the second word differently than the first one, but instead of changing the vowel sound, she changes whatever is available for her to change based on her phonetic and phonemic inventory.

In the second MP, *slip-sleep*, CLE adds an /e/ in both instances, and pronounces both vowel sounds /iy/ (off target). She seems to think that using an epenthesis is the answer to pronouncing the words in the expected way. The third MP is *pitch-peach*, which gives her no chance to alter the word by epenthesis. What happens next is very telling. She pronounces *pitch* off target (she uses the /iy/ sound), and then there is a short pause. After the pause, she proceeds to utter the word *peach*. She pauses because she knows by now (this is the last of eight observations) that there must be a difference in pronunciation. But where is it and how can it be implemented? There is awareness that there must be a difference, but for whatever reason, she cannot bring herself to pronounce the target sound /ɪ/.

The last MP is even more telling. She pronounces the first word (*fill)* off target, using /iy/ instead of /ɪ/. She pauses. She realizes there is no way to alter the pronunciation of the second word of *fill-feel*. She makes an attempt to self-correct by starting again. The first sound is critical and must be uttered /ɪ/ in order for the MP to work. CLE fails to pronounce the target sound and pronounces both words with an /iy/ vowel sound again. There is awareness of the fact that they must be pronounced differently, but there is no awareness of how to pronounce the target sounds accurately. While most of the class, however, could come close to the target sound /ɪ/, there was no definite and concrete awareness of how to continuously and effectively achieve its

pronunciation. This is true for most, because a few seemed to naturally have full awareness of the sound, and could utter it repeatedly and consistently on target.

All utterances were coded under one of three categories: *on target*, *close but no*, and *off target* utterances. A great amount of awareness evidence came by way of *close but no* utterances. As documented, similar sounds of L1 and L2 tend to get subsumed to an L1 category by learners. Subsumed means that two sounds that are similar but have at the same time distinctly unique features from each other, will tend to get categorized as a previously existing L1 sound (Flege, 1995). In the case of the participants, many became aware that /ɪ/ should sound different to /iy/. However, because of phonological transfer from L1, some of the learners tended to subsume the /ɪ/ vowel sound and the /ɛ/ vowel sound. To them, the /ɛ/ vowel sound is similar to the /ɪ/ sound, and is also very similar to the /e/ Spanish vowel sound. An example of this is transcribed in Figure 11. Learners write and draw as we discuss differences in pronunciation (metalinguistic awareness).

Figure 11

Corrective feedback Modeling /ɛ/ vs /ɪ/

T: ill

Sts: /ɛl/… /ɛl/

T: No /ɛl/, no. /ɪl/, ill, ill. /ɪ/ [models de vowel sound] /ɪ/

[writes down the meaning on the PDF]

Skibidi: Ahhh…

Although Figure 11 is an extract from the first class, the trend of gravitating the /ɪ/ somewhat towards an /ɛ/ continued along the whole process. Learners' utterances were coded into three categories: *on target*, *close but no*, and *off target*. This gravitating of the /ɪ/ towards almost an /ɛ/

is the reason why many of the utterances fell under the *close but no* category, as the data will show in the following sections.

Another instance of signs of awareness but mechanical failure to produce the desired sound was when learners lengthened a vowel sound to modify the pronunciation of the word. In the case of *still-steel* for example, by hitting *off target* the first /ɪ/ and then elongating the /iy/ in steel as a way of marking a difference between both pronunciations, they show that they know the sounds must be pronounced differently. The learner seems to either not be able to grasp which specific sound needs to be affected, or not be able to effectively isolate the target vowel sound to be modified.

After the first class, the second observation date (August 13th) was used to complete the MP worksheets and their drawings. While doing this, five more drills were implemented: choral repetition, choral reading, both sounds, and one sound only drills. Drilling also included 'one by one' drills on the individual and combined sounds. CDST views language as an open, fractal, adaptive, non-linear, self-organizing system. Every time the system (each individual and the class as a whole) interacts in responses it self-organizes and adapts (Larsen-Freeman, 1997).

The mediation techniques and approaches used during the eight-week process were with the aim of somehow altering the learners' output that they might better recognize and identify L2 phonetic forms that are of similar qualities but of a different category in their L1. Thus, raising phonemic awareness in the learners has been the guide to follow in choosing and devising these techniques. The previous data shows that the learners are responding positively to the drilling and manipulation class of elements in terms of awareness raising.

4.2 Pronunciation: Perceptions and Production

Pronunciation is important for intelligibility when communicating in spoken language, especially when dealing with an L2, since transfer from L1 will be present at varying levels depending on the speaker. Another reason why pronunciation is important is because speakers

will be judged by their accent. Research indicates that “pronunciation errors and accentedness have a strong influence on employability and promotion opportunities” (Newton, 2018, p. 343). The following examples show learners come to class with impressions regarding pronunciation too. However, their awareness does not equal accuracy. In analyzing the data, individual differences are observed as possible predictors of accuracy.

Perceptions Regarding Pronunciation and Pronunciation Learning

Learners have ideal speakers they want to sound like or emulate (Field Note 1). During the focused talk that was held with the learners regarding their impressions on pronunciation, they shared their views regarding ideal speakers in real life. I asked the class, “Who do you want to sound like? Is there someone you want to sound like?” Vigevani responded, “I want to speak like my brother” (Transcription, Observation 1). Vigevani is from the 4th grade group. Both his older brothers came to this same non-formal education setting and completed the multi-year process successfully. They are much older than Vigevany, who is only 10 years old. VIgevani continued, “He has an online job, he uses English every day.” His brother has recently gotten some type of online work with a company. Their father is a cab driver. Regulated cab drivers have taken a hit in Costa Rica in the past 10 years, since the onset of transportation apps. He is aware of how critical it is for his sons to speak English. Life is not easy, but learning the L2 is non-negotiable for them. Vigevany knows this and is very proud to be learning English. One day, he will be like his brothers and he will be able to help his father too.

“I want to speak like the Americans do”, says Neymar. “Like the Americans? Why?”, I probe. I need to get as much information from them as possible. “*Porque nos gustaría aprender más real”* [Because we would like to learn more real (English)] [sic], is the answer that he gives. Keylor Navas jumps in before I can ask Neymar what he means by “more real.” Is it closer to a specific accent? What accent? Where does he get his ideal speaker models from? Keylor Navas (KN, or Keylor): “I have an aunt who lives in the States (USA); she speaks English very

well [excitedly]. I can go visit her because I want to speak like her, fluidly, you know? The pronunciation…" It is evidenced in the interventions by the learners, that most have ideal speakers in real life. Neymar has what I have categorized as "rough pronunciation" (i.e., a heavy phonological transfer from his L1), same as his older sister, who is also attending here in the High Level (13 to 15 year olds). She has very good communication skills, but her phonetic-phonemic abilities have kept her from acquiring any sort of native-like pronunciation. Phonologically, I expect the same behavior to arise in Neymar. We will contrast these impressions against his aptitude later on in this paper.

Keylor Navas has shown dedication and agency in his process consistently now for a couple of years. He too is aware of the importance of him learning the L2. If he persists, he will become the first individual in his household to have successfully acquired not only proficiency in the English language, but an identity as an English speaker as well (Cummins, 2009). At home, they are not in a trying economic situation, but they cannot let their guard down, like so many individuals and families in our society nowadays. His dad works as an Uber driver on the side. The whole family is serious about Keylor's investment in L2 learning. It shows: his test results are consistently outstanding. He is one of the speakers whom I have dubbed along my years teaching them as having aptitude. He definitely has phonological aptitude for achieving the target sounds, besides a strong motivation and investment in his L2 learning process.

Continuing with our focused talk, I ask the learners what type of pronunciation they want to achieve. Person answers: "Excellent. An excellent pronunciation. PERFECT pronunciation." 'Person' is one of the participants. She chose her pseudonym when we worked on Worksheet 1, as did the rest of the learners. She is 12 years old. Person is tall, likes basketball, and has developed a close relationship with Bellingham (female, also 12 years old). They both sit at the end of two rows of learners next to each other. Person came into the seven-year process we use at our non-formal education setting late: a year and a half ago, aged 10. Literature has many instances showing that the earlier the L2 acquisition process begins, the better chances

the learners have of acquiring native-like proficiency (Long, 1990). Her pronunciation and understanding of English phonology shows some L1 negative transfer, but she is invested in the process and brings joy to the class with her inquisitive personality. Both her parents attended college. She attends a public school.

