The Role of Voice Recording in Enhancing English Pronunciation: A Case Study of Libyan EFL Learners

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دور تسجيل الصوت في تحسين النطق باللغة الإنجليزية ـ
دراسة حالة لطلاب اللغة الإنجليزية كلغة أجنبية في ليبيا

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الملخّـــص :

تهدف هذه الدراسة إلى استقصاء دور تسجيل الصّوت كأداة تعليمية فعّالة لتحسين النّطــق لدى متعلمي اللغة الإنجليزية كلغة أجنبية في السياق الليبي. وانطلقت الدراسة من التحديات التي يواجهها الطلبة في إنتاج الأصوات الإنجليزية بدقة نتيجة لتأثير النظام الصوتي للغة الأم. اعتمد البحث على منهج مختلط يجمع بين التحليل النوعي لتسجيلات صوتية قبل وبعد التدخل، إضافة إلى بيانات استبيان كمي/ نوعي يهدف إلى قياس وعي الطالب بالنطق، وقدرته على التصحيح الذاتي، ومستوى ثقته في مهاراته الشفوية. شملت العينة خمس عشرة طالبة من قسم اللغة الإنجليزية بجامعة طرابلس. أظهرت نتائج تحليل الأخطاء أن الطالبات تمكنّ من تصحيح من تصحيح 63.7% من الأخطاء الصوتية المستهدفة بعد أسبوع واحد من تطبيق منهج "سجّل-استمع-قارن". كما أظهرت بيانات الاستبيان أن 100% من المشاركات أكدنَ أن التسجيل ساعدهن في ملاحظة أخطائهن، بينما أشارت 80% إلى تحسّن ملحوظ في ثقتهن في التحدث. وبينت النتائج أيضاً أن التسجيل الصوتي عزز من الاستقلالية في التعلم، ووفّر مساحة آمنة للتمرّن بعيداً عن ضغط التفاعل المباشر.

وتخلص الدّراســـــة إلـــى أن تسجيل الصوت أداة فعّالة ومنخفضة التكلفة يمكن دمجها في برامج تعليم النطق لتعزيز الوعي الفونولوجي وتطوير الدقة الصوتية لدى المتعلمين. كما توصي بتوسيع تطبيقها في بيئات تعليمية مختلفة، وإجراء دراسات طولية لاستكشاف أثرها على المدى البعيد

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1. Introduction

English has established itself as a global lingua franca, playing a pivotal role across various professional and academic sectors. In the contemporary era, proficiency in English is no longer an advantage but a necessity, particularly within international corporations where it serves as the primary medium of communication (Crystal, 2003). Furthermore, the rapid advancement of technology has integrated English into the fabric of daily life, making it the dominant language of the internet and social media platforms (Graddol, 2006).

Despite its global significance, many learners encounter substantial obstacles in achieving oral fluency. Central to these challenges is pronunciation, a fundamental component of effective communication. As Akilbekova (2025) emphasizes, while pronunciation is a key determinant in enhancing communicative competence, it remains one of the most cognitively and linguistically demanding skills for non-native speakers to master.

The difficulties faced by English as a Second Language (ESL) learners often stem from phonological discrepancies between their native language (L1) and English (L2). Many learners struggle with English phonemes that do not exist in their mother tongue, often projecting L1 phonetic rules onto their L2 speech. Al-Zayed (2017) attributes these pronunciation errors primarily to "mother tongue interference" and a general lack of phonetic awareness.

Pronunciation is defined by Prashant (2018 p.16) as "the reproduction of language sounds in such a way that the intended message is passed easily". Achieving intelligible pronunciation is essential not only for speaking but also for listening comprehension (Gilakjani, 2016). To mitigate these challenges, modern pedagogical approaches suggest the use of specialized tools. Voice recording, along with AI-driven applications like Speechling and ELSA Speak, offers learners a platform for phonetic analysis and error identification.

