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Needs Analysis for Developing Phonic Fun Congklak as a Digital-Traditional Game-Based Medium for English Vocabulary Pronunciation

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ABSTRACT

English pronunciation remains a challenge in Indonesian elementary schools because instruction is largely teacher-centred, supported by limited interactive media, and provides insufficient opportunities for repeated oral practice. Although previous studies have investigated gamification, multimedia learning, and traditional games, few have integrated these approaches through a comprehensive needs analysis as the basis for developing pronunciation learning media. This study aimed to analyze the instructional needs for developing Phonic Fun Congklak, a culturally responsive digital pronunciation learning medium. A qualitative descriptive needs-analysis design was employed during the Analysis stage of the ADDIE model. The participants were 3 English teachers and 36 Grade IV–V students from three public elementary schools in Karawang Regency, Indonesia. Data were collected through classroom observations, semi-structured interviews, curriculum document analysis, and media requirement analysis, and were analyzed thematically. The findings identified six key needs: linguistic, affective, pedagogical, media, curriculum, and cultural. These findings provide a strong foundation for developing Phonic Fun Congklak, which integrates phonics, authentic pronunciation audio, multimedia learning, gamification, and the traditional *congklak* game. The study contributes a needs-analysis framework to support the development of culturally responsive technology-enhanced pronunciation learning media for elementary school students.

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1. INTRODUCTION

Pronunciation is a fundamental component of English oral communication because it determines how accurately speakers convey meaning and how confidently they participate in spoken interaction. Accurate pronunciation facilitates intelligible communication,

supports listening comprehension, and strengthens learners' oral proficiency from the early stages of language acquisition [1], [2]. For elementary school learners, early pronunciation instruction is particularly important because it establishes the phonological foundation that influences subsequent speaking and listening development. Nevertheless, pronunciation instruction in many English as a Foreign Language (*EFL*) classrooms remains underemphasized, with greater attention commonly devoted to vocabulary and grammar despite the essential role of pronunciation in communicative competence [1], [3].

The challenges of pronunciation learning are particularly evident in Indonesian elementary schools. Many students experience difficulty producing English phonemes that are absent from their first language, while limited classroom practice and insufficient instructional media reduce opportunities for meaningful pronunciation practice [1], [4]. Teachers also frequently encounter obstacles in providing systematic pronunciation instruction because many have not received specialized training and continue to rely on conventional learning resources that provide limited audio-visual support [5]. These conditions indicate that pronunciation learning involves not only linguistic aspects but also psychological, pedagogical, and technological dimensions.

Evidence from a preliminary needs assessment conducted as the initial stage of the present research project further confirms these challenges. The survey involved 120 elementary school students from five schools in Karawang Regency to identify initial learning needs prior to selecting the research sites for product development. The findings showed that 82% of students were unable to pronounce English consonant sounds that do not exist in Indonesian, including /θ/, /ð/, /ʃ/, and /v/. Furthermore, 74% reported low confidence when speaking English in front of the class, 72% considered English lessons monotonous because instruction relied primarily on worksheets and textbooks, 68% of teachers had never received formal training in pronunciation instruction, and only 12% had incorporated interactive digital media into pronunciation learning. These preliminary findings are derived from the authors' initial needs assessment conducted before the implementation stage of the present study and therefore served as the basis for identifying research needs (Prihamdani, unpublished preliminary research data, 2025). The three schools reported in the Method section represent the research sites selected from the broader preliminary survey for the subsequent development and validation stages. This evidence suggests that the existing problems extend beyond pronunciation accuracy to include students' learning motivation, teachers' instructional readiness, and limited technological integration.

Previous studies consistently demonstrate that interactive learning media can improve students' motivation and engagement in language learning. Gamification has been reported to increase participation, learning motivation, and classroom interaction by incorporating challenge, feedback, and reward mechanisms into educational activities [6]. From the perspective of the Cognitive Theory of Multimedia Learning, integrating visual and auditory information facilitates meaningful cognitive processing when instructional materials are designed according to multimedia learning principles [7]. Meanwhile, studies on traditional games have shown that culturally familiar learning activities such as *congklak*, marbles, and *engklek* can enrich English vocabulary instruction while simultaneously

preserving local cultural values [8], [9]. Collectively, these findings indicate that both gamification and traditional games possess considerable educational potential for elementary language learning.

