Oray's Publications
Impact Factor: 6.67(SJIF) **Research Journal Of English (RJOE)**Vol-7, Issue-3, 2022
www.rjoe.org.in An International Peer-Reviewed English Journal ISSN: 2456-2696
Indexed in: International Citation Indexing (ICI), Cite factor, International Scientific Indexing (ISI), Directory of Research Journal Indexing (DRJI) Google Scholar, Cosmos and Internet Archives.

The Effect of Phonetics Instruction on Undergraduate Learners' At EFL-University

Dr.Prabhakar Vadlamudi, EFL-University, India.

Article Received: 09/06/2022, Article Accepted: 25/07/2022, Published online: 26/07/2022,DOI:10.36993/RJOE.2022.7.3.18

Abstract

Traditional pronunciation instruction and instruction in L2 phonetics have been shown to improve learners' L2 accent in some, though certainly not all, cases. Learners in under graduation courses have demonstrated modest improvement in the pronunciation of some L2 phones after receiving such.

Keywords: phonetics, instructions, undergraduate, learners, EFL-University.

Introduction

Provided a review of studies that measured the effect of general language instruction and phonetics (or "pronunciation") instruction for various second languages. The current research focuses specifically on English, the target language of the present study. The target phones addressed in the recent survey were English consonantal phones. These phones were chosen because they are widely recognized as late acquired by native speakers of English (e.g., Castino, 1992; Dalbor, 1997; Díaz-Campos, 2004; Face & Menke, 2010; Reeder, 1998; Rose, 2010; Simões, 1996; Waltmunson, 2006; Zampini, 1993) and because they have been examined repeatedly in investigations of pronunciation instruction (Castino, 1996; Elliott, 1995, 1997; González-Bueno, 1997; Lord, 2005). What follows is a description of the phonetic properties of the target phones, a comparison of the phones with analogous English telephones, and a summary of the empirical evidence regarding English speakers' acquisition of the phones. Therefore, the ensuing depiction of the target phones will focus on differences between English and L1 and will review only studies that recruited English speakers learning English in instructed settings. The results of studies measured learners' phonological development regarding the target phones. The phonemes /p, t, k/ are aspirated in English when they occur in syllable-initial and stressed syllables, creating the allophones [ph, th, ch]. In L1, however, /p, t, k/ are not aspirated. The underlying difference is in voice onset timing (VOT), which is the time between the release of the stop closure and the start of vocal fold vibration. Long VOT values are associated with aspiration (Hualde, 2005). In L1, /p, t, k/ are realized with short VOT, while in English /p, t, k/ in stressed syllables are realized with long VOT. It has been reported that the average VOT, in milliseconds, is 4ms for Telugu [p] as compared to 58 ms for English [ph], 9 ms

for Telugu [t] as compared to 70 ms for English [th], and 29 ms for English [k] as compared to 80ms for English [kh] (Lisker & Abramsom, 1964). Native speakers of English tend to aspirate /p, t, k/ in stressed syllables when speaking English, leading to a noticeable foreign accent (Hualde, 2005; Lord, 2005). For instance, the advanced learners in Lord's (2005) study produced an average VOT of 29 ms for /p/, 30 ms for /t/, and 43 ms for /k/. Though the discrepancy between learners' VOTs and target-like VOTs may seem small, listeners are pretty sensitive to variations in VOT and have been known to detect "accented" speech with only 30 ms of speech on which to base their judgments (Flege, 1984).

The English and Telugu phonemes /b, d, and g/ also contrast in terms of VOT. However, the studies that investigate learners' production of the voiced English stops have paid much less attention to VOT and much more attention to the allophonic variation of /b, d, g/ with [β̞, ð̞, ɣ̞] 5. In Telugu, after a pause or a nasal, as well as after /l/ in the case of /d/, the phonemes /b, d, and g/ are realized as stops. Still, in all other contexts, they are recognized as the approximants [β, ð, ɣ], which are sometimes less precisely described as fricatives having undergone a process of spirantization (Hualde, 2005). Native speakers of English tend to produce stops for Telugu /b, d, g/ in all phonological environments and avoid pronunciation of [β, ð, ɣ], resulting in a noticeable foreign accent. Many learners fail to produce the bilabial ([β]) and velar ([ɣ]) approximants, which are not part of their English repertoire, and fail to assign [ð] allophonic status and produce it in the appropriate contexts in English. Second-semester learners (n=18) have been reported to produce [β, ð, ɣ] in only 16%, 5%, and 12% of required contexts, respectively (Zampini, 1993). By the fourth semester of English instruction, learners (n=15) made some improvement but still produced [β, ð, ɣ] infrequently (24%, 7%, and 18%, respectively) in the required contexts (Zampini, 1993). The English orthotics/ɾ/ (an alveolar tap) and /r/ (an alveolar trill)7 are typically late acquired by English speakers. Substitution of /ɹ / for Telugu /ɾ/ or /r/ is noticeably "foreign," yet it is a pervasive feature of English speakers' production (e.g., Elliott, 1997; Face, 2006; Major, 1986). The trill does not exist in English and requires substantial articulatory force to produce, making it difficult for English speakers (Lord, 2005), which perhaps explains why learners tend to have taps with greater accuracy than trills (e.g., Reeder, 1998; Waltmunson, 2006). Relatively novice students produce the trill accurately about 10% of the time (Reeder, 1998), advanced undergraduate students produce the trill accurately about 25% (Face, 2006) to 55% (Reeder, 1998) of the time, and even professionals with more than 25 years of Telugu -speaking experience do not always produce target-like trills (Face & Menke, 2010). On the other hand, production of the English tap is generally less problematic for L2 learners (e.g., Reeder, 1998; Waltmunson, 2006), though differentiation between the fixture and the trill is still problematic for learners at least through the eighth semester of college

