A Discussion of the Ins and Outs of L2 Pronunciation Instruction: A Clash of Methodologies*

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Abstract

The value attached to pronunciation has kept changing continually in the methodological history of language instruction. Depending on the nature of methodological considerations that dominated research and teaching agenda, it either received too much attention or was marginalized. This study sets out to provide a comprehensive overview of pronunciation instruction from the 1950s to the present day, with a particular reference to popular bipolar debates that characterized this methodologically fluctuating period. Moreover, it attempts to examine the general outlook on pronunciation and summarize major issues concerning what components of pronunciation to include in the syllabus and how to teach it. The study also discusses the role of computers and technology in pronunciation instruction by incorporating data from empirical studies. Although some of the debates have been inconclusive up until today, the intellectual effort put in the process seems to have proved fruitful in providing some guidelines for dealing with the challenging task of improving learners' pronunciation.

Keywords: Computer-assisted pronunciation teaching (CAPT), segmental/suprasegmental phonology, accuracy, intelligibility, nativeness, teacher education

İkinci Dilde Sesletim Öğretiminin Özüne Dair Bir Tartışma: Metodolojilerin Çatışması

Öz

Dil eğitiminin metodolojik tarihinde sesletime verilen önem farklılık gösteregelmiştir. Araştırma ve öğretime dair gündemin baskın olan ideolojilerin ve metodolojik değerlendirmelerin doğasına bağlı olarak, sesletim ya çok fazla ilgi görmüş ya da bir kenara itilmiştir. Bu çalışma özellikle metodolojik anlamda dalgalı bir dönemi simgeleyen iki kutuplu popüler tartışmaların çerçevesinde, 1950'lerden günümüze sesletim eğitimine ayrıntılı bir bakış ortaya koymayı hedeflemiştir. Bunun yanında sesletime genel bakışı incelemeye ve müfredata dahil edilecek sesletim unsurlarına ve sesletimin nasıl öğretilmesi gerektiğine dair temel konuları özetlemeye çalışmıştır. Çalışma aynı zamanda ampirik araştırmalardan elde edilmiş veriler vasıtasıyla bilgisayar ve teknolojinin sesletim eğitimindeki yerini ele almaktadır. Sesletime dair tartışmalardan bazıları bu güne kadar bir sonuca ulaşamamış olsa da bu süreçte ortaya konulan zihinsel çaba; zorlu bir iş olan öğrencilerin sesletimlerini geliştirme işinin nasıl ele alınması gerektiğine dair bazı ilkeler ortaya koymada semeresini vermiştir.

Anahtar Kelimeler: Bilgisayar destekli sesletim eğitimi (BDSE), parçacıl/parçaüstü fonoloji, doğruluk, anlaşılırlık, yerlilik, öğretmen eğitimi

Introduction

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* This study was produced from the first author's PhD dissertation entitled "*The effectiveness of instruction through Moodle and accent reduction software on the pronunciation of EFL teacher trainees.*"

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Though pronunciation accounts for a certain amount of attainment in foreign language learning, especially in terms of the use of spoken language, it has not received enough attention in L2 instruction over the years. On the one hand, findings of several studies discussing the effect of instruction on pronunciation found almost no correlation between formal instruction and attainment in pronunciation learning (e.g., Suter, 1976 cited in Robertson, 2003; Purcell & Suter, 1980; Yule & Macdonald, 1994). In line with such studies, some researchers with the same line of thought claimed that improvement in pronunciation is beyond the control of teachers because motivation and L1 are the most prominent predictors of success in pronunciation. On the other hand, others provided evidence that formal training could contribute to attainment (e.g., Bongaerts, 1999; Couper 2003; Derwing, Munro & Wiebe 1998; Kissling, 2014; Martinsen, Montgomery & Willardson, 2017; Rezaei, Gowhary & Azizifar, 2015). Such mixed results were probably due in part to various objectives of instruction, diverse groups of students and methodologies involved as well diverse testing procedures (Thomson & Derwing, 2015).

Meanwhile, the impact of technology on language teaching has been enormous in the last two decades. Linguistics and SLA have taken interest in utilizing computers to develop speaking and pronunciation skills, and they have made considerable progress (Goodwin-Jones, 2009). Each year, a new wave of software and web sites are introduced and one-way communication in traditional programs and websites has given way to more interactive environments where learner-generated content has become a part of online pedagogy. The introduction of computer-assisted pronunciation teaching, CAPT for short, seems to have opened up new debates regarding this issue.

In this methodologically rugged terrain in pronunciation instruction, language teachers need to have sufficient understanding of the fruits of the hot debates that have deluged the history of pronunciation instruction. Therefore, there seems to be an instructional and scientific need to take a close look at the methodological journey of pronunciation instruction in time with a view to shed light on how this intellectually rich history could inform current in-class practices. In line with this need, this study attempts to come up with some guidelines that could be of some help to teachers while making decisions regarding what elements of pronunciation to teach and how to teach them.

