

## Research Article

# Effect of Phonological and Phonetic Interventions on Proficiency in English Pronunciation and Oral Reading

### Diwakar Prahaladaiah 💿<sup>1</sup> and Kennedy Andrew Thomas 💿<sup>2</sup>

<sup>1</sup>Department of Education, CHRIST (Deemed to be University), Bengaluru, India <sup>2</sup>Centre for Education Beyond Curriculum (CEDBEC), CHRIST (Deemed to be University), Bengaluru, India

Correspondence should be addressed to Diwakar Prahaladaiah; diwakar.p@res.christuniversity.in

Received 13 September 2022; Revised 15 December 2022; Accepted 19 December 2022; Published 6 February 2024

Academic Editor: Syed Sameer Aga

Copyright © 2024 Diwakar Prahaladaiah and Kennedy Andrew Thomas. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

The current research aimed to know the effect of phonological and phonetic interventions in enhancing proficiency in English pronunciation and oral reading among teacher trainees. This study was of single-group pretest and posttest intervention designs. The sample size was selected through a stratified random sampling technique from teacher training colleges in Bengaluru. Two hundred and seven teacher trainees with L1 proficiency were chosen proportionately from Bangalore strata and orientated. Participants (N=32) enrolled voluntarily in the intervention program for 20 hr. Intervention modules on phonology and phonetics were developed by the researcher and a segmental approach was adopted to teach modules in 20 sessions. After every session, the participants were allowed to record the modules in Audacity, a multiaudio recorder application. The recorded modules were interpreted, and scores were determined on number of intelligible words pronounced by the participants. Further, it was validated by the experts to authenticate the determined scores. The researcher applied oscillographic and observation methods to analyze the participants' progress in pronunciation and oral reading proficiency levels during the experiment. The Wilcoxon signed-rank test was used to test the impact of intervention between the pretest and posttest (before and after intervention). The hypotheses testing revealed the difference between preintervention and postintervention scores in phonological and phonetic awareness and oral reading among teacher trainees, and the sig. value is less than 0.05 across all the attributes. This study insists that English phonology and phonetics must be a crucial part of the English language teaching (ELT) curriculum and highlights that teachers must be able to spot the most appropriate pronunciation teaching and train the students of English as a foreign language (EFL) with intricates of intelligible pronunciation. This study navigates the need for language proficiency among teacher trainees, especially in English pronunciation and oral reading, and substantiates the evidence that effective intervention and teachers' knowledge of pronunciation enhance proficiency levels in pronunciation and oral reading among teacher trainees. Finally, it hopes that B.Ed colleges and teacher educators will be beckoned to use technology-integrated intervention to teach phonology and phonetics.

#### 1. Introduction

Teachers of L2 English and researchers stay doubtful about pedagogical approaches in English pronunciation, likely because of limited research or lack of adequate training. Does phonological and phonetic interventions enhance proficiency in English pronunciation and oral reading? To answer this question, this study was an attempt to conduct an experiment that investigated the effect of the phonological and phonetic interventions to enhance teacher trainees' proficiency in English pronunciation and oral reading. Good pronunciation by teachers leads to learning, while poor pronunciation leads to difficulties in language teaching–learning [1]. Munro et al. [2] insisted that "learners must develop intelligible pronunciation which enhances communicability and increased speech abilities." There has been considerable interest in pronunciation teaching in recent decades and research on pronunciation in English as a foreign language (EFL). Berry [3] stated that "many EFL students may find pronunciation as a barrier to effective communication. More importantly, pronunciation is a critical component of oral communication." Prakash [4] studied the "problems faced in pronunciation by the speakers of English in South India." Thus, without good proficiency in English, pronunciation can be rigorously impaired. Baker and Murphy [5]

highlighted that "an overall neglect of pronunciation teaching has been observed in teacher training" and "scarcely any research that explores pronunciation teachers' knowledge of pronunciation in India." Jones [6] stated that "good speech may be defined as the way of speaking which is intelligible to all ordinary people, poor speech is a way of talking which is difficult for most people to understand." Further, Celce-Murcia et al. [7] stated that "there is a threshold level of pronunciation for L2 speakers of English; on the off chance that they fall behind this limit level, they will have oral communication issues regardless of how great and broad their control of English grammar may be."

The evolutions of modernization and globalization have processed cultural, political, economic, communication, and scientific exchange [8]. Therefore, the present education system and society need well-trained teachers who can interpret, pronounce, and convey the message to be spoken or written. However, some strategies would help the learners to improve their pronunciation, mainly to avoid faulty pronunciation and communication [9, 10]. "It is much easier to teach and correct pronunciation at an early stage in the learner's development than it is to correct time-compounded pronunciation errors at a later stage" [11]. The researchers suggest that phonetic training for primary school teachers is very important; in fact, it is vital that children must receive a good model of pronunciation from the very beginning of their foreign language experience [12]. Pronunciation teaching is of great importance for successful oral communication since it is an important ingredient of communicative competence [13]. "Later in the century, pronunciation teaching research began to move on both by embracing more sophisticated approaches to interlanguage phonology taking universal, developmental, and other processes into account as well as transfer" [14]. Pronunciation teaching covers the basics of pronunciation teaching: phonemes, accent, word stress, connected speech, intonation, rhythm, and speech patterns.

Pronunciation in L2 gives a clear understanding of an ability to produce phonemic sounds, and this includes both segmental and suprasegmental features. Therefore, these segmental and suprasegmental levels of pronunciation would be effective through technology-integrated instruction [15]. Ample evidence points to the importance of phonemic awareness in promoting reading for second-language learners of alphabetic as well as nonalphabetic languages [16]. A basic level of pronunciation is required for effective communication and to prevent comprehension problems, misunderstandings, and communication breakdowns [17]. Intelligible pronunciation plays an important role in social interaction, and also it is related to the prestige of the individuals. "With inadequate research in linguistics within the field of pronunciation, teachers and teacher educators are skeptical about teaching pronunciation in a language classroom" [18]. Studying the effect of the phonetic and phonological interventions on language proficiency among teacher trainees shed more light on the importance of pronunciation instruction. Therefore, the focus of this study is the importance to be given to pronunciation teaching in the language classroom.

1.1. Need for the Study. English is widely spoken in India after Hindi from postcolonial times. The English language has become a symbol of status in India. English teachers are expected to understand and deliver proficiency in pronunciation and oral reading as ESL in their classroom. "An overall neglect of pronunciation teaching has been observed in teacher preparation programs," and "scarcely any research has been conducted that explores pronunciation teachers' knowledge of phonology." [5] "Problems connected with the pronunciation of English by Indians." Prakash [4] and Cardoso [19] studied the "problems faced in pronunciation by the speakers of English in South India." Further, Dilda [20] explained "how the English pronunciations of Asians are difficult to understand." In India, English is a nonnative second language. Teachers and students at all levels find it difficult to learn pronunciation. Except in cities exposure to English is limited unlike native languages, English has noncorrespondence between spoken and written symbols. Language is for important social purposes because it is used for communication purposes [21]. However, English linguistics is a systematic study of language. Phonetics and phonology are the branches of linguistics, and it deals with the production, communication, and reception of human speech sounds. Proficiency in a speaking course, the nature of speaking, and factors involved in producing fluent and appropriate speech sound produced to be understood [21]. Especially among English teachers, proficiency in pronunciation and oral reading would reflect in their teaching sessions. Good communication by the teacher may be defined as a way of speaking, which is intelligible to all the students. Hence, there is a need to understand the importance of phonological and phonemic awareness for proficiency in English pronunciation and oral reading among teacher trainees before they become teachers.

Previous research has shown that pronunciation instruction effectively improves specific segmental and suprasegmental aspects of L2 sounds [15] and enhances listeners' overall comprehension of comprehensibility. Saalfeld [22] recommended that "the goal of English pronunciation instruction is not to imitate British or American accents, instead intelligible pronunciation must be the purpose of the communication." Moreover, researchers being language trainers have perceived the significance of phonetics and phonology knowledge among teachers to develop communication among students. Based on the discussion, the researchers strongly believe that there is a need to utilize contemporary intervention trends based on phonology and phonetics and determine their effectiveness in developing proficiency in English pronunciation and fluency in oral reading.

The aim of this study is intelligible pronunciation instruction as an intervention to bring out proficiency in pronunciation among teacher trainees of Bengaluru. This study aimed to determine the effect of phonology and phonetics on proficiency in English pronunciation and oral reading.

#### 1.2. Research Objectives.

(1) To assess the effect of the phonological and phonetic interventions on proficiency in English pronunciation.