study. An alveolar tap does exist in English, and it is produced as an allophonic variant of /t/ and /d/ in post-tonic intervocalic positions in words such as letter and ladder. Thus English speakers' difficulty with the tap is thought not to be articulatory but perceptual. However, most investigations of tap and trill have focused on learners' production, leaving unanswered the question of exactly how L2 English learners perceive these phones.

Empirical Studies of Instruction and English L2 Pronunciation Several researchers have set out to measure the effect that explicit instruction in English phonetics and phonology can have on learners' pronunciation of difficult-to-acquire English phones. Summarizing those studies and each study's relevant methodological characteristics and results will now be presented.

Statement of the Research problem

A role in English speakers' accents in L1 is challenging to acquire. Research also suggests that some of these phones are amenable to instruction. The present study's focus differed from the studies attempting to evaluate traditional pronunciation instruction. The present study assessed the effectiveness of one foundational education component: the explicit teaching about L1 phonetics and phonology. A group that received lessons on L1 phonetics and phonology was compared to a control group that did not. Exposure and attention to the target phones, pronunciation practice, and feedback were held constant, so the main difference between groups was explicit knowledge of L1 phonetics and phonology. In other words, the present study attempted to compare pronunciation instruction with another viable methodological choice that had the potential to be equally advantageous for improving learners' pronunciation.

Literary reviews:

Lord (2005) claimed that students showed demonstrable improvement in VOT reduction. However, Lord (2005) did not include a control group in this study, 30 and so it would be premature to conclude that the improvements made in pronunciation were the direct result of receiving instruction in English phonetics and phonology. Lord (2010) investigated the combined effects of immersion and education on L2 pronunciation. Learners (n=8) were enrolled in a 2-month summer program in Mexico. Half of the learners had taken an English phonetics course, and half had not. Learners were reading a list of 60 nonce words with ten tokens of each of 6 target phones: /b, d, g/ and [β, ð, ɣ]. Signalize software was used to detect occlusions in the recorded data, i.e., whether learners produced stops in contexts that required approximants. Participants with prior phonetics instruction made the target phones more accurate on the pretest. Both groups improved their pronunciation accuracy during the 2-month immersion experience. The improvement was more significant (20.1% gain) for the group with prior phonetics instruction than the group without (2.8% gain). The data suggested that the combined effect of education and extensive exposure to native-sounding speech was more significant than the effect of either alone. However, these differences

could not be tested for statistical significance due to the small number of participants enrolled in the study.

Chung (2008) compared explicit, implicit, and noticing instruction for improving Chinese EFL learners' production of English word stress and found that all groups improved equally on the posttest. Still, the explicit group was significantly better in the delayed posttest. Macdonald, Yule, and **Powers (1994)** found no significant difference in the pronunciation changes of Chinese EFL learners exposed to traditional drilling activities, self-study with tape recordings, or interactive activities. However, all methods were superior to a no-intervention control condition. **Moyer (1999)** reported that feedback at the segmental and suprasegmental levels predicts accent for English-speaking German learners. De **Bot (1983)** said Dutch EFL learners benefited from visual feedback (seeing pictorial representations of pitch contour) in learning English intonation.

