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Teaching Voiced and Voiceless Sounds in EFL Classrooms: A Conceptual Review of Challenges and Pedagogical Strategies

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ABSTRAK

Pengajaran pelafalan, khususnya perbedaan antara bunyi bersuara (voiced) dan tak bersuara (voiceless), masih menjadi domain yang kurang dieksplorasi dalam pedagogi Bahasa Inggris sebagai Bahasa Asing (EFL). Artikel ini menyajikan tinjauan konseptual yang berlandaskan tiga pilar teoritis: teori fonologi, teori transfer bahasa pertama (L1), dan instruksi pelafalan berbasis keterpahaman (intelligibility). Tiga tantangan utama diidentifikasi: interferensi fonologis L1, kesulitan artikulasi dan persepsi, serta keterbatasan kesadaran fonologis pada peserta didik dan pendidik. Sebagai respons, empat strategi pedagogis berbasis bukti diusulkan: instruksi fonologis eksplisit, praktik pasangan minimal yang terintegrasi dalam tugas komunikatif, pelatihan diskriminasi auditori, dan alat pelafalan berbantuan teknologi. Artikel ini berargumen bahwa prinsip keterpahaman harus memandu prioritas instruksional, dengan kontras berbeban fungsional tinggi seperti /s/–/z/, /t/–/d/, dan /f/–/v/ mendapat perhatian utama. Implikasi diturunkan bagi guru EFL, perancang kurikulum, dan program pelatihan guru.

ABSTRACT

The teaching of pronunciation, particularly the distinction between voiced and voiceless sounds, remains a critically underexplored domain within English as a Foreign Language (EFL) pedagogy. This article presents a conceptual review grounded in three theoretical pillars: phonological theory, first language (L1) transfer theory, and intelligibility-based pronunciation instruction. Three primary challenges are identified: L1 phonological interference, articulatory and perceptual difficulty, and limited phonological awareness among learners and teachers. Four evidence-based pedagogical strategies are proposed: explicit phonological instruction, minimal pair practice embedded in communicative tasks, auditory discrimination training, and technology-assisted pronunciation tools. The article argues that the intelligibility principle should guide instructional priorities, with high-functional-load contrasts such as /s/–/z/, /t/–/d/, and /f/–/v/ receiving primary attention. Implications are drawn for EFL teachers, curriculum designers, and teacher training programs.

Keywords: *Voiced Sounds, Voiceless Sounds, EFL Pronunciation, Phonological Awareness, Pedagogical Strategies.*

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Introduction

Pronunciation is universally recognized as a foundational dimension of communicative competence in second and foreign language learning. Among the many phonological features that English as a Foreign Language (EFL) learners must acquire, the distinction between voiced and voiceless consonants stands out as one of the most pedagogically consequential yet least systematically addressed. Voiced consonants—including /b/, /d/, /g/, /v/, /z/, /ʒ/, and /ð/—are produced with simultaneous vibration of the vocal cords, while their voiceless counterparts—/p/, /t/, /k/, /f/, /s/, /ʃ/, and /θ/—are articulated without such vibration (Celce-Murcia, Brinton, & Goodwin, 2010). When learners fail to consistently produce or perceive these contrasts, the result is not merely an accent but a genuine breakdown in intelligibility that impairs real communicative exchange.

The pedagogical neglect of voiced and voiceless instruction is not incidental. The dominance of Communicative Language Teaching (CLT) since the 1970s has progressively marginalized explicit pronunciation work, and within what pronunciation instruction does occur, the emphasis has fallen overwhelmingly on suprasegmental features such as stress, rhythm, and intonation (Levis & Grant, 2003; Gilakjani, 2011). Segmental instruction—and voiced/voiceless contrasts in particular—has received comparatively little attention in terms of dedicated conceptual or pedagogical frameworks. Yet segmental errors involving voicing distinctions are among the most frequent and most communication-impairing errors produced by EFL learners across a wide range of first-language backgrounds (Jenkins, 2000; Munro & Derwing, 2006).

