

Phonostack: Board Game for Pronunciation and Vocabulary Building

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DOI: <https://doi.org/10.47772/IJRISS.2026.102100147>

Received: 03 September 2026; Accepted: 08 September 2026; Published: 02 October 2026

ABSTRACT

The adoption of the Common European Framework of Reference for Languages (CEFR) in Malaysia aims to internationalise communicative benchmarking, but implementation may still face challenges. In Malaysian secondary ESL contexts, one area of concern that educators encounter is learners' issues in pronunciation, which is driven by a lack of explicit prosody training and imported materials that are contextually foreign. Thus, this paper presents Phonostack, a conceptual innovation introducing an educational board game designed to provide authentic pronunciation practice and vocabulary mastery aligned with CEFR descriptors. As a tactile, strategy-based tabletop game featuring dice, tokens, and targeted word lists, Phonostack serves as an interactive instructional framework to enhance phonological accuracy, articulation, and suprasegmentals (stress, rhythm, and intonation). By prioritizing physical interaction over digital automation, the game minimizes learner isolation and lowers affective barriers. This manuscript details the instructional mechanics, preliminary trial feedback from Malaysian ESL learners, enhanced self-correction technologies (such as QR-linked authentic audio), and a detailed quasi-experimental design for future empirical validation.

Keywords: English as a second language, CEFR, pronunciation, vocabulary, board game.

INTRODUCTION

The Common European Framework of Reference for Languages (CEFR) is an international standard to benchmark language abilities (Foley, 2019; Normand-Marconnet & Bianco, 2015). There are six global levels (A1, A2, B1, B2, C1, C2) to determine what learners can do with language in real-world tasks, rather than focusing solely on linguistic knowledge (Normand-Marconnet & Bianco, 2015; Shin et al., 2021). To standardise communicative competence and international benchmarking, Malaysia has adopted CEFR across all educational levels in schools, from primary to tertiary, as part of the English Language Education Reform and Roadmap (2015–2025) (Lim & Hashim, 2024; Musa et al., 2021; Nor & Yunus, 2022; Zaki & Darmi, 2021). Specifically, CEFR-aligned curricula and assessments ensure consistent descriptors across skills (Iber, 2014; Nor & Yunus, 2022; Zaki & Darmi, 2021). Evidence from Malaysian contexts shows generally positive teacher attitudes toward CEFR, but also notable implementation barriers such as limited training, resource constraints, and mismatch between imported CEFR textbooks and local contexts (Bakir & Aziz, 2022; Bayuon & Hashim, 2023; Iber, 2014; Kassim & Hashim, 2023; Musa et al., 2021).

Problem Statement

While CEFR-aligned curricula establish benchmarked targets for Malaysian secondary ESL learners, oral pronunciation and prosody remain underemphasized. Classroom instruction rarely offers explicit training in primary stress, rhythm, and intonation, while imported textbooks often lack local cultural relevance. Consequently, learners frequently experience performance anxiety and struggle with phonological accuracy

in natural communication. To address these challenges, tactile, game-based learning tools can create a low-anxiety environment that encourages interactive pronunciation practice and vocabulary mastery.

Research Objective

This paper aims to explore the use of an educational gamification tool in providing authentic pronunciation practice for ESL learners in Malaysian schools. Therefore, the use of board game as an educational and social activity is implemented in Malaysian ESL secondary classrooms to explore learners' pronunciation and vocabulary mastery based on the CEFR levels and word list.

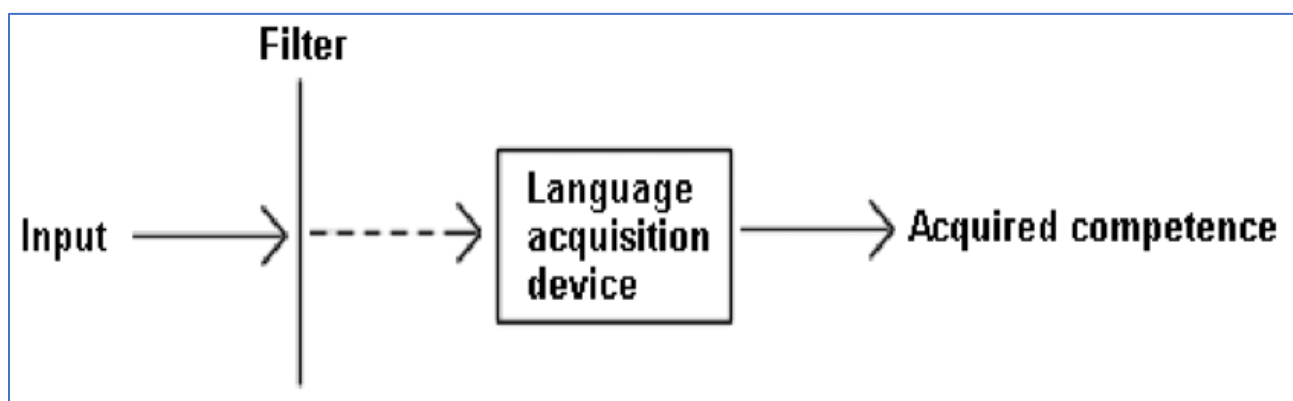
THEORETICAL FRAMEWORK

Phonostack is anchored in two foundational second language acquisition (SLA) frameworks namely the Affective Filter Hypothesis and the Sociocultural Theory.