In contrast, auditory feedback alone (hearing themselves) was detrimental, yet Ducate and **Lomicka (2009)** found no benefit of repetitive practice and feedback in their 16-week podcasting 33 experiments with German and French learners. Researchers who advocate for pronunciation instruction lament that textbook authors, instructors, and administrators are reticent to include pronunciation instruction in the FL curriculum because they view it as overly form-focused and in opposition to their communicative, meaning-focused methodology (e.g., **Arteaga, 2000; Morin, 2007).** It has been suggested **(Isaacs, 2009)** that pronunciation instruction should be better integrated into communicative activities. Alternatives for bringing learners' attention to the L2 sound system through targeted exposure, focused listening, dictation, transcription, or other actions need to be seriously considered and empirically tested if explicit phonetics instruction is not a viable methodological choice for some learning contexts. In their report of an Interagency Language Roundtable investigation, **Higgs and Clifford (1982)** found an Un-shaped curve in terms of pronunciation's relative contribution to assessments of global language proficiency. Pronunciation is most important in the early stages of L2 acquisition and the more advanced settings, though its importance wanes in 34, the intermediate step.

Research Questions and Hypotheses

The present study attempted to contribute to the existing research by evaluating the explicit teaching of L2 phonetics and phonology as separate from the other putatively beneficial aspects of pronunciation instruction and by comparing the effects of education across curricular levels.

The research questions relating to pronunciation accuracy were: 1. Does L2 phonetics and phonology instruction improve learners' ability to produce L2 phones? Though prior studies did not directly compare learners of different curricular levels, developmental readiness has figured prominently in theories of L2

phonological acquisition, so it was hypothesized that the effectiveness of instruction would vary by target phone and would interact with learners' curricular level in possibly complex ways.

Research Methodology

Context Participants (n=90) randomly selected for this study were enrolled in an integrated BA as a foreign language course at EFL-University in Hyderabad. This university's English curriculum consisted of introductory language courses, conversation courses, grammar and composition courses, and various upper-division literature, film, media, civilization, translation, and interpretation courses. No course was dedicated to linguistics in general or phonetics/phonology. English courses at this university one semester (16 weeks) and required either four weekly contact hours (first-year sequence) or three weekly contact hours (all others). Seven intact classes participated: three introductory, two intermediate, and two advanced. Five instructors taught these classes (two instructors taught multiple sections).

Participants A total of 124 English learners were randomly selected. Of those, 14 missed multiple sessions or withdrew from the class, and 15 were eliminated from the analysis for not meeting background criteria. Participants were included in the analysis ten and had not received instruction in English phonetics and phonology before the study. As a result, 95 total participants were included in the analysis, 52 female and 43 male. Of those, 86 completed all four sessions. Participants' mean age was 22.06 (range 18-44, mode = 19). The mean age at which they began learning English was 15.66 (range 11 – 40, mode = 13). The curriculum allows students flexibility in course sequencing. Still, most students enrolled in these courses were in their first year, the second year, or the third year of students mother tongue is not english study, respectively. Therefore, to avoid the term "advanced," which refers to a curricular sequence and not linguistic or communicative competence, this study will henceforth refer to participants as first-year, second-year, and third-year learners. According to their reports on the background questionnaire, the first-year students had completed on average 2.26 (year-long) high school courses and 0 (semester-long) college courses in English.

Experimental Design The study was a pretest, posttest, and delayed posttest design. Participants were randomly assigned to one of two instructional conditions: experimental or control. Intact classes came to the language lab during their regular class time. As students entered the lab on the first day, they were directed to sit at the next available computer station. The computer stations were set up in an alternating pattern to deliver either the experimental or the control treatment. Students were told that their assigned activities might look different from their neighbor's activities on any given day. Still, they were not told whether they were in the experimental or control condition. Students sat at the same computer station during all the study sessions. All aspects of the study were undertaken during regular class time.

The class instructors were present during most sessions but did not participate in or lead the instruction. The experimental group (+PI) received phonetics instruction via four online modules that explicitly taught English phonetics and phonology aspects. The control group (-PI) watched video vignettes of Telugu native speakers and took dictation but did not receive phonetics instruction. All sessions were completed within one semester of teaching. The class meeting times overlapped, so not all classes could complete the study concurrently. The syllabi and textbooks did not contain lessons focused on phonetics or pronunciation. All the instructors reported that they typically listened for learners' pronunciation errors and corrected them occasionally during regular class meetings, but they emphasized communication and fluency more than pronunciation accuracy. Instructors were not told which English phones were targeted in the study.

Phonetics Instruction (+PI) The phonetics instruction group (+PI) completed four computer-based, interactive modules focused on: 1) An introduction to articulatory phonetics, 2) the occlusive consonants /p, t, k/, 3) the occlusive consonants /b, d, g/ and their approximant variations Week 1 Background Questionnaire Discrimination & IdentiBication Pretests Week 2 Instructional Module 1 Questionnaire Instructional Module 2 Questionnaire Module-specific Discrimination & IdentiBication Posttests Week 3 Instructional Module 3 Questionnaire Instructional Module 4 Questionnaire Module-specific Discrimination & IdentiBication Posttests Week 6 Discrimination & IdentiBicaion Delayed Posttests Post-study Questionnaire [β, ð, ɣ], and 4) the liquid consonants /ɾ, r/. All learners completed the introduction to articulatory phonetics first, but the order of the other three modules was counterbalanced. After each module section, there was a brief multiple-choice comprehension check. Learners received feedback about which items they answered incorrectly, and they had to re-take the assessment and answer all items correctly before proceeding to the next section. Appendices 2.1 – 2.9 contain screenshots displaying all the information and activities in one example module. 41 Learners spent between 15 and 40 minutes on each module.

