A Blended Learning Program to Enhance the Segmental Features of Pronunciation among Prospective EFL Teachers: An Empirical Research

Dr. Adel I. Elbanna
Professor of TEFL
Faculty of Education
Kafr Elsheikh University

Dr. Marwa A. Naeem
Professor of TEFL
Faculty of Education
Kafr Elsheikh University

Dr. Eman E. Arafa
Lecturer of TEFL
Faculty of Education
Kafr Elsheikh University

Rawan A. Elsabagh
A TEFL Demonstrator
Faculty of Education
Kafr Elsheikh University

Abstract

The aim of this research is to investigate the effectiveness of using a blended learning program to enhance the segmental features of pronunciation among prospective EFL teachers. The current research followed the quasi-experimental design. The research employed randomized groups, pretest-posttest design. The participants were two groups: an experimental group (n= 45) and a control one (n= 45). Both groups were assessed before administering the experiment using the pre-test. The experiment was applied only to the experimental group for a designated period (10 weeks), with one session per week, while the control group received traditional teaching methods (lectures). After the experiment, both groups were reassessed using a posttest on the segmental features. Data were statistically analyzed by using the Paired Sample *t*-test. The findings revealed that blended learning significantly improved the pronunciation skills of the experimental group compared to the control group but it did not reach the desired level of effectiveness. This may be due to several contributing factors, including student's carelessness, lack of commitment, and time constraints that limited the full implementation of the program. It is concluded that blended learning models can enhance segmental features among prospective EFL teachers.

Keywords: blended learning, segmental features, pronunciation, prospective EFL teachers

استخدام برنامج تعلم مدمج لتنمية نطق المهارات الساكنة والمتحركة لدي الطلاب المعلمين دارسي اللغة الإنجليزية كلغة أجنبية: دراسة تجريبية

إعداد

أ.د/ عادل إبراهيم البنا
أستاذ المناهج وطرق تدريس اللغة الإنجليزية
كلية التربية – جامعة كفر الشيخ

أ.د/ مروة أحمد نعيم
أستاذ المناهج وطرق تدريس اللغة الإنجليزية
كلية التربية – جامعة كفر الشيخ

د/ إيمان السيد عرفة
مدرس المناهج وطرق تدريس اللغة الإنجليزية
كلية التربية – جامعة كفر الشيخ

روان عبد الحميد الصباغ
معيدة بقسم المناهج وطرق تدريس اللغة الإنجليزية
كلية التربية – جامعة كفر الشيخ

مستخلص

هدف هذا البحث إلى دراسة فعالية استخدام برنامج تعلم مدمج لتنمية نطق المهارات الساكنة والمتحركة لدي الطلاب المعلمين دارسي اللغة الإنجليزية كلغة أجنبية. اتبع البحث الحالي التصميم شبه التجريبي، وتم استخدام مجموعات عشوائية وتصميم اختبار قبلي- بعدي. تكونت عينة البحث من مجموعتين: أحدهما تجريبية وعددها (ن = ٤٥)، والأخري ضابطة وعددها (ن = ٤٥). تم تقييم كلتا المجموعتين قبل تطبيق البرنامج باستخدام الاختبار القبلي، وتم تطبيق البرنامج على المجموعة التجريبية لمدة ١٠ أسابيع بواقع جلسة واحدة أسبوعياً مدة كل جلسة ساعة ونصف، بينما تلقت المجموعة الضابطة طرق التدريس التقليدية المعتمدة على المحاضرات. وبعد تطبيق البرنامج، تم إعادة تقييم المجموعتين باستخدام الاختبار البعدي لنطق المهارات الساكنة والمتحركة. تم تحليل البيانات

احصائياً باستخدام اختبار "ت" للعينة المزدوجة. أظهرت النتائج أن التعلم المدمج قد نمي بشكل ملحوظ مهارات النطق لدي المجموعة التجريبية مقارنة بالمجموعة الضابطة، ولكنه لم يصل إلى مستوي الفعالية المطلوب، وذلك وفقاً لعدة عوامل من بينها الإهمال من قبل الطلاب، وضعف الالتزام، بالإضافة إلى ضيق الوقت الذي حد من إمكانية التنفيذ الكامل للبرنامج. يستنتج أن نماذج التعلم المدمج يمكنها تنمية مهارات النطق الساكنة والمتحركة لدي الطلاب المعلمين دارسي اللغة الإنجليزية كلغة أجنبية.