A Brief History of Pronunciation Instruction

Throughout the history of English language teaching, various approaches or methods adopted different views concerning the role of pronunciation in language instruction, the importance of accuracy, fluency and the global approach to pronunciation instruction and so forth. During the days of structuralism in the 1940s and 1950s, grammar and pronunciation were two integral components that were emphasized both in the US and the UK (Morley, 1991, 484). Traditional

approaches to pronunciation stressed the importance of minimal pair contrasts, and they followed a structural way of practicing suprasegmental features. Drills, articulatory descriptions, imitation and mimicry-memorization accounted for most of the instruction in the class. Traditional approaches ultimately aimed at native-like pronunciation (Luchini, 2005, 192). Due to the impact of both the communicative language teaching and some experimental studies that found little or no value in teaching pronunciation, researchers began to discuss whether to teach pronunciation and how to teach it if it is worth doing so.

A significant factor that contributed to the marginalization of pronunciation instruction was the advent of the communicative approach (Levis & LeVelle, 2010). While some earlier approaches or methods stressed accuracy (Natural approach and the TPR) (Pennington & Richards, 1986), some others, especially the communicative approach attached importance to intelligibility and fluency. Despite the strong emphasis on pronunciation before the 1960s, some researchers began to challenge its instructional value, whether it should be taught, and if so, how it should be taught. As a result, the importance attached to pronunciation gradually diminished, and it was no longer a part of formal instruction in many programs. In Levis and LeVelle's (2010) words, "the baby (the need for spoken intelligibility) was thrown out with the bathwater (the goal of native accuracy)" (p. 2). The focus on pronunciation no longer existed in the 1970s because, as Brown (2007) puts it, "explicit pedagogical focus on anything that smacked of linguistic nuts and bolts was under siege by proponents of the various non-directive 'let-it-just-happen' approaches to language teaching" (p. 283).

Furthermore, though some followers of the communicative approach accepted the significance of teaching pronunciation, they found it challenging to integrate it into instruction (Silveira, 2002; Celce-Murcia, et al., 1996). They focused on suprasegmentals by allowing learners to observe suprasegmental elements in communicative contexts, while they ignored segmentals and accuracy because they did not have a set of strategies to teach them communicatively (Celce-Murcia, et al., 1996). Other significant factors that led to a decrease in the popularity of pronunciation among language teachers were the impact of the critical period hypothesis and the belief that teaching pronunciation entailed expert knowledge (Fraser, 2006). The critical period research in the 1960s resulted in a loss of interest in pronunciation teaching because the research findings suggested that native-like pronunciation was an unattainable goal.

The waning interest in pronunciation was also the result of the skepticism about the value of teaching pronunciation because the most significant predictors of success in pronunciation were thought to be talent and length of residence in a foreign country (Thornbury, 2006) along with the age at which one begins to learn a second or foreign language. This line of thought suggests that it is

much easier to learn the target language if one has a natural talent and lives in the country where it is spoken. Pronunciation was considered unimportant, particularly in the communicative approach, and it was generally believed that it cannot be taught but can be naturally learned by learners, and most teachers did not have the necessary training or they lacked the confidence to teach pronunciation (Fraser, 2006). This was empirically supported in a research study carried out to investigate why Australian teachers ignored pronunciation in their practices (Macdonald, 2002). According to this study, the lack of pronunciation requirement in the curriculum, scarcity of quality instructional materials, lack of opportunities to improve their skills and knowledge through formal or in-service training and not being knowledgeable about how to address pronunciation caused this ignorance.

Although pronunciation has been marginalized over the years due to all these reasons (Macdonald 2002; Fraser, 2006), the shift from teacher-centeredness to learner-centeredness in overall language teaching methodology over the last few decades has also affected the way pronunciation is taught. Technological developments, especially the use of audio and video tools, and computers in pronunciation instruction helped improve pedagogical conditions in language classrooms in the last quarter of the twentieth century. There has been a lively interest for pronunciation during the 1990s and the basic premise of the new outlook on pronunciation was the importance of intelligibility for communicative competence (Morley, 1991). Native-like proficiency is viewed as an unrealistic goal, so intelligibility is highlighted (Thornbury, 2006; Celce- Murcia, et al., 1996), but accuracy is also viewed significant.