Bellingham, her friend, is the daughter of a Nicaraguan woman who works in a Costa Rican home as a helper. Bellingham also attends a public school. She has always had great phonologic aptitude, and can imitate and produce the sounds of the L2 in a natural and effortless way. However, she is not so invested in studying for vocabulary quizzes and many times fails to do her homework or does it carelessly. She is not coming next year. Her course was being paid for by the woman who owns the house her mother works at. Now, it seems this might not be the case any longer.

Cristiano Ronaldo (CR7) shows somewhat of a cynical approach to his classmates' learning process in class. CR7 has shown high aptitude for the learning of English since the beginning of his process. He feels empowered by his capacities in the use of the L2. He has been here since a young age. In response to my question, he added: "*Eehm, ser como algunoos, algunos comoo, [slowly] bueno, haay algunos… poquitos, casi… que aquii… sólo hablan inglés para conocer nuevos países*." [Uhhm, be like sooome…, some, liike, [slowly] well, theere are sooome… a few, almost, that here… they just speak English to know other countries.] CR7 uses his comment to imply that he has a better reason than others in the class or elsewhere to learn English, who just want to learn English for traveling to other countries, or trivialities of the like. He softens his remarks as he gets deeper along with what he wants to say, saying in the end something very different than that which he, presumably, set out to say initially. His parents both have university studies. His father is an engineer. CR7 has big plans for his future, apparently.

The learners' impressions on difficulty were also gathered in the third part of Worksheet 1: a 'comment' part. The learners were asked to write their opinion (in Spanish or in English)

regarding what was being talked about: English pronunciation, minimal pairs, and L2 vowel sounds. These are some of the extracts: Ron (female, high aptitude, earliest onset age) wrote: *“Those words are easy to difference for me, also in spanish we don’t have those sounds.”* [sic] Vigevani: *“Para mi, la pronunciación es muy importante.”* [For me, pronunciation is very important.] Melody: “It is difficult and difficult [sic] because some sounds are the same but some are different.” CR7, Skibidi, and Kuromi did not write any comments. The last three are very different learners, with varying results (CR7 and Skibidi outstanding, Kuromi starting to lag behind).

Skibidi is a special case. He is 11 years old and shows signs of being hyperactive. He is very talkative, extroverted, and invested in his English learning. He has realized through using the internet (for playing online games and watching ‘YouTubers’) that English is important for communicating on the world stage, and envisions himself as a proficient user and communicator. Kuromi (age 9, female), on the other hand, is quiet. She plays along as if she always understands, as she prefers to go unnoticed. But she has difficulty and already shows some signs of lagging behind the other learners. She must find it in herself to heighten her investment levels, or she might risk not becoming a proficient and confident L2 speaker. She always sits up front and seems to be abandoned to her thoughts. Chestorta is nine. She is very creative and a good drawer, and handles colors really well too. She is highly invested in the process, and had an early onset (five to seven years old). Chestorta wrote, *”The sounds is difficult and fácil easy porque algunos casi suenan igual.”* [The sounds are difficult and easy because some sound almost the same].

So far, learners have shared their impressions on pronunciation, talked about ideal speakers, and expressed their concerns regarding difficulty. It has also been established that during the eight-week intervention process, conscious manipulation of the classroom environment through drills and visual cues had an impact on the learners’ cognitive output.

Next, I will compare the learners' awareness regarding pronunciation, to the linguistic output they produced at the end of the intervention cycle.

4.3 Linguistic Output

After the eight-week intervention period, where once a week learners would engage in drilling activities and other kinds of phonetic and phonemic awareness-raising tasks (see Appendix D and Appendix E), a final oral test was done. Here, the learners would say a number of minimal pairs, and their responses were labeled: *on target*, *close but no*, or *off target*. An *on target* utterance meant the learner successfully pronounced the minimal pair, achieving a phonetically correct pronunciation of both /iy/ and /ɪ/ target sounds. A *close but no* utterance, meant the learner made a distinction in the minimal pair to show difference in pronunciation between the two target sounds, but failed to pronounce the /ɪ/ sound correctly. An *off target* utterance meant the learner made no differentiation between the minimal pair vowel sounds. Final tests were administered during observations seven and eight. On observation seven, the class collectively participated on the final drilling which, as all the rest, was recorded for subsequent analysis and categorization. On observation eight, the final oral tests for HPG, Skibidi, and CLE were administered, since they had been absent during observation seven. A four-tier qualitative categorization of each learner's awareness level was devised: five utterances, divided by four, indicate the places where each categorization should fall. They are as follows (see table 4):

Table 4

Levels of awareness based on number of on target utterances

Percentage	*On target* words	Evidence of awareness
25% or less	1	*no evidence*
25-50%	1-2	*little evidence*
50-75%	3	*some evidence*
75-100%	4-5	*substantial evidence*

On the test, the learners were given five opportunities to make decisions regarding pronunciation: two sets of minimal pairs with the words *fist-feast* and *sin-seen*; and three one-word tests with the words *steal, still,* and *list*. The total number of utterances came out to 100. Of these, 65 (65%) were *on target,* 16 (16%) were *close but no* utterances, and 19 (19%) were *off target*. If we add up the utterances that showed awareness (*on target* plus *close but no*) we get that 81 (81%) of the utterances showed signs of awareness. In a four-tier division as the one I did before, 81% equals *substantial levels of awareness.* After the eight-week intervention, the class went from showing *little to no evidence of awareness*, to *substantial evidence of awareness*. Table 5 and Figure 12 show the accuracy results, and Table 6 and Figure 13 show the awareness results.

Table 5

Distribution of accuracy results in final oral tests.

	Total	On target	Close but no	Off target
Utterances	100	65	16	19

Figure 12

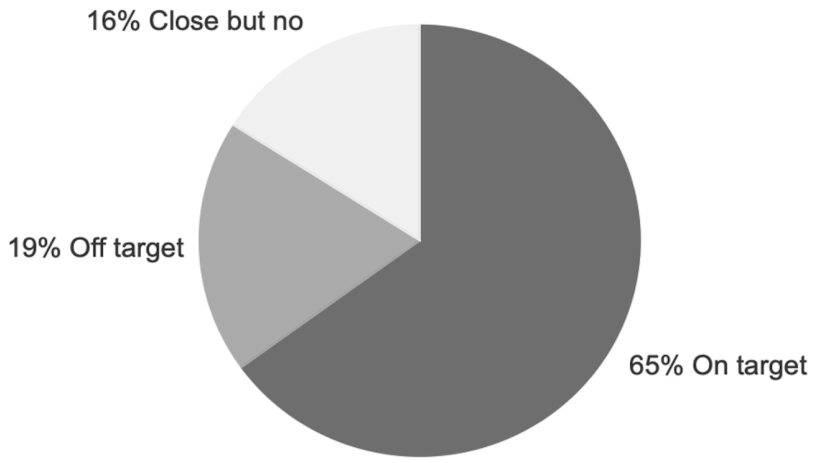
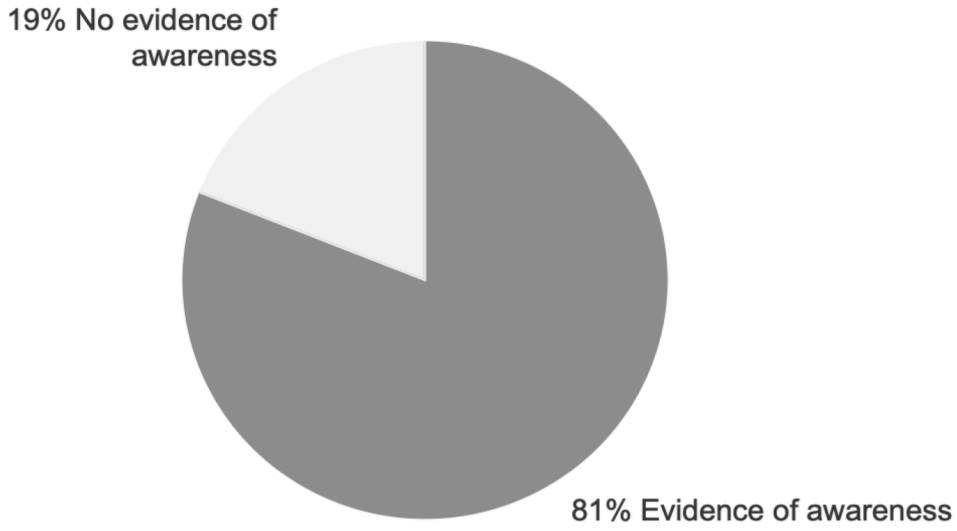


Table 6

Distribution of awareness results in final oral tests.