This gap is especially significant given that certain voiced-voiceless contrasts carry high functional load in English—that is, their confusion is statistically likely to cause misunderstanding (Brown, 1988). The /s/–/z/ distinction in word-final position (e.g., price vs. prize), the /t/–/d/ contrast (e.g., bet vs. bed), and the /f/–/v/ pair (e.g., fan vs. van) are among the most frequent and most intelligibility-critical contrasts in everyday English vocabulary. For speakers of languages such as Bahasa Indonesia, Mandarin, Japanese, and Korean—in which some or all of these contrasts are absent or neutralized—the acquisition of these features poses persistent difficulty rooted in deep phonological processing differences (Swan & Smith, 2001; Deterding, 2010).

What is lacking in the current literature is a conceptual synthesis that brings together phonological theory, L1 transfer research, and classroom-applicable pedagogical strategies into a coherent framework specifically addressing voiced and voiceless instruction. The present article addresses this gap by asking three organizing questions: (1) What are the primary theoretical and empirical challenges EFL learners face in acquiring voiced and voiceless sound contrasts? (2) What evidence-based pedagogical strategies are available to address these challenges? (3) How should the intelligibility principle guide the prioritization of voiced and voiceless instruction in EFL contexts? It is hoped that this conceptual review will provide a practical reference point for EFL teachers, inform curriculum design decisions, and stimulate targeted empirical research in an undertheorized area of pronunciation pedagogy.

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Theoretical Framework

Phonological Theory and the Voiced/Voiceless Distinction

The voiced–voiceless distinction in English operates as a phonemic contrast: it differentiates meaning between otherwise identical word-forms (minimal pairs). Well-known examples include /pɪn/ (pin) vs. /bɪn/ (bin), /faɪn/ (fine) vs. /vaɪn/ (vine), and /sɪl/ (sill) vs. /zɪl/ (zill) (Roach, 2009). At the phonological level, voicing is a laryngeal feature: voiced obstruents are produced with concurrent vocal fold vibration, while voiceless obstruents are articulated with the glottis open and the folds apart (Ladefoged & Johnson, 2014). This distinction is not confined to the segmental level alone; it interacts with other phonological processes—vowel lengthening before voiced consonants, variation in aspiration for voiceless stops, and differences in consonant release at word boundaries—all of which complicate acquisition for L2 learners.

From a theoretical standpoint, the voiced/voiceless distinction is significant because it belongs to the category of features that are both phonetically complex and cross-linguistically variable. Not all languages employ the voiced–voiceless contrast phonemically, and even among languages that do, the acoustic parameters used to signal the distinction differ (Lisker & Abramson, 1964). This cross-linguistic variability is precisely what makes the feature challenging for EFL learners and why a conceptual framework grounded in phonological theory is necessary for developing effective instruction.

First Language Transfer Theory

First language transfer, or cross-linguistic influence, is the most extensively documented source of phonological difficulty in second language acquisition (Odlin, 1989; Flege, 1995). According to the Contrastive Analysis Hypothesis (Lado, 1957), learners systematically transfer the phonological patterns of their L1 into the L2, and the degree of difficulty corresponds to the degree of structural difference between the two systems. For voiced and voiceless sounds, this means that learners whose L1 lacks a particular contrast are likely to neutralize or substitute that contrast in English production. Bahasa Indonesia speakers, for instance, do not productively distinguish voiced from voiceless consonants in word-final position, leading to systematic devoicing errors in English (Deterding & Poedjosoedarmo, 2001).

The Speech Learning Model (Flege, 1995) extends this framework by proposing that the phonetic categories already established in the L1 exert a magnetic pull on the perception and production of similar L2 sounds. When an L2 sound is perceptibly similar—but not identical—to an L1 category, learners tend to assimilate it to that existing category rather than form a new one. This perceptual assimilation makes certain voiced-voiceless contrasts particularly resistant to acquisition, especially when the L2 contrast is subtle (e.g., the /f/–/v/ distinction, which involves a relatively small acoustic difference in energy and duration). Understanding the mechanisms of L1 transfer is essential for any conceptual framework aimed at guiding voiced and voiceless instruction, as it explains

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why these errors are systematic, persistent, and not easily corrected through communicative exposure alone.