Another significant development at the end of the last century was the idea of a threshold in intelligibility and accuracy in pronunciation teaching. Building upon this idea, Jenkins (2000, 2002) carried out some empirical research into the interaction between non-native speakers (NNSs) and introduced the idea of a phonological core for international communication; that is, a set of core elements to be acquired to ensure intelligibility between NNSs of various linguistic backgrounds. The phonological core includes consonants that lead to misunderstanding or harm intelligibility, nuclear stress, consonant clusters at the beginning of words (rather than at the end) and the distinction between long and short vowels (Thornbury, 2006, p. 164). The starting point for Jenkins' lingua franca core (LFC), or English for international communication (EIL) is that the number of nonnative speakers of English is greater in number than that of native speakers. Therefore, unlike traditional views of pronunciation teaching, LFC proposed by Jenkins (2000; 2002) focuses on the interaction between nonnative speakers. This, according to Jenkins (2002), has significant implications for English language teaching, especially for pronunciation. Her perspective significantly altered the

goals of pronunciation teaching because rather than native or native-like pronunciation, international intelligibility has been the ultimate aim of pronunciation teaching.

The idea of phonological core gained some popularity among researchers. For example, being inspired by the philosophy of EIL, Wells (2005) suggested revising our targets in pronunciation pedagogy, especially in TESOL (p. 101). Similarly, Levis (2005) rightly believed that Jenkin's "recommendations have caused pronunciation teachers in all contexts to revisit their beliefs about intelligibility and the primacy of suprasegmentals" (p. 371). However, several of them criticized her work in LFC. For example, Kubota (2006) challenged the notion of native English speaker accents by claiming that this concept should further be clarified since participant teachers' opinions about such accents varied a lot. Kubota further criticized ELF in terms of expressing personal identity in that it has no native speakers, so there is no model for learners to follow.

Globally considered, there has recently been a revival of interest in pronunciation teaching to make L2 learners more efficient users of the target language (Luchini, 2005), and this interest has been more apparent as a number studies have been published in leading journals in ELT (e.g., Ali, 2016; Engwall, 2012; Golonka, Bowles, Frank, Richardson, & Freynik, 2014; Hsu, 2016; Lee & Lyster, 2016; Liakin, Cardoso, & Liakina, 2017; Luo, 2016; Martinsen, Montgomery, & Willardson, 2017; Mbah, Mbah, Iloene, & Iloene, 2014; Meng, Wang, Li, Meng, & Chen, 2012; Mompean & Fouz-González, 2016; Olson, 2014; Ouni, 2014; Sun et al., 2017; Thomson, 2011, 2012; Thomson & Derwing, 2015; van Doremalen, Boves, Colpaert, Cucchiarini, & Strik, 2016). The EIL and LFC perspective has had a great impact on this. This new orientation towards pronunciation might also be the result of globalization. The changes in instructional focus opened up new debates such as approaches to teaching pronunciation, goals and methodology (Luchini, 2005). However, there are still some unresolved debates in pronunciation instruction, such as whether to focus on segmentals or suprasegmentals and whether to opt for accuracy or intelligibility.

Segmental versus Suprasegmental Components

Language involves both segmental (e.g., vowels and consonants) and suprasegmental elements (e.g., stress and intonation) (Broughton, Brumfit, Flavell, Hill & Pincas, 1980). These are alternatively referred to as "phonemic-based" and "discourse-based" (Pennington & Richards, 1986, p. 207) components. The history of ELT has witnessed heated debates over which one to emphasize/deemphasize or even which one to exclude from the syllabus. In the framework of segmental or suprasegmental debate, the bottom-up and top down approach to pronunciation have always been discussed fervently to shape pronunciation instruction. On the one hand, the bottom-up approach posits that it is right to start with phonemes and work upwards because when phonemes

are learned, other features will naturally follow, while the top-down approach assumes that suprasegmental features are the most significant elements of speech, so they should be emphasised; segmental contrasts will be learned with ease (Dalton & Seidlhofer, 1994).

Burgess and Spencer (2000) argue that phonemes, particularly consonants, can be emphasised since phonemes are significant in communication along with word stress. To comprehend syllables, it is necessary to understand and describe phonemes and to work upwards (p. 209). In terms of affective considerations, improvements in phonemes might motivate learners through a feeling of achievement or errors might result in embarrassment (Thompson & Gaddes, Online, para. 12). On the other hand, as Pennington and Richards (1986) note, there is more to pronunciation in an L2 than individual sounds. The misconception that pronunciation instruction equals segmentals resulted in a decrease in the significance attached to pronunciation because such a narrow focus failed to have a deep impact on overall pronunciation quality (Wong, 1993). However, the priority assigned to suprasegmentals, superiority of native models and whether native language teachers are essential have been challenged (Levis, 2005, p 376). Thompson and Gaddes (2005), for example, view the discarding of segmental techniques as ideologically conditioned (Online, para. 9). That is, in an era when communicative language teaching deluged the profession, discrediting the value of segmental study did not result from scientific evidence. As to the superiority of native teachers, there is evidence to the contrary. For example, the results of a recent empirical study suggested that the improvement in students' accentedness and comprehensibility was higher when they were taught by a non-native teacher although the students preferred a native to be their teacher (Li & Zhang, 2016). In another study, students' comprehensibility taught by a native-English-speaking was similar to that of those taught by a non-native teacher despite most of the students' preference for a native teacher (Levis, Sonsaat, Link, & Barriuso, 2016).