	Total	Awareness	No Awareness
Utterances	100	81	19

Figure 13



Variables of accuracy

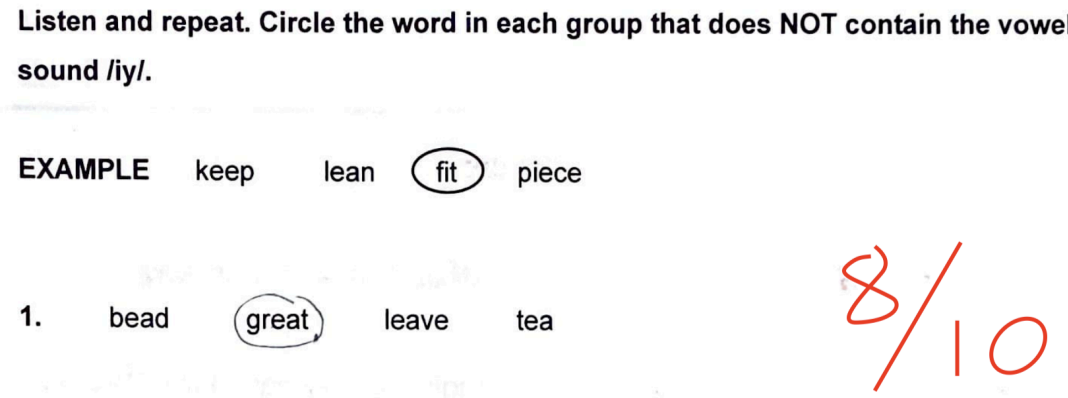
Throughout the process, it became evident that there were variables that affected awareness and accuracy levels among most if not all the learners. To measure these variables in some way, the results of the oral tests (linguistic output) were compared to the results of the written tests and a comparison between degrees of awareness versus degrees of accuracy were measured. It must be acknowledged, though, that accuracy levels fall outside the realm of the research question.

Awareness versus Accuracy

Two sets of written tests were done. One on observation five (one test), and the second set on observation seven (three tests). Figure 14 shows an extract of the first test: Learners had to circle the word that did not contain the vowel sound /iy/. As was mentioned before, it is important to point out that these tests were not validated, and were simply taken from a pronunciation textbook for university level.

Figure 14

First phonetic discrimination test.



Listen and repeat. Circle the word in each group that does NOT contain the vowel sound /iy/.

EXAMPLE keep lean (fit) piece

1. bead (great) leave tea

8/10

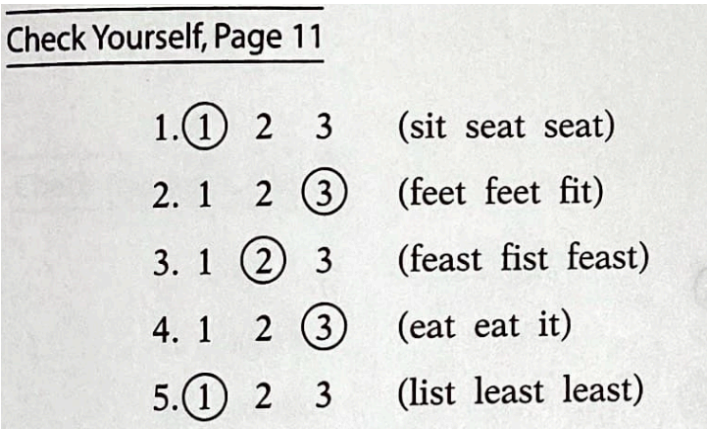
Later on, on the seventh (the second to last) intervention, the second set of written testing was done with three awareness tests similar to Test 1. On Test 2, learners had to circle the word with the different vowel sound (two words with /iy/ and one minimal pair with /ɪ/ were read aloud). Figure 15 shows an extract of the test's answer sheet, and the words to read to the learners.

Test three was a set of ten minimal pairs, where the teacher reads only one of the two words. The learners must circle the word that they hear. Test four was a set of ten written sentences with a minimal pair embedded in the sentences in parentheses. Learners must circle

the word they hear when the teacher reads the sentences aloud. Figure 16 shows completed examples of tests 2, 3, and 4.

Figure 15

Answer sheet for test two.


Check Yourself, Page 11

1. (1) 2 3 (sit seat seat)
2. 1 2 (3) (feet feet fit)
3. 1 (2) 3 (feast fist feast)
4. 1 2 (3) (eat eat it)
5. (1) 2 3 (list least least)

The test results from Test 1 were compared to the mean of the test results from Tests 2-4. Each learner had a grade for Test 1, and a mean of grades for tests 2,3, and 4. The results of the two tests were compared to see if they evidenced progress between the first and second test dates. The first test was midway through the eight-week intervention process, and the second set of tests was administered at the end. The numbers were then analyzed to see if there had been any growth in awareness levels. Table 7 shows the results.

On average, the learners grew 1, 2 points in awareness. In general, they all increased their awareness levels, according to the test results. Skibidi and Neymar have a negative growth rate. However, Skibidi remained always in the *substantial evidence of awareness* category, moving from 10 to 9,3. He got a 10 every test, except for Test 3, which was an 8. Neymar went from a 6 in Test 1, to a 5 in the mean for Tests 2-4. His individual test results were 7, 3, and 5 in the second set of tests. Although he ascribes a great importance to pronunciation, he seems to

have trouble discerning the target sounds and how to produce them. Chestorta was stricken from the average count since she only did the second round of written tests. She was absent on September 10th, the date when I ran the first test.

Figure 16

Details of tests two, three, and four.