الكلمات المفتاحية: التعلم المدمج، مهارات النطق الساكنة والمتحركة، الطلاب المعلمين

Introduction:

Accurate pronunciation is a crucial part of learning English. Pronunciation is critical to proper communication because incorrect pronunciation can cause the recipient to misinterpret the message. Pronunciation is an oral skill that aims to help students comprehend and be understood, build their trust when they are in a communicative situation, and encourage them to monitor their speech.

Clear pronunciation influences productive communication. To communicate effectively in English a speaker needs to produce correctly many different sounds. This process requires much time and it sometimes becomes challenging to master. Therefore, English pronunciation, including understanding the English phonological system is very essential for students leaning English as a second language or a foreign language. Speakers need to pronounce clearly and correctly, and listeners must be able to analyze the speech that they heard according to phoneme and phonological system to interpret it correctly. Therefore, pronouncing consonant

and vowel sounds correctly is a basic element of pronunciation.

In the contemporary age, education is not bound or limited to a classroom setting, but now students can learn independently by using the internet anytime and anywhere. Blended learning is a practical method in the field of instruction, which is a combination of both new-style and old-style approaches to learning (Yudhana, 2021).

Literature Review:

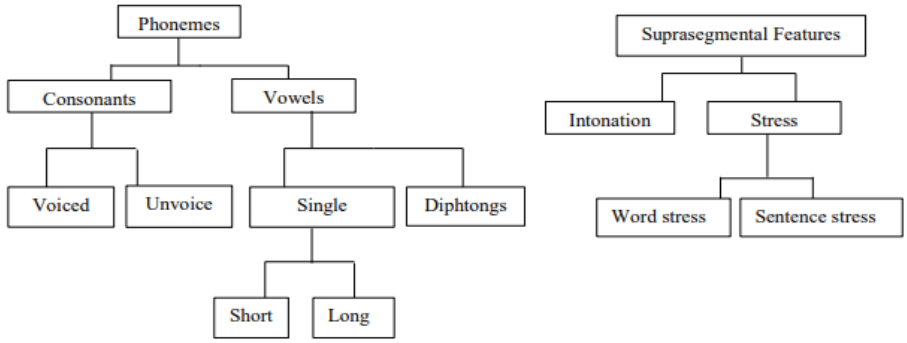
Pronunciation comprises various processes, from creating individual sounds and sound clusters to connecting speech with all its prosodic characteristics (e.g., stress, intonation, etc.). Furthermore, the way we speak conveys something about ourselves to the people around us. Contrary to the common idea that pronunciation is just related to how separate words in a language are articulated, it is also related to the voicing of these words in a sentence.

Pronunciation can be defined as "*the way a certain sound or sounds are produced. Unlike articulation, which refers to the actual production of speech sounds in the mouth, pronunciation stresses more the way sounds are perceived by the hearer*" (Richards & Schimdt, 2010, p. 469).

According to Kelly (2001), Pronunciation can be discussed through two main features: they are segmental features (phonemes) and suprasegmental features. He summarizes the features in the following Figure:

Figure 1

Features of Pronunciation. Kelly, (2001, p.2)



Segmental Features (Phonemes)

Segmental features refer to the individual sound units like **vowels** and **consonants** (Zemková, 2018). All vowels are voiced, whereas consonants can be either voiced or voiceless. English sound system consists of 44 phonemes, including 24 consonants and 20 vowels. Additionally, these features assist speakers to differentiate the meaning according to the sound (Rojak, 2017). According to Kelly (2001), vowel sounds may be single (like / I /in dig), or a combination involving a movement from one vowel sound to another known as diphthong like (like / aʊ /in house).