In addition, the value of teaching suprasegmentals is not free from doubt. For some suprasegmental features such as intonation, the amount of predictability is so little that some people fail to see that there is systematic variation between languages unlike individual phonemes that exhibit certain amount of regularity (Broughton et al., 1980). This basically diminishes the value of teaching suprasegmentals. Luchini (2005) argues that not all suprasegmental features are learnable in formal settings because some of them are acquired in time. Research on whether it is feasible to teach suprasegmental elements indicated that some components such as nuclear stress and intonation appear to be learnable, while some others like pitch movement and intonation of tag question are difficult to learn (Pennington & Ellis, 2000). In short, though some researchers believe that suprasegmentals contribute to intelligibility much more than segmentals do, some of these features are not easy to teach (Thornbury, 2006, p. 185).

A Discussion of the Ins and Outs of L2 Pronunciation

According to Pennington and Richards (1986), segmental phonology is not the ultimate aim because correct pronunciation of phonemes does not guarantee native-likeness or intelligibility, whereas others argue that the significance of suprasegmentals and their learnability are far from being certain (Hahn, 2004; Jenkins, 2004). As debates continued, a balanced view of segmentals and suprasegmentals have come to the fore (e.g., Derwing, Munro & Wiebe, 1998; Jenkins, 1998; Luchini, 2005; Pennington & Richards, 1986; Celce- Murcia et al, 2010; Levis & Levelle, 2009 as cited in Martins, Borges & Levis, 2016; Suzuki, 2017; Thomson & Derwing, 2015; Tsai, 2015). Pennington and Richards (1986) state that "micro-perspective on phonology needs to be complemented by a macro-focus on voice-setting and prosodic features" (p. 209). Similarly, according to Jenkins (1998), though suprasegmentals are more important for native listeners, communication between nonnative speakers entails a balance between segmentals and suprasegmentals in EIL contexts. The dual framework of pronunciation instruction links a micro-focus on speech production; that is, improving segmentals in a bottom-up fashion, and a macro-level one on speech performance; in other words, an overall emphasis on components of communication in a top-down fashion. Either of these levels can be prioritized at a certain time or they can equally be focused on (Morley, 1991), but training should always deal with sounds in a context because importance of each sound to communication and intelligibility will be apparent at discourse level (Goodwin, 2001). Finally, the shift that caused by the EIL perspective makes it obligatory to take into account intelligibility for NNSs.

Intelligibility versus Accuracy/Native-likeness

In addition to the discussions on segmentals and suprasegmentals, there has been another matter of debate that profoundly influenced pronunciation teaching goals and pedagogies. On the one hand, nativeness principle, a highly popular target among teachers in the 1960s, suggests that native-like pronunciation is both potentially acquirable and desirable. Though the effect of this principle waned due to the findings of the critical period research beginning with Lenneberg (1967), it is still felt to a certain extent. On the other hand, intelligibility principle supports the idea that what learners need for successful communication is comprehensibility of speech and the contributions of various elements of language to intelligibility of speech differ. Therefore, those elements which are essential for intelligibility should be emphasized, while those relatively unhelpful should be disregarded (Levis, 2005).

Even at the time when ardent supporters of native accents were numerous, there were some people whose words signaled the importance of meaning and the limits of acceptable pronunciation. For instance, though Hockett (1950) viewed nonnative accents as undesirable nearly seven decades ago, he stressed that learners' pronunciation need not to be an exact counterpart of native forms and that a focus on good pronunciation should not distract learners from what to say. Nonnativeness

is not a direct hindrance, yet the degree of accentedness might have a negative impact on the success of interaction and therefore might result in frustration (Lu, 2002). For this reason, learners' pronunciation should be within a range of acceptable forms. Acceptable forms in turn imply a threshold of speech intelligibility. If learners are able to communicate successfully, this means that their speech is intelligible. In this respect, it might be easier to measure intelligibility in actual communicative contexts, while such terms as perfection and native-like pronunciation are not easy to define (Morley, 1991).

Pursuing the goal of perfect pronunciation does not seem feasible. Nowadays a common contention among L2 researchers is that native-like proficiency in pronunciation is hardly achievable (Derwing & Munro, 2005; Morley, 1991; Thornbury, 2006). Therefore, according to this view, a native model is not something to be imitated as it is; it functions as a framework that helps non-native speakers have similar accents. Apart from its being difficult to acquire, perfect pronunciation might not be appropriate in some situations. For example, some native speakers might react negatively towards native-like accents or a person may wish to preserve the trace of L1 in his/her L2 speech (Morley, 1991, p. 499). This is because nowadays it is common to attach importance to people's heritage, a part of which is accent (Brown, 2007). Learners' desire to sound like a native speaker might affect the extent to which they do so. In addition, trying to acquire native-like pronunciation might result in frustration on the part of teachers and students if they fail to acquire it. It does not matter whether speakers have a strong accent as long as their speech is intelligible, particularly if they speak English for travelling, but those who have to speak English in formal and/or international settings should have intelligible and accurate speech because good speaking style facilitates communication.

