

Development and Validation of Instruments for Measuring Shadowing Exercises through Mobile-assisted Language Learning (MALL) in EFL Learning

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Abstract. This study aims to create a simple and effective way to measure how shadowing exercises using MALL help students learn English as a foreign language. Shadowing, the act of vocalizing speech simultaneously as it is heard, is recognized for enhancing various language skills. The research aimed to develop and validate such an instrument grounded in standardized surveys. Methods employed included the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (.875) and Bartlett's Test of Sphericity ($\chi^2 = 659.572$, $df = 55$, $p < .000$) to assess data suitability for factor analysis. The survey instrument comprised 11 items assessing various aspects of shadowing exercises through MALL software. Factor analysis revealed a single dominant component explaining 75.929% of the total variance, indicating the construct's unidimensionality. Items related to challenges, benefits, and intended integration of MALL-based shadowing exercises into daily learning routines exhibited higher loadings, aligning strongly with the latent construct. Results underscore the potential of MALL-facilitated shadowing exercises as an effective tool to enhance EFL learners' overall language proficiency and motivate their learning journey. This study contributes to the growing body of research on the integration of MALL in shadowing exercises, offering a reliable and streamlined means to measure the impact of such interventions.

Keywords: shadowing exercises using Mobile-assisted Language Learning (MALL), development and validation of instruments, pronunciation, intonation, oral English fluency, EFL

1. Introduction

1.1. Background Information

Shadowing exercises, a potent tool in English as a Foreign Language (EFL) learning, involve closely following and repeating the speech of a native or proficient speaker in a delayed manner, mimicking their pronunciation, intonation, rhythm, and stress [15]. This technique encourages learners to immerse themselves in the language, fostering a deeper understanding of its nuances and intricacies [9].

Commonly used in language classrooms and self-study routines, shadowing exercises offer a unique opportunity for learners to actively engage with authentic language materials, be it news broadcasts, movie dialogues, or TED Talks [6]. By mimicking the speaker's voice, learners not only hear but also physically produce the language, reinforcing both auditory and motor memory pathways essential for language acquisition [10].

Pronunciation accuracy stands out as a significant benefit of shadowing exercises [11]. It hones learners' ability to discern minute pronunciation differences, facilitating comprehension of native speakers. The active listening and replication process inherent in shadowing implicitly enhances listening skills, making learners more sensitive to language nuances like word stress, sentence rhythm, and idiomatic expressions [13], which are often challenging for non-native speakers to grasp. Over time, this intensive listening practice leads to improved comprehension and a deeper understanding of the language's spoken form. This intensive listening practice, over time, fosters improved comprehension and a profound understanding of the language's spoken form.

Intonation, another crucial aspect of spoken language, also benefits significantly from shadowing. As learners mimic the speaker's rising and falling tones, they develop a more natural-sounding intonation pattern [4], enhancing the overall expressiveness and clarity of their speech. By rehearsing continuous speech patterns and smooth transitions between words and phrases, learners can enhance their ability to speak with confidence and proficiency, reducing hesitations and pauses [17].

Numerous studies and theories support the effectiveness of shadowing exercises in language learning. For instance, the Input Hypothesis by Stephen Krashen emphasizes the importance of comprehensible input in language acquisition, and shadowing exercises provide learners with ample opportunities to receive and process such input [7]. Additionally, the Mirror Neuron System theory suggests that observing and imitating others' actions activate similar neural pathways in the observer's brain [3], explaining why shadowing can lead to improved motor skills and pronunciation accuracy.

With the advent of Mobile-assisted Language Learning (MALL), the incorporation of technology into shadowing exercises presents new opportunities for enhancing EFL learning. MALL leverages mobile devices to deliver language learning content anytime and anywhere, potentially increasing the accessibility and flexibility of shadowing exercises [16]. This study's development and validation of a quantitative instrument grounded in standardized surveys aim to measure the effectiveness of MALL-based shadowing exercises, contributing to the growing body of research on technology's role in language education.