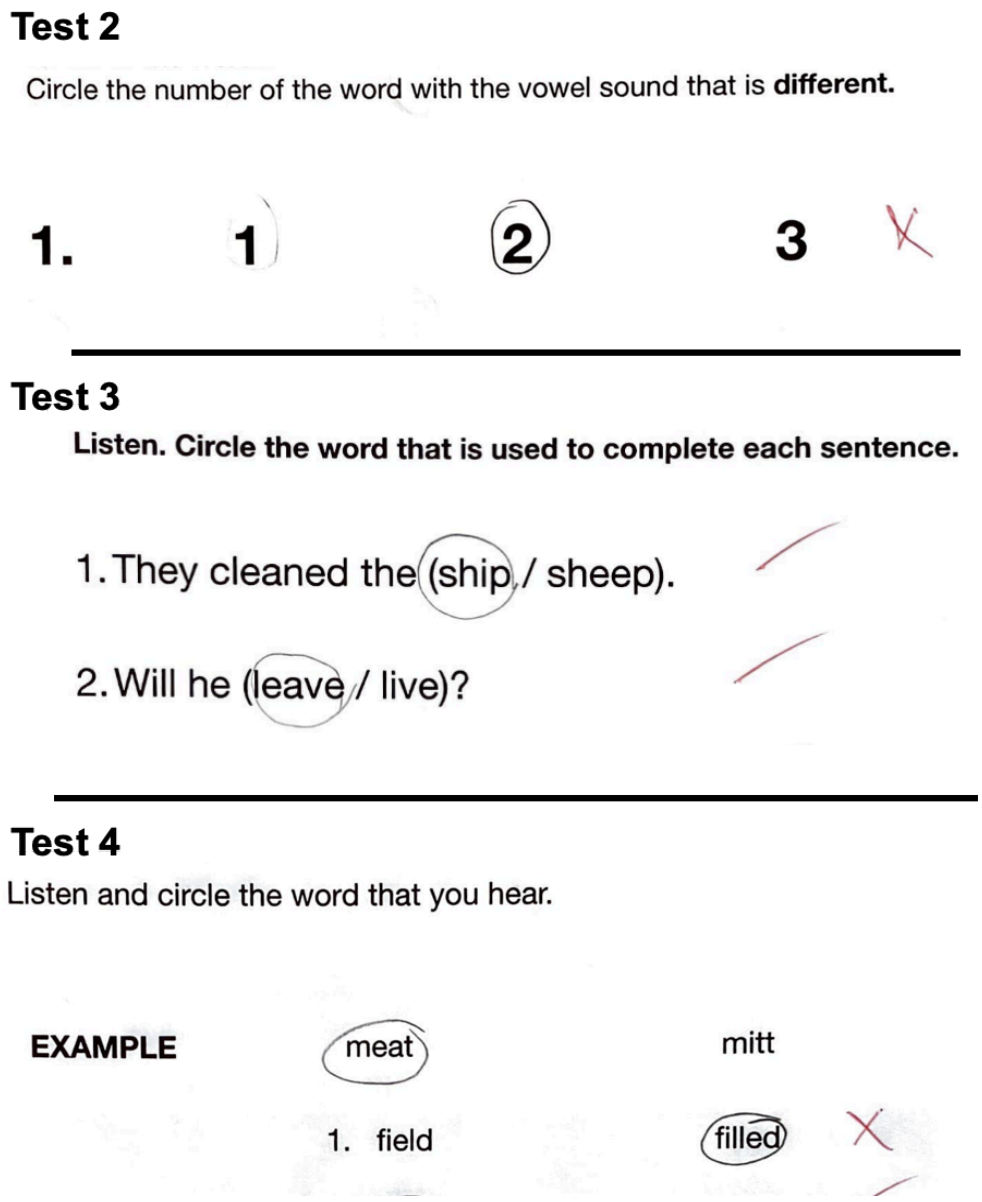


Table 7

Test 1 (T1), mean of Tests 2-4, and level of increase between tests.

Student / Date	T1	Mean T2,3,4	Increase
Bellingham	8	8,3	0,3
CLE	1	5,3	4,3
CR7	10	10	0
Doner	6	7,3	1,3
Elits	9	9	0
Evelyn	8	8,3	0,3
Hermione	8	9,6	1,6
HPG	10	10	0
Keylor	8	9,3	1,3
Kuromi	0	5,3	5,3
Melody	6	7	1
MR	8	9,3	1,3
Neymar	6	5	-1
NK	4	7,7	3,7
Person	8	8	0
Ron	8		
Skibidi	10	9,3	-0,7
Vigevani	7	9,3	2,3
AM	8	10	2
Chestorta		7,5	
Mean	**7**	**8,2**	**1,2**

Overall, Table 7 shows that there was an increase in the levels of awareness measured from 7 to 8.2. Five-point increases were shown by CLE and Kuromi, since they started out showing little to no evidence of awareness. However, their final numbers are still low compared to the rest of the participants. They both showed a mean of 5.3 out of ten. If this were a summative test with a passing grade of six, they both would have failed. Other significant increases were NK, who went from 4 to 7.7, showing a 3-point increase. Especially interesting are Vigevani and AM's results. They both show aptitude, and they are invested in the process. They both moved two points up each. Vigevani moved from 7 to 9.3; and AM went from 8 to 10. Although some learners showed no increase in the level of awareness (HPG: both tests 10; Elits: both tests 9; and Person: both tests 8), they all remained in the *substantial levels of awareness* category.

Next, let us compare these written test results to the final oral test results and see how they measure up in terms of awareness. If we take the results from the final oral tests, and the results of the final written tests (i.e., the mean of Tests 2-4), and we divide them into the four-tier categories for evidence of awareness, we get Table 8.

Table 8 shows how the level of evidence of awareness in both final tests scored in the category of *substantial evidence of awareness.* While there were instances of *no evidence of awareness*, and *little evidence of awareness* in the oral test results (CLE and Doner), they both scored *some evidence of awareness* in the written tests. As mentioned before in the analysis of CLE's final oral test, she did show evidence of awareness when she paused before an answer, and most revealingly when she tried to self-correct in two different utterances. Something similar happened with Doner, who could not hit the target sound /ɪ/ in his test, and instead lengthened the /iy/ vowel sound in the second word, effectively pronouncing the vowel in both words in the minimal pair as /iy/. The results in Table 8 support the idea that both situations might be because of an issue in either pronouncing or identifying the sounds. Both CLE and Doner show evidence of awareness, but they fail to reproduce the sounds. One might infer they might even be unable to distinguish between them. On the first perception test, Doner scored 6 and CLE 1.

On the second set of perception tests Doner scored a mean of 7.3 and CLE a mean of 4.3, both under the class means of 7 for test one, and 8 for the second set of perception tests. On the oral tests they got the two lowest scores: CLE 0, and Doner 4. Kuromi and Doner´s “some” evidence of awareness results are not in red because they scored a 7 and a 7.3 respectively. These would be considered “passing grades” if the tests were summative.

Table 8

Evidence of awareness in oral and written tests.

Participant	Oral	Written
Bellingham	substantial	substantial
CLE	no	some
CR7	substantial	substantial
Doner	little	some
Elits	substantial	substantial
Evelyn	substantial	substantial
Hermione	substantial	substantial
HPG	substantial	substantial
Keylor	substantial	substantial
Kuromi	substantial	some
Melody	substantial	some
MR	substantial	substantial
Neymar	some	some
NK	substantial	substantial
Person	substantial	substantial
Ron	substantial	
Skibidi	substantial	substantial
Vigevani	substantial	substantial
AM	substantial	substantial
Chestorta	substantial	substantial
Total	substantial	substantial

I can also turn these categories into numbers and compare them with the results of the written tests, which were in fact measured in numbers since they had grades. Table 9 shows the results of the percentage of words that showed evidence of awareness in the final oral test. The oral column number is a division of the sum of *on target* plus *close but no* utterances, by the total number of utterances (five). So if a participant had two *on target* and t*wo close* but no utterances, both were summed and then divided by five. A participant with four out of five utterances showing signs of awareness would thus have a score of eight out of ten in the oral results column. These numbers can then be compared, participant by participant and as a whole, with the final written test results.

Table 9

Levels of awareness in the final tests in percentages.

Participant	Oral	Written
Bellingham	8	8,3
CLE	0	5,3
CR7	10	10
Doner	4	7,3
Elits	10	9
Evelyn	10	8,3
Hermione	8	9,6
HPG	10	10
Keylor	10	9,3
Kuromi	8	5,3
Melody	8	7
MR	8	9,3
Neymar	6	5
NK	10	7,7
Person	8	8
Ron	8	
Skibidi	10	9,3
Vigevani	8	9,3
AM	10	10
Chestorta	8	7,5

As we can see, the numbers are consistent between both oral and written final tests: both means scored 8.1 in awareness. Let us focus on the red numbers then. CLE: She scored zero in the oral test and 5.3 in the written test. Her case was just discussed above. Another important factor is that, since she was absent the day of the oral test, her test was done alone, so there was no chance of ecological, phase, or auditory alignment for any of the participants who did the test on the eighth instead of the seventh observation date (HPG, Skibidi, CLE).

Doner: 4 in the oral test and 7.3 on the written test. We might infer that this might be a failure to produce the sound (productive issue) or a failure to identify the difference between the sounds (receptive issue). Doner was present on the day of the final oral test, so he had every chance to ecologically align (or phase align or phonologically align) to the rest of his classmates.

Kuromi: 8 on the oral test (suspiciously high), and 5.3 on the written tests. This supports the idea of ecological alignment. Since she has had a chance to listen to her classmates read the given visual cue, she has a chance to make a more informed decision. Or maybe her level of excitement was heightened due to the activity (participants used a microphone to give their response) and this helped her decision-making process.

Neymar: 6 on the oral test and 5 on the written one. Fives are in red because if this were a summative test and the passing grade were seven, then anything below that would be a failing grade. This result can further support the idea that students can phase align when working as a system: They are given a choice to make regarding sound production. When writing, there is no way of knowing what your classmates are writing; you are, so to speak, left to your own devices.

NK: Although his numbers are not in red, his oral production is definitely not represented by his 10. He is insecure regarding his L2 skills, just coming into the process, and shows great difficulty when speaking. What these results show is that he made sound choices in the oral test by aligning to one of the phases or choices he had.

I have been using the term phase alignment too, as a construct taken from Complex Dynamic Systems Theory (CDST). By making a decision on how to utter a word or minimal pair,

the participants are taking a risk, they are making a choice. They are put in an “edge of chaos” situation by being put on the spot (individually having to say the word) and having to phase align (take sides making a conscious decision): sit or seat?