Affective Filter Hypothesis (Krashen, 1982)

In the Affective Filter Hypothesis, Krashen (1982) states that in language learning, emotional variables such as anxiety, fear of judgment, and motivation can obstruct learners' language input acquisition. From the perspective of mastering pronunciation, speaking while at the same time producing accurate sounds may triggers ESL learners' performance anxiety especially when in public.

By adopting a low-stakes, tactile tabletop game, Phonostack helps counteract learners' affective filter by shifting pronunciation practice into a playful game. Additionally, strategy-based physical mechanics (such as tossing dice, balancing and extracting wooden blocks) can redirect focus away from their linguistic vulnerability. By replacing rigid drills with gamified physical interactions, the game lowers the affective filter, fostering an emotionally supportive environment that encourages risk-taking when reading



International Phonetic Alphabet (IPA) symbols.

Figure 1. Affective Filter Hypothesis (Krashen, 1982)

Zone of Proximal Development (Vygotsky, 1978)

Consequently, the Sociocultural Theory by Vygotsky (1978) asserts learners possess their Zones of Proximal Development (ZPD). The ZPD refers to how learners' cognitive development and language acquisition are closely linked to social processes mediated through interpersonal interactions. Phonostack operationalizes this through structured, turn-taking tabletop mechanics. As active players extract blocks and attempt phonetic articulation, other players serve as "More Knowledgeable Others" (MKOs) by providing peer feedback based on the correct pronunciation from the word list. Hence, isolated phonetic practices are transformed into a collaborative dialogue, enabling learners to bridge the gap between their current language ability and targeted mastery through peer scaffolding.

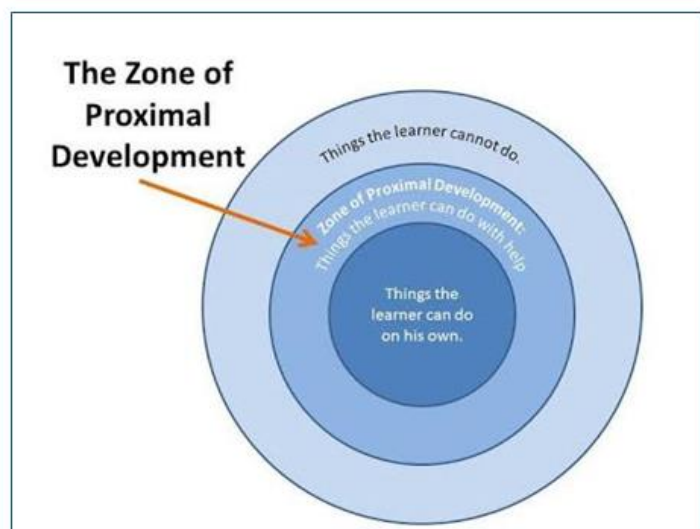


Figure 2. Sociocultural Theory (Vygotsky, 1978)

Novelty

Educational gamification tools have been identified to boost learner engagement. Gamified pronunciation practice improves pronunciation by reducing affective barriers which motivate learners, and encourages corrective feedback (Idris et al., 2020; Asikin & Ibrahim, 2020). Subsequently, gamified, multisensory approaches (including card games) can enhance articulation, phonological accuracy and recognition, illustrating gamification's applicability to second language sound recognition (Shukor et al., 2020). Finally, gamified activities (e.g., interactive quizzes and phonology-focused mini-games) can be used to scaffold pronunciation practices in Malaysian classrooms by focusing on stress, rhythm, and intonation (Idris et al., 2020; James, 2017; Shukor et al., 2020; Asikin & Ibrahim, 2020).

Game Mechanics and Design

Phonostack is a tactile tabletop game that combines physical dexterity, chance, and oral production. Players roll a customized die to determine which color-coded tier to target. Using one hand, the active player extracts a wooden block, reads the printed International Phonetic Alphabet (IPA) transcription aloud using correct syllable stress, and relies on peers to verify the pronunciation against a master word list. The player then flips the block to reveal the written word and stacks it on top of the tower.

Game Components

- 51 Dual-Sided Wooden Blocks: One side displays a target vocabulary word; the reverse displays its corresponding International Phonetic Alphabet (IPA) transcription with primary stress marks (/'/).
- 1 Customized Die: Features six animal face icons (ladybug, hedgehog, snail, caterpillar, cow, bee) matching color-coded block tiers.
- CEFR-Aligned Word List & Reference Guides: Categorized by syllable count (2, 3, and 4 syllables).

Instructional Gameplay Sequence

1. Die Roll: The active player rolls the die to select the target animal tier.
2. Tactile Extraction: Using only one hand, the player selects and extracts one block beneath the highest completed layer.
3. Phonetic Decoding & Production: The player reads the displayed IPA transcription aloud, applying correct primary stress and syllable length.
4. Verification Step: Peer players cross-check the oral production against the master word list. The active player flips the block to confirm word identity.