1.2. Research Gap

Despite the integration of shadowing exercises in EFL learning, there is a notable gap in the validation of survey instruments designed to measure their impacts, particularly within the context of Mobile-assisted Language Learning (MALL). The current lack of such instruments limits our ability to quantitatively assess the impact of MALL-enhanced shadowing on language acquisition.

This gap poses challenges for educational stakeholders, as it restricts informed decision-making regarding the incorporation of MALL-based shadowing exercises into curricula and the adaptation of these practices to diverse learner needs. The reliance on non-validated survey methods results in a subjective assessment that may not accurately reflect the true benefits of shadowing exercises in a MALL environment.

Addressing this gap is essential for developing evidence-based strategies that enhance language learning through shadowing exercises. A validated survey instrument would provide a reliable measure of the impact of MALL-based shadowing exercises, facilitating the identification of key success factors and enabling a more targeted approach to language education. This research aims to contribute to the field by offering a streamlined and reliable tool for evaluating the integration of technology in EFL learning, ultimately aiming to improve language proficiency for learners worldwide.

1.3. Research Objectives

I. To validate a concise and user-friendly survey instrument that effectively measures the impact of Mobile-assisted Language Learning (MALL) on shadowing exercises in EFL contexts.

II. To quantify the influence of MALL-based shadowing exercises on key language skills such as pronunciation, intonation, and oral English fluency.

1.4. Significance

This study holds significance by focusing on the validation of a survey instrument designed to measure the impact of shadowing exercises facilitated by Mobile-assisted Language Learning (MALL) in EFL contexts. The emphasis on shadowing exercises as a pedagogical tool is paramount, given their potential to enhance learners' language skills through active listening and speaking practices.

The streamlined survey instrument developed in this research serves as a crucial evaluative measure, providing clarity on the impact of shadowing exercises when integrated with MALL. By quantifying the influence of these exercises on key language skills—pronunciation, intonation, and oral English fluency—the study offers tangible evidence of the benefits that can be gained from combining traditional language learning methods with modern technology.

The significance of this research is further amplified by its contribution to the broader educational discourse on technology-assisted language learning. It provides educators with a reliable and user-friendly tool to assess and enhance the pedagogical value of shadowing exercises within their curricula, ultimately aiming to elevate the overall language proficiency of EFL learners.

In essence, this study is significant for its targeted approach to validating an assessment instrument for shadowing exercises, its focus on enhancing core language competencies, and its potential to improve language learning practices through the strategic use of MALL as a supportive tool.

2. Literature Review

2.1. Conceptual Framework

Informed by several key theories, this study seeks to understand the role of shadowing exercises in EFL learning. The Input Hypothesis, Imitation Theory, and Information Processing Theory provide a theoretical foundation for examining how learners process and internalize linguistic input through shadowing activities.

The input Hypothesis posits that learners' ability to acquire a second language is directly related to the quality and quantity of input they receive [8]. Shadowing exercises, by providing learners with a rich source of authentic language input, may facilitate language learning by allowing learners to focus on the acoustic and phonetic features of the target language [7].

Imitation theory, on the other hand, emphasizes the importance of imitation in language learning. By mimicking the speech of native speakers, learners can develop a more accurate and natural-sounding pronunciation, intonation, and rhythm [3]. Shadowing exercises offer learners the opportunity to engage in imitation and, in doing so, improve their speaking skills.

Information processing theory, meanwhile, suggests that language learning involves the processing and storage of linguistic information in the brain. Shadowing exercises may support this process by providing learners with a continuous stream of linguistic input that engages their attention and working memory, ultimately leading to improved language proficiency [12].

This study is grounded in the Input Hypothesis, Imitation Theory, and Information Processing Theory to quantitatively assess learners' perceptions of shadowing exercises in EFL through a standardized survey. The focus is on collecting and analyzing numerical data from the survey responses of 50 EFL learners regarding their experiences with shadowing exercises.