Oral tests and written tests were administered to the participants to show accuracy and levels of awareness. I have analyzed the most salient numbers in the previous table, and I have compared the written and oral final test results in terms of numbers and in qualitative assessment terms. We know how each of the participants did at each of the stages. We have observed certain trends and come up with possibilities to make sense of what each table tells us. Now, let us take a look at what the final results are. What can the numbers conclusively tell us? Table 10 has the overall results of all the final tests that were done at the end of the intervention period.

Table 10

Overall results of the final tests measuring levels of awareness.

Evidence	Oral	Written
Substantial	85%	74%
Some	5%	26%
Little	5%	-
No	5%	-

At the beginning of the intervention process, in Drill 0 (the first modeling of the drilling exercises) the participants showed *little to no evidence of awareness*, with most of the participants failing to mark a difference between target sounds, and effectively phase aligning the end of the drill towards *off target* utterance of the expected sounds. After the eight-week intervention process, numerous drills, readings and explanations focused on the target sounds (Observations 1-8), these are the results of the final tests.

On the oral test, 85% of the participants (17 out of 20) demonstrated *substantial evidence of awareness*. Five per cent of the participants (one participant, Neymar) scored *some evidence of awareness.* Another 5% (Doner) showed *little evidence of awareness*, and one participant (CLE, the last 5%) showed *no evidence of awareness.* As discussed before, CLE did show evidence of awareness, she just could not demonstrate it orally. Nevertheless, if we go by the numbers and add up the ones that showed evidence of awareness, we have that 95% of the learners showed some evidence of awareness in the final oral test.

Regarding the written test, 74% of the participants (14 out of 19) showed *substantial evidence of* awareness; 26% (four students) *some evidence of awareness*. Of these four students (CLE, Doner, Kuromi, and Neymar), three scored with a below-six "red" grade: CLE (5.3); Kuromi (5.3); and Neymar (5). Doner scored 7.3 on his written test, moving from scoring *little awareness* (4) in the oral test, to *some awareness* (7.3) on the written test. All in all, when summing up the learners who showed some evidence of awareness in the final written test, we see that 100% of the learners showed evidence of awareness in the final written test. If we add up the results of the oral and written tests and average them out (Table 11), we see that 97.5% of the learners showed evidence of awareness in their final test results.

Table 11

Mean of learners' levels of awareness shown in the final tests.

	Oral	**Written**	**Mean**
Awareness	95%	100%	97,5%

Lastly, if we take these numbers and analyze how many of them showed high accuracy levels (85% or more, i.e., *substantial evidence of awareness*), we see that 85% showed high accuracy levels on the oral test, and only 74% achieved this on the written tests. Then, If we average those two numbers out, we see that 79,5% of the learners showed high degrees of

accuracy (*substantial evidence of awareness*) overall. As we have seen, 97.5% of the learners showed some degree of awareness on both tests. As Figure 17 and Table 12 show, this evidence supports the statement that awareness does not equal accuracy. If awareness does not equal accuracy, this means that although many learners knew that there had to be a difference in the two target sounds, not nearly as many knew exactly how to achieve them consistently and consciously.

Figure 17

Awareness vs Accuracy.

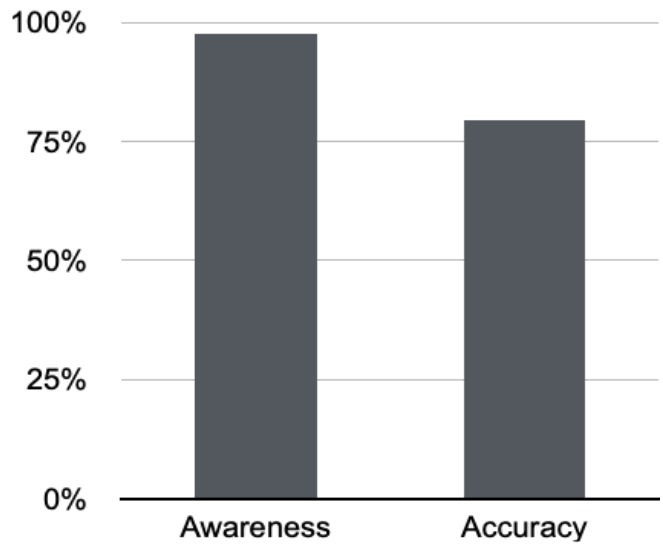


Table 12

Awareness vs Accuracy

Awareness vs Accuracy	
Awareness	97,5%
Accuracy	79,5%

To close this section, and address this paper's research question, the evidence points to the fact that drilling strategies with a blend of methodological approaches help young EFL learners become aware of L2 phonetic structures not present in their L1. However, awareness does not equal accuracy. Time did not suffice in this study to experiment with working memory, but at least it can be established that there is awareness. Schmidt (1990) reminds us, "If noticed, it becomes intake" (p. 139), and also, "There is no learning without awareness" (p.131). Once intake is achieved, uptake would be the natural next step. Step one in the learning process has been achieved.

To conclude, through the dataset that has been gathered in this research process, I have observed that: (1) Drills along with cognitive interactionist techniques had an impact on the learners' phonological awareness and output; (2) Even though learners have expectations regarding their ideal self in terms of L2 pronunciation, expectation does not always meet reality; and (3) Differences in oral production had to do with aptitude, motivation, agency, and investment. All of these phenomena have been observed, gathered, and analyzed in order to answer the research question: How can drills help raise L2 phonologic awareness in young EFL learners?

V. Discussion and Conclusion

The aim of this case study was to document and assess how a group of Spanish-speaking young EFL learners could be helped to develop increased awareness of L2 phonemic forms not present in their first language (L1). As has been documented, negative transfer from L1 (Archibald, 2018, p.11) will keep Spanish speaking EFL learners from recognizing, and therefore, producing the 12 English vowel sounds, as they will subsume similar sounding vowels into an already existing and predetermined category of only five Spanish vowel sounds (Flege, 1995). Thus, to help keep these incorrectly used sounds from fossilizing into interlanguage (Selinker, 1972), I proposed a series of systematic drilling exercises of two distinct but similar sounds (/iy vs /ɪ/) over an eight-week intervention period. This intervention was planned and implemented to determine if and how drilling these sounds to the young EFL learners could help them raise awareness of L2 phonemic structures not present in their L1.

The findings of the study showed that the use of drilling, along with the implementation of cognitive interactionist approaches and techniques, was instrumental in raising the learners' levels of awareness regarding the two target sounds. After the eight-week intervention period of drills and other noticing and awareness raising activities (Schmidt, 1990), the learners went from showing *little to no evidence of awareness,* to showing *substantial evidence of awareness* of any difference between the two target sounds. Tests were devised to support the findings. In these tests, participants finished the intervention process showing that 97.5% of the learners evidenced some type of awareness of difference between the sounds. Of these, 79% could recognize and produce these sounds with a high degree of accuracy in words and minimal pairs. Another 14% could pronounce a sound that was close to the target sound but not quite on target, and 5% could not find a way to orally mark the difference between both sounds.

The class was always viewed and managed as a system. During mediation, it was documented how the manipulation of mechanisms of learning (Loewen, 2015) helped the learners gain awareness of new categories of L2 sounds (Flege, 1995). Input (Krashen, 1981)

was carefully selected to maximize output efficiency (Swain, 1995). The learners listened to the modeling, then to their peers, and then aligned individually to what they thought was the correct decision when it was their turn, so there was dynamic exchange between the learners and their environment (Atkinson, 2011). By repetition, the learners aligned phonetically to what they heard.

McDonough (2005) conducted research where he found that students who had modified output opportunities showed a greater degree of learning compared to those without modified output opportunities (Kim, 2017, p. 131). The noticing and awareness activities used in the intervention gave the learners repeated output opportunities in a short amount of time. McDonough (2005) showed through her research that noticing the gap was an important requisite in order to generate modified output, or output that is more target-like than what they were previously producing. With increased output and corrective feedback opportunities, the findings in my paper confirm that repetition and the manipulation of mechanisms of learning yields results to generate intake (input that has been noticed by the learner) and uptake (modified output) (Schmidt, 1990; Lowen, 2015; Swain, 1985). Kim (2017) concludes that task design features have an impact on the amount of interaction learners have. As stated before, these noticing activities gave the learners repeated opportunities to interact and to pay attention to form during interaction. The more interaction, the more output opportunities and thus the more intake and uptake opportunities in meaningful learning activities.