Despite these advances, several limitations remain in the existing literature. Previous studies have predominantly investigated gamification, multimedia learning, or traditional games as separate instructional approaches, with most focusing on vocabulary acquisition or general English achievement rather than pronunciation development. Moreover, empirical studies integrating digital gamification with culturally embedded traditional games for elementary English pronunciation learning remain scarce, particularly within the Indonesian elementary school context. Existing research has also paid limited attention to conducting a comprehensive needs analysis that simultaneously considers curriculum requirements, learner characteristics, teacher readiness, and media requirements prior to instructional media development. This gap indicates the need for research that systematically investigates learners' and teachers' needs before designing innovative pronunciation learning media.

To address this gap, the present study proposes *Phonic Fun Congklak*, a digital-traditional learning medium that integrates phonics instruction, English vocabulary, authentic pronunciation audio, visual learning support, and the mechanics of the traditional *congklak* game within a single interactive platform. Unlike previous studies that examined either digital gamification or traditional games independently, this study combines both approaches while employing a comprehensive needs analysis as the initial stage of educational product development. This integration represents the originality of the study by connecting technological innovation with local cultural heritage to support pronunciation learning among elementary school students.

Therefore, the objective of this study is to analyze the needs for developing *Phonic Fun Congklak* by examining existing pronunciation learning problems, user needs, curriculum demands, learner characteristics, teacher readiness, and media requirements in elementary schools in Karawang Regency.

The findings are expected to contribute theoretically by extending the literature on pronunciation learning media and technology-enhanced language learning in elementary education. Practically, the results provide empirical evidence for designing culturally responsive digital learning media that can assist teachers, curriculum developers, and educational policymakers in improving English pronunciation instruction for young learners.

2. METHOD

This study employed a qualitative descriptive needs-analysis design as the initial phase of a research and development process. The needs analysis was conducted within the Analysis stage of the ADDIE instructional design model, which emphasizes the systematic identification of learner characteristics, instructional problems, learning objectives, and contextual conditions before product design and development [10]. Qualitative description was considered appropriate because the study sought to obtain an in-depth understanding of classroom realities, teachers' and students' needs, and instructional media requirements rather than to examine causal relationships or test statistical hypotheses. This approach

enables researchers to describe educational phenomena as experienced by participants and to generate practical implications for instructional development [11].

The research was conducted from January to March 2025 in three public elementary schools in Karawang Regency, West Java, Indonesia, namely SDN Wadas I, SDN Tegalsawah I, and SDN Purwasari III. These schools were purposively selected from the five schools involved in the preliminary needs assessment because they represented different learning environments and agreed to participate in the subsequent development stage of the research.

The participants consisted of 3 English teachers (one teacher from each school) and 36 elementary school students from Grades IV and V (12 students from each school). Students were selected using purposive sampling based on three inclusion criteria: (1) they had participated in English learning activities for at least one semester, (2) they experienced pronunciation learning during classroom instruction, and (3) they were willing to participate with permission from their parents and schools. The teachers were selected because they were directly responsible for English instruction and were familiar with the existing classroom conditions.

Primary data were obtained through classroom observations, semi-structured interviews with teachers and students, curriculum document analysis, media needs analysis, and application requirement analysis. In contrast, secondary data were collected from relevant literature concerning pronunciation instruction, gamification, multimedia learning, and educational technology. The use of multiple data sources allowed the researchers to obtain a comprehensive understanding of pronunciation learning needs from different perspectives.

Classroom observations were conducted in one English lesson at each participating school, with each observation lasting approximately 70–90 minutes. An observation checklist was developed to document pronunciation teaching strategies, teacher–student interaction, student participation, instructional media utilization, classroom atmosphere, and learning difficulties. Semi-structured interviews were conducted individually with each teacher and in small groups with students. The interview protocol explored participants' experiences with pronunciation learning, perceived instructional challenges, preferred learning media, and expectations regarding digital pronunciation learning applications. Curriculum analysis focused on examining the alignment between the proposed learning materials and the Elementary English Learning Outcomes (*Capaian Pembelajaran*) under the Merdeka Curriculum.

The primary research instruments consisted of observation sheets, semi-structured interview guidelines, curriculum analysis checklists, and media requirement analysis forms. Prior to data collection, all instruments were reviewed by two experts in English language education to ensure content relevance and clarity.

The analysis focused on five dimensions: (1) current pronunciation learning practices, (2) students' pronunciation difficulties, (3) teachers' instructional media needs, (4) students' learning characteristics and preferences, and (5) curriculum compatibility with the proposed pronunciation materials. The qualitative data were analyzed using thematic analysis. Observation notes, interview transcripts, and documentary evidence were first

transcribed and organized. Subsequently, open coding was performed to identify meaningful units of information, which were then grouped into categories corresponding to the five dimensions of needs analysis. Finally, the categories were synthesized to formulate design implications for developing the *Phonic Fun Congklak* application.