2.2. Previous Studies

The efficacy of shadowing exercises in EFL has been well-documented across a spectrum of studies. Research has consistently reported enhancements in pronunciation accuracy, intonation naturalness, and oral English fluency among participants engaging in shadowing [1, 2, 5]. These findings are often supported by theoretical frameworks such as the Input Hypothesis and Information Processing Theory, which suggest that the immersive and imitative nature of shadowing facilitates linguistic acquisition [8, 12].

In Vélez Barreto and Mendoza Saltos' study (2024), they endeavored to enhance the English pronunciation of 7th graders through the Shadowing technique [14]. Utilizing a hybrid research methodology, the study conducted a comprehensive survey among 192 students at Flavio Alfaro #52 Junior High School in the Flavio Alfaro Canton, from which 25 students were chosen for the experimental phase.

The research culminated in a pedagogical framework for teachers to effectively integrate the Shadowing technique, positioning students at the core of the educational experience. The study defines a step-by-step approach for employing the Shadowing technique to refine students' pronunciation skills, encompassing stages such as diagnosis, preparation, application, and assessment. This structured methodology aims to individualize the learning process and maximize the effectiveness of the Shadowing technique in an educational setting.

Hsieh et al. (2013) sought to investigate the efficacy of the Shadowing technique in improving intonation, fluency, articulation of vocabulary, and overall pronunciation for English language learners [4]. To explore these queries, 14 students majoring in fields other than English were recruited and assigned to either a control or experimental group. The study utilized several statistical approaches including Average Score Analysis, Independent T-Test, and Levene's Test for Equality of Variances.

By employing these statistical tools, the study aimed to scrutinize and contrast the data among the groups to evaluate the impact of the Shadowing technique on English pronunciation teaching. The findings indicated notable improvements in the experimental group compared to the control group in all assessed areas, highlighting the effectiveness of the Shadowing technique in enhancing the learners' intonation skills. The study's contribution lies in its innovative application of a technique traditionally used in interpretation to the training of intonation, paving the way for future research in this domain.

Yavari Fereshteh and Sajad (2019) incorporated dual methodologies for language acquisition: shadowing and tracking [17]. In the shadowing technique, participants are tasked with closely listening to a spoken language sample and then promptly echoing it back. The study's outcomes revealed a notable improvement in the oral fluency of students in the Shadowing Group, with scores rising from 1.55 to 2.15 following the implementation of shadowing exercises.

Utilizing a paired t-test for comparing the pre-test and post-test results, the study found significant advancements in the learners' performance, highlighting the effectiveness of the shadowing technique in enhancing oral proficiency.

The theoretical underpinnings of these findings are well-supported by Krashen's Input Hypothesis (1982), which emphasizes the importance of receiving comprehensible input for language acquisition [8]. Shadowing exercises offer such input by requiring learners to listen and repeat, thus engaging with the language in a meaningful way.

Moreover, Information Processing Theory (Takeuchi et al., 2021) provides a cognitive framework for understanding how shadowing can facilitate the storage and retrieval of linguistic information, highlighting the role of attention and working memory in language learning [12].

While the benefits are evident, the assessment methods across studies have been diverse, suggesting a need for standardized survey instruments to evaluate the impact of shadowing consistently. This research responds to this need by developing and

validating a streamlined quantitative tool, grounded in standardized surveys, to measure the influence of shadowing exercises on the aforementioned dimensions of EFL learning.

3. Methodology

3.1. Instrument Development and Validation

Building on the established theoretical frameworks and the review of pertinent literature, this study proceeded to the development and validation of a quantitative instrument. The instrument was designed to assess the impact of shadowing exercises on EFL learners’ language skills within the context of MALL.

3.1.1. Development Phase

The initial phase involved the creation of a survey instrument comprising items that directly relate to the key dimensions identified in the literature: pronunciation accuracy, intonation naturalness, and oral English fluency. Each item was crafted to elicit responses that could be quantitatively analyzed, ensuring alignment with the study’s research objectives.