There was priming (interactive alignment) in how the class knew what to expect and how to react as soon as a visual cue appeared on the classroom screen. This noticing-type of exercise had been done the year before with random words as a game with the learners, so they knew what to expect and how to behave. This type of priming will save time when used with transition activities that focus on pronunciation for a short time but in an engaging way. (Darcy et al., 2021, p. 124). These main concepts a all taken from the cognitive interactionist

approach, and aim to manipulate the mechanisms of learning and the conditions under which they occur in order to maximize learning (Lowen, 2015).

Lastly, although learners came to class with impressions on pronunciation, their expectations did not always meet reality. There was awareness shown to a great extent; however, accuracy levels were lower than awareness levels. This difference means that a percentage of the learners who showed awareness of a difference between the two target vowel sounds, could not repeatedly, consistently, and unequivocally pronounce the target vowel sound for it to be considered uptake. More time would be necessary to implement spaced learning techniques (Castro-García, 2014) along with those described in this paper, to see whether the percentage of accuracy could be made to grow and then by how much and under which circumstances. All in all, drills and drill-like activities can be seen as an effective and engaging way of helping the learners in their language learning process.

5.1 Contributions to the field

This research contributes to the pool of data that shows that these drill pronunciation exercises are a valuable resource in class (Kelly, 2000). Facilitating work on advancing the learners' productive as well as receptive skills, this paper helps to show that drills are useful in developing the L2. Kelly states that drills are one of the main ways in which pronunciation is practiced in the classroom (p.13), and the results in my paper show why: it is because drilling for phonology is highly effective. Also, Kelly mentions that drilling is important to all learner levels. Here, I am presenting a tool that can be used at beginner, intermediate, and/or advanced levels.

Also, my paper deals with the age group that has had less research done on: learners at the beginning stages of acquisition (Pennington, 2021, p. 17). Since these learners have a greater aptitude for the intake of pronunciation (Birdsong, 1999a, p. 1), Pennington mentions that a move away from the focused emphasis on advanced or late-stage learners is necessary. Furthermore, Pennington, in her article Teaching Pronunciation: The State of the Art 2021,

makes a call for developing an “appropriate pronunciation methodology for beginners. She then proposes to challenge standard practices with norm-breaking ones, to experiment, and to actively research pronunciation teaching in beginner-level learners (p. 17). The methods and techniques presented on this paper do precisely that. Here, you have a way of incorporating pronunciation teaching in an engaging and meaningful way for the learners, which shows that you can generate uptake through raising the learners’ awareness level of L2 phonological forms not present in their L1. Focus on form exercises, along with awareness-raising and controlled practice have been mentioned as being important factors in pronunciation teaching (Long, 1991, 2015), and the results presented above add empirical data to further support these affirmations.

Furthermore, as has been documented by Flege et al. (1997), native speakers of Spanish will misidentify the English vowel sound /ɪ/ and replace it with the Spanish vowel sound /i/. Here I am presenting a technique that helps the learners become aware that there is a difference between these sounds. With the drills and awareness exercises presented in this research, I am showing that it is possible for the learners to discern between these sounds. Input has become intake. Combining these types of exercises along with spaced learning techniques (Castro-García, 2014), there is the possibility of turning this intake into uptake.

Lastly, since time concerns are always present in the curriculum, and given the fact that little attention has been paid to pronunciation teaching since the 1980s (Pennington, 2021), here I present a way in which facilitators can incorporate pronunciation practice into any lesson, without taking away much time. In this regard, Brown (2008) has stated the need to systematically integrate pronunciation in the classroom. Concurrently, Darcy et al. (2021) call for an integration of pronunciation teaching in using scattered activities. This will allow for the facilitators to draw attention to pronunciation without it occurring at the detriment of other course goals. On the contrary, a reactive focus on pronunciation in classes not only proved to help with bottom-up listening tasks and other skills, but it also helps instill in the learners a sense that pronunciation is important (p. 124). The drill-type exercises I have presented here are an

engaging way to incorporate a change of pace when needed. There is no need to plan for these exercises. Once the students and the activities have been primed, the exercises can go into effect without the need of any type of explanation. The learners will know exactly what they have to do and how they have to behave. This will ultimately save much-needed time in the classroom, and help learners develop receptive as well as productive skills. All this, while taking advantage of technological advances (e.g., the use of electronic visual cues) which have greatly impacted the linguistics field, resulting in a historical development of pronunciation pedagogy in the last decades. All in all, here is presented a research and a tool that is quick and easy to use, and that proves to have benefits in a field that has been much neglected ever since the onset of Communicative Language Teaching: phonological drills with additional awareness exercises.

5.2 Limitations of the study

However, there are also limitations in this study that must be mentioned. The tests administered for the written results varied in scope and difficulty level. All the tests used in this study were designed to analyze some type of observable behavior from the learners. The tests, although taken from a widely used book for pronunciation teaching at university levels, were not measured against one another to see it they could show consistency in their levels of difficulty, thus generating possible imbalances between the results of one set of tests and the other. Thirdly, due to time constraint issues, this study measures only the target sounds in individual words or in minimal pairs. An attempt was made to focus the learners' attention on these sounds in spoken sentences as well, but it became evident very quickly that the learners were being confused by the other words in the sentence, and began producing the target sounds in words that did not really require it. Lastly, this study centered only on the /iy/ vs /ɪ/ sounds. The fact that the /iy/ English sound is so similar to the /i/ Spanish sound, gave the learners a head start on the production of the /iy/ sound, while at the same time not having have had really the time to grasp that the /iy/ sound is a slightly diphthongized and slightly lengthier sound (when it

is in an accented syllable, or before a voiced consonant in a one-syllable word) than the Spanish /i/.

5.3 Suggestions for future research

Further studies should center on other sets of English vowel sounds and their combinations, as the letters that precede and succeed a sound will affect the sound's production. Also, the reading of sentences and natural spoken speech should be measured to see whether there is awareness of L2 phonetic forms. Working memory should also be measured, using a spaced learning approach (Castro-García, 2014). By having more time to observe participants and their reactions to different stages of intervention across a longer time-span, we would be able to see if input can effectively become not just intake (noticed input), but can also be converted to uptake (modified output), tapping into the long-term memory storage of the learners (Schmidt, 1990).

5.4 Conclusion

Knowledge and awareness will allow learners to make conscious and informed decisions about how to pronounce the target language sounds more precisely. By helping them become aware, we empower them to become increasingly knowledgeable users of the L2. This will have an impact on their lives, as it will strengthen their communication skills, as well as improve employability (Newton, 2018, p. 343).

Furthermore, in using dynamic drills and enhanced drilling as classroom techniques, we can improve the practice of English teaching. By incorporating drills as transition activities, as unplanned events based on having the class act as one system, we can instill in the learners an enjoyment of these quick but impactful learning activities. By using them sparingly but consistently through the learning cycle, we can have the learners primed for these drilling type exercises. Priming (also called interactive alignment) the learners in how these drills function

and what their main objective is, can reap benefits as we transition from one part of the class into another. By repetition, learners will know what the task is about and what everyone is expected to do with minimal guidance, thus saving time. This way, we can effectively embed phonology instruction into any type of pre-existing lesson plan. Drilling can be engaging for the learners. It can serve as an on-the-go technique for raising expectation and excitement levels that can help the learners re-engage with the class, while at the same time setting the system (class, individual, and language) to work at its highest level. Thus, phonetic drilling can be used as a spur-of-the-moment activity to rekindle attention, expectation, and excitement within a classroom environment, while at the same time furthering the development of L2.

In conclusion, the present study confirms the usefulness of drills and drilling in young EFL learners' classroom situations, when used in conjunction with other activities. The study shows that behaviorist and cognitive interactionist techniques and approaches can be engaging activities for the learners. These activities can help develop their awareness of L2 phonetic and phonemic forms not present in their L1. Working under collaborative relations of power mindset (working joyfully), we foster in the learners the mindset that we all grow together. We also encourage and show the learners how we grow from the experience of mistakes. We instill in them the sense that the classroom is a safe space, where they are encouraged to take risks and explore language with joy as they learn from one another. Furthermore, in observing that we foster excitement (edge of chaos) situations, while viewing the whole class as a system, and the learners as systems within a system, and finally the L2 acquisition as a system onto itself, we can align the process, the learners, the class, and L2 development into resourceful, engaging, and beneficial educational experience for all.

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Appendices

Appendix A: Focused Talk Protocol

Focused talks

Activity: LET'S DRAW!