Specifically, voice recording serves as a powerful metacognitive tool. According to Siregar (2023), the primary objective of employing voice

recordings is to facilitate fluency and minimize the influence of regional dialects (p. 43). This technique allows learners to engage in a "record-listen-compare" cycle, where they contrast their speech with native models. This process fosters self-correction and has been shown to increase learner confidence and overall communicative proficiency (Prayudha, 2024).

2. Statement of the Problem

In the Libyan context, English is taught as a Foreign Language (EFL) primarily within restricted classroom settings, resulting in limited opportunities for authentic oral practice. Consequently, many Libyan learners struggle with accurate pronunciation, particularly regarding segmental features such as specific consonant and vowel sounds that are absent in Arabic.

The tendency to apply Arabic phonetic rules to English often leads to unintelligibility. This lack of phonetic precision not only hinders effective communication but also negatively impacts learners' psychological state, leading to reduced confidence and a hesitation to engage in oral activities. Given these barriers, there is an urgent need to investigate practical, effective methods—such as voice recording—to bridge the gap between theoretical knowledge and spoken performance.

3. Research Aims

This study aims to investigate the efficacy of voice recording as a pedagogical tool for improving pronunciation among EFL learners.

4. Research Objectives

To investigate the extent to which voice recording assists students in identifying and self-correcting pronunciation errors.

To examine the mechanisms through which voice recording facilitates phonetic improvement.

To explore the impact of voice recording on promoting self-practice and bolstering speaking confidence.

5. Research Questions

The study seeks to address the following questions:

Q1-To what extent does the use of voice recording help students identify and correct their pronunciation errors?

Q2-How does the practice of voice recording contribute to the improvement of students' pronunciation?

Q3-Does the use of voice recording provide a viable platform for self-practice and the development of speaking confidence?

6. Research Design

This study employs a mixed-methods approach, integrating both qualitative and quantitative data to provide a comprehensive analysis.

Qualitative Data: Derived from students' actual voice recordings, which are analyzed to track the identification and correction of phonetic errors.

Quantitative/Qualitative : A 15-item questionnaire (14 closed-ended and 1 open-ended) was administered to explore student perceptions regarding the tool's impact on their confidence and self-practice habits.

Participants: The sample consisted of 15 female undergraduate students from the English Department, Faculty of Education, University of Tripoli, Libya.

7. Significance of the Study

This research is significant as it addresses a critical gap in the Libyan EFL literature regarding low-cost, technology-mediated pronunciation tools. For students, it introduces an accessible method for autonomous learning and confidence-building. For educators, it provides a framework for tracking student progress and delivering constructive feedback outside traditional classroom hours. Ultimately, the findings contribute to a deeper understanding of how simple technological interventions can enhance oral communication skills in resource-limited settings.

LITERATURE REVIEW

2.1 Introduction

Following the foundational overview provided in the previous chapter, this section delves into the theoretical and empirical underpinnings of utilizing voice recording as a pedagogical tool for enhancing English pronunciation. It examines the definition and multifaceted importance of pronunciation, alongside a technical exploration of voice recording's benefits and applications. Furthermore, this chapter discusses the integration of recording technologies within diverse learning environments and synthesizes relevant empirical studies to highlight existing research gaps that this study intends to address.

2.2 Definition and Importance of Pronunciation

Pronunciation is a cornerstone of linguistic competence, fundamentally dictating the clarity and intelligibility of oral communication. Aboe, Thalib, and Bundu (2023 p. 726) conceptualize pronunciation as "the production of sounds that we use to convey meaning". Beyond the mechanical articulation of sounds, effective pronunciation ensures the precise delivery of a speaker's intent. Mastering this skill empowers learners to articulate ideas cogently, thereby bridging the gap between linguistic knowledge and communicative success. Moreover, a high degree of phonetic accuracy is intrinsically linked to learner confidence (Kasimov, 2022). Despite being one of the most formidable hurdles in language acquisition, pronunciation remains indispensable due to its direct impact on mutual intelligibility (Kissova, 2019).