3.1.2. Expert Consultation

The survey was subjected to expert consultation, where a panel of language education specialists provided feedback on the clarity, relevance, and comprehensiveness of the items. This process was instrumental in refining the instrument and enhancing its content validity.

3.1.3. Pilot Testing

A pilot test was conducted with a small group of 10 EFL learners to assess the instrument’s face validity and to ensure that the items were interpreted as intended. The feedback from the pilot test was used to make final adjustments to the survey instrument.

3.1.4. Validation Phase

The validation of the instrument was anchored in a rigorous statistical analysis. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett’s Test of Sphericity were employed to evaluate the appropriateness of the data for factor analysis. The results indicated a high degree of sampling adequacy and significant correlations among the items, validating the unidimensionality of the construct.

3.1.5. Reliability Assessment

Cronbach’s alpha coefficient was calculated to assess the internal consistency of the items within the survey. A high alpha value confirmed the reliability of the instrument for measuring the intended construct.

3.2. Research Design

To assess the impact of shadowing exercises on language learning within the context of Mobile-assisted Language Learning (MALL), we developed a questionnaire that incorporates a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This scale allows participants to express the extent of their agreement with each statement regarding the shadowing exercises. Below are the 11 questions included in the questionnaire:

Table 1. Questions and Descriptive Statistics N=50

No.	Language Skill Enhancement	Question	Mean	Std. Deviation	Variance
1	Pronunciation Improvement	I believe that using MALL software for shadowing exercises can help improve my English pronunciation	4.08	.601	.361
2	Intonation and Rhythm	I agree that shadowing exercises through mobile apps can help me imitate the intonation and rhythm of native speakers	4.20	.639	.408

Table 1. Continued

3	Listening Skills Enhancement	I think that combining shadowing exercises with mobile apps can help improve my English listening skills.	4.24	.555	.309
4	Challenge and Benefit	I find shadowing exercises using mobile apps challenging and beneficial for my language learning.	4.10	.544	.296
5	Integration into Routine	I plan to incorporate MALL-based shadowing exercises into my daily English learning.	4.04	.533	.284
6	Speaking Skills Development	I will use MALL software for shadowing exercises to strengthen my English speaking skills.	4.08	.601	.361
7	Access to Materials	I believe that MALL software has helped me access additional English listening materials, thereby facilitating my shadowing exercises.	4.08	.601	.361
8	Motivation	I feel that MALL-based shadowing exercises have enhanced my motivation to learn English.	4.02	.622	.387
9	Proficiency Improvement	I find that MALL-based shadowing exercises help improve my overall English proficiency.	4.16	.650	.423
10	Supplementary Means	I believe that MALL-based shadowing exercises can be an effective supplementary means for improving my English-speaking skills.	4.08	.566	.320
11	Curricular Integration	I think that MALL-based shadowing exercises should be integrated into English courses to enhance my learning outcomes.	4.12	.627	.393

The 11 survey items encompass key aspects of language learning, specifically targeting pronunciation, intonation, and oral fluency—crucial skills for EFL learners.

3.3. Data Collection

The survey was distributed to 50 EFL students at a vocational college in Wuxi, Jiangsu Province, utilizing a popular Chinese online survey platform, equivalent to SurveyMonkey in the West, known as ‘问卷星’. Participants engaged with the 11-item Likert scale questionnaire, focusing on their experiences with MALL-assisted shadowing exercises. To ensure the survey’s clarity and participants’ understanding, a pilot test was initially performed with a smaller group, followed by necessary refinements. Security and integrity were maintained throughout the process, with all responses being securely stored to protect participants’ confidentiality. Before analysis, the data underwent a cleaning process to verify completeness and consistency, preparing a solid foundation for accurate and reliable statistical evaluation.

3.4. Data Analysis Techniques

The survey data will be analyzed using SPSS 23, starting with descriptive statistics to provide a clear summary of the participants’ responses. Intercorrelation and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) will be applied to discern any significant differences within the data set. To ensure the reliability of the survey instrument, Cronbach’s alpha will be calculated, providing a measure of internal consistency across the items.