Date: _____ **Class:** _____

Location: _____ **Schedule:** _____

Instructions: While the class draws, the facilitator guides the conversation towards the target subject of vowels in L1 and L2. These talks will be recorded using audio-recording devices. Transcriptions of the audio recordings will be made.

Length: _____

Guiding questions:

- What are vowels?
- What are consonants?
- What do vowels sound like?
- Is there a difference between English vowel sounds and Spanish vowel sounds?
- What are the vowels in Spanish?
    - How do they sound?
    - What are they called?
- What are the vowels in English?
    - How do they sound?
    - What are they called?

What is pronunciation?

Is pronunciation important?

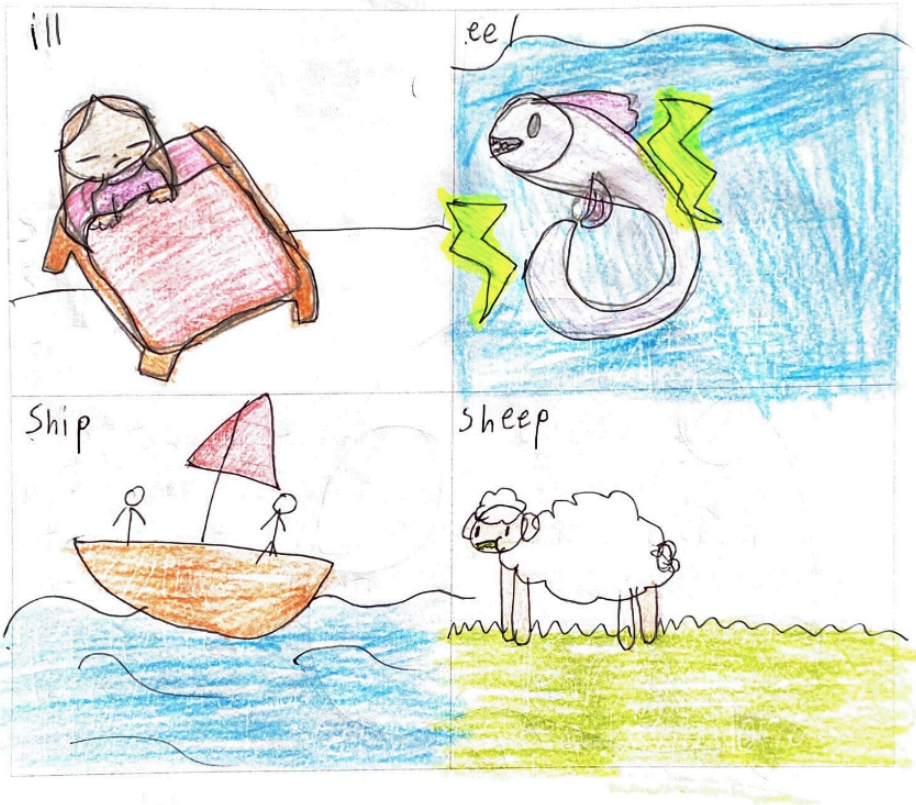
Do you have a way you want to sound like when you speak Spanish?

Do you have a way you want to sound like when you speak English?

Appendix B: Sample of Artifacts: Learner Motivation, Agency, and Investment.

Artifact 1: Chestorta

Choose two minimal pairs and make a drawing of each word. What do you think about the difference in their pronunciation?

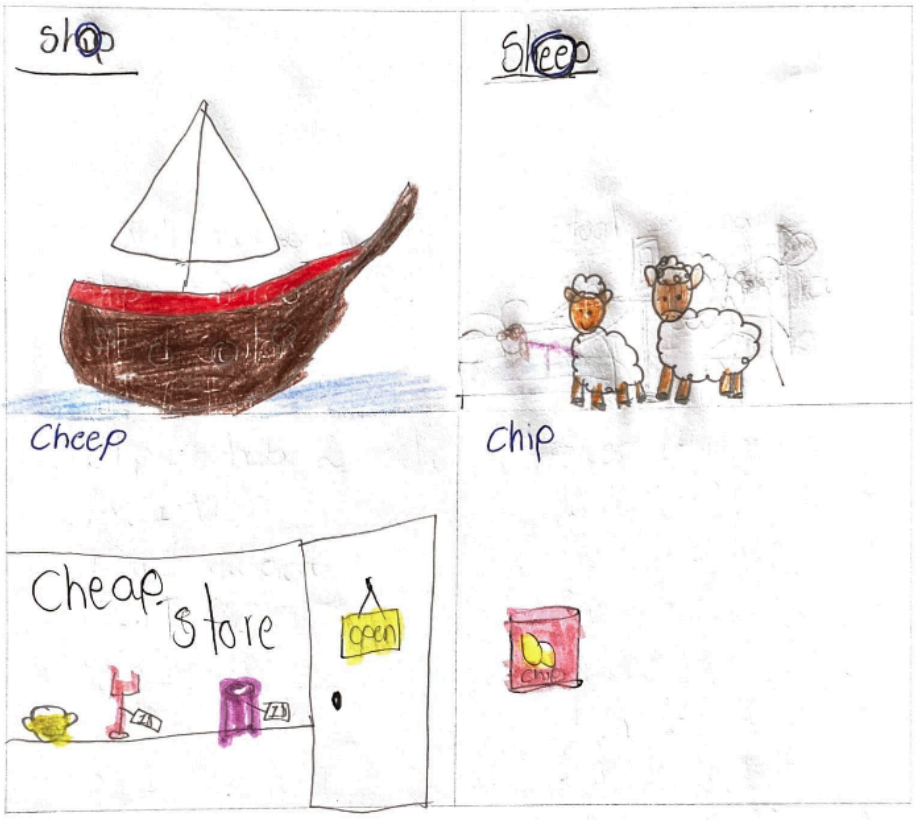


Write a comment:

The Sounds is difficult and ~~easy~~ facil porque algunos casi suenan igual

Artifact 2: Hermione

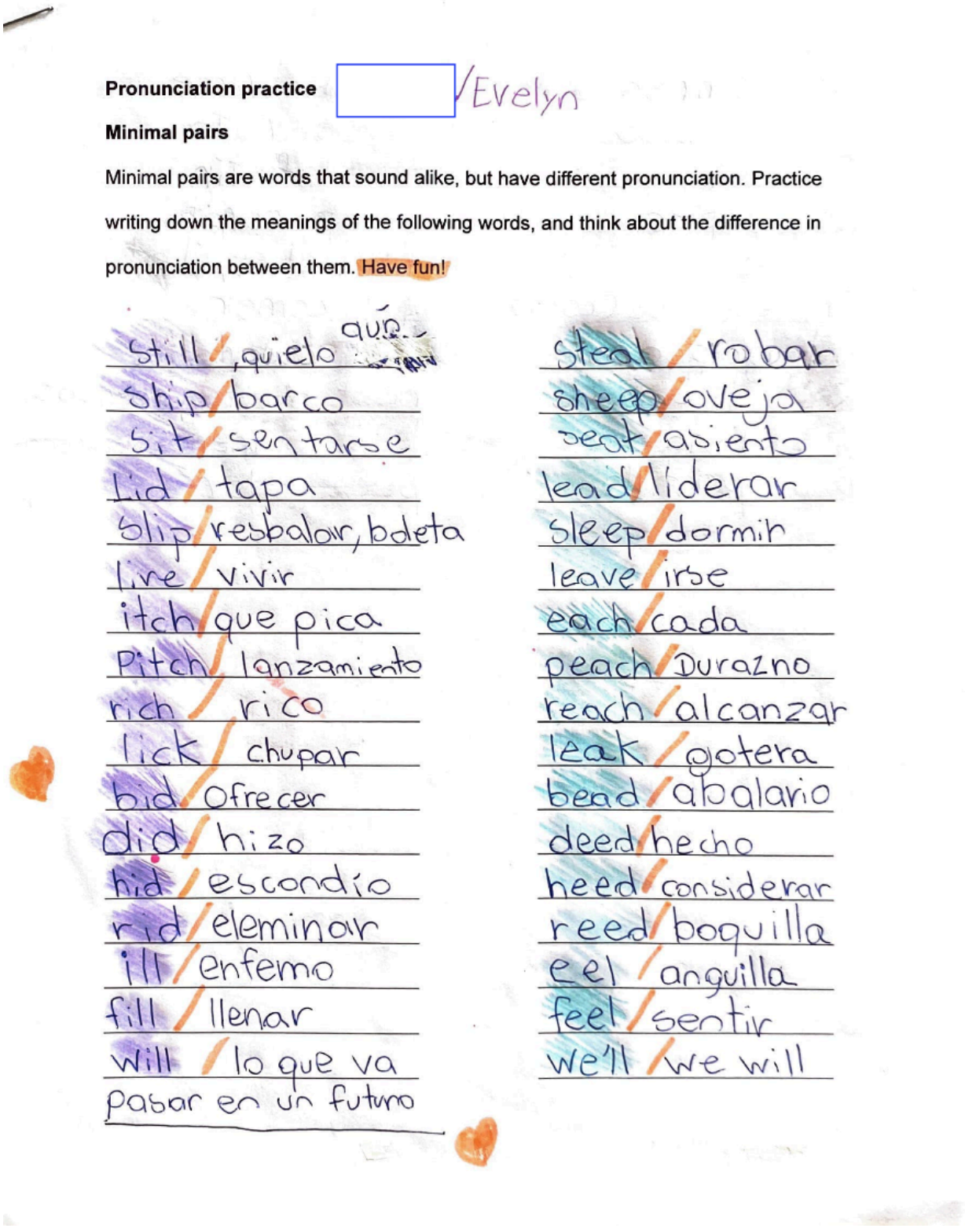
Choose two minimal pairs and make a drawing of each word. What do you think about the difference in their pronunciation?