To enhance the trustworthiness of the findings, methodological triangulation was applied by comparing evidence obtained from classroom observations, interviews, curriculum documents, and literature analysis. Source triangulation was also employed by comparing teachers' and students' perspectives. Member checking was conducted by allowing teacher participants to review summaries of the interview findings, while peer debriefing with educational technology researchers was used to improve the credibility and consistency of data interpretation [11].

The findings from the needs analysis were translated into development specifications for Phonic Fun Congklak. The application was expected to be browser-based, accessible through smartphones and laptops, easy to navigate, and supported by audio pronunciation models, vocabulary visualization, interactive animations, phonics activities, and educational game mechanics adapted from the traditional *congklak* game.

This study complied with ethical principles for educational research involving children. Formal permission was obtained from the participating schools before data collection commenced. Parents or legal guardians provided informed consent for student participation, while students participated voluntarily. Participants' identities were anonymized, and all collected data were treated confidentially and used solely for research purposes.

Table 1. Data Sources and Focus of the Needs Analysis

No.	Data Source	Focus of Analysis
1	Classroom Observation	Existing pronunciation teaching practices, teacher–student interaction, students' participation, instructional media utilization, and classroom learning environment.
2	Semi-Structured Interviews with Teachers	Teachers' perceptions of students' pronunciation difficulties, instructional challenges, existing media limitations, and expectations for digital pronunciation learning media.
3	Semi-Structured Interviews with Students	Students' pronunciation learning experiences, learning preferences, confidence in speaking English, interest in game-based learning, and expectations for interactive pronunciation media.
4	Curriculum Document Analysis	Alignment of pronunciation and vocabulary materials with the Elementary English Learning Outcomes (*Capaian Pembelajaran*) under the Merdeka Curriculum.
5	Media and Application Requirements Analysis	Functional and technical requirements, accessibility, user interface design, multimedia integration (audio, visuals, and animation), game mechanics, and learning workflow for the development of *Phonic Fun Congklak*.

3. RESULTS AND DISCUSSION

3.1. Results

This section presents the findings of the needs analysis conducted during the Analysis phase of the ADDIE model. The findings are organized into four themes: (1) the current condition of English pronunciation learning, (2) teachers' and students' needs, (3)

curriculum, material, and media requirements, and (4) the implications of the identified needs for developing the *Phonic Fun Congklak* application. The findings were synthesized from classroom observations, semi-structured interviews, curriculum document analysis, and media requirement analysis.

3.1 Current Condition of Pronunciation Learning

Classroom observations conducted across the three participating elementary schools revealed similar patterns of pronunciation instruction. English pronunciation learning was generally implemented through teacher explanation followed by choral repetition, with limited opportunities for individual pronunciation practice. Although minor differences were found in classroom management and student participation, the overall instructional approach remained predominantly teacher-centred.

Teachers primarily introduced new vocabulary by reading each word aloud before asking students to repeat it collectively. Individual pronunciation assessment was conducted only occasionally, making it difficult for teachers to identify students who required additional support. Consequently, students had limited opportunities to receive corrective feedback regarding pronunciation accuracy.

Observation findings also indicated that students experienced difficulties in producing several English speech sounds, particularly vowel contrasts, unfamiliar consonants, and appropriate word stress and intonation. Students generally pronounced English words according to Indonesian phonological patterns, especially when encountering unfamiliar sounds. When invited to pronounce vocabulary individually, several students hesitated before speaking and tended to lower their voices, indicating limited confidence in oral English performance.

The observations further demonstrated that pronunciation instruction relied heavily on conventional learning resources. Textbooks, worksheets, and teacher modelling remained the primary instructional media, while interactive digital learning resources were not integrated into classroom practice. This condition reduced students' opportunities to receive repeated pronunciation exposure through audio-visual media and independent practice activities.

These findings indicate that the existing pronunciation learning environment has not yet fully accommodated students' linguistic needs, active participation, or opportunities for repeated oral practice.

3.2 Teachers' and Students' Needs

Semi-structured interviews demonstrated that teachers regarded pronunciation as one of the most challenging components of English instruction at the elementary level. Teachers consistently reported that many students experienced difficulty distinguishing English sounds from Indonesian sounds, while limited classroom time constrained opportunities for intensive pronunciation practice. Consequently, teachers expressed the need for instructional media capable of providing consistent pronunciation models and engaging students in repeated learning activities.