(2) To assess the effect of the phonological and phonetic interventions on English oral reading proficiency.

#### 2. Literature Review

English pronunciation is one of the most important and difficult skills to be acquired by L2 learners [8]. Teachers and learners must dedicate a lot of time to improve their pronunciation. Pronunciation teaching-learning must be viewed as the accurate pronunciation of every phonemic sound because it is an essential communication component. Hişmanoğlu [13] stated that "pronunciation intervention is vital for fruitful oral correspondence to occur since it is a significant element of communication capability." English pronunciation and oral reading are the areas of language instruction that affects all levels of proficiency across the discipline of language teaching and learning [23]. Prahaladaiah [24] claimed that "the native language impedance can be perceived as an interaction when one language affects another, and when the individual is encountering language transfer." McArthur et al. [25] examined that "the impedance happens because the learners utilize their past L1 experience to coordinate the second language information." Dawes and Iavarone [26] stated that "there is a need to modify our teaching methodology and use the mother tongue where it helps. In light of the enormity of the problem and the standard of attainment in English by our teachers, we have no option except to reconcile to the use of L1 in teaching English." McArthur et al. [25] defined pronunciation as "the act or result of producing the speech sounds, including phonemes, intonation, and rhythm." The EFL instructors should know their learners and their need to improve pronunciation. They must enable the learners with slow speech with the correct pronunciation. The instruction must be integrated with the latest technology, especially computer technologies, to assist the learners in enhancing their pronunciation skills [11]. The teachers must be proficient in varieties of English accents such as British and American English; the key is if the instructors are familiar with intelligible pronunciation [11].

An interventional study by Aksakalli and Yağız [27] revealed that "the participants in the study displayed significance in pronouncing phonemes. Further, this study revealed that participants had improved in both segmental and suprasegmental scores at the posttest." A similar study by William [28] showed "improved results in segmental and suprasegmental intervention scores at the posttest." The major concern with pronunciation instruction is teachers' negligence in pronunciation instruction. The author further states the reasons for negligence; the learners perceive that they need not learn English pronunciation, instead they believe that only communication is essential [14]. Fraser [29] suggested that "teachers must be provided with instructional materials that would enhance their pronunciation instruction. Further, the author insists on the methodology of pronunciation instruction." It is stated that intelligibility pronunciation must be the key objective of English pronunciation instruction [2]. The author further emphasizes that L2 learners should develop selfconfidence and functional communication strategies. The research explains term pronunciation and the importance of English pronunciation instruction. According to the viewpoint of Nixon and Tomlinson [17] "pronunciation articulation does not overlap with regular communication."

The literature review highlights the research gap in L2 English pronunciation, especially the research on teacher trainees' proficiency in English pronunciation and oral reading. Hence, this study sets the further platform for understanding the importance of phonological and phonetic interventions to enhance English pronunciation and oral reading proficiency. This study also explores technology-integrated intelligible phonetic intervention in an L2 setting.

#### 3. Methods and Materials

3.1. Research Design. The current research was quantitative experimental research. This study was carried out through a research design called "single group pretest posttest design." The quantitative experimental research approach allowed for experimental data collection at pretest and posttest time for the purpose of describing the proficiency level improvement among the subjects in the experiment.

3.2. Participants and Sampling Techniques. A stratified sampling technique was used to recruit the targeted participants. Two hundred and seven teacher trainees with L1 proficiency were chosen proportionately from Bangalore strata and orientated and assessed. Participants (N= 32) enrolled voluntarily in the intervention program for 20 hr. The male and female teacher trainees aged between 21 and 23 years were the participants in the experiment.

3.3. Tools and Scales Used in the Study. The National Assessment of Educational Progress (NAEP) scale for reading and pronunciation, a standardized tool, was adopted to test the participants' proficiency scores in English pronunciation and oral reading. To check the suitability of the tool for this study, relevant literature was examined. A similar study was conducted using a similar rubric by Kennedy and Trofinvich [30]. The components of the tool are rubric for oral reading fluency, monitoring and projecting progress in reading fluency instruction chart, oral presentation evaluation scale, and rubric for speaking assessment (pronunciation/diction, fluency, word choice, usage, ideas/meaning) [31].

*3.3.1. Audacity.* Audacity is a free and easy-to-use multitrack audio recorder and audio editor for Windows [32]. This was adopted during the experiment to record live audio, record playbacks, and convert records into digital recordings. The same application was utilized by Rolsy Jaafar in 2019 for harmonic series of experiments in resonance and the findings unveiled the experimental values with less than 5% error. This study also revealed the application can be used for accurate values of sound spectrum within the ranges.

3.3.2. Audio-Text-Phonetic (ATP) Transcription Software. Audio-text-phonetic (ATP) software, a multitrack audio recorder for Linux and Windows, was adopted by the researcher. It was further submitted to linguistics experts and software professionals to validate the tool and check

the application's suitability for the current research. Postvalidation, the ATP software was used in this study, and the ATP software was used to convert audio files to text and from text to phonetic transcriptions. "STT (speech-to-text) programs can be used instead of human listeners to evaluate the quality of pronunciation by comparing against a standard accent and pronunciation" [33]. In the current research speech recognition, a Chrome web-based and Web Speech application programming interface was adopted [34] which enabled the speech input and text output. Spoken language for speech recognition was set as English-United States and IndE-Indian Standard English was set for ATP. Similar research was administered by Yasir et al. [34] who successfully implemented and administered the STT application, and it resulted in 96.63% of accuracy among English speakers in Indonesia. The researchers used this software to determine the score in pronunciation of the participants in the experiment. Further, the scores were verified and validated by the linguistic experts.

3.3.3. Intervention Modules on Phonology and Phonetics. Forty-four intervention modules on all phonemes were developed by the researcher. The intervention modules were submitted to linguistic experts and software professionals for validation; postvalidation, the tool was used in this study to check its reliability. The intervention modules were designed in a segmental form of instruction on phonemic sounds. All instructional objectives in the modules were based on skillbased communication and the oscillography methods.

*3.3.4. Statistical Software and Statistical Analysis Methods.* The following analyses are carried out to achieve the research objectives and test the hypotheses framed for this study.

Data Reliability Test: The purpose of the reliability of data collected is to check the internal consistency of data and ensure the reliability of data. All the variables, which are essential for this research, are considered for this test. This is done by performing Cronbach's  $\alpha$  test.

Descriptive Analysis: Descriptive analysis is used to understand the description of data collected, which needs to be studied for further statistical analysis. This descriptive analysis explains the data behavior of the study, which includes frequency, percentage value calculation, mean scores, standard deviations, etc.

*Chi-Square Analysis (Test for Independence of Attributes):* The chi-square test is used to find out the association between two variables by examining their independent nature. This is to examine if the study variables are associated anyway and if the association is significant or not. The response pattern for a particular aspect or attribute is the same or different between two or more groups. This analysis is helpful to understand the impact of one variable on other variables(s) if the variables are categorical in nature.

*Kolmogorov–Smirnov Test for Normality*: The Kolmogorov–Smirnov (K–S) test is used to test the normality of the data, that is, to test the null hypothesis that a set of data comes from a normal distribution.

*Mann–Whitney Test*: This test is used to compare an independent measure of two groups, that is, to compare differences between two independent groups when the

dependent variable is either ordinal or continuous, but not normally distributed. This is an alternative test of the independent *t*-test, while the independent *t*-test is used to compare a particular aspect if the data satisfy normality assumptions.

Wilcoxon Signed-Rank Test: Wilcoxon signed-rank test is used to compare two related samples, matched samples, or to conduct a paired difference test of repeated measurements on a single sample to assess whether their population mean ranks differ. This is an alternative test of paired *t*-test, which is used to compare a repeated measure of two groups if the data satisfy normality assumptions.

*Kruskal–Wallis Test*: The Kruskal–Wallis test is used to compare an independent measure of more than two groups when the data are not normally distributed. This is an alternative test of the analysis of variance (ANOVA) test if the data follow a normal distribution.

3.4. The Experiment. The intervention study was executed from January 10, 2021 to January 31, 2021. The data were collected in three stages: the recruitment of respondents (pretest), intervention, and impact assessment (posttest). A pretest (preintervention) was administered to the single experimental group, followed by 20 hr of an intervention study with progression assessment tests, and concluded with the postintervention test. The National Reading Panel National Institute of Child Health and Human Development states that "5 to 18 hr of intervention gives substantial benefit but stretched intervention programs do not necessarily have an advantage" [35]. The researchers conducted the intervention study in M.S. Ramaiah College of Education, Bengaluru. Before the experiment, the language lab was set. A conducive teaching-learning environment was provided with proper ventilation, and it was consistently retained for internal validity.