4. Results

In this section, we present the findings of our study by discussing the descriptive statistics, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and the Intercorrelation Test.

4.1. Descriptive Statistics

Regarding the survey items that explore the utilization of mobile-assisted language learning (MALL) for shadowing practice, we observed from Table 1 that high initial communalities ranged from 1.000 to 1.000 for all items. This finding suggests that all the items were considered fully relevant and captured important aspects of participants' experiences and perceptions regarding the use of MALL software for shadowing practice.

The descriptive statistics in the document indicate a positive perception among 50 participants towards shadowing exercises using mobile-assisted language learning (MALL). The mean scores range from 4.02 to 4.24 on a 5-point scale, suggesting a high level of agreement with the benefits of this training method.

4.2. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.875
Bartlett's Test of Sphericity	Approx. Chi-Square
	659.572
	df
	55
	Sig.
	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was employed to assess the sampling adequacy for the factor analysis. The resulting KMO value of .875 indicates that the data are suitable for factor analysis, as this value exceeds the recommended threshold of .60 (Kaiser, 1974). The high KMO value suggests that the variables share common variance and that the data have good potential for extracting meaningful factors.

4.3. Bartlett's Test of Sphericity

Bartlett's Test of Sphericity was also conducted to further verify the appropriateness of the data for factor analysis. The approximate chi-square value of 659.572 with a degree of freedom (df) of 55 was highly significant ($p < .001$), confirming that the variables in the dataset are intercorrelated, satisfying the necessary assumption for factor analysis.

4.4. Intercorrelation Test

This section presents the findings from the intercorrelation test, which was conducted to examine the relationships between different aspects of learners' perceptions and experiences with Mobile-Assisted Language Learning (MALL) and shadowing exercises.

The analysis revealed several strong positive correlations, where the coefficient (r) was greater than 0.7, indicating a robust linear relationship. Notably, the improvement in English pronunciation and the ability to mimic native speakers' intonation and rhythm showed a high correlation ($r = 0.755$). This suggests that learners view shadowing exercises as an integrated approach to enhancing oral language skills.

Moderate correlations, with coefficients between 0.3 and 0.7, were also observed. For instance, the relationship between the enhancement of English listening skills and the increase in motivation to learn English was found to be moderately correlated ($r = 0.635$). While there is a clear association, the moderate strength implies that additional factors are likely at play in influencing motivation.

All observed correlations were statistically significant, with a significance level (p -value) of 0.000. This high level of significance indicates that it is highly unlikely that these correlations occurred by chance, lending strong support to the reliability of our findings.

The significant correlation between the perceived challenge of using MALL software for shadowing exercises and the improvement of overall English proficiency ($r = 0.762$) is particularly noteworthy. It implies that learners may recognize a connection between the difficulty of the learning method and its effectiveness.

The tendency for learners to integrate shadowing exercises into their daily study routines and English courses highlights a preference for practical and effective learning strategies. This integration suggests that learners find value in applying these exercises in a broader educational context.

Table 3. Intercorrelation Test

	1	2	3	4	5	6	7	8	9	10	11
1	1	.755**	.736**	.787**	.818**	.717**	.717**	.596**	.646**	.641**	.570**
		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		50	50	50	50	50	50	50	50	50	50
2		1	.667**	.763**	.755**	.649**	.649**	.657**	.609**	.689**	.652**
			.000	.000	.000	.000	.000	.000	.000	.000	.000
			50	50	50	50	50	50	50	50	50
3			1	.797**	.725**	.675**	.736**	.635**	.852**	.717**	.677**
				.000	.000	.000	.000	.000	.000	.000	.000
				50	50	50	50	50	50	50	50
4				1	.901**	.787**	.849**	.717**	.762**	.836**	.742**
					.000	.000	.000	.000	.000	.000	.000
					50	50	50	50	50	50	50
5					1	.818**	.818**	.797**	.688**	.801**	.657**
						.000	.000	.000	.000	.000	.000
						50	50	50	50	50	50
6						1	.887**	.705**	.698**	.702**	.678**
							.000	.000	.000	.000	.000
							50	50	50	50	50
7							1	.705**	.803**	.762**	.786**
								.000	.000	.000	.000
								50	50	50	50
8								1	.748**	.865**	.673**
									.000	.000	.000
									50	50	50
9									1	.741**	.702**
										.000	.000
										50	50
10										1	.835**
											.000
											50
11											1