Another recurring finding concerned teachers' expectations regarding learning media. Teachers expected digital media that could be easily operated during classroom instruction without requiring complicated installation procedures. Browser-based accessibility, simple navigation, pronunciation audio, attractive illustrations, and game-based activities were identified as the most desirable features. Teachers also emphasized that digital media should complement classroom instruction rather than replace the teacher's instructional role.

Student interviews revealed that learners preferred English learning activities that incorporated games, colourful illustrations, audio pronunciation, animation, and direct interaction. Students indicated that they enjoyed learning through activities resembling play rather than conventional memorization. They also preferred vocabulary related to familiar objects and daily experiences because such topics were easier to understand and remember.

Affective factors also emerged as an important theme during the interviews. Students frequently associated pronunciation activities with the fear of making mistakes when speaking in front of classmates. Consequently, they expected learning activities that allowed them to practise repeatedly in an enjoyable and supportive environment before performing individually.

Overall, the interview findings suggest that future pronunciation media should simultaneously address linguistic accuracy, student motivation, classroom engagement, and ease of instructional implementation.

3.3 Curriculum, Material, and Media Requirements

Curriculum document analysis indicated that pronunciation learning supports the achievement of elementary English learning outcomes, particularly those related to oral communication and vocabulary development. Although pronunciation is not presented as an independent learning objective within the curriculum, accurate pronunciation constitutes an essential component of students' communicative competence.

Analysis of curriculum content showed that vocabulary topics closely related to students' everyday experiences were the most appropriate learning materials. Topics such as animals, fruits, colours, family members, school objects, and daily activities were considered suitable because they represent concrete concepts that can easily be illustrated visually and practised orally.

Media requirement analysis demonstrated that the proposed application should prioritize accessibility, simplicity, and interactive learning experiences. Participants expected the application to operate through commonly available web browsers so that it could be accessed using smartphones, tablets, or laptop computers without additional software installation.

Furthermore, several instructional features were identified as essential for supporting pronunciation learning. These features include pronunciation audio models, vocabulary illustrations, phonics-based learning activities, interactive games, repeated listening opportunities, and pronunciation practice integrated into game mechanics. Such features were considered important because they allow students to hear, observe, imitate, and repeatedly practise English pronunciation within meaningful learning activities.

The incorporation of the traditional *congklak* game also emerged as an important requirement. Participants viewed *congklak* as a familiar cultural game that could increase students' learning interest while maintaining local cultural values within a digital learning environment.

Table 2. Summary of the Needs Analysis Findings and Development Implications

Need Dimension	Main Findings	Identified Learning Problems	Implications for Developing *Phonics Fun Congklak*
Linguistic	Students experienced difficulties in producing English vowel sounds, consonants, word stress, and intonation.	Limited opportunities for repeated pronunciation practice and corrective feedback.	Provide authentic pronunciation audio, phonics activities, imitation practice, and repeated oral exercises.
Affective	Students showed low confidence during individual pronunciation activities.	Fear of making mistakes reduced participation in oral English practice.	Design enjoyable game-based learning activities that encourage repeated pronunciation practice without excessive performance pressure.
Pedagogical	Pronunciation instruction remained teacher-centred and relied primarily on explanation and repetition.	Students participated passively and had limited individual practice opportunities.	Develop interactive student-centred learning activities through game mechanics and collaborative participation.
Media	Interactive digital pronunciation media were rarely used during classroom instruction.	Learning relied mainly on textbooks, worksheets, and teacher modelling.	Develop a browser-based multimedia application integrating audio, visuals, animation, and educational games.
Curriculum	Daily-life vocabulary was considered most appropriate for elementary learners.	Abstract vocabulary reduces students' comprehension and engagement.	Organise pronunciation learning using contextual vocabulary themes aligned with the Merdeka Curriculum.
Cultural	Traditional games remain familiar to elementary students.	Digital learning risks reducing exposure to local cultural heritage.	Integrate *congklak* mechanics into pronunciation learning to combine cultural preservation with educational technology.

3.4 Summary of the Results

The needs analysis consistently demonstrates that pronunciation learning in the participating elementary schools requires improvement across linguistic, pedagogical, affective, technological, curricular, and cultural dimensions. Classroom observations revealed that pronunciation instruction remains predominantly teacher-centred and is supported by limited digital resources. Interviews further indicated that both teachers and students expect interactive, accessible, and enjoyable pronunciation learning media incorporating authentic pronunciation models, visual support, and game-based activities. Curriculum and media analyses additionally confirmed that contextual vocabulary, multimedia integration, and the incorporation of the traditional *congklak* game constitute important considerations for developing *Phonic Fun Congklak*. These findings provide the

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empirical basis for the subsequent design and development stages of the proposed learning application.