3.4.1. Consent Procedure and Ethical Committee Approval. Consent was taken by all the participants before the experiment, and they were oriented on the procedure of the experiment. The participants were not minoring hence, parental consent was not taken. The Research Conduct and Ethics Committee at Christ University confirmed that this study was exempt from requiring ethical review in November 2021.

3.5. The Intervention and Data Collection Procedure. The pretest was administered on enrolled participants. The pretest included the level of English pronunciation and oral reading competency of both segmental and suprasegmental features of pronunciation. After completing the pretest, the intervention modules were taught for 20 hr for 3 weeks. The intervention modules consisted of both segmental and suprasegmental features of English pronunciation, including articulatory phonetics, organs of speech, stress, and intonation. The participants used intervention modules in the language laboratory and participated in instruction-fronted pronunciation activities, focusing on the production of English sounds [36]. The modules primarily focused on the correct pronunciation of the phonemic sounds by listening and then imitating the same. Further, the participants were instructed to read out the passages and pronounce targeted sounds after

	TABLE 1: Cronbach's $\alpha$ of ass	essment scale.	
Cronbach's α	Cronbach's $\alpha$ based on standardized items		No. of items
0.918	0.930		5
	TABLE 2: Item statistics of ass Mean	essment scale.	N
Prepronunciation and diction	1.7188	0.92403	32
Prefluency	1.5625	0.75935	32
Preword choice	1.5313	0.62136	32
Preusage	1.5938	0.66524	32
Preideas meaning	1.1563	0.36890	32

TABLE 3: Interitem correlation matrix of assessment scale.

	Prepronunciation and diction	Prefluency	Preword choice	Preusage	Preideas meaning
Prepronunciation and diction	1.000	0.922	0.830	0.700	0.606
Prefluency	0.922	1.000	0.850	0.722	0.597
Preword choice	0.830	0.850	1.000	0.773	0.611
Preusage	0.700	0.722	0.773	1.000	0.661
Preideas meaning	0.606	0.597	0.611	0.661	1.000

practicing from the modules. The participants were given enough time to practice before they recorded. All the articulations were recorded in audacity application. Further, ATP transcription software was used to transform audio data into text and text-to-phonetic transcription. The researchers obtained the recordings of the participants and uploaded the audio into ATP transcription software. The scores resulted from the text produced by the ATP software and compared with the original text modules.

The scores were determined on number of appropriately pronounced words. Further, the Common European Framework of Reference for Languages (CEFR), an international standard for describing language ability, was adopted to determine scores of the participants on six levels: A1, a basic level with a speech rate with an accuracy of 60 words per minute; A2, a beginner level with a speech rate of 80 words per minute; B1, an intermediate level with 120 words per minute or less; and C1, an advance level with the speech rate of 140 words or less per minute. The researcher and experts in linguistics further validated the resultant measurements. Experts conducted validated (assessed) audio samples from the first to the last session for accentedness, intelligibility, comprehension, and fluency in English pronunciation and oral reading. A posttest was administered after the intervention program, and the posttest included the same procedure as in the pretest.

#### 4. Data Analysis and Findings

The data were compiled at the end of the day's experiment. The proficiency scores were determined based on the participants' performance. The participants were ranked for each of the recordings in each module. It was done in the order of the percentage of words pronounced proficiently identified by ATP software. The survey data was entered into an MS Excel file and analyzed using SPSS 25.0.

4.1. Normality Checks. Normality checks were performed before starting the data analysis. The K–S test was used to test the normality of the data. The test results showed that the data are not normally distributed. The K–S test results are presented in Table 35. Since the assumptions of the parametric test are violated, the paired *t*-test cannot be used. So, suitable nonparametric tests were used to test the hypotheses.

4.2. Data Reliability and Item Analysis. The data reliability checks were performed; Cronbach's  $\alpha$  (or coefficient  $\alpha$ ), developed by Lee Cronbach in 1951, measures reliability or internal consistency. "Reliability" is another name for consistency.

4.2.1. Reliability Statistics of Pretest. Table 1 states Cronbach's  $\alpha$  is 0.918, indicating a high internal consistency level for our scale with this specific sample.

Table 2 shows the item statistics of the assessment scale results of the pretest assessment.

Table 3 indicates the interitem correlation matrix of the preassessment scale.

Table 4 denotes the removal of preideas meaning leads to a small improvement in Cronbach's  $\alpha$ , and we can also see that the "corrected item-total correlation" value was low (0.668) for this item. This might lead us to consider whether we should remove this item.

Table 5 shows the variance and standard deviation of the assessment scale.

4.2.2. Item Analysis for Pre- and Postspeaking Assessment. Table 6 indicates Cronbach's  $\alpha$ , which is 0.895, indicating a high internal consistency level for our scale with this specific sample.

TABLE 4: Item-total statistics-corrected item-total correlation.

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's $\alpha$ if item deleted
Prepronunciation and diction	5.8438	4.652	0.884	0.861	.892
Prefluency	6.0000	5.290	0.905	0.875	.875
Preword choice	6.0313	5.967	0.881	0.785	.884
Preusage	5.9688	6.031	0.782	0.661	.902
Preideas meaning	6.4063	7.539	0.668	0.479	.934

TABLE 5: Scale statistics.			TAB	LE 6: Reliability statistics of post	test.	
Mean	Variance	Standard deviation	No. of items	Cropbach's a	Cronbach's $\alpha$ based on	No. of items
7.5625	9.028	3.00470	5		standardized items	NO. OI Itellis
				0.895	0.901	5

Table 7:	Item stat	istics of as	sessment s	cale.	

	Mean	Standard deviation	Ν
Postpronunciation and diction	3.4375	0.98169	32
Postfluency	2.9063	1.05828	32
Postword choice	2.7188	0.72887	32
Postusage	2.5313	0.80259	32
Postideas meaning	1.6250	0.55358	32

TABLE 8: Interitem correlation matrix of assessment scale.

	Postpronunciation and diction	Postfluency	Postword choice	Postusage	Postideas meaning
Postpronunciation and diction	1.000	0.848	0.719	0.596	0.430
Postfluency	0.848	1.000	0.801	0.668	0.544
Postword choice	0.719	0.801	1.000	0.705	0.610
Postusage	0.596	0.668	0.705	1.000	0.535
Postideas meaning	0.430	0.544	0.610	0.535	1.000

TABLE 9: Item-total statistics of assessment scale.

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's $\alpha$ if item deleted
Postpronunciation and diction	9.7813	7.402	0.786	0.728	.8605
Postfluency	10.3125	6.673	0.872	0.805	0.845
Postword choice	10.5000	8.452	0.845	0.721	0.855
Postusage	10.6875	8.544	0.719	0.541	0.877
Postideas meaning	11.5938	10.184	0.587	0.407	0.907

Table 7 indicates item statistics of the assessment scale, which is used in the posttest evaluation.

Table 8 indicates the interitem correlation matrix of the assessment scale used in the posttest.

Table 9 denotes the removal of postideas meaning that it leads to a small improvement in Cronbach's  $\alpha$ , and we can also see that the "corrected item-total correlation" value was low (0.587) for this item. This might lead us to consider whether we should remove this item.

Table 10 indicates the statistics of the assessment scale, which highlights the standard deviation and the variance of the assessment scale.

4.2.3. Item Analysis for Pre- and Postoral Reading Presentation. Table 11 indicates that Cronbach's  $\alpha$  is 0.91, indicating a high internal consistency level for our scale with this specific sample.

Table 12 indicates item statistics of prepronunciation presentation.

Ν

32

32

32 32

32 32

32

32

32

32

TABLE 10: Statistics of assessment scale.

TABLE 11: Internal consistency of assessment scale.

Mean	Variance	Standard deviation	No. of items	Cronbach's a	Cronbach's $\alpha$ based on	No. of items	
13.2188	12.564	3.54450	5	- Cronbach's α standardized items		NO. OI Itellis	
				0.910	0.913	10	

	Mean	Standard deviation	
Pre: make use of eye contact and facial expressions	2.1563	0.67725	
Pre: have a good opening	2.2500	0.62217	
Pre: change the pitch and voice	2.0313	0.64680	
Pre: use interesting and specific language	1.9063	0.73438	
Pre: use pauses or emphasis on keywords	1.7813	0.75067	
Pre: support ideas with details and examples	2.2813	0.52267	
Pre: use gestures or action	2.2500	0.50800	
Pre: use visuals	2.3750	0.49187	
Pre: speak clearly	2.3750	0.55358	
Pre: have a good closing	2.3438	0.48256	

TABLE 12: Item statistics of prepronunciation presentation.