Phonetically, pronunciation is categorized into suprasegmental and segmental features. Suprasegmental elements encompass prosodic features—such as stress, intonation, and rhythm—that govern the musicality and meaning of entire utterances. Conversely, segmental features refer to individual phonemes, including vowels and consonants. Research indicates that common segmental errors often involve substitution, omission, addition, and vowel length confusion (Wu & Wang, 2020). For instance, EFL learners frequently substitute complex English phonemes with familiar L1 sounds, such as replacing the voiceless dental fricative /θ/ with the alveolar plosive /t/, or the voiced labiodental fricative /v/ with the voiceless /f/.

2.3 Definition of Voice Recording

Voice recording refers to the digital capture and storage of spoken language through electronic devices, most commonly smartphones. In the context of English as a Foreign Language (EFL), it serves as a reflective tool that allows learners to archive and audit their own speech. The ubiquity of mobile technology has democratized access to these tools, as noted by Japer (2021), who defines voice recording as an accessible medium for learners to generate fundamental audio data for self-evaluation (p. 252).

2.4 Benefits of Voice Recording

The pedagogical advantages of voice recording are manifold. It heightens phonetic awareness and fluency by allowing learners to externalize their

speech, identify discrepancies, and monitor longitudinal progress. For inhibited or "shy" students, the tool fosters a sense of autonomy and psychological safety. Aoki (2014) highlights a dual benefit: learners can refine their output through rehearsal before recording, while educators can provide asynchronous, constructive feedback, overcoming the temporal constraints of the traditional classroom. This creates a low-anxiety environment where learners can experiment with sounds without the immediate pressure of peer judgment.

2.5 Applications of Voice Recording

As versatile "voice tools," these technologies offer varied opportunities for enhancing oral proficiency (Pop, & David, 2011). Beyond individual practice, recordings can facilitate collaborative tasks such as role-plays or dialogues. Platforms like WhatsApp and Telegram have emerged as vital conduits for this practice, allowing students to exchange voice notes and receive individualized feedback in a way that classroom time often precludes (Al-Rubaat & Alshammari, 2020). This flexibility enables sustained engagement with the language outside formal instruction.

2.6 Pedagogical Integration: Inside and Outside the Classroom

The iterative process of recording, reviewing, and re-recording provides a structured pathway for phonetic improvement.

In-Class Integration: Educators can utilize recording for oral assessments, reading-aloud tasks, and collaborative group work, which encourages participation from less vocal students.

Extramural Practice: Outside the classroom, learners can engage in autonomous activities such as describing visual prompts or reading texts. Studies by Albogami and Algethami (2022) suggest that using mobile applications for real-life communication simulation significantly enhances communicative confidence and authentic language use.

2.7 Enhancing Pronunciation via Voice Recording

Voice recording acts as a mirror for the learner's phonetic performance. By contrasting their output with native or teacher models, students can achieve higher accuracy in segmental features (Gilakjani, 2012). Practicing through recording not only targets specific vowel and consonant errors but also mitigates "speaking anxiety," a common barrier in EFL contexts (Yaman,

2016). Ultimately, it serves as a diagnostic and developmental tool that facilitates independent tracking of phonetic evolution.

2.8 Review of Empirical Studies

Several recent studies underscore the efficacy of this tool:

LoorBailón et al. (2025) In a mixed-methods study in Ecuador, students utilizing WhatsApp for voice recording showed a 10.14% increase in pronunciation scores. The "record-compare" method significantly improved self-correction and phonetic awareness.

Mancera Arévalo (2014) Focusing on eighth-grade students in Colombia, this study found that self-recordings led to marked improvements in specific consonant sounds (/s/, /w/, /θ/) and increased learner motivation and self-reflection.

Jaber (2021) Investigating university students in Iraq, Jaber observed a 26.8% improvement in segmental features after a three-month intervention using voice recordings, noting that while students recognized errors, they still required guidance for correction.

Siregar (2023) Conducted in Indonesia, this research demonstrated that recording tasks in phonetics courses helped students navigate segmental and suprasegmental challenges, while acknowledging the influence of L1 interference and motivation.