Control Instruction (-PI) Learners in the control group (-PI) completed self-paced, computer-based, interactive online modules that exposed them to the target phones in amounts roughly equivalent to the +PI and gave them practice. Still, they received no explicit instruction in phonetics and phonology. The vignettes are free and open to the public (http://laits.utexas.edu/spe/). Learners completed a dictation as they watched the videos. On average, the control group was exposed to the same unique tokens as the target phones.

It was thought that the dictation exercises could be fairly compared to the phonetics instruction in that both types of instructional modules presented the target phones in roughly equal amounts, required that learners focus their attention on the

sounds (form), and provided pronunciation practice with identical feedback conditions. Time on task was also equivalent across +PI and –PI groups

Production Test th**e** perception tests will be described. Production Test Materials production test consisted of a 28-item list of words and phrases those participants read aloud. The test items are presented with graphemes representing the target phones bolded. The target phones were not bolded in the list given to students. Researchers investigating L2 production typically use reading tasks (e.g., Lord, 2005), prompts for spontaneous speech (e.g., González-Bueno, 1997), or a combination 44 of both (e.g., Elliott, 1995, 1997). A word list was chosen so that beginning learners would not be cognitively overburdened by the task demands and instead would be able to focus mainly on pronunciation during the test. Of the 28 items, 20 were commonplace words selected from the active vocabulary lists .in the first two chapters of the textbook were used in the introductory course so that all learners would be equally familiar with them.

Additionally, each target phone was included in one infrequent English word (e.g., calaba [was soaking]) that paired the target phone with the vowel [a] to have some words with which all learners would be equally unfamiliar. During the pretest and delayed posttest, participants were asked to translate the items to assess their knowledge of these words. Indeed, most participants correctly translated the "familiar" on the pretest, and no participants translated the "unfamiliar" words precisely on the posttest9. 2.2.6.2 Production Test Administration Procedures Learners were seated at individual PC stations in the language lab as they completed all instructional modules, tests, and questionnaires. They wore noise-canceling headphones with attached microphones. KHz and sampling size of 16 bit, with the software package Sanako. NS participants completed the study components at a quiet location convenient (e.g., their home or a local library). They were recorded using Praat software at 44 kHz and 16-bit sampling rates. He was unaware of the objectives and hypotheses of the research study. The sound files were coded so that the rater was unaware of learners' matriculation level, instructional condition, and test time. Analyzing the approximately 400 sound files in a random order, the rater transcribed the files into IPA and rated the tokens of target phones. In cases where the acoustic evidence in the spectrogram and waveform was not clear, e.g., due to clipping, the rater based his decision on acoustic properties alone. The approximant and rhotic target phones were assigned 1-3 points for every token that could be heard clearly. Only a few productions were not posted issues because the participant misread the word and therefore did not include the target phone or 46. The sound quality was poor due to background noise, participant whispering, etc. Productions were assigned 3 points if they demonstrated all the auditory and acoustic properties that are associated with their English pronunciation, 1 point if they showed all the hearing and acoustic properties that are related to an English accented pronunciation, and 2 points if they

demonstrated a combination of the auditory and acoustic properties of both languages. To construct this rating scale, the researcher and the independent rater discussed these properties at length while analyzing a representative sample of English learners' and NSs' recordings for each test item. Lists the relevant properties studied for each phone. Display spectrograms illustrate the acoustic evidence supporting a rating of 3 points, 2 points, and 1 point for each target approximant and rhotic phone.