TABLE 13: Item-total statistics of preoral reading presentation.

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's $\alpha$ if item deleted
Pre: make use of eye contact and facial expressions	19.5938	16.830	0.546	0.562	0.910
Pre: have good opening	19.5000	17.097	0.552	0.547	0.908
Pre: change the pitch and tone of voice	19.7188	16.144	0.723	0.726	0.898
Pre: use interesting and specific language	19.8438	15.233	0.794	0.870	0.893
Pre: use pauses or emphasis on keywords	19.9688	15.064	0.806	0.866	0.892
Pre: support ideas with details and examples	19.4688	17.483	0.587	0.728	0.906
Pre: use gestures or action	19.5000	17.484	0.607	0.712	0.905
Pre: use visuals	19.3750	17.274	0.686	0.667	0.901
Pre: speak clearly	19.3750	16.565	0.766	0.873	0.896
Pre: have a good closing	19.4063	17.088	0.752	0.891	0.898

TABLE 14: Reliability statistics of oral reading presentation of posttest.

Cronbach's α	Cronbach's $\alpha$ based on standardized items	No. of items
0.954	0.954	10

Table 13 illustrates the total statistics of preoral presentation.

Table 14 states the reliability statistics of the oral reading presentation of the posttest.

Table 15 indicates the result of item statistics of the oral reading presentation of the posttest.

Table 16 indicates the result of total statistics of oral reading presentation of posttest which indicates the correlation and multiple correlation.

Table 17 indicates the result of item analysis on the areas of speaking progress while using undergoing the intervention modules.

Table 18 indicates the interitem correlation matrix of the speaking assessment.

Table 19 states the total item statistics of the speaking assessment scale.

	Mean	Standard deviation	Ν
Post: make use of eye contact and facial expressions	3.0313	0.73985	32
Post: have good opening	3.1563	0.80760	32
Post: change the pitch and tone of voice	3.3438	0.74528	32
Post: use interesting and specific language	3.2500	0.71842	32
Post: use pauses or emphasis on keywords	3.5000	0.67202	32
Post: support ideas with details and examples	3.0000	0.67202	32
Post: use gestures or action	2.7813	0.79248	32
Post: use visuals	2.9688	0.69488	32
Post: speak clearly	2.9375	0.80071	32
Post: have a good closing	2.9063	0.68906	32

TABLE 15: Item statistics oral reading presentation of posttest.

#### TABLE 16: Item-total statistics of oral reading presentation of posttest.

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's $\alpha$ if item deleted
Post: make use of eye contact and facial expressions	27.8438	30.588	0.861	0.911	0.946
Post: have good opening	27.7188	30.209	0.824	0.902	0.948
Post: change the pitch and tone of voice	27.5313	31.160	0.777	0.737	0.950
Post: use interesting and specific language	27.6250	32.177	0.673	0.673	0.954
Post: use pauses or emphasis on keywords	27.3750	31.790	0.783	0.759	0.950
Post: support ideas with details and examples	27.8750	31.855	0.774	0.711	0.950
Post: use gestures or action	28.0938	30.152	0.850	0.759	0.947
Post: use visuals	27.9063	31.120	0.848	0.865	0.947
Post: speak clearly	27.9375	30.383	0.810	0.895	0.949
Post: have a good closing	27.9688	31.386	0.818	0.883	0.948

TABLE 17: Item analysis on areas of speaking progress (intervention modules progression scores).

Cronbach's $\alpha$	Cronbach's $\alpha$ based on standardized items	No. of items	
0.886	0.887	5	
	Item statistics		
	Mean	Standard deviation	N
Pronunciation and diction	1.41	0.493	288
Fluency	1.38	0.487	288
Word choice	1.24	0.430	288
Usage	1.16	0.367	288
Ideas meaning	1.29	0.454	288

TABLE 18: Interitem correlation matrix of speaking assessment.

	Pronunciation and diction	Fluency	Word choice	Usage	Ideas meaning
Pronunciation and diction	1.000	0.893	0.560	0.462	0.665
Fluency	0.893	1.000	0.504	0.477	0.573
Word choice	0.560	0.504	1.000	0.637	0.694
Usage	0.462	0.477	0.637	1.000	0.643
Ideas meaning	0.665	0.573	0.694	0.643	1.000

TABLE 19: Item-total statistics of speaking assessment.

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's <i>α</i> if item deleted
Pronunciation and diction	5.07	2.082	0.795	0.839	0.845
Fluency	5.10	2.156	0.744	0.809	0.858
Word choice	5.24	2.352	0.698	0.558	0.868
Usage	5.33	2.569	0.640	0.509	0.881
Ideas meaning	5.20	2.215	0.767	0.645	0.852

TABLE 20: Demographics: gender ratio of the sample.

Gender	Frequency	Percent (%)
Female	25	78.10
Male	7	21.90
Total	32	100.00

TABLE 21: Demographics: age of the sample.

Age (years)	Frequency	Percent (%)
21	6	18.80
22	21	65.60
23	5	15.60
Total	32	100.00

TABLE 22: Demographics: educational qualification of the sample.

Educational qualification	Frequency	Percent (%)
BA	12	37.50
BA (English literature)	15	46.90
BBA	2	6.30
B.Com	2	6.30
Total	32	100.00

*4.3. Descriptive Data Analysis.* The following tables explain the demographics of the participants.

Table 20 shows a survey coverage that includes 78% of female teachers and 22% of male teachers.

Table 21 shows the age spread of participants indicating that 65% are 22 years old, 19% are 21 years old, and about 16% are 23 years old participants.

Table 22 indicates the demographics of the sample which is around 47% of participants have completed BA (English literature), and about 37.5% have done BA courses. Others include BBA and B.Com.

Table 23 shows that at the preintervention level, the mean scores are less than two across all the attributes. It indicates that the teachers had low-level skills (mostly at low level = 1 and some with level 2) in these attributes before the intervention. "Change the pitch and tone of voice" (mean = 1.56) has

scored better than other attributes. At the postintervention level, the mean scores are more than 2.5 across all the attributes. "Use of gestures or action" (mean = 3.47) scored better. Overall, the teachers have had improved levels of skills in these attributes after the intervention.

Table 24 highlights that at the preintervention stage, the mean scores are less than two across all the attributes. Only "usage" has higher mean score (1.56) than others. It shows that the teachers had lesser level skills in the rubric for speaking assessment-related attributes before the training intervention. In the posttraining stage, the mean scores are more than 2.5 in all the attributes. In perticular, the attributes "word choice" and "usage" have higher mean scores (2.91, 2.88, respectively) than other attributes. This shows that the teachers improved their skills in these attributes after the training intervention.

Table 25 illustrates that in the pretraining level, all the values are one only. At the posttraining level, the mean score is greater than 2.78. After the training intervention, the teacher trainees have improved skills in these attributes.

4.4. Hypothesis Testing. To test the hypothesis that the effect of an intervention enhances the proficiency levels in English pronunciation and oral reading, the hypothesis is further split into four hypotheses as follows:

- Hypothesis 1 (H1) There is no significant difference between pretest and posttest scores in phonological and phonetic awareness among teacher trainees.
- Hypothesis 2 (H2) There is no significant difference between pretest and posttest scores in English pronunciation among teacher trainees.
- Hypothesis 3 (H3) There is no significant difference between pretest and posttest scores in oral reading among teacher trainees.
- Hypothesis 4 (H4) There is no significant difference in teachers' proficiency in pronunciation and oral reading before and after the intervention in phonology and phonetics.

Before starting the hypothesis testing, the data points relevant to these hypotheses are tested to determine whether

Variables	Ν	Mean	Standard deviation
Pre: make use of eye contact and facial expressions	32	1.25	0.440
Pre: have a good opening	32	1.25	0.440
Pre: change the pitch and tone of voice	32	1.56	0.504
Pre: use interesting and specific language	32	1.22	0.420
Pre: use pauses or emphasis on keywords	32	1.16	0.369
Pre: support ideas with details and examples	32	1.34	0.483
Pre: use gestures or action	32	1.34	0.483
Pre: use visuals	32	1.22	0.420
Pre: speak clearly	32	1.16	0.369
Pre: have a good closing	32	1.25	0.440
Post: make use of eye contact and facial expressions	32	2.81	0.693
Post: have a good opening	32	2.66	0.653
Post: change the pitch and tone of voice	32	2.75	0.622
Post: use interesting and specific language	32	2.88	0.793
Post: use pauses or emphasis on keywords	32	3.28	0.888
Post: support ideas with details and examples	32	3.03	0.740
Post: use gestures or action	32	3.47	0.621
Post: use visuals	32	2.69	0.535
Post: speak clearly	32	2.78	0.608
Post: have a good closing	32	2.72	0.457

TABLE 23: Pronunciation evaluation: mean and standard deviation.