2.9 Gaps in the Literature

Despite the global interest in voice recording for pronunciation, there is a distinct paucity of research within Arab contexts, and specifically within Libya. Most existing literature examines broad speaking skills (fluency, accuracy, and prosody) without providing a focused analysis of segmental features within an Arabic-speaking framework. Furthermore, the role of self-recording in fostering error identification and self-correction among Libyan EFL learners remains under-explored. This study aims to fill these lacunae by investigating the impact of voice recording on the segmental pronunciation of Libyan learners and its role in building independent speaking confidence.

METHODOLOGY

3.1 Introduction

Building upon the theoretical framework and empirical review presented in the previous chapter, this section elucidates the methodological approach

employed in this study. It provides a detailed account of the research design, setting, participant demographics, and instrumentation. Furthermore, it outlines the data collection procedures, analytical techniques, and ethical considerations, while acknowledging the limitations inherent in the research process.

3.2 Research Design

This study adopts a mixed-methods research design, integrating both qualitative and quantitative approaches to provide a holistic understanding of the role of voice recording in phonetic improvement. As Creswell (2014) posits, mixed-methods research involves the collection and integration of both forms of data to yield a more comprehensive inquiry (p. 32).

Qualitative Strand focused on analyzing students' voice recordings to monitor the identification and rectification of pronunciation errors over time.

Quantitative Strand utilized a structured questionnaire to statistically measure students' perceptions regarding the effectiveness of voice recording in fostering autonomy and confidence.

3.3 Research Site

The study was conducted within the English Department at the Faculty of Education, University of Tripoli, Libya, during the Fall semester of 2025. This site was purposively selected as it hosts pre-service English teachers whose professional success depends heavily on oral proficiency and phonetic accuracy, making them an ideal cohort for investigating pronunciation-enhancing tools.

3.4 Participants

The participant pool consisted of 15 female undergraduate students enrolled in the "Listening and Speaking 3" course. The participants, aged between 20 and 21, were in their third and fourth semesters of study. This specific group was chosen due to their intermediate proficiency level, where phonetic refinement is most critical.

3.5 Research Instrumentation

To ensure a robust data triangulation, two primary instruments were utilized Voice Recording Tasks each participant provided two distinct audio samples (pre-intervention and post-intervention). This tool was designed to

qualitatively assess the participants' ability to self-diagnose and correct segmental errors.

Digital Questionnaire developed via Google Forms and distributed through Telegram, the survey comprised 15 items: 14 closed-ended questions (Likert-scale/multiple choice) for quantitative analysis and one open-ended question for qualitative insights. The questionnaire aimed to gauge learner attitudes toward self-practice and communicative confidence.

3.6 Data Collection Procedures

The data collection followed a systematic multi-phase process:

Initial Phase: Participants recorded an baseline audio sample on a specific topic via Telegram, reflecting their natural, unpracticed pronunciation.

Intervention Phase: For one week, students engaged in a "self-correction cycle." They compared their initial recordings with native speaker models, identified discrepancies, and practiced the target sounds independently.

Final Phase: Participants submitted a second recording of the same script to demonstrate phonetic improvement.

Survey Phase: Following the recording tasks, the digital questionnaire was administered to capture the students' reflective experiences and perceived gains in confidence.

3.7 Data Analysis

A bifurcated analytical approach was applied:

Qualitative Analysis: Audio data were subjected to Error Analysis (EA). Segmental mistakes identified in the baseline recordings were compared against the final recordings to evaluate the degree of phonetic correction and improvement. Qualitative responses from the open-ended survey question were thematically summarized to reflect student sentiment.

Quantitative Analysis: Data from the closed-ended survey items were processed using SPSS (Statistical Package for the Social Sciences). Descriptive statistics, including frequencies and percentages, were calculated to provide a clear quantitative representation of the tool's perceived efficacy.

3.8 Research Trustworthiness

The credibility and dependability of the findings were maintained through data triangulation (combining recordings and survey data) and rigorous monitoring of the data collection process. By meticulously analyzing both

objective performance (recordings) and subjective perceptions (questionnaires), the study ensures that the results accurately reflect the participants' phonetic development.