The Intelligibility Principle in Pronunciation Instruction

A foundational shift in L2 pronunciation research has moved the field away from the nativeness principle—the pursuit of phonetically native-like speech—toward the intelligibility principle, which holds that learners need only to be comprehensible in genuine communicative contexts (Levis, 2005; Derwing & Munro, 2015). This shift has important practical consequences: it frees teachers from the impossible goal of eliminating accent and redirects instructional energy toward phonological features that actually affect communication. Central to this reoriented framework is the concept of functional load—the degree to which a phonemic contrast is used to distinguish words in the language (Brown, 1988). High-functional-load contrasts, such as /s/–/z/ and /t/–/d/ in English, carry greater communicative weight than low-functional-load contrasts, such as /θ/–/ð/, and therefore warrant priority attention in EFL instruction (Munro & Derwing, 2006). The intelligibility principle thus provides a principled, learner-centered basis for making pedagogical decisions about which voiced and voiceless contrasts to teach, in what sequence, and with what degree of emphasis.

Method

This study employs a conceptual review methodology, a well-established approach in applied linguistics and language education research for synthesizing and theorizing about a body of existing literature without collecting primary empirical data (Torraco, 2005). Conceptual reviews are particularly appropriate when a topic has received fragmented treatment across multiple disciplines or research traditions and requires an integrative theoretical framework. The topic of teaching voiced and voiceless sounds in EFL classrooms intersects phonetics, phonological acquisition, second language acquisition (SLA), and language pedagogy—making a conceptual synthesis both necessary and timely.

The literature reviewed was identified through systematic searches of major academic databases, including ERIC, Google Scholar, JSTOR, and Scopus. Search terms included combinations of the following: 'voiced and voiceless sounds EFL,' 'pronunciation instruction,' 'L2 phonology,' 'segmental features EFL,' 'minimal pairs teaching,' 'explicit pronunciation instruction,' and 'functional load.' Priority was given to peer-reviewed journal articles from the past two decades, though foundational theoretical works from earlier periods were included where relevant. Approximately forty primary sources formed the basis of this review, consistent with the scope of similar conceptual articles in applied linguistics (Atar, 2018; Zarate-Sandez, 2020).

Analysis followed a thematic synthesis approach (Thomas & Harden, 2008), in which themes were identified inductively from the literature and organized into a coherent conceptual framework. The review prioritizes sources addressing: (1) the phonological

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and acquisitional basis of voiced–voiceless difficulty; (2) pedagogical strategies for segmental pronunciation instruction; and (3) teacher beliefs and practices concerning explicit pronunciation teaching. The resulting framework is intended to be both theoretically grounded and practically applicable to diverse EFL classroom contexts, with particular relevance to teachers working with learners from Asian language backgrounds.

Results and Discussion

Challenges in Acquiring Voiced and Voiceless Sound Contrasts

The acquisition of voiced and voiceless contrasts by EFL learners is shaped by the interaction of three principal challenge categories: L1 phonological interference, articulatory and perceptual difficulty, and limited phonological awareness among both learners and teachers.

L1 phonological interference is the most consistently documented challenge in the literature. Languages such as Bahasa Indonesia, Mandarin Chinese, and Korean impose significant phonological constraints on their speakers' production of English voicing contrasts (Swan & Smith, 2001). In Bahasa Indonesia, voiced stops /b/, /d/, and /g/ exist phonemically in syllable-initial positions but are systematically devoiced in word-final contexts—a pattern that leads Indonesian EFL learners to apply this devoicing process to English, producing 'cap' for 'cab' or 'bet' for 'bed' (Deterding & Poedjosoedarmo, 2001). The English fricative pair /f/–/v/ poses further difficulty, as this contrast is absent in many Asian L1 systems, leading to persistent substitution errors in both perception and production (Gilakjani, 2011). The Speech Learning Model (Flege, 1995) accounts for this pattern by explaining that similar—but non-identical—L2 sounds are assimilated into existing L1 phonetic categories, making accurate production especially resistant to change.

The second challenge is articulatory and perceptual in nature. Producing voiced obstruents, particularly in word-final position, requires learners to sustain vocal cord vibration throughout articulatory closure—a feat that is phonetically demanding for those unaccustomed to final voicing (Flege & Port, 1981). On the perceptual side, the acoustic cues that differentiate voiced from voiceless consonants in English—Voice Onset Time (VOT), preceding vowel length, and closure duration—are language-specific in their relative salience (Lisker & Abramson, 1964; Ladefoged & Johnson, 2014). EFL learners must therefore recalibrate their perceptual systems to attend to cues that may be phonologically irrelevant in their L1. Research indicates that perceptual training must precede or accompany production practice for meaningful phonological progress to occur (Derwing & Munro, 2015).