The variables related to oral presentation evaluation are measured on a 5-point scale (1 = Lowest, 3 = Mid, 5 = Highest). The mean and standard deviations of these variables are given here.

TABLE 24: Rubric for speaking assessment: mean and standard deviation.

Variables	Ν	Mean	Standard deviation
Preintervention level			
Pre:pronunciation/diction	32	1.00	0.000
Pre: fluency	32	1.03	0.177
Pre: word choice	32	1.16	0.369
Pre: usage	32	1.56	0.504
Pre: ideas/meaning	32	1.47	0.507
Postintervention level			
Post: pronunciation/diction	32	4.06	1.134
Post: fluency	32	3.69	0.998
Post: word choice	32	2.91	0.818
Post: usage	32	2.88	0.871
Post: ideas/meaning	32	2.59	0.798

These variables are measured on a 5-point scale (1 = Difficult, 3 = Moderate, 5 = Easy).

TABLE 25: Rubrie	c oral reading	fluency: mean	and standard	deviation.
THEFT BOT ICHOIN	e orar reading	machie, mican		a c i a ci

Variables	Ν	Mean	Standard deviation
Pre: rubric oral reading fluency	32	1	0 By default, all have very less oral reading fluency (level 1)
Post: rubric oral reading fluency	32	2.78	0.608

Prelevel rubric oral reading fluency and postlevel rubric oral reading fluency are measured in 4 points scale (levels 0-4, where 0 = Nil, 1 = Difficult, 4 = Easy).

they satisfy normality assumptions using the K–S test. The test results showed that the data points (both at the preintervention and postintervention stages) fail to satisfy normality conditions (results are given in Table 35). However, the hypotheses are further examined using suitable nonparametric methods.

Wilcoxon signed-rank test: Rationale behind using the test.

Since the assumptions of the parametric test are violated, the paired *t*-test cannot be used to find the statistical difference between the two points. The Wilcoxon signed-rank test is used if the differences between pairs of data are nonnormally distributed. The Wilcoxon signed-rank test compares the sample median against a hypothetical median. This is the rationale behind using Wilcoxon signed-rank test.

4.4.1. *Hypothesis 1: English Pronunciation: Analysis Results.* H1: There is no significant difference between pretest and posttest scores in phonological and phonetic awareness among teacher trainees.

Variables consideration: Pronunciation evaluation related to preintervention level and postintervention level variables.

- (1) Make use of eye contact and facial expressions
- (2) Have a good opening
- (3) Change the pitch and tone of voice
- (4) Use interesting and specific language
- (5) Use pauses or emphasis on keywords
- (6) Support ideas with details and examples
- (7) Use gestures or action
- (8) Use visuals
- (9) Speak clearly
- (10) Have a good closing

4.4.2. Wilcoxon Signed-Rank Test: Results. In this test, data are paired, and the members of the pairs are from the same population. The ranking process is done and classified as negative rank, positive rank, and ties. That is,

Negative Rank: Post value of the particular variable < Prevalue of the particular variable.

Positive Rank: Post value of the particular variable > Prevalue of the particular variable.

Ties: Post value of the particular variable = Prevalue of the particular variable.

For each variable, the mean rank and sum of ranks have arrived. The Z-value is calculated, and then the test results are concluded. The rank test calculations are given below.

As shown in Table 26, it is observed that the difference (postintervention–preintervention) is positive for the majority of respondents. The values after postintervention are improved. The Wilcoxon signed-rank test calculates the *Z*-value and shows the *p*-value for the same.

Table 27 indicates the *p*-values (0.001) are less than 0.05 across all the attributes. That is, pre- and postintervention scores on oral presentation attributes are statistically significant. Similar research results by Aksakalli and Yağız [27], Gilakjani [37], and Kolokdaragh [38] revealed a substantial difference in comprehensibility and impact was due to phonological and phonetic awareness, and the significant difference between pretest and posttest ratings was defined as *t* (oral comprehensibility) = 13,555; p < 0.05.

*Conclusion*: The postintervention values are significantly higher than the preintervention values across the attributes

related to oral presentation evaluation. So, the intervention positively impacted in such a way that there is a significant improvement in phonological and phonetic awareness among teacher trainees.

*4.4.3. Hypothesis 2: Analysis Results.* H2: There is no significant difference between teacher trainees' pretest and posttest scores in English pronunciation.

Variables consideration: Rubric for speaking assessment (assess speaking progress) and pre- and postlevel variables (pronunciation/diction, fluency, word choice, usage, ideas/ meaning).

The Wilcoxon signed-rank test is used here as well, as the data do not follow normality assumptions. Also, the focus is on analyzing the pairwise differences. The test results are shown in Table 28.

Table 28 shows that it is found here that the difference (postintervention–preintervention) is positive for the majority of respondents. Also, the negative ranks are very less. This indicates that the values after posttraining intervention are improved.

Table 29 indicates the *p*-values (0.001) are less than 0.05 across all the attributes. That is, the pre- and postintervention scores on rubric for speaking assessment attributes are statistically significant. The same findings by Ioup and Weinbergereds [39] and Diwakar and Thomas [24] revealed that the experimental group's mean gain score of 64.13 with an SD value of 4.03 was significant. The computed *t*-value of 87.12 was significant at 0 level at posttest.

*Conclusion*: The postintervention values are significantly higher than the preintervention values across the attributes related to English pronunciation. So, it is concluded that the intervention has positively impacted in such a way that there is a significant improvement in English pronunciation among teacher trainees.

*4.4.4. Hypothesis 3: Oral Reading.* H3: There is no significant difference between pretest and posttest scores in oral reading among teacher trainees.

Table 30 shows rubric oral reading fluency; all the teachers show positive rank, which indicates that the values after postintervention are improved.

Table 31 shows that the *p*-value 0.001 is less than 0.05. That is, pre- and postintervention scores on rubric oral reading fluency are statistically significant.

*Conclusion*: The postintervention values are significantly higher than the preintervention values. It is concluded that the intervention conducted impacted significant improvement in oral reading among teacher trainees.

4.4.5. *Hypothesis 4: Analysis Results.* H4: There is no significant difference in teachers' proficiency in pronunciation and oral reading before and after the intervention in phonology and phonetics.

Variable consideration: Daywise monitoring and projecting progress in reading fluency chart (proficiency chart), that is "day-wise monitoring of word correct per minute" is considered. Daywise monitoring of word correct per minute is

Attributes		Ν	Mean rank	Sum of ranks
	Negative ranks	0	0	0
Make use of eye contact and facial	Positive ranks	28	14.50	406.00
expressions (post-pre)	Ties	4		
	Total	32		
	Negative ranks	1	8.00	8.00
	Positive ranks	29	15.76	457.00
Have a good opening: (post-pre)	Ties	2		
	Total	32		
	Negative ranks	0	0	0
Change the pitch and tone of voice	Positive ranks	25	13.00	325.00
(post-pre)	Ties	7		
	Total	32		
	Negative ranks	1	6.50	6.50
Use interesting and specific language	Positive ranks	30	16.32	489.50
(post-pre)	Ties	1		
	Total	32		
	Negative ranks	0	0	0
Use pauses or emphasis on keywords	Positive ranks	30	15.50	465.00
(post–pre)	Ties	2		
	Total	32		
	Negative ranks	0	0	0
Support ideas with details and examples	Positive ranks	28	14.50	406.00
(post-pre)	Ties	4		
	Total	32		
	Negative ranks	0	0	0
Has asstures on estima (most mas)	Positive ranks	32	16.50	528.00
Use gestures or actions (post-pre)	Ties	0		
	Total	32		
	Negative ranks	0	0	0
Use viewels? (next nue)	Positive ranks	29	15.00	435.00
Ose visuais: (post-pre)	Ties	3		
	Total	32		
	Negative ranks	0	0	0
Speak clearly (post pro)	Positive ranks	30	15.50	465.00
Speak clearly (post-pre)	Ties	2		
	Total	32		
	Negative ranks	0	0	0
Have a good closing? (nest pro)	Positive ranks	29	15.00	435.00
mave a good closing: (post-pre)	Ties	3		
	Total	32		

TABLE 26: Pronunciation evaluation: Hypothesis 1: Wilcoxon-signed rank test.