3.9 Ethical Considerations

This research adhered to strict ethical protocols. Informed consent was obtained from all participants prior to data collection. Participants were briefed on the study's objectives and assured that their involvement was voluntary, with the right to withdraw at any time. To maintain anonymity, personal identifiers were removed, and all digital data were stored in secure, password-protected files used exclusively for academic purposes.

3.10 Research Limitations

Several limitations should be noted:

Sample Size: The small cohort (N=15) may limit the generalizability of the findings to a broader population.

Duration: The study was conducted over a relatively short period; a longitudinal approach might yield deeper insights into phonetic retention.

Gender Homogeneity: As the participants were exclusively female, the results may not account for potential gender-based variations in language learning strategies.

RESULTS AND FINDINGS

4.1 Introduction

Following the methodological framework detailed in the previous chapter, this section presents the empirical findings derived from the data analysis. The results are synthesized from two primary instruments: the participants' longitudinal voice recordings and a comprehensive perception questionnaire. The questionnaire comprised 15 items, bifurcated into nine closed-ended questions addressing the efficacy of voice recording in phonetic correction, and six items (including one open-ended) focused on self-practice and communicative confidence. These findings collectively address the core research questions regarding the impact of voice recording on EFL pronunciation.

4.2 Efficacy of Voice Recording in Error Identification and Correction

This phase of the study examined the extent to which voice recording facilitates the recognition and rectification of pronunciation errors. Fifteen female students from the "Listening and Speaking 3" course participated in

a "record-listen-compare" task. Participants initially recorded an impromptu speech regarding the humanitarian situation in Gaza to establish a baseline. Following a comparative analysis with native speaker models, students engaged in a one-week practice period before submitting a second recording.

Error Analysis (EA) Results:

The baseline recordings yielded a total of **99 specific mispronunciations**. Post-intervention analysis revealed that **63 of these errors were successfully corrected**, marking a significant **63.7% improvement** in phonetic accuracy. The qualitative analysis of the 30 recordings identified seven recurring error categories, as detailed in Table 1.

Table 1: Analysis of Phonetic Errors Identified in Student Voice Recordings

Word	Phonetic Target	Student Realization	Phonetic Deviation	Error Category
Courage	/ˈkʌrɪdʒ/	/ˈkuːrɪʒ/	/ʌ/ → /uː/, /dʒ/ → /ʒ/	**Vowel Confusion + Substitution**
Deserve	/dɪˈzɜːrv/	/dɪˈsərf/	/z/→/s/, /v/→/f/, /ɜː/→/ə/	**Devoicing + Substitution**
Darkest	/ˈdɑːrkɪst/	/ˈdɑːrknest/	Epenthesis of /n/, /ɪ/→/e/	**Addition + Substitution**
Faith	/feɪθ/	/feɪt/	/θ/ → /t/	**Voiceless Consonant Confusion**
Strength	/streŋθ/	/strɪŋ/	/e/ → /ɪ/, /θ/ Omission	**Substitution + Omission**
Region	/ˈriːdʒən/	/ˈriːʒɪn/	/dʒ/ → /ʒ/, /ə/ → /ɪ/	**Substitution + Schwa Error**
Resilient	/rɪˈzɪliənt/	/rɪˈsiːlɪnt/	/z/→/s/, /ɪ/→/iː/, /ə/ Omission	**Devoicing + Vowel Confusion**
Despite	/dɪˈspaɪt/	/dɪˈspeɪt/	/aɪ/ → /eɪ/	**Diphthong Error**
Live	/lɪv/	/liːf/	/ɪ/ → /iː/, /v/ → /f/	**Vowel Confusion + Devoicing**

**Student Perceptions: The Role of Voice Recording in Phonetic Development**

The quantitative analysis of the questionnaire data (pie 1–5) highlights a strong consensus among participants regarding the utility of voice recording.