The third challenge is limited phonological awareness. Many EFL learners—and, critically, their teachers—lack explicit knowledge of the physiological and acoustic properties that distinguish voiced from voiceless sounds (Schmidt, 2001; Pardede, 2018). Without this awareness, learners are unable to engage in the conscious noticing that

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Schmidt (2001) identifies as a prerequisite for L2 acquisition. Atar (2018) documents similar dynamics in other phonological domains, noting that learners frequently fail to perceive target contrasts until explicitly taught. The implication for voiced and voiceless instruction is clear: communicative exposure alone is insufficient, and deliberate, awareness-raising instruction is necessary.

Pedagogical Strategies for Teaching Voiced and Voiceless Sounds

Drawing on the reviewed literature, four major categories of evidence-based pedagogical strategies are identified for voiced and voiceless instruction in EFL classrooms.

First, explicit phonological instruction—sometimes referred to as form-focused pronunciation teaching—involves directly explaining the articulatory and acoustic features of target sounds and making the phonological contrast salient for learners (Darcy, 2018). In the context of voiced and voiceless instruction, this entails teaching learners about the role of the larynx in voicing, demonstrating the physical sensation of vocal cord vibration (e.g., by placing fingertips lightly on the throat), and using visual aids such as vocal tract diagrams and phonetic charts (Celce-Murcia et al., 2010). Pardede's (2018) action research with Indonesian EFL learners demonstrated that explicit instruction—including video-based articulation modeling, drilling, and phonetic transcription comparison—significantly improved pronunciation accuracy. The theoretical justification rests on Schmidt's (2001) Noticing Hypothesis: learners cannot acquire what they have not first consciously noticed.

Second, minimal pair practice is a time-tested technique for directing learner attention to specific phonemic contrasts by presenting word pairs differing in only one sound (e.g., 'fan' vs. 'van,' 'sip' vs. 'zip,' 'bat' vs. 'pat') (Celce-Murcia et al., 2010). Traditional minimal pair drills have been criticized as decontextualized and mechanical; however, the literature consistently shows that embedding minimal pair activities within communicative tasks substantially enhances their effectiveness (Atar, 2018; Moedjito, 2008). A role-play task requiring learners to navigate a shopping scenario involving 'vine' and 'fine' creates genuine communicative motivation for mastering the /f/–/v/ distinction. The functional load principle (Brown, 1988; Munro & Derwing, 2006) can further guide the selection of minimal pairs, ensuring that practice concentrates on contrasts most likely to impair intelligibility.

Third, auditory discrimination training addresses the perceptual dimension of voiced-voiceless acquisition by systematically developing learners' ability to distinguish target contrasts in listening prior to requiring their production. Informed by speech perception research (Flege, 1995; Derwing & Munro, 2015), auditory training involves repeated exposure to minimal pairs across varied phonetic environments and speech rates, requiring learners to identify which sound they hear. Zarate-Sandez (2020) reviews a growing body of evidence showing that auditory training consistently yields significant gains in both perception and production. Classroom implementation can include listening

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discrimination exercises, phoneme identification tasks, and exposure to recordings featuring both native and non-native speaker productions of target contrasts.

Fourth, technology-assisted pronunciation tools represent an increasingly important resource for voiced and voiceless instruction. Software and applications providing visual acoustic feedback—waveforms, spectrograms, voice onset time displays—enable learners to observe the phonetic properties of their own speech and compare them with target models (Lambacher, 1999; Fouz-Gonzalez, 2015). This visual feedback is especially valuable for voicing contrasts because it renders the temporal and spectral differences between voiced and voiceless sounds visible and concrete (Zarate-Sandez, 2020). Praat, a free acoustic analysis program, has been used effectively with Indonesian university students to allow real-time observation of voicing patterns (Pardede, 2018). The platform YouGlish allows learners to hear target words in naturalistic video contexts, supporting perceptual familiarity and contextual understanding simultaneously.