TABLE 27: Test statistic: pronunciation evaluation.

Attributes	Z-value	Sig. value
Make use of eye contact and facial expressions (post-pre)	-4.720	0.001
Have a good opening (post-pre)	-4.735	0.001
Change the pitch and tone of voice (post-pre)	-4.493	0.001
Use interesting and specific language (post-pre)	-4.821	0.001
Use pauses or emphasis on keywords (post-pre)	-4.886	0.001
Support ideas with details and examples (post–pre)	-4.693	0.001
Use gestures or actions (post-pre)	-5.009	0.001
Use visuals (post-pre)	-4.842	0.001
Speak clearly (post-pre)	-4.932	0.001
Have a good closing? (post-pre)	-4.875	0.001

Attributes		Ν	Mean rank	Sum of ranks
	Negative ranks	0	0	0
	Positive ranks	31	16.00	496.00
Pronunciation/diction (post-pre)	Ties	1		
	Total	32		
	Negative ranks	0	0	0
	Positive ranks	32	16.50	528.00
Fluency (post-pre)	Ties	0		
	Total	32		
	Negative ranks	1	2.50	2.50
Manual shatter (mant mus)	Positive ranks	28	15.45	432.50
word choice (post-pre)	Ties	3		
	Total	32		
	Negative ranks	3	9.00	27.00
I la se (na stanz)	Positive ranks	28	16.75	469.00
Usage (post-pre)	Ties	1		
	Total	32		
	Negative ranks	1	8.50	8.50
	Positive ranks	26	14.21	369.50
ideas/meaning (post-pre)	Ties	5		
	Total	32		

TABLE 28: Rubric for speaking assessment: Hypothesis 2: Wilcoxon-signed rank test.

TABLE 29: Test statistics: rubric for speaking assessment.

Attributes	Ζ	Sig. value
Pronunciation/diction (post-pre)	-5.023	0.001
Fluency (post-pre)	-5.070	0.001
Word choice (post-pre)	-4.953	0.001
Usage (post-pre)	-4.450	0.001
Ideas/meaning (post-pre)	-4.485	0.001

TABLE 30: Rubric for oral reading fluency: hypothesis 3: Wilcoxonsigned rank test.

Attributes		Ν	Mean rank	Sum of ranks
	Negative ranks	0	0	0
Rubric oral reading	Positive ranks	32	16.50	528.00
fluency (post-pre)	Ties	0		
	Total	32		

TABLE 31: Test statistics: rubric for oral reading fluency.

Attribute	Ζ	Sig. value
Rubric oral reading fluency (post-pre)	-5.084	0.001

measured in three stages below: initial, midterm, and completion stage, and comparisons are made among the three levels.

The data considered for this analysis are not normally distributed, hence failing to satisfy the normality assumption.

TABLE 32: Reading fluency (WCPM: words correct per minute).

Measures	Week 1: reading fluency chart (WCPM)	Week 2: reading fluency chart (WCPM)	Week 3: reading fluency chart (WCPM)
N	32	32	32
Mean	28.28	46.09	75.94
Standard deviation	11.11	14.69	21.38

TABLE 33: Kruskal–Wallis: reading fluency (words correct per minute) by week: ranks.

Week		Ν	Mean rank
	Week 1: initial	32	21.80
Reading fluency	Week 2: midterm	32	48.09
	Week 3: completion	32	75.61

Hence, Kruskal–Wallis test is used here instead of ANOVA. The Kruskal–Wallis test results are given below.

Table 32 shows the progression in reading fluency in week 1; the average reading fluency is at 28.28 words correct per minute, with a SD of 11.11. This is improved in week 2, where the average reading fluency is 46.09 words correct per minute, with a SD of 14.69. In week 3, the average reading fluency improved to 75.94 words correct per minute, with a SD of 21.38.

Table 33 highlights the reading fluency; the minimum mean rank is 21.80 for week 1, and the maximum mean

TABLE 34: Kruskal–Wallis test result: reading fluency (words correct per minute).

Variable	Kruskal–Wallis test	df	Sig. value
Reading fluency (words correct per minute)	60.99	2	0.001

rank is 75.61 for week 3. It is observed that there is weekly progress on the reading fluency levels.

Table 34 shows Kruskal–Wallis test results. General norm is that a larger value of Kruskal–Wallis indicates higher differences among the groups. Degrees of freedom = number of groups -1=3-1=2. The *p*-value of 0.001 is less than 0.05; hence, it is concluded that the differences are statistically significant. The previous research by Major et al. [10] and Gan et al. [40] result of Tau reveals that the intervention was effective in improving oral reading fluency; the effect was sufficient with *p*>0.05.

*Conclusion*: There is a significant difference in teachers' proficiency in pronunciation and oral reading before and after the intervention in phonology and phonetics. It is concluded that there is evidence of improved reading fluency over the weeks.

#### 5. Discussion and Conclusion

Teachers, researchers, and teacher educators are doubtful about pronunciation instruction in a language classroom, likely limited research, and a lack of adequate training for teachers and trainees [18, 39]. This study was an attempt to conduct the experiment on teacher trainees (N=32), which tried to investigate the effect of intervention in enhancing proficiency in pronunciation and oral reading. The previous research by Saito and Lyster [15] and Couper [36] stated that pronunciation instruction enhances not only segmental and suprasegmental features of phonetics and phonology but also communication comprehensibility. However, there is a need to highlight that two of the studies established any improvement because they lacked effective intervention [41, 42]. Another research by Saalfeld [22] highlighted that the studies were designed to enhance the learners to reach a basic proficiency level which is required for intelligible pronunciation rather than a native accent. Further, it stated that instruction over 1 month can enhance overall pronunciation ability, and a similar intervention program was conducted in the current research to develop proficiency in pronunciation and oral reading; the values after 1-month intervention in the current research were significantly higher than the preintervention values across the attributes related to oral presentation evaluation. It also highlighted that the intervention positively impacted in such a way that there is a significant improvement in phonological and phonetic awareness among teacher trainees. The present study's findings comply with Couper, "the study referred to developing proficiency in pronunciation through instruction and practice" [36, 23].

To provide a summary of the discussion about the effect of phonetics and phonological intervention on proficiency in pronunciation and oral reading among teacher trainees, through this study, it can be commented that the lack of proficiency in pronunciation would lead to confusion in communication and comprehension in listeners. The participants in this study gradually improved their pronunciation and oral reading proficiency levels. In week 3, further improvement is seen as the average reading fluency is 75.94 words correct per minute, with a SD of 21.38. Therefore, technology-integrated intervention and pronunciation knowledge are very essential for teachers and teacher trainees so the comprehension of the students would be easy. The analysis of pre- and posttest revealed that pronunciation intervention enhanced the pronunciation of the teacher trainees. Numerous studies could be provided from the literature to support that explicit intervention [43] in pronunciation could rise proficiency levels among the participants. To state another example, this study revealed that the students who received pronunciation instruction improved their pronunciation abilities. Another research also furnished similar results that explicit intervention in pronunciation has a significant impact on comprehensibility [15].

This study aimed to determine the effect of the intelligible phonological and phonetic interventions on proficiency in English pronunciation and oral reading among teacher trainees of Bengaluru. This study was designed in a single group pre-post intervention design. The intervention modules focused on enhancing the proficiency level of English pronunciation and oral reading. The objective of this study was to compare the scores of proficiencies between the preintervention and postintervention stages. The analysis results concluded that the intelligible intervention improved teacher trainees' phonological and phonetic awareness and proficiency levels. It concludes that there is evidence of improved reading fluency over the weeks. Hence, it is concluded that the intelligible intervention positively improved teacher trainees' English pronunciation and oral reading.