Jenkins (2004) notes that "the prevailing concept of 'accent reduction,' with its tendency to regard learners as subjects for speech pathology and to exhort them to lose all traces of their L1 accent in their L2 has been questioned by those working from an EIL perspective" (p. 115). In fact, it is not possible to talk about an accent-free speech because a standard variety itself is an accent. Some learners may wish to speak in a standard accent though acquiring such an accent is not essential for intelligible speech. Moreover, an accented speech does not always cause intelligibility problems (Derwing & Munro, 2005). In a study carried out by Smith and Rafiqzad (1979), it was found that native speakers were considered the least intelligible for non-natives in natural settings. The factors that govern what is intelligible and what is not seem to be complex. For example, learners sharing the same L1 might understand each other very well despite certain amount of accentedness. Native-like speech is not a feasible goal because in a multilingual global community nonnative

accents are common and acceptable, while native accents are not relevant to intercultural interaction.

In sum, for oral comprehensibility which is commonly sought in language learning, EFL learners do not need to possess native-like pronunciation; what they actually need is intelligible pronunciation and confidence in speaking (Morley, 1991). Among the discussions concerning segmentals versus suprasegmentals and native-likeness versus intelligibility, it had taken language teaching domain a considerable amount of time to understand that pronunciation instruction was necessary for spoken intelligibility rather than native-likeness or complete denial. Throughout this time, pronunciation was in need of repair (Levis & LeVelle, 2010) and today it partially is. For example, most of the studies surveyed by Thomson and Derwing (2015) in their narrative review promoted native-likeness as the objective of instruction. In addition to these debates, recent issues tend to include a discussion of the role of technology in teaching pronunciation, which is the issue discussed in the next section.

Computer-Assisted Pronunciation Instruction

Among new developments in the field, the latest trend still includes pronunciation training and accent reduction through the use of online and offline CAPT software, which provides learners with the chance to compare their speech to that of a native speaker and track their progress. Neri, Cucchiarini, and Strik (2002) state that CAPT software enables learners to gain access to unrestricted and real-time L2 input, and such programs eliminate the constraints of classroom instruction and help learners to learn autonomously (Pennington, 1999). CAPT systems provide learners with a variety of interactive learning materials, and a great majority of instructional activities offered in computer-assisted pronunciation teaching contexts are not usually available in traditional learning environments. CAPT software has been found effective in teaching segmental elements. For example, such software was found to be good at improving segmental components of learners' pronunciation by providing visual feedback (Olson, 2014).

In recent years, there have been some software focusing on both segmentals and suprasegmentals, such as EyeSpeak, which helped Iraqi students realise their mistakes while studying pronunciation in an enjoyable way (Sidgi & Shaari, 2017). However, most CAPT software focuses on segmentals (e.g., Olson, 2014) and there is need for research and additional design work with respect to suprasegmentals (Ali, 2016). In regular classrooms, learners feel threatened and they lose self-confidence upon receiving a negative feedback or being forced to articulate a new sound (Laroy, 1995), but both PC-based and web-based pronunciation instruction environments are able to assist learners to progress at their own rate and to practise new sounds in a low-stress environment.

Famous examples for PC-based software include Pronunciation Power I and II and various other accent reduction programs such as Pronunciation Patterns and Accent Master. Earlier versions of offline software were mainly structural and accuracy oriented in the 1970s and 1980s. Although limited in scope, some of these software packages (e.g., Pronunciation Power I and II, Rosetta Stone, Learn to Speak English and so forth) provide intelligent feedback quickly (Eskenazi, 1999) through individualized feedback components, while some others with natural language processing feature make it possible for learners to interact with the computer.

One of the most significant elements of CAPT is automatic speech recognition, ASR for short (Eskenazi, 1999). The use of ASR in phonetics and phonology can be traced back to 1970s or earlier. ASR works with commercial dictation programs like Dragon Naturally Speaking (Goodwin-Jones, 2009) or they are used as a part of pronunciation software under controlled contexts. Improvements in hardware and a decrease in the price of computers have contributed to the proliferation of automatic language trainers (Eskenazi, 1999). Goodwin-Jones (2009) highlights that despite its constraints, "the promise of having a computer recognise spoken language holds so much potential for helping students improve speaking skills that ASR represents an irresistible attraction to CALL developers" (p. 5). A good ASR system should give learners the chance to see how to correct their errors (Hansen, 2006) because identifying the error without presenting solutions for correction is not enough.