3.2. Discussion

The findings of this study demonstrate that the need for developing *Phonic Fun Congklak* extends beyond the provision of digital learning media. The needs analysis revealed that pronunciation learning in the participating elementary schools is constrained by linguistic difficulties, teacher-centred instructional practices, limited digital media utilization, students' low speaking confidence, and the absence of culturally contextualized learning resources. These findings indicate that improving pronunciation instruction requires an integrated approach that simultaneously addresses pedagogical, technological, linguistic, affective, and cultural dimensions [12], [13].

The first important finding concerns the linguistic challenges experienced by elementary school students. Classroom observations showed that students encountered difficulties in producing English vowel sounds, consonants, word stress, and intonation, particularly when English phonemes differed from the Indonesian sound system. These findings confirm that pronunciation remains one of the most demanding aspects of English learning for young learners because successful pronunciation requires learners to perceive unfamiliar sounds before producing them accurately [14], [15]. Difficulties in distinguishing and articulating English phonemes are expected in English as a Foreign Language (*EFL*) contexts where learners have limited authentic exposure to spoken English. Consequently, pronunciation instruction should emphasize continuous listening discrimination, phonics instruction, imitation, guided repetition, and corrective feedback rather than isolated vocabulary memorization [16], [17].

The findings also suggest that pronunciation learning in the observed schools remains predominantly teacher-centred. Teachers generally introduced vocabulary by modelling pronunciation, after which students repeated the words collectively. Although this approach provides initial pronunciation input, opportunities for individual practice and personalized feedback were limited. Such instructional patterns reduce students' active engagement and make it difficult for teachers to identify individual pronunciation errors. Previous studies have similarly reported that teacher-centred pronunciation instruction often emphasizes repetition rather than communicative practice, resulting in limited improvement in learners' pronunciation accuracy [18], [19]. Therefore, the present findings extend previous evidence by demonstrating that classroom interaction should gradually shift from collective repetition toward learner-centred pronunciation activities that encourage repeated oral production and active participation.

Another notable finding concerns students' affective characteristics. Interviews indicated that many students lacked confidence when pronouncing English words individually because they were afraid of making mistakes in front of their classmates. This finding suggests that pronunciation learning involves emotional as well as linguistic factors. Anxiety frequently reduces students' willingness to participate in oral communication, particularly among young learners who are still developing self-confidence [20]. Consequently, pronunciation instruction should provide a psychologically safe learning

environment where learners can practice repeatedly without excessive performance pressure. This finding supports educational perspectives that emphasize the importance of positive learning experiences in developing speaking confidence and communicative competence [21].

The needs analysis further revealed that teachers and students shared similar expectations regarding digital learning media. Teachers expected instructional media capable of providing consistent pronunciation models, while students preferred interactive learning experiences incorporating games, pictures, animations, and audio. These findings reinforce the argument that educational technology should not merely digitize conventional instruction but should transform learning into an engaging and interactive experience [22]. Multimedia learning environments that integrate auditory and visual information enable learners to process pronunciation input through multiple sensory channels, thereby facilitating more meaningful learning processes [23]. The present findings therefore support multimedia learning principles by demonstrating that pronunciation instruction should combine listening, visual representation, and interactive practice within a unified learning environment.

The integration of game elements into pronunciation learning represents another important implication of this study. Students consistently expressed greater interest in learning activities resembling games than in conventional memorization. This finding supports previous studies reporting that gamification increases learners' motivation, classroom participation, persistence, and enjoyment during language learning [24], [25]. Unlike traditional drill-based pronunciation exercises, game-based activities provide immediate goals, repeated opportunities for practice, and continuous engagement. These characteristics are particularly beneficial for pronunciation learning because accurate pronunciation develops gradually through repeated exposure and frequent oral production rather than through single instructional sessions [26].

One distinctive contribution of the present study is the integration of the traditional *congklak* game into pronunciation learning. While previous studies have demonstrated the educational value of traditional games for vocabulary learning and student motivation, relatively few have explored their application in English pronunciation instruction [27]. The findings of this study suggest that *congklak* possesses characteristics that naturally support pronunciation practice. Its turn-based mechanics encourage students to pronounce target vocabulary repeatedly before making each move, thereby increasing opportunities for oral production. Unlike conventional pronunciation drills, the game context shifts students' attention toward completing meaningful learning tasks, reducing anxiety while maintaining repeated pronunciation practice. Consequently, the present study extends previous research by demonstrating that traditional games may contribute not only to vocabulary acquisition but also to pronunciation development through structured oral interaction.