- **Error Detection:** A significant **100%** of participants (53.3% Strongly Agree, 46.7% Agree) confirmed that recording their voices helped them detect pronunciation mistakes (pie 1).
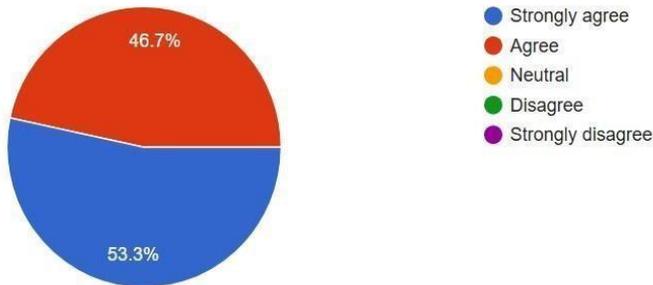

pie 1. Noticing Pronunciation Mistakes through Voice Recording

- **Phonetic Awareness: 86.6%** reported an increased awareness of their pronunciation, with only 13.3% remaining neutral (pie 2).
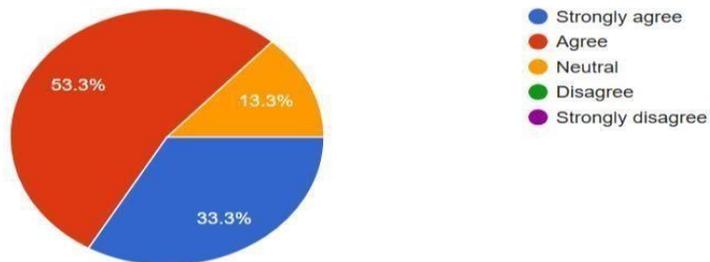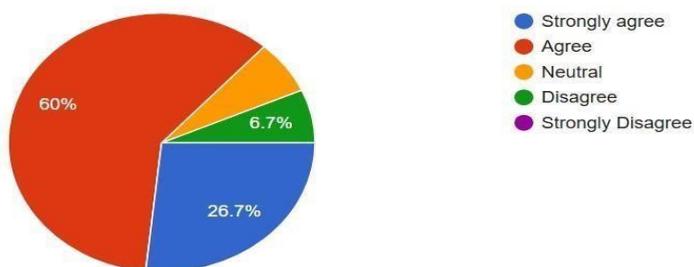

pie 2. Increasing Awareness of Pronunciation through Voice Recording

- **Accuracy and Progress: 80%** of respondents agreed that the tool improved their accuracy (pie 3) ,and **86.7%** found that comparing temporal recordings (early vs. late) was a vital indicator of their progress (pie 4).
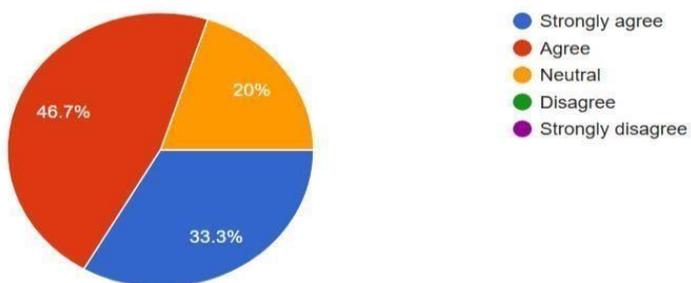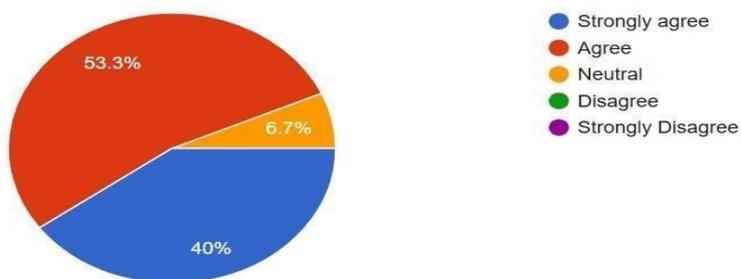
pie 3. Improving Pronunciation Accuracy Using Voice Recording

pie 4. Showing Progress by Comparing Early and Later Recordings

- **Self-Evaluation: 93.3%** of students utilized their recordings to identify specific areas requiring further linguistic refinement (pie 5).


pie 5. Identifying Areas that Need Improvement by Listening to Recordings

4.3 Voice Recording as a Tool for Autonomous Practice and Confidence

The study further explored the psychological and self-regulatory impact of the tool (pie 6–9).