With the help of ASR technology, CAPT systems are able to provide learners with instantaneous and individualized feedback (e.g., Hansen, 2006; Tanner & Landon, 2009; Mich, Neri & Guiliani, 2006; van Doremalen et al., 2016). CAPT software with ASR technology mostly provides learners with a model speech which is imitated by learners. In such systems, learners' speech is compared to native speech samples and corrective feedback is given (Hişmanoğlu & Hişmanoğlu, 2011). Then, learners are provided with auditory and/or visual feedback on their productions including waveforms, talking heads or a recast of the utterance. Presenting the feedback component in game-like formats provides learners with attractive contexts to practise (Dalby & Kewley-Port, 1999). Corrective feedback through graphic representations enables learners to be autonomous and to progress at their own rate (Thompson & Gaddes, 2005, para. 19) and there is no limit to how many times learners can try. A more innovative method involved the use of a dialogue game to provide individual feedback (Su, Wu, & Lee, 2015).

Another significant application of CAPT is that it is possible to produce speech from a given text. Computer software that is capable of doing this is called text-to-speech synthesizers. Such software is widely available on the Internet although fully functional versions of most of these computer programs entail registration at a certain cost, and paid versions offer a wide range of

voices and better voice quality. Free or trial versions also work to a great extent. They are especially helpful when there are no native speakers to provide learners with a model to follow. Text-to-speech could boost the amount and quality of input and provide additional materials for classes (Liakin et al., 2017). In a study on African students learning Turkish (Güçlü & Yiğit, 2015), text-to-speech software was found to be effective despite poor intonation and distorted sound. However, quality of such software is increasing as new methods are being used in speech synthesis. For example, in Meng, Wu, Jia, Meng, & Cai's study (2014), the use of hidden Markov model was found to improve the naturalness of speech. It seems that future developments will further improve the quality of artificial speech.

CAPT systems can be used as a complement to classroom teaching to increase practice time (Eskenazi, 1999) or they can be used solely as the only system to teach pronunciation. Moreover, learners can progress at their own rate and they make decisions about what and when to study (Murray, 2007; Goodwin-Jones, 2009). In CAPT, the traditional role of the teacher as a knowledge transferor is no longer possible because the teacher functions as a guide; such a change in role might be threatening for some teachers, while it might be a good opportunity for some others to put their constructivist views into practice (Murray, 2007).

Despite some positive developments, there is still need for further advancements in ASR in computer assisted pronunciation teaching. This is supported by a recent study in which Golonka, Bowles, Frank, Richardson and Freynik (2014) reviewed 350 studies on CALL issues to discuss the effectiveness of technology on learning and concluded that although the use ASR proved highly beneficial, there was a long way to go in this area. Learners with a variety of accents might not be recognised by ASR systems since they are mostly designed with native speaker speech samples. The degree of tolerance might have a deep impact on what learners can gain out of such systems. What should be considered as acceptable pronunciation in CAPT should be estimated carefully since setting higher standards might discourage learners (Goodwin-Jones, 2009) or lower standards might result in incomplete or erroneous learning.

Another problem is erroneous feedback (Eskenazi, 1999; Neri, Cucchiarini & Strik, 2006; Neri et al., 2002) or incomprehensible feedback. CAPT systems might detect errors correctly, but they may fail to give learners the right option to correct errors. Complex diagrams, spectrograms and incomprehensible symbols which are actually intended for experts might mean little for learners with no phonetic training. Students should be able to comprehend the feedback provided with ease; moreover, it should tell the learner where the mistake is and how to correct it. In addition, most CAPT software packages have been created without sound pedagogical basis and most of them focus on only segmentals, and suprasegmental features of language are neglected in such programs

(Seferoğlu, 2005; Hişmanoğlu & Hişmanoğlu, 2011). In addition to these shortcomings, most CAPT software packages have been developed with commercial concerns in mind to attract a wider variety of audiences (Hansen, 2006). CAPT developers should consider research findings concerning intelligibility and functional load (Derwing & Munro, 2005) and identify pedagogical objectives for a particular group of learners.

Pronunciation Instruction in Teacher Education

Paradigm shifts have resulted in uncertainty about the place of pronunciation in TESL/TEFL (Pennington and Richards, 1986). As a result, pronunciation was marginalized within applied linguistics. As pronunciation was marginalized in TEFL methodology, it is normal for teachers to have little or no training in pronunciation (Derwing & Munro, 2005). As Tanner and Landon (2009) note, teachers' lacking formal training in pronunciation causes difficulties for learners. Lack of formal teacher training in pronunciation results in either no instruction at all or little of it with only prominent features of learners' accent; the effect of these features on intelligibility is not considered (Derwing & Munro, 2005). This is the commonly encountered situation around the world. For example, teachers not having enough knowledge on pronunciation usually neglect this area of language in Australia (MacDonald, 2002).