The findings additionally highlight the importance of integrating local cultural values into digital learning environments. Educational technology frequently emphasizes innovation while overlooking learners' cultural backgrounds. The incorporation of *congklak* demonstrates that digital learning media can preserve local cultural identity while simultaneously addressing contemporary educational needs [28]. This culturally responsive

approach aligns with educational perspectives suggesting that meaningful learning occurs when new knowledge is connected with learners' prior experiences and cultural environments [29]. Consequently, *Phonic Fun Congklak* is designed not merely as a pronunciation application but as a culturally contextualized learning environment that combines educational technology with local wisdom.

Another important implication concerns pronunciation pedagogy itself. The findings indicate that students require more than audio pronunciation models alone. Effective pronunciation learning should combine pronunciation input, listening discrimination activities, phonics instruction, imitation practice, repeated oral production, teacher-guided correction, and opportunities for self-monitoring [30]. Therefore, the proposed application should incorporate pronunciation audio, phonics-based learning sequences, vocabulary visualization, repeated listening activities, voice-recording features where feasible, and teacher-guided feedback during classroom implementation. Such integration would enable technology to complement rather than replace teachers' pedagogical roles.

Despite these contributions, several practical challenges should be considered during implementation. The effectiveness of browser-based pronunciation learning depends on the availability of digital devices, stable internet connectivity, classroom technological infrastructure, and teachers' digital competence. Differences in students' digital literacy may also influence the effectiveness of technology-assisted pronunciation learning, particularly in schools with varying technological resources. These contextual factors suggest that successful implementation requires teacher preparation, institutional support, and flexible classroom management strategies alongside application development.

This study has several limitations. First, the needs analysis was conducted in three elementary schools within a single regency; therefore, the findings may not fully represent pronunciation learning conditions in other educational contexts. Second, the present study focused exclusively on the analysis phase of the ADDIE model and did not evaluate the effectiveness of the developed application in improving students' pronunciation performance. Third, qualitative findings relied primarily on observations, interviews, and document analysis without quantitative measurement of pronunciation improvement. These limitations provide opportunities for future investigations.

Future research should continue by developing and validating the *Phonic Fun Congklak* application through expert validation, usability testing, and classroom implementation. Experimental or quasi-experimental studies are recommended to examine the effectiveness of the application in improving pronunciation accuracy, speaking confidence, listening discrimination, and learning motivation among elementary school students. Future studies may also investigate the integration of automatic speech recognition (*ASR*) technology to provide immediate pronunciation feedback and compare its effectiveness with teacher-guided pronunciation instruction. Such investigations would contribute further evidence regarding the role of culturally responsive digital learning media in supporting English pronunciation instruction for young learners.

4. CONCLUSION

This study identified the instructional needs underlying the development of Phonic Fun Congklak as a culturally responsive digital learning medium for English pronunciation instruction in elementary schools. The needs analysis revealed that pronunciation learning is constrained by students' difficulties in producing English sounds, limited speaking confidence, teacher-centred instructional practices, minimal use of interactive digital media, and the need for contextual learning materials aligned with the Merdeka Curriculum. These findings demonstrate that the development of Phonic Fun Congklak, which integrates phonics instruction, authentic pronunciation audio, multimedia learning, gamification, and the traditional *congklak* game, provides an appropriate solution to address the linguistic, pedagogical, affective, technological, curricular, and cultural needs identified in this study. Theoretically, this study contributes to the existing literature by highlighting the importance of conducting a comprehensive needs analysis as the foundation for developing culturally responsive technology-enhanced pronunciation learning media for young learners.

Practically, the findings provide guidance for teachers, instructional designers, curriculum developers, and schools in designing more interactive, student-centred, and engaging pronunciation learning environments that promote repeated oral practice while preserving local cultural values. Nevertheless, this study was limited to the Analysis stage of the ADDIE model and involved only three elementary schools; therefore, the findings do not yet demonstrate the effectiveness of the proposed application in improving students' pronunciation performance. Future research should continue with the design, development, expert validation, usability testing, classroom implementation, and effectiveness evaluation of *Phonic Fun Congklak*. Further studies are also encouraged to investigate the integration of technologies such as automatic speech recognition (*ASR*) and adaptive feedback systems to enhance pronunciation accuracy and speaking confidence among elementary school learners.