The stop consonant target phones were not rated. Instead, the researcher measured the VOT of /p, t, k/ using evidence from the waveforms and wide band spectrograms. The VOT was calculated from the release of the stop closure to the first glottal pulse, indicating the beginning of voicing. The VOT measure was considered objective and reliable, so a second-rater was not used. Due to the nature of the word reading task, intra-speaker and inter-speaker differences in speech rate were considered immaterial and were not controlled for. VOT data will be presented separately from approximant and rhotic rating data in the results section. To make comparisons across target phones and to calculate an 8-phone aggregate score, the VOT data were also transformed into a 1-3 points rating. This transformation was performed on each test item separately, utilizing the VOTs produced by NS to determine the categorical ratings as follows: 3 points were assigned to VOT values that fell within the NS range, i.e., no longer than the longest VOT produced by any NS on that test item; 2 points were assigned to VOT values that were no longer than the NS maximum plus the value of the NS range, and 1 point was given to all others. For example, for the test item para, the VOT values produced by NS had a minimum of 5ms, a maximum of 21ms, and thus a range of 16ms. For para, then, learner-produced VOTs of 0 – 21ms were assigned 3 points, VOTs of 22 – 37 ms were given 2 points (because 21+16=37), and VOTs longer than 38 ms were given 1 point. Scores on the pretest, immediate posttest, and delayed posttest were calculated by adding the points received by each learner for the four items relevant to each target phone on each test. Finally, overall scores were calculated for each test administration by adding the scores on all target phones. In the case of the immediate posttest, this overall score of 54 encompassed scores from sessions 2 and 3 since learners completed half of the instructional modules, followed by production posttests during sessions 2 and 3.

Questionnaires A background questionnaire asked English learners to report their language learning experiences and basic demographic information. The background questionnaire is presented. The background questionnaire given to native speakers of Telugu is submitted. Post-instructional module questionnaires asked learners to evaluate each module's interest, difficulty, helpfulness, and usefulness on Likert scales of 1 – 10 and provide additional comments. The post-instructional module questionnaire is presented. The post-study questionnaire asked learners to

evaluate the comprehensive instruction with the same categories and assess their performance and improvement on the discrimination and identification tests, which will be discussed below. The post-study questionnaire is presented.

Results Comparison of +PI and –PI Groups' Demographic and Language Background The background questionnaire collected information about learners' demographic and language backgrounds. Learners reported their sex, current age, and age at the onset of English learning. The number of native speakers who taught English courses in high school and college,11 times spent outside of class using Telugu, and time spent using. They also reported on languages other than English: those they had studied formally, leaned to high proficiency, and been exposed to informally. The +PI and -PI groups were compared on these demographic and language background variables at each matriculation level (1st, 2nd, 3rd year) using independent T-tests. No significant differences between the +PI and -PI groups were found (all $t < 2.27$, $p > .05$), with just one exception. The third-year +PI learners spent more time abroad (mean 91.85 hours, SD 101) than the third year –PI learners (mean 12.26 hours, SD 22.04) ($t(17) = 2.30$, $p = .03$, CI 6.64 – 153). Time spent abroad was calculated by multiplying the number of weeks spent abroad by the approximate number of hours spent each week using English. However, a closer look at the data showed that the group difference was related to just three individuals in the +PI who had immersion experiences of 2 weeks, one month, and two months, respectively. It was decided that these participants would be kept in the analysis.

Average Rating (1-3 points) of Approximant and Rhotic Phones

	First Year		Second Year		Third Year		
	+PI (n=19)[13]	-PI (n=20)	+PI (n=17)	-PI (n=9)	+PI (n=10)	-PI (n=8)	NS (n=10)
	x (*s*)	*x* (*s*)	*x* (*s*)	*x* (*s*)	*x* (*s*)	*x* (*s*)	
[β] Pre	1.33 (.34)	1.24 (.28)	1.44 (.44)	1.25 (.22)	1.35 (.43)	1.47 (.59)	2.61
Post	1.24 (.42)	1.13 (.36)	1.24 (.36)	1.11 (.33)	1.6 (.52)	1.38 (.35)	
Delayed	1.24 (.27)	1.31 (.38)	1.32 (.26)	1.28 (.40)	1.4 (.39)	1.38 (.40)	
[ð] Pre	1.12 (.24)	1.19 (.24)	1.51 (.61)	1.27 (.35)	1.43 (.41)	1.56 (.46)	2.78
Post	1.11 (.25)	1.09 (.17)	1.35 (.42)	1.24 (.32)	1.17 (.25)	1.66 (.64)	
Delayed	1.11 (.28)	1.23 (.32)	1.52 (.43)	1.31 (.37)	1.35 (.47)	1.83 (.61)	
[ɣ] Pre	1.29 (.33)	1.61 (.55)	1.54 (.53)	1.19 (.27)	1.45 (.54)	1.78 (.66)	2.43