- **Communicative Confidence: 80%** of participants reported that practicing with recordings bolstered their confidence in speaking English (pie 6).
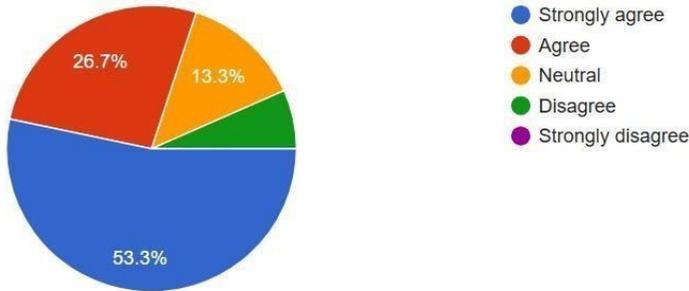

pie 6. Increasing Confidence in Speaking English through Voice Recording

- **Extramural Utility: 66.7%** viewed voice recording as an effective tool for practice outside the traditional classroom, though a small minority (13.3%) expressed skepticism (pie 7).


pie 7. Using Voice Recording to Practice English Outside the Classroom

- **Learner Autonomy:** Notably, **80%** of participants felt capable of correcting their pronunciation independently without direct teacher intervention (pie 8).
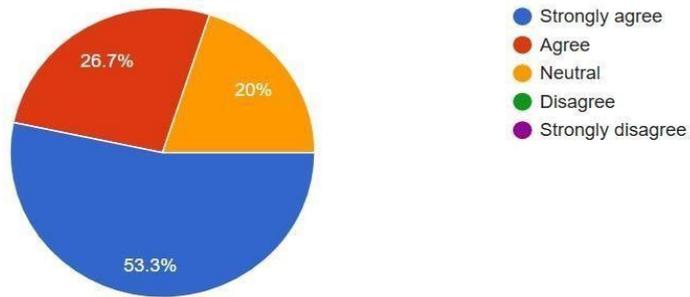
pie 8. Using Voice Recording to Correct Pronunciation without a Teacher's Help

- **Future Adoption: 80%** indicated a commitment to utilizing voice recording for future skill development (pie 9).
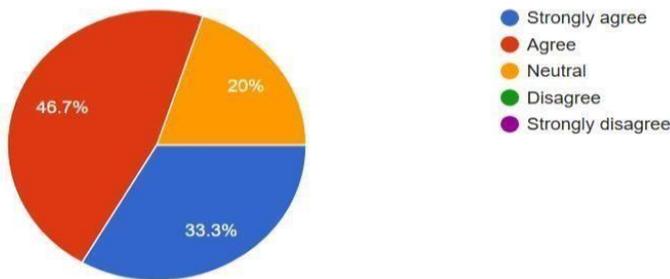
pie 9. Using Voice Recording to Improve Speaking Skill in the Future

Qualitative Insights from Open-Ended Responses

When asked to suggest supplementary tools (Item 10), which indicates 47% of participants deemed voice recording sufficient. However, 53% suggested a blended approach involving:

1. **Technological Tools:** ELSA Speak, Duolingo, YouGlish, and the British Council app.
2. **Pedagogical Techniques:** Shadowing and immersive listening to native speakers.

4.4 Summary of Quantitative Data

Table 2 provides a comprehensive overview of the response distributions across all questionnaire items.

Table 2: Percentage Distribution of Participant Responses (N=15)

Questionnaire Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Noticing mistakes through recording	**53.3%**	**46.7%**	**0%**	**0%**	**0%**
Increasing phonetic awareness	**33.3%**	**53.3%**	**13.3%**	**0%**	**0%**
Improving pronunciation accuracy	**33.3%**	**46.7%**	**20%**	**0%**	**0%**
Monitoring progress via comparison	**26.7%**	**60%**	**6.6%**	**6.7%**	**0%**
Identifying areas for improvement	**40%**	**53.3%**	**6.7%**	**0%**	**0%**
Enhancing confidence in speaking	**53.3%**	**26.7%**	**13.3%**	**6.7%**	**0%**
Practicing outside the classroom	**26.7%**	**40%**	**20%**	**6.6%**	**6.7%**
Correcting errors without teacher aid	**53.3%**	**26.7%**	**20%**	**0%**	**0%**
Future intention to use recording	**33.3%**	**46.7%**	**20%**	**0%**	**0%**
Comfort in listening to own voice	**13.3%**	**33.3%**	**40%**	**6.7%**	**6.7%**