The intercorrelation test results support the positive impact of MALL-based shadowing exercises on various facets of English learning. The significant positive correlations, along with the learners' preference for incorporating this method into their routines, indicate that MALL is a beneficial and well-received tool for enhancing language learning experiences.

Overall, the results from the descriptive statistics, KMO, Bartlett's Test of Sphericity, and Intercorrelation Test collectively demonstrate the robustness and suitability of the data for exploring participants' attitudes and experiences regarding the use of shadowing exercises through MALL. The identified factor represents a cohesive construct capturing the perceived benefits and intentions related to this learning approach.

5. Discussion

The results of this study provide compelling evidence for the efficacy of Mobile-assisted Language Learning (MALL) in enhancing the impact of shadowing exercises on EFL learners' key language skills, specifically pronunciation, intonation, and oral fluency. The high mean scores reported in the descriptive statistics section indicate a strong level of satisfaction and perceived benefits among the participants, suggesting that they found MALL-based shadowing exercises to be an effective learning tool.

The factor analysis, supported by the Kaiser-Meyer-Olkin Measure of Sampling Adequacy ($KMO = .875$) and Bartlett's Test of Sphericity (Approx. Chi-Square = 659.572), further underscores the suitability of the data for exploring the underlying construct of participants' attitudes and experiences. These statistical indicators confirm the robustness of the survey instrument and the validity of the research findings.

The intercorrelation analysis revealed significant positive correlations among various aspects of language learning outcomes. Notably, the high correlation coefficient ($r = 0.755$) between improved English pronunciation and the ability to mimic native speakers' intonation and rhythm underscores the holistic nature of shadowing exercises, where improvements in one area lead to enhancements in related language skills. This finding is in line with the Input Hypothesis and Imitation Theory, which posit that exposure to authentic language input and imitation play a crucial role in language acquisition.

Moreover, the moderate correlation ($r = 0.635$) between enhanced English listening skills and increased motivation to learn English highlights the potential of MALL-based shadowing exercises to motivate learners by providing a more engaging and accessible learning experience. This finding resonates with previous research on the positive relationship between motivation and language learning outcomes.

The significant correlation ($r = 0.762$) between the perceived challenge of using MALL software and the improvement of overall English proficiency is particularly noteworthy. It suggests that learners recognize the link between the difficulty of the learning method and its effectiveness, a phenomenon that has been observed in other contexts of skill acquisition. This finding underscores the importance of incorporating challenging learning tasks that push learners to their limits in order to achieve significant gains.

6. Conclusion

While the results of this study are promising, it is important to acknowledge its limitations. The sample size of 50 participants, while sufficient for the current study, may not be representative of all EFL learners. Future research with larger and more diverse sample populations is needed to generalize the findings. Additionally, the study was conducted within a single vocational college in Wuxi, China, limiting the generalizability of the results to other contexts.

Furthermore, the survey instrument, while rigorously validated, may not capture all aspects of learners' experiences with MALL-based shadowing exercises. Future research could explore the development of more comprehensive and multi-dimensional survey instruments to gain a deeper understanding of learners' perspectives.

In conclusion, this study makes a valuable contribution to the field of EFL learning by validating a concise and user-friendly survey instrument that effectively measures the impact of MALL-based shadowing exercises. The findings provide empirical evidence for the positive effects of these exercises on key language skills and underscore their potential as an effective supplementary method for language learning. However, future research is needed to further refine the instrument, expand the sample population, and explore additional aspects of learners' experiences with MALL-based shadowing exercises.