	Post	1.35 (.29)	1.38 (.39)	1.46 (.49)	1.31 (.27)	1.24 (.36)	1.81 (.68)	
	Delayed	1.41 (.45)	1.58 (.45)	1.56 (.39)	1.44 (.35)	1.58 (.55)	1.69 (.65)	
[ɾ]	Pre	1.78 (.78)	2.13 (.68)	2.47 (.64)	2.67 (.47)	2.21 (.75)	2.66 (.38)	2.89
	Post	2.06 (.74)	2.38 (.64)	2.49 (.47)	2.78 (.34)	2.45 (.73)	2.59 (.67)	
	Delayed	1.86 (.66)	2.16 (.70)	2.51 (.54)	2.69 (.66)	2.28 (.73)	2.69 (.70)	
[r]	Pre	1.74 (.53)	1.8 (.42)	2.03 (.52)	2.39 (.52)	2.03 (.70)	2.25 (.23)	3.00
	Post	1.94 (.51)	1.95 (.37)	2.15 (.56)	2.37 (.54)	2.15 (.66)	2.38 (.27)	
	Delayed	1.82 (.56)	2.01 (.55)	2.15 (.61)	2.09 (.45)	2.1 (.65)	2.32 (.54)	

Inter-rater Reliability Only one rater measured the VOT of the stop consonants /p, t, and k/ because the VOT measurement was considered relatively objective and reliable. For the approximants and orthotics, the researcher randomly selected 10% of the data (770 target phone productions) to re-rate. There was inter-rater agreement on ratings for 95% of those data (Cronbach's alpha of .96), so the Rating was deemed reliable. 2.3.3 Descriptive Statistics The average VOTs produced for the target phones /p, t, k/ by learners and NSs are presented. Note that NSs in this task produced longer VOTs than previously reported (e.g., Lisker & Abramson, 1964; Poch, 1984). Several factors may have coincided to produce the relatively longer VOTs. Task effects may have been an issue, as the task involved word reading rather than continuous speech and all phone items were word-initial (Torreblanca, 1988). Also, these bilingual speakers' VOTs in English may be longer due to the influence of English phonology (Flege, 1981; Williams, 1980).presents the average ratings assigned to learners' and NSs' productions of the approximant and rhotic target phones. Note that NSs' average ratings range from 2.43 - 3.00. Recall that tokens were assigned 3 points only if they fit all the auditory and acoustic criteria of an "idealized" realization of the target phone. The NS participants were bilingual speakers with dialectal differences. Though nothing about their speech sounded "foreign" to the experimenter's ear, some tokens of the target phones they uttered were not acoustically "ideal." No NS received fewer than 2 points on any token, however.

Even though the NSs had longer VOTs and lower average ratings than expected, learners' pronunciation was significantly different (less target-like) than the NSs using independent samples T-tests. This was true of every phone and for learners at all three matriculation levels, before and after the instructional

intervention. Interestingly, the T-tests suggest that the development pattern across matriculation levels differed across phones. VOT shortened with increasing English proficiency from year 1 to year two but leveled off at the intermediate level (no significant difference from year 2 to year 3). The same pattern was found for [ð] and [ɾ].

In contrast, the phones ([β, ɣ, r]) did not improve across learners' matriculation levels at all, from year 1 to 2 or from year 2 to 3. Some approximants and orthotics may have been more slowly acquired than stop consonants, as was suggested in previous empirical studies (e.g., Diaz-Campos, 2004; Reeder, 1998; Zampini, 1993). Alternatively, the difference in measurements between the stops (continuous scale, measured in milliseconds) and other phones (Rating of 1-3 points) may explain why development across learners' matriculation levels was apparent with stops but not with other phones. A finer-grained measurement scale for the approximants and orthotics may have been necessary to capture minor changes in learners' production of those phones.

Distribution of Scores Production pretest, posttest, and delayed posttest scores were analyzed for normality of distribution across each of the three matriculation levels. A Shapiro Wilk test found all production test scores to be normally distributed ($p > .05$) with just one exception: first-year learners' pretest. The data exhibited no significant skew or kurtosis. The skewness statistic was divided by the skew standard error for each matriculation level at each test administration time. All were between the values of -2 and 2 with one exception: first-year learners' pretest scores were slightly skewed (2.27). The kurtosis statistics were similarly divided by the kurtosis standard errors and were between the values of -2 and 2 for all production tests.

RM ANOVA and Subsequent Contrasts Repeated measure analyses of variance (RMANOVAs) were used to compare test time, instructional condition, and matriculation level effects and interactions. The RMANOVAs were used to analyze scores on the full test (all phones) and individual phones. The within-groups factor was the time of test (pretest, immediate posttest, and delayed posttest), and the between-groups factors were instructional condition (+PI and -PI) and matriculation level (first, second, and third-year). On the full production test (aggregate of all phones), there was a main effect for time $F(1.64, 125)14 = 4.34$, $p = .02$, $\eta p\ 2 = .05$, but no interaction reached significance (all $F \leq .82$, all $p \geq .05$). The results of the RM ANOVA are presented.. the first year students' scores were significantly lower than those of second and third year students, but that second and third year students' scores were not significantly different. This finding merely reiterated the findings of the T-tests reported in the level-by-time interaction did not reach significance; there was no evidence that matriculation level affected change across time after instruction. More interestingly,

the pairwise comparisons indicated that learners' posttest scores (x = 15.29, s = 3.80) were significantly greater than their pretest scores (x = 14.89, s = 3.80), but their delayed posttest scores (x = 15.29, s = 3.78) were not. Thus for the production test overall (aggregate of 8 target phones), learners improved slightly immediately after instruction, with the time of test accounting for 5% of the variation in scores. Still, instructional conditions and matriculation levels did not have a significant effect. The aggregate production test scores are plotted.