REFERENCES

[1] R. Febriani and M. F. Sya, "Kesulitan siswa sekolah dasar dalam pengucapan bahasa Inggris," *Karimah Tauhid*, vol. 1, no. 4, pp. 461–467, 2022.

[2] J. Diwaly Muhammed and S. Bahri Abduljabbar, "The impact of pronunciation practice on English listening comprehension: A case study of high school students in Duhok," *Academic Journal of Nawroz University*, vol. 12, no. 4, pp. 17–25, 2023, doi: 10.25007/ajnu.v12n4a1895.

[3] L. Major, G. A. Francis, and M. Tsapali, "The effectiveness of technology-supported personalized learning in low- and middle-income countries: A meta-analysis," *British Journal of Educational Technology*, vol. 52, no. 5, pp. 1935–1964, 2021, doi: 10.1111/bjet.13116.

[4] D. Prihamdani, *Pengembangan Media Pembelajaran Phonic Fun Congklak untuk Meningkatkan Pelafalan Kosa Kata Bahasa Inggris Siswa Sekolah Dasar di Kabupaten Karawang*. Unpublished preliminary research data, Universitas Sultan Ageng Tirtayasa, Serang, Indonesia, 2025.

[5] F. Hakeu, I. I. Pakaya, and M. Tangkudung, "Pemanfaatan media pembelajaran berbasis gamifikasi dalam proses pembelajaran di MIS Terpadu Al-Azhfar," *Awwaliyah: Jurnal Pendidikan Guru Madrasah Ibtidaiyah*, vol. 6, no. 2, pp. 154–166, 2023, doi: 10.58518/awwaliyah.v6i2.1930.

[6] R. E. Mayer, "Cognitive theory of multimedia learning," in *The Cambridge Handbook of Multimedia Learning*, 2nd ed., R. E. Mayer, Ed. Cambridge, U.K.: Cambridge University Press, 2014, pp. 43–71, doi: 10.1017/CBO9781139547369.005.

[7] S. Frimaulia, Y. Sari, and Taufiqurrahman, "Pengaplikasian permainan tradisional dalam peningkatan kosakata bahasa Inggris," *Jurnal Pengabdian Kepada Masyarakat*, vol. 3, no. 2, pp. 88–99, 2022.

[8] Y. Yantoro, D. A. Kurniawan, and N. Silvia, "Implementation of the congklak traditional game in

Madrasah Ibtidaiyah and elementary school," *Jurnal Pendidikan Agama Islam*, vol. 18, no. 2, pp. 407–430, 2021, doi: 10.14421/jpai.2021.182-11.

[9] R. M. Branch, *Instructional Design: The ADDIE Approach*. New York, NY, USA: Springer, 2009.

[10] J. W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 4th ed. Thousand Oaks, CA, USA: Sage Publications, 2014.

[11] S. Purwaningsih and L. Hakim, "Congklak board game: A way to preserve local culture in grammar class," in *Proceedings of the EAI International Conference*, 2021, doi: 10.4108/eai.14-11-2020.2314016.

[12] R. Al-Jarf, "Listening and Speaking Instruction, Assessment and Technologies in the Saudi EFL Context: A Systematic Self-Review," *British Journal of Applied Linguistics*, vol. 6, no. 2, pp. 18–39, May 2026, doi: 10.32996/bjal.2025.6.2.3.

[13] R. Kunova and Z. Kralova, "A Systematic Review of Experimental Methods in EFL Pronunciation Enhancement: Trends, Technologies, and Gaps," *Forum for Linguistic Studies*, vol. 7, no. 10, pp. 165–178, Oct. 2025, doi: 10.30564/fls.v7i10.10900.

[14] L. D. Yulianti, M. Marhum, and A. Kamaruddin, "Pronunciation Problems of English Segmental Sounds Encountered by EFL Learners of English Education Study Program," *Jurnal Pendidikan Bahasa Inggris Undiksha*, vol. 13, no. 1, pp. 124–139, May 2025, doi: 10.23887/jpbi.v13i1.86838.

[15] T. Bent, R. F. Holt, K. J. Van Engen, I. A. Jamsek, L. J. Arzbecker, L. Liang, and E. Brown, "How Pronunciation Distance Impacts Word Recognition in Children and Adults," *The Journal of the Acoustical Society of America*, vol. 150, no. 6, pp. 4103–4117, Dec. 2021, doi: 10.1121/10.0008930.