According to Pennington and Richards (1986), pronunciation instruction "involves a complex interaction of perceptual, articulatory, and interactional factors" (p. 208). Moreover, teaching such a skill is rather challenging as it compels teachers to make difficult pedagogical decisions. Therefore, English teachers should be equipped with both theoretical and practical understanding of how pronunciation should be taught to do so. They should be able to make informed decisions about what software, course books and activities to use, and how to analyse learners' pronunciation problems and to utilise research findings. Otherwise, difficulties in pronunciation instruction coupled with their lack of training will eventually fail them. It is generally assumed that teachers with enough training on pronunciation often have positive attitudes, while those with little training are most often observed to exhibit certain level of dislike for it. Such a negative attitude seems to affect language learners who are likely to be discouraged from the learning process if the teacher has a heavily accented speech with poor intelligibility. Moreover, the amount of time allocated for pronunciation is mostly teacher dependent, and it is directly affected by attitudes to teaching pronunciation (Hişmanoğlu & Hişmanoğlu, 2010). In short, the way teachers view pronunciation has a deep impact on the extent to which they teach pronunciation or they achieve their aims.

As for the focus of instruction, it includes phonemes, features of connected speech, stress, rhythm and intonation (Jenkins, 2004). The focus of attention is, as frequently stressed, intelligible

pronunciation. Correct pronunciation implies an intelligibility threshold; in other words, communication is not possible if learners do not go beyond a certain level of attainment in pronunciation no matter how proficient they are in grammar and vocabulary (Mich et al., 2006; Celce-Murcia, et al., 1996; Hinofotis & Bailey, 1980).

Keys to Success in Pronunciation

Certain amount of phonetic and phonological awareness is necessary to acquire self-monitoring and self-correction skills, both of which are necessary for autonomous pronunciation learning. To equip learners with self-monitoring in pronunciation, consciousness raising activities that help learners recognize the differences between L1 and L2 phonology are more beneficial than error correction (Jones, 1997). Among potential strategies are "critical listening, compiling learning portfolios, utilizing CALL resources and studying in pronunciation-specific classes" (Thompson & Gaddes, 2005, On-line, para. 17). Burgess and Spencer (2000) recommend the use of games, puzzles and the use of phonetic symbols to teach pronunciation as a part of awareness raising activities. To help learners to acquire self-monitoring skills, teachers should try to develop noticing in their classes by directing students' attention to specific structures in the input (Luchini, 2005). Learners should be able to make a comparison between their interlanguage forms and the target ones. On the other hand, teachers should be equipped with the ability to analyse learners' speech and use this analysis for pinpointing problematic areas.

Pronunciation training may start by addressing various pronunciation problems at segmental level that result in accented speech because various types of segmental errors may have differential impact on the intelligibility of nonnative speech (Rogers & Dalby, 1996). Training should focus on the production and perception of such sounds to improve intelligibility (Rogers, Dalby & DeVane, 1994) because learners may have problems in both production and perception of the target sounds. Wells (2005) observes that learners' perception of sound contrasts is often neglected, but teachers have to teach how to produce and recognize minimal pairs; there is no way to avoid minimal pair work. When studying pronunciation, according to Burgess and Spencer (2000), EFL or ESL learners should start with suprasegmental features, while those in teacher training programs should adopt a bottom up approach; that is, from segmental components to suprasegmentals. For adult speakers to be understood better in professional settings, perceptual and productive vowel contrast training and instruction in stress patterns work well (McCombs, 2006). In short, the latest trend is to favour a balanced approach to teaching pronunciation because intelligibility problems are natural results of problems related with segmental and suprasegmental features of pronunciation (Celce-Murcia, et al., 1996; Goodwin, 2001). Moreover, there seems to be no case at all in which one possesses poor sound production and perfect intonation.

Moreover, it is wise to integrate pronunciation in the coursework rather than presenting it in isolation (Broughton et al., 1980; Brown, 2008). Learners should be given the chance to practise pronunciation through meaningful tasks, practise alone and before the class, focus on an international audience and selected target features, get individualized feedback from both peers and the teacher (Walker, 2005). However, it might be difficult to design communicative tasks to teach pronunciation. Therefore, drills can sometimes be used, but teachers can mostly utilise games, jokes, songs and other materials that render a pronunciation practice activity meaningful. Learner/teacher-generated content could be used to arouse interest in instructional materials.