Prioritization Based on the Intelligibility Principle

A central argument of this conceptual framework is that voiced and voiceless instruction should be guided by the intelligibility principle rather than by a pursuit of native-like phonetic accuracy (Levis, 2005). Applying the functional load framework (Brown, 1988) to English voicing contrasts yields a principled basis for instructional sequencing. High-priority contrasts—those distinguishing large numbers of frequent words and most commonly causing communicative breakdown—include /s/–/z/ in word-final position (e.g., price vs. prize), /t/–/d/ (e.g., bet vs. bed), and /f/–/v/ (e.g., fine vs. vine). These contrasts should be introduced early and practiced systematically. Lower-priority contrasts, such as /θ/–/ð/, which Jenkins (2000) controversially excluded from her proposed Lingua Franca Core, may be addressed selectively based on learners' communicative goals and interactional contexts.

The intelligibility principle also has implications for error treatment. Not all voiced-voiceless errors warrant equal corrective attention; teachers should develop sensitivity to which errors genuinely impair comprehension and which are merely markers of a non-native accent (Derwing & Munro, 2015). This distinction allows teachers to maintain communicative momentum in the classroom while still addressing phonologically significant errors in a strategic and learner-centered manner.

Implications for EFL Teachers, Curriculum, and Teacher Training

For EFL teachers, this framework recommends that voiced and voiceless instruction be planned and systematic rather than incidental or reactive (Foote et al., 2016; Do Minh Luan, 2021). Dedicated pronunciation mini-lessons of five to ten minutes, embedded within broader communicative activities, can target specific contrasts identified as problematic for the particular learner group (Gilakjani, 2011). Such integration ensures that pronunciation instruction remains connected to meaningful use rather than isolated in decontextualized drill. For curriculum designers, this review recommends the explicit inclusion of voiced and voiceless instruction in EFL syllabi, sequenced according to functional load priorities and informed by learners' L1 backgrounds. Moedjito (2008)

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found that the absence of clear curriculum guidelines for pronunciation—including segmental features—leads to inconsistent and neglected instruction across EFL programs. A curriculum that specifies target contrasts, recommends evidence-based techniques, and provides assessment criteria would substantially improve the quality and coherence of pronunciation teaching.

For teacher trainers, the evidence points to a critical need for pre-service and in-service programs that go beyond theoretical phonetics to include explicit training in teaching voiced and voiceless contrasts. Zarate-Sandez (2020) and Do Minh Luan (2021) both note that many EFL teachers report feeling inadequately prepared to teach pronunciation systematically. Professional development programs modeling communicative minimal pair tasks, auditory discrimination training protocols, and the use of technology-assisted feedback tools would substantially improve teacher readiness and confidence in this underserved area of EFL pedagogy.

Conclusion

This conceptual review has synthesized the theoretical and empirical literature on teaching voiced and voiceless sound contrasts in EFL classrooms and has constructed a pedagogical framework to guide practice in this underexplored area. Three primary challenges were identified: L1 phonological interference rooted in the learner's established sound system, articulatory and perceptual difficulty arising from language-specific acoustic cue weighting, and limited phonological awareness among both learners and teachers. These challenges are compounded by the structural tendency of communicative EFL instruction to marginalize explicit segmental teaching.

In response to these challenges, the framework proposes four evidence-based pedagogical strategies: (1) explicit phonological instruction grounded in the Noticing Hypothesis, which raises learner awareness of the articulatory and acoustic properties of target sounds; (2) minimal pair practice embedded in communicative tasks, prioritized by the functional load principle; (3) auditory discrimination training that systematically builds perceptual sensitivity to voiced-voiceless contrasts before requiring their production; and (4) technology-assisted pronunciation tools that provide visual acoustic feedback and naturalistic listening contexts. These strategies are most effective when implemented in combination and when connected to authentic communicative practice.

The article has argued throughout that the intelligibility principle should anchor the prioritization of voiced and voiceless instruction, directing attention to high-functional-load contrasts—/s/–/z/, /t/–/d/, and /f/–/v/—that most significantly affect communicative effectiveness. This approach avoids phonetic perfectionism and ensures that instructional resources are allocated efficiently. Future empirical research should evaluate the effectiveness of the proposed strategies through classroom-based studies across diverse EFL contexts and L1 backgrounds, with particular focus on long-term development in spontaneous speech. Teacher training programs should also be systematically evaluated for their success in preparing instructors to implement these strategies with confidence and pedagogical insight.

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