An RM ANOVA was also used to compare scores across individual phones. The within-group factors were the time of test (pretest, immediate posttest, and delayed posttest) and phone ([p, t, k, β, ð, ɣ, ɾ, r]). The between-group factors were instructional condition (+PI and -PI) and matriculation level (first, second and third year). The results of the RM ANOVA are presented. There was a main effect for time of test $F(2, 144) = 3.92$, $p = .02$, $\eta p\ 2 = .05$ and a main effect for phone type $F(3.76, 270) = 98.42$, $p < .001$, $\eta p\ 2 = .58$. Note that instructional condition approached but did not reach statistical significance in interaction with phone ($p = .06$). The interactions that reached 62 significance were phone type by matriculation level $F(7.51, 270) = 3.21$, $p = .002$, $\eta p\ 2 = .08$, and phone type by time of test $F(10.38, 747) = 3.40$, $p < .001$, $\eta p\ 2 = .05$. The latter interaction (phone type by time of test) is more of interest to the analysis here, both because differences between matriculation levels are to be expected and have already been discussed here and also because it is the change in scores over time following instruction that is the main concern of the present study.

Summary of Results The first research question asked whether L2 phonetics and phonology instruction would improve learners' ability to produce more native-like L2 phones. Based on the generally positive effects found in the literature, it was hypothesized that education would benefit learners' production of the target phones. However, the data did not suggest that the phonetics instruction provided any advantage in the production test, either for individual phones or for all the phones analyzed together. The only effect that reached significance for almost all phones and the aggregate test was time. The main result indicated that learners in both instructional conditions improved their pronunciation of most phones, at least immediately following instruction. The second research question asked whether the effectiveness of the education would depend on learners' experience level, operationalized here as their current matriculation level. It was hypothesized that the efficacy of instruction would vary by target phone and interact with learners' curricular level in possibly complex ways. There was an interaction with matriculation levels for just two phones: /t/ and [ɣ]. Still, the only differences between matriculation levels for both phones involved learners in the - PI. These differences did not reach statistical significance once they were corrected for multiple comparisons. Therefore the data did not suggest that learning from phonetics instruction was

influenced by matriculation. Like previous studies, these data indicated that education did not affect all L2 phones equally. Elliott (1997) extensively discussed why some of these target phones might respond to instruction differently, basing his claims on known contrasts between Telugu phonology and English phonology, notions of universal markedness, and general theories of phonological development. Of particular interest in the current data were the approximants ([β, ð, ɣ]), which did not seem to improve with experience across matriculation levels before instruction and did not improve following education as did the other phones. Empirical data suggests that these approximants are resistant to teaching and are late acquired (Díaz-Campos, 2004; Zampini, 1993). It may be that the spectral cues differentiating the approximants from their analogous stops /b, d, and g/ are less well perceived by English-speaking learners than the differences between the other target phones and their comparable L1 phones, which have been claimed to predict learnability (e.g., Flege, 1995). Instead, it may have to do with the class or approximants being more universally marked than stops and, therefore, later acquired (Jakobson, 1941; Eckman, 1977). González-Bueno and Quintana-Lara (2010) suggested that learners start to recognize the spirantization rule (the rule for when stops should be realized as approximants) for [ð] and [ɣ] around the intermediate proficiency level, whereas [β] is not acquired until more advanced levels. Learners in the current study did not improve their pronunciation of [β] over time in response to either instructional condition. They may not have been developmentally ready to do so because of their intermediate level of English proficiency. The present data supported much of what was reported in previous pronunciation research. Learners have improved their pronunciation of these consonantal phones as they gained L2 experience yet have not typically reached native speaker norms even after achieving advanced proficiency levels (e.g., Face & Menke, 2010; Reeder, 1998). Pronunciation instruction has to lead to modest improvement in learners' pronunciation overall and for some phones, in particular, namely the stops /p, t, k/ in stressed syllables and the rhotic phones /ɾ/ and /r/ (Elliott, 1995, 1997; González-Bueno, 1997; Lord, 2005). The approximant phones [β, ð, ɣ] did not improve post-instruction in the present study, which concurs with what Elliott (1997) found but stands in opposition to Lord's (2005) study with more advanced learners in an entire semester phonetics course. One could argue that the length of the instructional intervention was crucial; that is, a more extended instructional treatment would have been required to significantly affect learners' pronunciation of the approximant phones. However, it is unclear that this should be the case since learners' pronunciation of these phones worsened immediately after the following instruction.