Single Vowels are divided into two kinds, they are short vowels and long vowels. There are 12 English pure vowels.

- Short vowels are vowel sounds that are pronounced in a short form. There are 7 short vowels in English. They are /ʌ/, /ɑ/, /æ/, /ɛ/, /ɪ/, /ʊ/, and /ə/.

- Long vowels are vowel sounds that are pronounced for a longer duration than short vowels. they are often represented with a colon /ː/. There are 5 long vowels in English. They are /i:/, /u:/, /ɜ:/, /ɔː/, and /a:/.

Diphthongs come from the Greek word *diphthongs*. A diphthong is a combination of two vowel sounds pronounced together, such as the "oy" in "oil." In British RP, well-known diphthongs include /aɪ/, /eɪ/, /ɔɪ/, /ɪə /, /eə/, /ʊə/, /əʊ/, and /aʊ/. Diphthongs are similar in length to the long vowels. It's important to note that in all diphthongs, the first part is significantly longer and stronger than the second part.

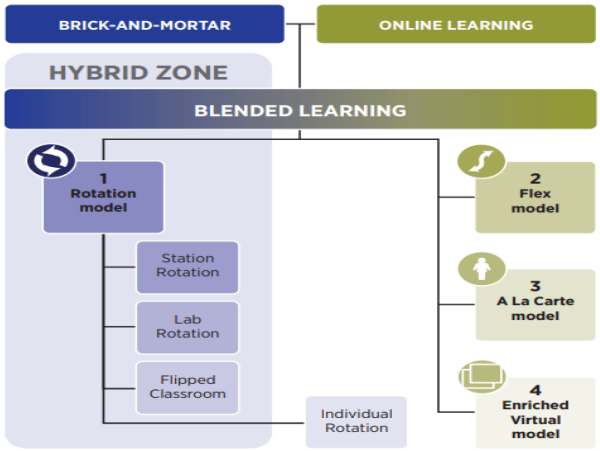
Consonants are sounds in which the air stream meets some obstacles in the mouth on its way up from the lungs. These sounds are classified using the VPM framework, which stands for Voicing, Place of Articulation, and Manner of Articulation (Vocroix, 2021; Rinartha et al., 2018). Voicing refers to whether the vocal folds are used; a sound is voiceless if they are not. The place of articulation concerns where the airflow is blocked or constricted, while the manner of articulation is related to the nature of the obstruction. The English sound system features 24 consonant sounds, which are /b, d, g, v, ð, z, □, ʤ, l, r, j, w, n, m, ŋ, p, t, k, f, s, θ, ʃ, h, ʧ/.

Blended learning is one of the promising approaches with reference to the implementation of the digital technologies in education (Titov, Kurilov, Titova & Brikoshina, 2019). Blended learning includes not only digitally mediated methods, offline or online, but also new non-computer educational tools and techniques (Kayalar, 2020).

Blended learning is defined as a targeted combination of learning media (face-to-face learning and various forms of new technologies) as solutions to improve learning and performance, derived from structured goals and needs (Bizami et al., 2022). Models can vary and should be adapted according to the context in which they are planned to be applied. Horn and Staker (2014) determined, through their research, most blended learning programs fit between broad parameters of four main models as in the following Figure (Powell et al., 2015, p. 7):

Figure (2)

Blended Learning Models



In the flipped classroom model, students rotate on a fixed schedule between classroom instruction during the school day and online outside of school hours. In this way, students control how, when, and where they receive their online instruction, and then rotate back into the classroom environment the following day to apply what they've learned in a project-based environment.

Research Problem:

The problem of the research was derived from the researcher's observation during teaching demonstrations at the faculty of Education, interview with specialized professors in linguistics, and from the results of a pilot research. The researcher prepared a diagnostic test in pronunciation skills. The aim of the test was to assess students' ability to pronounce words, sentences, and read aloud paragraphs accurately, clearly, and fluently. The group of individuals on whom the diagnostic test was administered is fourth-year students of the English department. Thirty-five male and female students have been randomly assigned to take the test on March 20, 2024. The pronunciation test included 10 questions on vowels (short and long), stress patterns, and intonation patterns. The test was administered and asserted by professional TEFL instructors.