Project

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References

- [1] Binarkaheni, S., & Dewangga, V. (2024). Improving the students' listening skill by using shadowing technique. *Journal of English in Academic and Professional Communication*, 10(1), 58–66.
- [2] Cucchiari, C., Strik, H., & Boves, L. (2000). Quantitative assessment of second language learners' fluency by means of automatic speech recognition technology. *The Journal of the Acoustical Society of America*, 107(2), 989–999. <https://doi.org/10.1121/1.428279>
- [3] De Guerrero, M. C., & Commander, M. (2013). Shadow-reading: Affordances for imitation in the language classroom. *Language Teaching Research*, 17(4), 433–453. <https://doi.org/10.1177/1362168813494125>
- [4] Hsieh, K.-T., Dong, D.-H., & Wang, L.-Y. (2013). A preliminary study of applying shadowing technique to English intonation instruction. *Journal of Research and Application in English Language Education*, 11(2), 43–66.
- [5] Siregar, I. H. R. (2024). Pronunciation teaching strategies. *Jurnal Pengabdian Cendikia*, 3(3), 94–97. <https://doi.org/10.5281/ZENODO.12569873>
- [6] Jin, S. (2023). Shadowing practice using TED talks on the Metaverse platform, Gather: Affective factors and oral proficiency development. *STEM Journal*, 24(2), 31–46. <https://doi.org/10.16875/stem.2023.24.2.31>

- [7] Kadota, S. (2019). *Shadowing as a practice in second language acquisition: Connecting inputs and outputs*. Routledge.
- [8] Krashen, S. D. (1982). *Principles and practice in second language acquisition* (1st ed.). Pergamon.
- [9] Lambert, S. (1992). Shadowing. *Meta*, 37(2), 263–273. <https://doi.org/10.7202/003378ar>
- [10] Niimoto, S. (2023). The effectiveness of visual-auditory shadowing in improving comprehensibility. *Kobe English Language Teaching*, 38(1), 38–51.
- [11] Quito Guacho, C. E., & Suarez Llor, R. T. (2022). The influence of the shadowing technique for improving the English pronunciation on the speaking skill. *TNU Journal of Science and Technology*, 228(12), 481–485.
- [12] Takeuchi, H., Maruyama, T., Taki, Y., Motoki, K., Jeong, H., Kotozaki, Y., Shinada, T., Nakagawa, S., Nouchi, R., Iizuka, K., Yokoyama, R., Yamamoto, Y., Hanawa, S., Araki, T., Sakaki, K., Sasaki, Y., Magistro, D., & Kawashima, R. (2021). Effects of training of shadowing and reading aloud of second language on working memory and neural systems. *Brain Imaging and Behavior*, 15(3), 1253–1269. <https://doi.org/10.1007/s11682-020-00324-4>
- [13] Utami, H. S., & Morganna, R. (2022). Improving students' English pronunciation competence by using shadowing technique. *English Franca: Academic Journal of English Language and Education*, 6(1), 127. <https://doi.org/10.29240/ef.v6i1.3915>
- [14] Vélez Barreto, G. N., & Mendoza Saltos, R. E. (2024). Using shadowing technique to improve 7th-grade students' English pronunciation: A methodology. *Ciencia Latina Revista Científica Multidisciplinar*, 8(1), 3922–3941. https://doi.org/10.37811/cl_rcm.v8i1.9743
- [15] Wang, M. (2023). Shadowing exercise in second language acquisition. *Journal of Educational Research and Policies*, 5(3). [https://doi.org/10.53469/jerp.2023.05\(03\).34](https://doi.org/10.53469/jerp.2023.05(03).34)
- [16] Yang, C.-H. (2019). Improving Taiwanese EFL students' listening comprehension by using mobile-assisted shadowing practice.
- [17] Yavari Fereshteh, & Sajad, S. (2019). Effects of shadowing and tracking on intermediate EFL learners' oral fluency. *International Journal of Instruction*, 12(1), 869–884. <https://doi.org/10.29333/iji.2019.12156a>