Besides the significance of contextualisation, there are several other important issues. For example, the difference between the activities for perception and those for production and the concepts of accuracy and intelligibility should be taken into consideration when designing instructional materials. How these elements or dimensions of pronunciation are viewed determine the nature of pronunciation pedagogy. Moreover, teachers should work on a teachability and learnability scale and they should identify feasible goals and emphasise only those teachable and learnable items which are essential for intelligibility (Dalton & Seidlhofer 1994; Derwing & Munro, 2005; Luchini, 2005). As it is often recommended (e.g., Broughton et al., 1980), learners should listen to different accents (both native and non-native ones). This is basically necessary for perception training and strongly recommended in EIL and ELF communication as speakers have to interact with people with diverse language backgrounds. Finally, learners communicate in English whenever and wherever need arises, so it is not wise to ask them to make a choice between EFL and EIL since they need both of these (Wells, 2005). Levis (2005), however, states that LFC is not applicable in EFL contexts because learners sharing the same L1 direct themselves towards the L2 pronunciation which is deeply affected by their L1, but learners sharing different L1s seek international intelligibility.

Levis (1999) suggest that teachers should be familiar with common standard dialects of English; they should encourage their learners to be aware of different varieties and they should be informed that it is wise to expose learners to different models in addition to the teacher's accent and those available in the audio materials that accompany the textbooks (Online, para. 8). Perceptual training or listening comprehension should include various English accents, while productive training and daily language use in the classroom should consist of only one variety (Yuzawa, 2007). Following a standard accent that would function as a model could be of great help to decide on correct pronunciation. In this way, language teachers get immune to being lost in different variations. In acquiring a NES accent, phonology should function as a theoretical support in teaching pronunciation in ELT departments.

Future Trends for Instruction and Research

Despite much discussion going on about the role of technology in pronunciation instruction, there aren't empirical studies with results that can be generalized (Murray, 2007). Moreover, Goodwin-Jones (2009) complain that although such software packages are popular, researchers opt for writing reviews about them rather than evaluating their value through empirical studies. This is mostly true for language learning software in general and pronunciation-oriented software in particular. Similarly, Seferoğlu (2005) stresses the importance of integrating technological tools into pronunciation teaching especially in contexts where L2 input is inadequate, so that learners can get a chance to practise language and interact with each other.

Some researchers (e.g., Wang & Munro, 2004) appeal for studies in computer-based training of a wider range of vowel contrasts. Hişmanoğlu (2010) recommends that prospective studies on online pronunciation pedagogy and materials should focus on training teachers on the use of online materials and whether to use a particular material in an online or traditional form, appropriate online materials for various proficiency levels. Similarly, Goodwin-Jones (2009) suggests conducting research in traditional and computer-assisted pronunciation training (p. 8). Another interesting issue that can form the basis of future studies can be the integration of Web 2.0 tools into PC software. In other words, the users of PC software can form online learning communities as an extension of offline pronunciation study. This could be particularly beneficial because, as Veselovska (2016) stresses, web-based technology could be used to design and present learning materials. Such studies can focus on how PC software and online tools can be used in cooperation. Prospective studies on pronunciation instruction could also deal with (a) suprasegmental elements, (b) integration speech recognition (accordingly automatic feedback) in learning management systems, and (c) teaching pronunciation through teacher-to-learner and learner-to-learner synchronous communication.

Finally, the research on issue of learner attitudes has provided mixed results to date. Some researchers found that those learners with a positive attitude towards native-likeness performed better, while some others found no correlations between success in pronunciation and positive attitudes towards native-likeness. Attitudes and motivation are closely related; positive attitudes are expected increase motivation. However, there is not strong evidence to support this. Therefore, along with attitudes, as Brown (2008) notes, such learner factors as motivation, L1 background, personality that are argued to play a significant role in success in pronunciation learning should be researched. In other words, the relationship between success in pronunciation and each of these factors should be analysed through empirical research studies.

Concluding Remarks

The methodological history of pronunciation instruction in English has witnessed some opinion- rather than evidence-based practices, such as abandoning of instruction entirely, disregarding segmentals or prioritising nativeness. In addition, most pronunciation instruction models have often found themselves confronted with fierce criticisms and unsubstantiated claims. In the last several decades, two significant developments have shaped the way pronunciation is taught and learned. First, considerable effort has been spared to incorporate computers and the Internet to instructional environments, yet most of it focused on segmental aspects of pronunciation, probably because studying suprasegmentals mostly entails a human teacher or peers to interact with. However, ASR technology has been developing fast and prospective practices will include more of suprasegmental elements in digital learning materials and research into CAPT. Secondly, the introduction of the ELF perspective (Jenkins, 1998; 2000; 2002) into pronunciation instruction has apparently led to a paradigm shift. To put it bluntly, its impact has been so enormous that this perspective seems to permeate current research into pronunciation, particularly with respect to what to teach and whether to prioritise accuracy and intelligibility for more successful international communication.

Globally considered, discussions on what elements of pronunciation to teach and how to do it have been inconclusive for the most part, yet they have brought about some important guidelines to follow. These include establishing a balance not only between accuracy and intelligibility but also between segmental and suprasegmental components, presenting pronunciation in context, raising students' awareness and using technology for individualized instruction. Following these guidelines could assist teachers in clearing the ground in pronunciation instruction, which has been a battleground for various approaches and methods.

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