#### Appendix

Table 35 states that before starting the hypothesis testing, the data points relevant to these hypotheses are tested to determine whether they satisfy normality assumptions using the Kolmogorov–Smirnov test. The test results showed that the data points (both at the preintervention and postintervention stages) fail to satisfy normality conditions. However, the hypotheses are further examined using suitable nonparametric methods.

test results.
/-Smirnov
Kolmogorov
35:
TABLE

		Normal	parameters	Most	extreme differe	nces	ť	~;	Tant months (A value and
K–S test	Ν	Mean	Standard deviation	Absolute	Positive	Negative	1 est statistics	two-tailed)	nest results ( <i>p</i> -value, not not not not not not not not distributed)
Pre: rubric oral reading fluency (four points)	32	1.00						0.001	$p \leq 0.05$
Pre: reading fluency chart week 1 (words correct per minute)	32	24.84	9.795	0.440	0.440	-0.310	0.440	0.001	$p \leq 0.05$
Pre: reading fluency chart week 2 (words correct per minute)	32	45.94	15.834	0.302	0.302	-0.229	0.302	0.001	$p \leq 0.05$
Pre: reading fluency chart week 3 (words correct per minute)	32	77.19	21.588	0.177	0.136	-0.177	0.177	0.012	$p \leq 0.05$
Pre: OPE: make use of eye contact and facial expressions (OP 5PT)	32	1.25	0.440	0.465	0.465	-0.285	0.465	0.001	$p \leq 0.05$
Pre: OPE: have a good opening? (OP 5PT)	32	1.25	0.440	0.465	0.465	-0.285	0.465	0.001	$p \leq 0.05$
Pre: OPE: change the pitch and tone of voice (OP 5PT)	32	1.56	0.504	0.370	0.305	-0.370	0.370	0.001	$p \leq 0.05$
Pre: OPE: use interesting and specific language? (OP 5PT)	32	1.22	0.420	0.480	0.480	-0.301	0.480	0.001	$p \leq 0.05$
Pre: OPE: use pauses or emphasis on keywords (OP 5PT)	32	1.16	0.369	0.508	0.508	-0.336	0.508	0.001	$p \leq 0.05$
Pre: OPE: support ideas with details and examples (OP 5PT)	32	1.34	0.483	0.418	0.418	-0.257	0.418	0.001	$p \leq 0.05$
Pre: OPE: use gestures or actions (OP 5PT)	32	1.34	0.483	0.418	0.418	-0.257	0.418	0.001	$p \le 0.05$
Pre: OPE: use visuals (OP 5PT)	32	1.22	0.420	0.480	0.480	-0.301	0.480	0.001	$p \leq 0.05$
Pre: OPE: speak clearly (OP 5PT)	32	1.16	0.369	0.508	0.508	-0.336	0.508	0.001	$p \le 0.05$
Pre: OPE: have a good closing (OP 5PT)	32	1.25	0.440	0.465	0.465	-0.285	0.465	0.001	$p \le 0.05$
Pre: rubric for oral presentations: presentation (OP 3 PT)	32	1.09	0.296	0.530	0.530	-0.376	0.530	0.001	$p \leq 0.05$
Pre: rubric for oral presentations: speaking mechanics (OP 3 PT)	32	1.06	0.246	0.538	0.538	-0.400	0.538	0.001	$p \leq 0.05$
Pre: rubric for oral presentations: content (OP 3 PT)	32	1.56	0.504	0.370	0.305	-0.370	0.370	0.001	$p \leq 0.05$
Pre: rubric for oral presentations: visuals/props costumes (OP 3 PT)	32	1.19	0.397	0.494	0.494	-0.318	0.494	0.001	$p \leq 0.05$
Pre: rubric for speaking assessment: pronunciation/diction (SPA 5S)	32	1.00						0.001	$p \leq 0.05$
Pre: rubric for speaking assessment: fluency (SPA 5S)	32	1.03	0.177	0.539	0.539	-0.430	0.539	0.001	$p \leq 0.05$
Pre: rubric for speaking assessment: word choice (SPA 5S)	32	1.16	0.369	0.508	0.508	-0.336	0.508	0.001	$p \leq 0.05$
Pre: rubric for speaking assessment: usage (SPA 5S)	32	1.56	0.504	0.370	0.305	-0.370	0.370	0.001	$p \leq 0.05$
Pre: rubric for speaking assessment: ideas/ meaning (SPA 5S)	32	1.47	0.507	0.354	0.354	-0.321	0.354	0.001	$p \leq 0.05$
Post: rubric oral reading fluency (four points)	32	2.78	0.608	0.328	0.266	-0.328	0.328	0.001	$p \leq 0.05$
									(continued)

## Education Research International

			[	FABLE 35: Conti	inued.				
		Normal	parameters	Mos	t extreme differe	nces	Test	A symp. Sig	Test results ( <i>b</i> -value not
K–S test	Ν	Mean	Standard deviation	Absolute	Positive	Negative	statistics	(two-tailed)	normally distributed)
Post: OPE: make use of eye contact and facial expressions (OP 5PT)	32	2.81	0.693	0.325	0.268	-0.325	0.325	0.001	$p \leq 0.05$
Post: OPE: have a good opening (OP 5PT)	32	2.66	0.653	0.326	0.237	-0.326	0.326	0.001	$p \leq 0.05$
Post: OPE: change the pitch and tone of voice (OP 5PT)	32	2.75	0.622	0.312	0.250	-0.312	0.312	0.001	$p \leq 0.05$
Post: OPE: use interesting and specific language (OP 5PT)	32	2.88	0.793	0.250	0.219	-0.250	0.250	0.001	$p \leq 0.05$
Post: OPE: use pauses or emphasis on keywords (OP 5PT)	32	3.28	0.888	0.353	0.209	-0.353	0.353	0.001	$p \leq 0.05$
Post: OPE: support ideas with details and examples (OP 5PT)	32	3.03	0.740	0.236	0.236	-0.233	0.236	0.001	$p \leq 0.05$
Post: OPE: use gestures or actions (OP 5PT)	32	3.47	0.621	0.335	0.243	-0.335	0.335	0.001	$p \leq 0.05$
Post: OPE: use visuals (OP 5PT)	32	2.69	0.535	0.377	0.248	-0.377	0.377	0.001	$p \leq 0.05$
Post: OPE: speak clearly (OP 5PT)	32	2.78	0.608	0.328	0.266	-0.328	0.328	0.001	$p \leq 0.05$
Post: OPE: have a good closing (OP 5PT)	32	2.72	0.457	0.450	0.269	-0.450	0.450	0.001	$p \le 0.05$
Post: rubric for oral presentations: presentation (OP 3 PT)	32	2.41	0.560	0.328	0.328	-0.293	0.328	0.001	$p \leq 0.05$
Post: rubric for oral presentations: speaking mechanics (OP 3 PT)	32	2.75	0.440	0.465	0.285	-0.465	0.465	0.001	$p \leq 0.05$
Post: rubric for oral presentations: content (OP 3 PT)	32	2.47	0.507	0.354	0.354	-0.321	0.354	0.001	$p \leq 0.05$
Post: rubric for oral presentations: visuals/ props costumes (OP 3 PT)	32	2.22	0.659	0.286	0.286	-0.245	0.286	0.001	$p \leq 0.05$
Post: rubric for speaking assessment: pronunciation/diction (SPA 5S)	32	4.06	1.134	0.358	0.263	-0.358	0.358	0.001	$p \leq 0.05$
Post: rubric for speaking assessment: fluency (SPA 5S)	32	3.69	0.998	0.380	0.380	-0.250	0.380	0.001	$p \leq 0.05$
Post: rubric for speaking assessment: word choice (SPA 5S)	32	2.91	0.818	0.421	0.392	-0.421	0.421	0.001	$p \leq 0.05$
Post: rubric for speaking assessment: usage (SPA 5S)	32	2.88	0.871	0.432	0.380	-0.432	0.432	0.001	$p \leq 0.05$
Post: rubric for speaking assessment: ideas/ meaning (SPA 5S)	32	2.59	0.798	0.476	0.305	-0.476	0.476	0.001	$p \leq 0.05$

#### **Data Availability**

The quantitative data used to support the findings of this study available from the corresponding author on request.

#### **Additional Points**

*Implications of the Study.* There is a need for language proficiency, especially in phonology and phonetics. This study substantiates the evidence on the effect of proficiency and teachers' knowledge that would enhance proficiency levels in pronunciation and oral reading among teacher trainees, and also indicates that teachers' need for fundamental knowledge in English pronunciation and oral reading. Thus, this study exhibits a strong connection between phonemes and pronunciation among English teachers. The tools used for this research can be included in the induction training level for teachers to improve English communication before taking classes with their students. This study implies that English teachers must understand and deliver intelligible English pronunciation and oral reading intervention for ESL students to enhance their proficiency.

*Limitations of the Study.* This study was mainly on teacher trainees, teachers and teacher educators can also be included, and on speaking and reading and writing and listening language skills. Restricted sample size as the population of teacher trainees is scattered. Also, the female portion is higher than the male portion.

#### **Conflicts of Interest**

The authors declare that they have no conflicts of interest.