Results of the Pilot Study

The pronunciation subskills were assessed, and the mean of each subskill was calculated as shown in Table (1):

Table (1)

The Results of the Pilot Study

Sub Skills	Means
Vowels	7.28
Consonants	7.08

As indicated in Table (1), the mean score of vowels is (7.28) and consonants (7.08) out of 20. These results indicate that the participant's performance in vowels and consonants is considerably below the expected proficiency level. Therefore, it becomes necessary to implement a treatment to enhance their pronunciation performance.

Research Questions:

1- What is the effectiveness of using a blended learning program to enhance pronouncing vowels among prospective EFL teachers?

2- What is the effectiveness of using a blended learning program to enhance pronouncing consonants among prospective EFL teachers?

3- What is the effectiveness of using a blended learning program to enhance the segmental features of pronunciation among prospective EFL teachers?

Research Hypotheses:

The following null hypotheses were formulated to be tested:

1. There is no statistically significant difference ($\alpha \leq 0.05$) level between the post- test mean scores of the experimental group and those of the control group on pronouncing English vowels.
2. There is no statistically significant difference ($\alpha \leq 0.05$) level between the post- test mean scores of the experimental group and those of the control group on pronouncing consonants.
3. There is no statistically significant difference ($\alpha \leq 0.05$) level between the post- test mean scores of the experimental group and those of the control group on pronouncing segmental features.

Methodology:

The current research employed a quasi-experimental design consisting of one control group and one experimental group. The researcher prepared an oral pre-posttest to assess pronunciation skills. The test was conducted for both the control group and the experimental group. The experimental group received the treatment, while the control group was taught using the traditional method.

Participants:

The target population of this research was EFL prospective teachers. The population was narrowed down to an accessible population, consisting of fourth-year students (2024-2025) from the English Department at the Faculty of Education, Kafr El Sheikh University. The researcher randomly selected 45 prospective EFL teachers to serve as the experimental group and another 45 as the control group. The participant's ages ranged between 20 and 21 years. To ensure the internal validity of the research before applying the treatment, a comparison was

made between the experimental group and the control one to make sure they were equivalent.

Table (2)

Results of the Homogeneity between the Experimental Group and the Control Group for the Pre-Test

Group Statistics

Skill	Group	n	Means	Std. Deviation	*t*	Sig. (2-tailed)
Vowels	experimental group	45	11.8	1.546	0.501	0.618
	control group	45	11.62	1.813		In-significant
Consonants	experimental group	45	11.73	1.304	0.224	0.823
	control group	45	11.67	1.508		In-significant

Table (2) shows the results, which confirm that there are no significant differences between the two groups in the pre-test.

Research Tool

- A pronunciation test (prepared by the researcher) administered to all subjects of the sample both before and after the treatment.

The Pronunciation Test:

The researcher prepared an oral pre-posttest to assess the pronunciation of segmental features. The final version of the test was developed after applying the modifications suggested by the jury members. The aim of the test was to assess students' ability to apply pronunciation skills in words, sentences, and paragraphs accurately. The test consisted of five parts. In part one, the researcher asked each student alone some questions about himself to break the ice and ease any tension. This part consisted of ten questions. In part two, the student was required to read aloud a series of words. This part consisted of two sections, five items per section, with two words per item. In part three, the student was required to read aloud some sentences, paying attention to his pronunciation of vowels and consonants. In part four, the student was required to take a look at a conversation. After that, he should role-play the conversation in pairs, taking turns as the agent and the customer. And finally in part five, the student was given a photo and is asked to describe it.

The internal validity coefficient was calculated using the Pearson formula. The correlation between the scores of each individual skill and the total score is calculated as in Table (3).