DISCUSSION AND CONCLUSION

5.1 Introduction

This final chapter synthesizes the empirical findings in relation to the existing literature, offering a critical discussion on how this study correlates with or diverges from previous research. Furthermore, it presents a conclusive summary, pedagogical recommendations, an acknowledgment of the study's limitations, and directions for future scholarly inquiry.

5.2 Discussion of the Findings

The evidence gathered in this study underscores the transformative role of voice recording in enhancing EFL pronunciation. A significant majority of participants exhibited marked phonetic improvement after engaging in the

"record-listen-compare" cycle. By contrasting their speech with native-speaker models, students successfully bridged the gap between their initial phonetic output and the target pronunciation. This iterative process not only improved segmental accuracy but also fostered a sense of autonomous learning and psychological readiness.

Comparative Analysis with Prior Research: The results align with **Loor Bailón et al. (2025)**, who highlighted the efficacy of comparing student output with teacher models for error identification. However, while Loor Bailón reported a 10.14% improvement, this study observed a significantly higher correction rate of **63.7%**. This disparity underscores the high impact of intensive, focused practice on segmental features within the Libyan context.

Similarly, the findings corroborate **Mancera Arévalo (2014)**, who noted that self-recording heightens phonetic awareness and helps students reflect on their linguistic strengths and weaknesses. While Arévalo focused on specific phonemes (/s/, /w/, /θ/), this study broadened the scope to **general segmental features**, confirming that voice recording is a versatile tool for various phonetic challenges.

When compared to **Jaber (2021)**, this study found a much higher improvement rate in segmental features (63.7% vs 26.8%). A pivotal point of divergence lies in **learner confidence**. While Jaber's participants recognized their errors but lacked the confidence to self-correct, the participants in this study demonstrated high levels of self-efficacy, successfully identifying and correcting their mistakes independently.

Finally, while **Siregar (2023)** emphasized the importance of teacher and peer feedback, this research demonstrates that **autonomous self-correction** via native-speaker models is equally—if not more—effective for certain learner cohorts. This suggests that voice recording can serve as a powerful tool for self-regulated learning, reducing the burden on classroom time.

5.3 Conclusion

In conclusion, the study successfully demonstrated that voice recording is an effective pedagogical intervention for improving English pronunciation among Libyan EFL learners. It facilitates a critical self-evaluative process where learners notice, analyze, and rectify phonetic errors. By providing a

platform for independent practice, voice recording not only improves segmental accuracy but also significantly bolsters speaking confidence. These findings contribute to the growing body of evidence supporting the integration of mobile technology in language learning.

5.4 Recommendations

Based on the findings, the following pedagogical recommendations are proposed:

- **Integrated Self-Correction:** Educators should incorporate regular "record-and-compare" tasks into the curriculum, encouraging students to benchmark their speech against native models.
- **Asynchronous Practice:** Voice recording activities should be utilized both inside and outside the classroom to maximize practice time and build oral confidence.
- **Training in Self-Evaluation:** Students should be explicitly taught self-evaluation techniques to foster autonomy and reduce reliance on immediate teacher feedback.
- **Technological Professional Development:** Training programs should be provided for teachers on how to effectively implement pronunciation apps and recording tools in EFL settings.

5.5 Research Limitations

Despite its significant findings, this study is subject to several limitations:

1. **Sample Constraints:** The sample was limited to 15 female students at a single institution, which may restrict the generalizability of the results to male students or other geographical regions.
2. **Temporal Scope:** The intervention was conducted over a one-week period. Consequently, the results reflect short-term phonetic improvement rather than long-term linguistic retention.

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