[16] R. Al-Jarf, "A Systematic Review of Studies on Pronunciation Instruction and Practice in L2 (2005–2025)," *Journal of English Language Teaching and Applied Linguistics*, vol. 8, no. 1, pp. 10–29, Jan. 2026, doi: 10.32996/jeltal.2026.8.1.2.

[17] W. A. Afzali, H. Amiri, M. Rahimi, and A. M. Wahidi, "A Review on Effective Strategies for Teaching English Pronunciation to EFL Learners (Literature Review)," *Scientia: Technology, Science and Society*, vol. 3, no. 5, pp. 90–100, 2026, doi: 10.59324/stss.2026.3(5).06.

[18] M. Burri, "Comparing L2 Teachers' Practices With Learners' Perceptions of English Pronunciation Teaching," *PROFILE: Issues in Teachers' Professional Development*, vol. 25, no. 1, pp. 129–145, Jan.–Jun. 2023, doi: 10.15446/profile.v25n1.101156.

[19] S. Ville, "Language teachers' cognitions and the impact of pronunciation training observation," *Phonica*, vol. 21, pp. 1–29, 2025, doi: 10.1344/phonica2025.21.5.

[20] X. Ye and G. Hu, "Effects of motivational interventions on EFL learners' willingness to communicate, self-confidence, and anxiety: An experimental study," *Language Teaching Research*, early access, 2025, doi: 10.1177/13621688251367858.

[21] S. Ulpa, M. Tahir, and F. H. Amin, "Teachers' perceptions of speaking confidence strategies: A case study at Cambridge English School," *Journal on Interdisciplinary Studies in Humanities*, vol. 8, no. 2, pp. 370–, 2025, doi: 10.34050/elsjish.v8i2.44442.

[22] G. Hassan, "Technology and the transformation of educational practices: A future perspective," *International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration*, 2025, p. 1596, doi: 10.34050/elsjish.v8i2.44442.

[23] Q. Yi, Z. Dong, and H. Qiao, "Enhancing EFL listening and speaking skills: Strategies and practice for implementing multimedia and multi-modal approaches," *Journal of Humanities, Arts and Social Science*, vol. 8, no. 9, pp. 2211–2217, 2024, doi: 10.26855/jhass.2024.09.032.

[24] S. Laksanasut, "Gamification in ESL/EFL education: Transforming language learning and teaching through play," *TESOL and Technology Studies*, vol. 6, no. 1, pp. 16–29, 2025, doi: 10.48185/tts.v6i1.1562.

[25] N. A. Adzmi, S. Bidin, B. Selvaraj, and S. Saad, "The role of gamification in enhancing engagement and motivation in language learning," *International Journal of Research and Innovation in Social Science*, vol. 8, no. 9, pp. 239–2402, 2024, doi: 10.47772/IJRISS.2024.8090197.

[26] P. F. Ihsani, D. S. Nanda, and S. Susanto, "Insights into enhancing English pronunciation and vocabulary through drilling and word repetition techniques," *Journal of Scientific Insights*, vol. 2, no. 1, pp. 35–47, 2025, doi: 10.69930/jsi.v2i1.276.

[27] C. Tejedor-García, D. Escudero-Mancebo, V. Cardeñoso-Payo, and C. González-Ferreras, "Using challenges to enhance a learning game for pronunciation training of English as a second language," *IEEE Access*, vol. 8, pp. 74250–742??, 2020, doi: 10.1109/ACCESS.2020.2988406.

[28] A. K. Arrasyid, H. Herpratiwi, R. M. Sinaga, and D. M. Fitri, "Transformation of traditional learning models in elementary schools in Lampung Province: An adaptation approach," *Jurnal Pendidikan Progresif*, vol. 15, no. 2, pp. 1310–1327, 2025, doi: 10.23960/jpp.v15i2.pp1310-1327.

[29] A. C. Anyichie, D. L. Butler, N. E. Perry, and S. M. Nashon, "Examining classroom contexts in support of culturally diverse learners' engagement: An integration of self-regulated learning and

culturally responsive pedagogical practices," *Frontline Learning Research*, vol. 11, no. 1, pp. 1–39, 2023, doi: 10.14786/flr.v11i1.1115.

[30] S. T. Bakieva and K. M. Eshmatova, "Technology-enhanced approaches to teaching English pronunciation," *International Journal of Humanities and Natural Sciences*, vol. 11-1 (110), pp. 7–12, 2025, doi: 10.24412/2500-1000-2025-11-1-7-12.