Table (3)

Pearson Correlation Coefficient for the Segmental Features

		Consonants Post	Total Post
Vowels Post	Pearson Correlation	.832**	.924**
	Sig. (2-tailed)	0.000	0.000
	N	45	45
Consonants Post	Pearson Correlation		.873**
	Sig. (2-tailed)		0.000
	N		45

Table (3) presents Pearson Correlation Coefficient for segmental features (vowels and consonants) which is greater than 0.7, this is a close value to 1, so one can conclude according to (Schober, Boer, & Schwarte, 2018) that there is a statistically strong positive correlation

between vowels and consonants, and consonants and the overall pronunciation performance in the posttest.

Research Materials

- A blended learning program to develop prospective EFL teachers' segmental features.
- A lecturer's guide (prepared by the researcher) to show professors how to use the blended learning program.
- A student's guide (prepared by the researcher) to show prospective teachers how to use blended learning.

Results and Discussion:

The *t*-test for independent samples was used to compare the means of the two groups (control and experimental) on the pronunciation test (pre and post) and the means of the experimental group on the pre and post-test.

Testing the First Hypothesis:

- There is no statistically significant difference ($\alpha \leq 0.05$) level between the post- test mean scores of the experimental group and those of the control group on pronouncing English vowels.

To test this hypothesis, an independent samples *t*-test was conducted to compare the mean scores of vowels of the two groups on the post-test.

Table (4)

t- Values for the vowels Posttest Scores of the Experimental and Control Group

Group Statistics

Skill	Group	n	Means	Std. Deviation	*t*	Sig. (2-tailed)	Eta Squared
Vowels	experimental group	45	20.58	2.34	12.361	0.01	0.635
	control group	45	13.67	2.931		Significant	Large

Table (4) shows that the mean scores are 20.58 and 13.67, the SD aree 2.34 and 2.93 for the experimental and control groups, (t = 12.361, P> 0.01). The t-test results reveal that there is a statistically significant difference at the (0.05) level between the mean scores of the experimental group and those of the control one in pronouncing vowels in favor of the experimental group. Thus, the null hypothesis is rejected. Eta squared (η^2) refers to the effect size, and its value is 0.635, which is greater than 0.14. Therefore, it indicates a large effect size.

Testing the Second Hypothesis:

- There is no statistically significant difference at 0.05 level between the post- test mean scores of the experimental group and those of the control group on pronouncing English consonants.

The *t*-test for independent samples was performed to compare the mean scores of consonants of the two groups on the post-test.

Table (5)

t- Values for the consonants Posttest Scores of the Experimental and Control Group

Group Statistics							
Skill	Group	n	Means	Std. Deviation	*t*	Sig. (2-tailed)	Eta Squared
Consonants	experimental group	45	20.98	2.482	13.875	0.01	0.686
	control group	45	13.73	2.472		Significant	Large

Table (5) shows that the mean scores are 20.98 and 13.73, the SD are 2.482 and 2.472 for the experimental and control groups, (t = 13.875, P> 0.01). The T-test results indicate that there is a statistically significant difference at the (0.05) level between the mean scores of

the experimental group and the control one in pronouncing consonant sounds in favor of the experimental group. Thus, the null hypothesis is rejected. Eta squared (η^2) refers to the effect size, and its value is 0.686, which is greater than 0.14. Therefore, it indicates a large effect size.

Testing the Third Hypothesis:

- There is no statistically significant difference ($\alpha \leq 0.05$) level between the post- test mean scores of the experimental group and those of the control group on pronouncing segmental features.

The following table reveals that the *t*-test for independent samples was performed to compare the mean scores of segmental features of the two groups on the post-test.

Table (6)

t- Values for the segmental features Posttest Scores of the Experimental and Control Group

Group Statistics					
Skill	**Groups**	**n**	**Means**	**Std. Deviation**	***T***
Total	**experimental group**	**45**	**41.56**	**4.615**	**1 3.528**
	control group	**45**	**27.40**	**5.289**	

Table (6) reveals that the mean scores are 41,56 and 27.40, the Std. deviation values are 4.615 and 5.289 for the experimental and control groups, *(t* = 13.528, P> 0.01). The *t*-test results indicate that there is a statistically significant difference at the (0.05) level between the mean scores of the experimental group and the control one in pronouncing consonant sounds in favor of the experimental group. Thus, the null hypothesis is rejected.