#### References

- C. B. Paulston and M. N. Burder, *Teaching English as a Second Language: Techniques and Procedures*, Winthrop Puplishers, Inc., Cambridge, 1976.
- [2] M. J. Munro, T. M. Derwing, and S. L. Morton, "The mutual intelligibility of L2 speech," *Studies in Second Language Acquisition*, vol. 28, no. 1, pp. 111–131, 2006.
- [3] D. M. Berry, "Level up your pronunciation: impact of a mobile game," *MEXTESOL Journal*, vol. 45, no. 1, p. 45, Article ID 12, 2021.
- [4] K. Prakash, "The role of phonetics in teaching ESL learners," *The Journal of English Language Teaching*, vol. 7, no. 5, 2015.
- [5] A. Baker and J. Murphy, "Knowledge base of pronunciation teaching: staking out the territory," *TESL Canada Journal*, vol. 28, no. 2, Article ID 29, 2011.
- [6] D. Jones, *The Pronunciation of English*, Cambridge University Press, 4th edition, 1956.
- [7] M. Celce-Murcia, D. M. Brinton, J. M. Goodwin, and B. Griner, *Teaching Pronunciation: A Course Book and Reference Guide*, Cambridge University Press, 2nd edition, 2010.
- [8] D. Prahaladaiah, "Value-based teaching English language and literature," *Journal of Education Culture and Society*, vol. 12, no. 2, pp. 59–66, 2021.
- [9] X. Yang, "Dynamic assessment in English pronunciation teaching: from the perspective of intellectual factors," *Theory and Practice in Language Studies*, vol. 7, no. 9, pp. 780–785, 2017.

- [10] R. C. Major, Interlanguage Phonology: The Acquisition of Second Language and Sound System, Second Language Research Series, p. 410, Heinle Publishers, 1987.
- [11] National Reading Panel (U.S.) and National Institute of Child Health and Human Development (U.S.), "Report of the National Reading Panel: Teaching Children to Read: An Evidence-based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction," U.S. Dept. of Health and Human Services, 2000.
- [12] H. Scarbrough and J. Corbett, *Technology and Organization: Power, Meaning, and Design*, Routledge, 1st edition, 1992.
- [13] M. Hişmanoğlu, "Current perspectives on pronunciation learning and teaching," *Journal of Language and Linguistic Studies*, vol. 2, no. 1, pp. 101–110, 2006.
- [14] J. Harmer, *The Practice of English Language Teaching*, Longman, London, 2001.
- [15] K. Saito and R. Lyster, "Effects of form-focused instruction and corrective feedback on L2 pronunciation development of /J/ by Japanese Learners of English," *Language Learning*, vol. 62, no. 2, pp. 595–633, 2012.
- [16] K. A. Lindsey, F. R. Manis, and C. E. Bailey, "Prediction of first-grade reading in Spanish-speaking English-language learners," *Journal of Educational Psychology*, vol. 95, no. 3, pp. 482–494, 2003.
- [17] C. Nixon and M. Tomlinson, Primary Pronunciation Box: Pronunciation Games and Activities for Younger Learners, Cambridge University Press, 2005.
- [18] M. Burt and C. Van Duzer, How should Adult ESL Reading Instruction Differ from ABE Reading Instruction?, CAELA Network Brief, Washington, DC, 2005.
- [19] W. Cardoso, "Teaching foreign onset clusters," in Achievements and Perspectives in Second Language Acquisition of Speech, K. Dziubalska-Kol-aczyk, M. Wrembel, and M. Kul, Eds., pp. 29–40, 2011.
- [20] G. S. Dilda, "A review of voice disguise in a forensic phonetic context," *International Journal of English Literature and Social Sciences*, vol. 5, no. 3, pp. 721–725, 2020.
- [21] N. G. Gido, Q. T. Oregines, and C. Cerbas, "Audio-video learning resources and the students' English pronunciation skills," *Global Scientific Journals*, vol. 10, no. 3, pp. 2293–2304, 2022.
- [22] A. Saalfeld, "Acquisition of L2 phonology in advanced learners: does instruction make a difference," in *Proceedings of the* 2nd Pronunciation in Second Language Learning and Teaching Conference, vol. 24, pp. 144–152, 2011.
- [23] S. Mitra and R. Ghatak, "An apparatus for measuring clarity of spoken English," *Indian patent application number* 1159/DEL/ 2002, 2002.
- [24] D. Prahaladaiah and K. A. Thomas, "Multilinguism in English language teaching: perceptions of students and teachers of Bengaluru on regional languages in ELT," *Smart Moves Journal IJELLH*, vol. 6, no. 12, Article ID 13, 2018.
- [25] T. McArthur, J. Lam-McArthur, and L. Fontaine, *The Oxford Companion to the English Language*, Oxford University Press, New York, 1992.
- [26] B. Dawes and M. L. Iavarone, "In-service English language training for Italian primary school teachers an experience in syllabus design," *Ricerche Di Pedagogia E Didattica — Journal of Theories and Research in Education*, vol. 8, no. 1, pp. 79–92, 2013.
- [27] C. Aksakalli and O. Yağız, "The pre-service EFL teachers' development of phonological processing and evaluation of their attitudes towards pronunciation," *GIST – Education and Learning Research Journal*, vol. 20, pp. 7–31, 2020.

- [28] L. William, "Developing a context-sensitive pedagogy for communication-oriented language teaching," *Korea Open Access Journals*, vol. 68, no. 3, pp. 3–25, 2013.
- [29] H. Fraser, Coordinating Improvements in Pronunciation Teaching for Adult Learners of English as a Second Language, Department of Education, Training and Youth Affairs, Canberra, 2000.
- [30] S. Kennedy and P. Trofimvich, "Language awareness and second language pronunciation: a classroom study," *Language Awareness*, vol. 19, no. 3, pp. 171–185, 2010.
- [31] W.-T. Tseng, S. Chen, S.-P. Wang, H.-F. Cheng, P.-S. Yang, and X. A. Gao, "The effects of MALL on L2 pronunciation learning: a meta-analysis," *Journal of Educational Computing Research*, vol. 60, no. 5, pp. 1220–1252, 2022.
- [32] Audacity<sup>®</sup> software is copyright © 1999–2021 Audacity Team, https://audacityteam.org/.
- [33] M. DelliCarpini, "Dialogues across disciplines: ESL teachers for interdisciplinary collaboration," *Current Issue in Education* vol. 11, no. 2, 2009.
- [34] M. Yasir, M. N. K. Nababan, Y. Laia, W. Purba, Robin, and A. Gea, "Web-based automation speech-to-text application using the audio recording for meeting speech," *Journal of Physics: Conference Series*, vol. 1230, Article ID 012081, 2019.
- [35] J. Morley, "The pronunciation component in teaching English to speakers of other languages," *TESOL Quarterly*, vol. 25, no. 3, pp. 481–520, 1991.
- [36] G. Couper, "The short and long-term effects of pronunciation instruction," *Prospect*, vol. 21, no. 1, pp. 46–66, 2006.
- [37] A. P. Gilakjani, "A study of factors affecting EFL learners' English pronunciation learning and the strategies for instruction," *International Journal of Humanities and Social Science*, vol. 2, no. 3, pp. 119–128, 2012.
- [38] R. V. Kolokdaragh, "ESL/EFL learners' perception of their pronunciation needs and strategies," in 41st Annual State CATESOL Conference in Santa Clara, CA
- [39] Ioup and S. Weinbergereds, Studies in Second Language Acquisition, vol. 10, pp. 90–110, Newbury House Publishers, 1987.
- [40] H. H. Gan, J. A. C. Lee, and K. A. Ghani, "Oral reading intervention for an English language learner: a single-case design," *Theory and Practice in Language Studies*, vol. 9, no. 1, pp. 28–33, 2019.
- [41] S. Macdonald, "Pronunciation views and practices of reluctant teachers," *Prospect*, vol. 17, no. 3, pp. 3–18, 2002.
- [42] A. Roccamo, "Teaching pronunciation in just ten minutes a day: a method for pronunciation instruction in first-semester German language classrooms," *Die Unterrichtspraxis/Teaching German*, vol. 48, no. 1, pp. 59–83, 2015.
- [43] J. Gordon and I. Darcy, "Teaching segmentals vs. suprasegmentals: different effects of explicit instruction on comprehensibility," in *Proceedings of the 10th Pronunciation in Second Language Learning and Teaching Conference*, J. Levis, C. Nagle, and E. Todey, Eds., pp. 116–126, Iowa State University, Ames, IA, 2019.