Write a comment:

I like to make this because I loooove to write and learn english. This is one of the bests exercises that I made in english ~~clss~~ classes.
There is nothing that don't like me.
Thanks.

Artifact 3: Evelyn



Pronunciation practice /Evelyn

Minimal pairs

Minimal pairs are words that sound alike, but have different pronunciation. Practice writing down the meanings of the following words, and think about the difference in pronunciation between them. Have fun!

still / quielo aún
ship / barco
sit / sentarse
Lid / tapa
slip / resbalar, bdeta
live / vivir
itch / que pica
Pitch / lanzamiento
rich / rico
lick / chupar
bid / ofrecer
did / hizo
hid / escondio
rid / eleminar
ill / enfemo
fill / llenar
will / lo que va pasar en un futuro

steal / robar
sheep / oveja
seat / asiento
lead / liderar
sleep / dormir
leave / irse
each / cada
peach / Durazno
reach / alcanzar
leak / gotera
bead / abalario
deed / hecho
heed / considerar
reed / boquilla
eel / anguilla
feel / sentir
we'll / we will

Artifact 4: Elits

Pronunciation practice [redacted] elits

Minimal pairs

Minimal pairs are words that sound alike, but have different pronunciation. Practice writing down the meanings of the following words, and think about the difference in pronunciation between them. Have fun!

still - Iquieto, 2. Aún	steal - robar
ship - barco	Sheep - oveja
sit - sentarse	seat - asiento
lid - tapa	lead - liderar
Slip - resbalar, boleta	Sleep - dormir
live - vivir	leave - irse
itch - que pica	each - cada
pitch - lanzamiento	peach - durazno
rich - rico, adinerado	reach - alcanzar
lick - chupar	leak - gotera
bid - ofrecer	bead - abalorio, cuenta
did - hizo	deed - hecho - una obra
hid - escondio	heed - considerar
Rid - eliminar	Reed - leer, boquilla
ill - enfermo	eel - anguila
fill - llenar	feel - sentir
will - lo que pasara en un futuro	we'll - we will

Appendix C: Consent Form

Fecha: _____

Permiso de Autorización para Participación en Investigación de Fonética

Nombre del Padre/Madre/Tutor: _____

Nombre del Estudiante: _____

Estimados padres de familia:
Nos dirigimos a ustedes para solicitar su autorización para que su hijo/a participe en un proyecto de investigación de lingüística aplicada en la enseñanza del inglés. Este estudio, titulado ***"Estudio de caso: técnicas de impulso respuesta en ejercicios de fonética para ayudar a jóvenes aprendices de inglés a reconocer formas fonéticas de la lengua extranjera no presentes en su lengua materna"*,** está siendo llevado a cabo por el profesor Camilo Pavez Phillips (Mr. Pavez) con el apoyo de la UNA con el objetivo de mejorar los métodos de enseñanza de la fonética del inglés.

Descripción del Proyecto: El proyecto pretende demostrar cómo técnicas de impulso y respuesta por medio de fichas visuales de palabras, pueden ayudar a aprendices jóvenes a internalizar y desarrollar una percepción más clara de las diferencias entre los sonidos de las vocales del idioma inglés al compararlas con las vocales del español. Durante el transcurso del proyecto, se realizarán diversos ejercicios de fonética en los que su hijo/a estará involucrado/a. Estos ejercicios pueden incluir:
1. **Grabaciones de audio:** Su hijo/a podrá ser solicitado/a para realizar grabaciones de su voz mientras pronuncia palabras, frases o realiza ejercicios de fonética.
2. Fotografías de artefactos. En algunos casos, también se podrá requerir fotografías de los ejercicios escritos realizados en la clase para analizar la comprensión, mejora y otros aspectos de la pronunciación de los aprendices.

Confidencialidad y Uso de Datos: Todos los datos recopilados durante este estudio (audios y fotografías de artefactos) serán tratados con la máxima confidencialidad. Las grabaciones serán utilizadas exclusivamente con fines académicos y de investigación. En ningún caso se divulgarán públicamente sin su previo consentimiento. No se hará mención a la identidad de los participantes. Toda mención y/o evidencia de nombres reales será codificada de inmediato para que permanezca anónima. Se utilizarán seudónimos para los participantes con el fin de garantizar su confidencialidad.

Derechos del Participante: La participación de su hijo/a en este estudio es completamente voluntaria. Usted tiene el derecho de retirar el consentimiento en cualquier momento sin que esto tenga ninguna afectación en el curso de Inglés.

Cuándo: segundo semestre del 2024 durante las clases de inglés

Dónde: en aula de las clases de inglés
Riesgos para los participantes: ninguno.

Agradecemos de antemano su colaboración y apoyo en este importante proyecto de investigación.

Por favor, firme la siguiente hoja si está de acuerdo en permitir que su hijo/a participe en este estudio.

Autorización del Padre/Madre/Tutor:

Yo, [Nombre del Padre/Madre/Tutor], autorizo a mi hijo/a [Nombre del Estudiante] a participar en el estudio de investigación de fonética llevado a cabo por Camilo Pavez Phillips (Mr. Pavez). Entiendo que la participación incluye la posible grabación de audios y videos, y acepto las condiciones descritas anteriormente.

Firma del Padre/Madre/Tutor: _____

Fecha: _____

Atentamente,

[Nombre del Investigador]
[Nombre de la Institución]
[Número de Teléfono]
[Correo Electrónico]

Appendix D: Perception Test

Name: Keylor - Tuesday, Sept. 10th

Listen and repeat. Circle the word in each group that does NOT contain the vowel sound /iy/.

EXAMPLE keep lean (fit) piece

1.	bead	great	leave	tea
2.	eight	piece	believe	niece
3.	scene	women	these	even
X **4.**	need	been	sleep	thirteen
X **5.**	police	thief	machine	vision
6.	pretty	wheat	sweet	cream
7.	people	bread	~~deal~~	east
8.	tin	teen	steam	receive
9.	leave	live	leaf	lease
10.	steep	Steve	easy	still

8/10

Appendix E: Phonological Awareness Exercise.

Read aloud the paragraph about the Beatles. All the boldfaced words should be pronounced with the vowel sound /iy/.

The **Beatles**

What is a **Beatle**? **Maybe** you think of a **real creature** who **creeps** and **leaps** about. But most **people** recall four English **teens** called the **Beatles**, who appeared as a rock group in the **nineteen sixties**. **Leaving bebop** behind, the **Beatles** created a **unique beat** that **appealed** to everyone. **Seen** on American **TV**, they were **greeted** by **screams** and cheers. "**Please Please Me**" and "**She** Loves You" were among their **many pieces**. They **even received** an award from the **queen** of England. The **team** broke up as they **reached** their **peak**, but **each** member continued his own career. The world **grieved** the loss of their **leader**, John Lennon, who died in December **1980**. Although only **briefly** on the **scene**, the **Beatles** **created meaningful** music that will **be** here for an **eternity**.