Moreover, the difference between the pretest and post test scores of the experimental group was statistically analyzed as shown in Table (7).

Table (7)

Pretest and Posttest Results of the Experimental Group

Paired Samples Statistics

	Means	n	S Std. Deviation	*T*	Sig. (2-tailed)	Size effect
Vowels Post	20.58	45	2.340	35.990	0.01	5.37
Vowels Pre	11.80	45	1.546			
2 Consonants Post	20.98	45	2.482	30.979	0.01	4.62
Consonants Pre	11.73	45	1.304			

The results reveal that the mean score of the experimental group in vowels in the pretest is (11.80), with a standard deviation of (1.546), indicating the participants' performance before applying the program. The posttest mean score after implementing the program increased to (20.58), with a standard deviation of (2.340), reflecting an improvement in the participants' performance. The Sig. (2-tailed) value obtained from the paired samples t-test is (0.01). Since this value is less than 0.05, the difference between the pretest and posttest scores is statistically significant. This means that the improvement observed in the posttest scores is not occurred by chance and can be attributed to the program. Also, the effect size value is (5.37), which is interpreted as large effect according to Cohen's conventions (1988).

The results of the mean scores of the experimental group in consonants in the pretest is (11.73), with a standard deviation of (1.304), indicating the participants' performance before applying the program. The posttest mean score after applying the program increased to (20.98), with a standard deviation of (2.482), reflecting an

improvement in the participants' performance. The Sig. (2-tailed) value obtained from the paired samples t-test is (0.01). Since this value is less than 0.05, the difference between the pretest and posttest scores is statistically significant. This means that the improvement observed in the posttest scores is not occurred by chance and can be attributed to the program. Also, the effect size value was (4.62), which is interpreted as large effect.

Discussion:

The research findings show that the blended learning program has a large positive effect on the experimental group, showing significant improvements in their performance. This highlights the success of blended learning in achieving better outcomes. These results are consistent with Sabat et al. (2022) which revealed that the use of blended learning model was effective to increase students' interest and motivation in learning pronunciation. These findings also align with Al-Mofti (2020) and Alzahrani and Alqurashi (2023), who reported that a blended learning model (flipped classroom)

positively impacted students' pronunciation and resulted in positive feedback and satisfaction.

However, despite these positive effects of the research, the results did not reach to the effectiveness. This indicates that while the program was beneficial, further refinement or continued application might be necessary to enhance its overall effectiveness.

Conclusion

This research explored the effectiveness of using the blended learning program to enhance segmental features of pronunciation among prospective EFL teachers. The findings demonstrated that blended learning models significantly improved the segmental features of the experimental group compared to the control group. By allowing students to engage with content outside of traditional class hours and dedicate in-class time to active practice and feedback, the blended learning facilitated more focused and personalized learning. However, while the program had a notable impact, it did not fully reach the desired level of effectiveness across all aspects of pronunciation.

Recommendations

The researcher recommends the following practices to be applied in EFL contexts to enhance learner's segmental features of pronunciation through blended learning:

1. EFL instructors should adopt blended learning models to create more engaging and effective learning environments.

2. EFL learners should take an active role in online and face-to-face exercises to improve their pronunciation skills.

3. Researchers should conduct further studies on the long-term effects of using blended learning to enhance pronunciation skills.

4. Curricula designers should ensure that pronunciation objectives are supported by appropriate digital resources.

Suggestions for Further Research

Based on the results of this research, the researcher suggests the following for subsequent studies:

1. Integrating more pronunciation focused activities in the blended learning program.

2. Replication of this research from the first year at the English department to ensure better results and more improvements.

3. Replication of this research with a longer duration to observe the long-term effects of the blended learning on pronunciation skills.

4. Incorporating multimedia tools and technology to further enhance the blended learning experience to improve pronunciation skills.

5. Instructing teachers to use digital tools to be able to apply the blended learning models in their teaching.

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