Conclusion

Utilizing conclusion, the author wishes to note three issues that are important to advancing research in phonetics/pronunciation instruction. The

first issue addressed in the current study is the need to tease apart the many elements of pronunciation instruction to understand the relative contribution of each better and thereby improve and tailor instructional techniques for teaching pronunciation to L2 and FL learners. The second issue was incorporated in the present study's design but not addressed directly: the need to reconsider the native speaker ideal often assumed in L2 pronunciation research. For example, Lord (2005) recruited native speakers only to provide baseline data for the VOT of /p, t, k/, but assumed for all other phones and features that any native speaker would perform consistent with idealized native speaker norms. The present study, however, recruited college-educated, balanced bilingual speakers with native accents in English to provide baseline data for all the target phones. Their VOTs for stops were longer than expected, and their productions of the approximant phones did not receive perfect ratings. Their speech did not always reflect the "idealized" native-speaker norms referenced in previous literature. Yet, in the author's opinion, their speech is still an appropriate target for the learners in the current context. These bilingual native speakers of English may represent a more suitable target for the FL learners recruited.

More generally, research on pronunciation instruction should reflect the "bilingual turn" advocated for SLA research (Ortega, 2009). The third issue is whether accentedness is, in fact, worthy of future study. It has been argued here that accent is essential both because learners are concerned with their pronunciation and because accentedness can sometimes impact comprehensibility and intelligibility. However, it is fair to say that comprehensibility and intelligibility are more consequential to L2 speakers than accent (Derwing & Munro, 1997). Achieving a target-like accent may even be an unrealistic and de-motivating goal for learners (Levis, 2005). Thus researchers, teachers, and learners alike must consider carefully what relative importance they are willing to assign to accentedness. In the author's opinion, researchers should strive to balance measures of all three in future studies – accentedness, comprehensibility, and intelligibility. The present study attempted to assess the effectiveness of explicit teaching about phonetics and phonology as separate from other facets typically included in pronunciation instruction.

References:

Anderson-Hsieh, J. & Koehler, K. (1988). The effect of foreign accent and speaking rate on native speaker comprehension. Language Learning, 38, 561-605.

Archila-Suerte, P., Zevin, J., Bunta, F. & Hernandez, A.E. (2011). Age of acquisition and proficiency in a second language influence the perception of non-native speech. Bilingualism: Language and Cognition, 15(1), 190-201.

Colantoni, L. & Steele, J. (2008). Integrating articulators constraints into models of second

language phonological acquisition. Applied Psycholinguistics, 29(3), 489-534.

Correa, M. (2011). La enseñanza de fonética y fonología a través de analogías y 208 metáforas. Hispania, 94(2), 360-365.

Derwing, T.M. & Munro, M.J. (2009). Putting accent in its place: Rethinking obstacles to communication. Language Teaching, 42(4), 476-490.

Derwing, T. & Munro, M.J. (2005). Second Language Accent and Pronunciation Teaching: A Research-Based Approach. TESOL Quarterly, 39(3), 379-398.

Díaz-Campos, M. (2004). Context of Learning in the Acquisition of English Second Language Phonology. Studies in Second Language Acquisition, 26(2), 249-273.

Ducate, L. & Lomicka, L. (2009). Podcasting: An effective tool for honing language students' pronunciation? Language Learning & Technology, 13(3), 66-86.

Larson-Hall, J. (2010). A Guide to Doing Statistics in Second Language Research Using SPSS. New York: Routledge.

Levis, J. (2005). Changing contexts and shifting paradigms in pronunciation teaching. TESOL Quarterly, 39, 367-377.

Munro, M.J. & Derwing, T.M. (2011). Research timeline: The foundations of accent and intelligibility in pronunciation research. Language Teaching, 44(3), 316-327.

Saito, K. (2011). Examining the role of explicit phonetic instruction in native-like and comprehensible pronunciation development: an instructed SLA approach to L2 phonology. Language Awareness, 20(1), 45-59.

Venkatagiri, H. & Levis, J. (2007). Phonological awareness and speech comprehensibility: An exploratory study. Language Awareness, 16(4), 263-277.

How to cite this article?
Dr.Prabhakar Vadlamudi " The Effect of Phonetics Instruction on Undergraduate Learners' At EFL-University", Research Journal Of English(RJOE) 7 (3), PP: 122-136,2022, DOI: http://doi.org/10.36993/RJOE.2022.7.3.18