5. Stacking & Turn Completion: The block is stacked on top of the tower. The turn ends after a 10-second window or when the next player touches the structure.
6. Win/Loss Condition: The last player to successfully extract, articulate, and stack a block before structural collapse wins. The player responsible for the collapse sets up the tower for the subsequent round.

Preliminary Evaluation and Pilot Feasibility Data

To model classroom viability prior to full-scale empirical testing, a preliminary trial session was conducted with a sample of Malaysian secondary ESL learners (N=16, Form 4 students, CEFR A2–B1 proficiency range).

Pilot Testing

Learners completed a post-session feasibility survey evaluated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), supplemented by brief qualitative comments.

Evaluation Dimension	Mean Score (M)	Standard Deviation (SD)	Key Learner Feedback
Affective Reduction	4.63	0.5	"I felt less scared making pronunciation mistakes because it felt like playing Jenga."
Peer Scaffolding	4.38	0.62	"Checking my teammate's stress marks helped me notice my own mistakes."
Perceived Learning	4.25	0.58	"I learned where to put stress on 3-syllable and 4-syllable words."
Gameplay Engagement	4.75	0.45	"The 10-second timer and balancing made the practice very exciting."

Benefits to Society and Commercialization Potentials

Board games have several advantages over digital and online gaming, or other forms of gamification. They provide a tangible, social, and screen-free way to connect with others while keeping players' minds sharp (Idris et al., 2020). Compared to digital and online games, board games reduce player isolation and creates shared social bonds. Subsequently, strategy-based games provide a cognitive workout for players to exercise problem-solving and critical thinking (James, 2017).



Figure 3. Phonostack

Game-Based Learning and Self-Guided Feedback

Phonostack combines physical play with collaborative interaction to address key psychological and social factors in second language acquisition. By incorporating tasks that require physical dexterity, the game provides a constructive cognitive distraction that reduces public speaking anxiety during oral production, operationalizing Krashen's (1982) Affective Filter Hypothesis within a low-stakes tabletop environment. Concurrently, peer verification leverages Vygotsky's (1978) Sociocultural Theory by encouraging learners to scaffold each other's language development. However, preliminary observations indicate that peer checking alone is limited by students' varying baseline phonological awareness. Because non-native learners often share similar interlanguage backgrounds, subtle pronunciation errors—such as misplacing primary stress or failing to reduce vowels—frequently go unnoticed, creating a risk that phonetic mistakes will be reinforced.

To overcome these limitations and promote independent learning, Phonostack integrates a dual-layer self-correction framework. First, target vocabulary items incorporate clear visual cues, using explicit International Phonetic Alphabet (IPA) primary stress markers (/'/) to highlight correct syllable emphasis. Second, the physical action of flipping each block provides immediate feedback by pairing the IPA transcription directly with the word's standard spelling. This combination of visual guidance and tactile interaction helps consolidate sound-spelling relationships, enabling students to verify their own pronunciation accurately without relying solely on peer or teacher intervention.

RECOMMENDATION FOR FUTURE IMPROVEMENTS

Phonostack was developed as a cost-effective, portable tabletop game designed for intermediate secondary ESL learners in collaborative classroom settings. Future iterations can enhance its pedagogical value by integrating scannable QR codes onto each wooden block. These codes will link directly to authentic audio models (such as Received Pronunciation and Standardized Malaysian English) via a lightweight, offline mobile interface, giving learners immediate access to clear audio references. Furthermore, while the current paper outlines the conceptual design and preliminary pilot feedback, formal empirical research is required to evaluate the game's impact on student learning outcomes over time.

Proposed Quasi-Experimental Design

To empirically evaluate the efficacy of Phonostack, a six-week quasi-experimental study will be conducted with N=60 upper-secondary ESL learners (Form 4, aged 16) drawn from two intact classes at a public secondary school in Selangor, Malaysia. The target population encompasses learners within the CEFR A2 (Waystage) to B1 (Threshold) proficiency ranges. The intervention will consist of one 30-minute session per week over the six-week period. Learner progress will be measured using pre- and post-intervention speaking tasks divided into three distinct stages.

First, a word-level read-aloud task will evaluate segmental accuracy using two-, three-, and four-syllable words from the Phonostack corpus. Second, a sentence-level controlled production task will measure suprasegmental features, specifically sentence rhythm and primary stress shifts. Third, a semi-structured picture description task will examine learners' spontaneous lexical retrieval and natural prosody during communicative speech.

Student performances will be scored by two independent interlocutors using a modified Cambridge CEFR B1 Speaking Assessment Scale, utilizing a 1 to 5 rating scale across four analytical criteria. Segmental accuracy will measure the precise production of individual vowel and consonant sounds. Prosody and suprasegmentals will assess primary stress placement, intonation contours, and rhythm. Fluency and hesitation will track speech naturalness and the reduction of silent pauses. Finally, lexical resource will measure the accurate application of targeted multi-syllable vocabulary in context.

CONCLUSION

Phonostack addresses critical gaps in Malaysian secondary ESL instruction by offering a screen-free, localized tabletop intervention that integrates CEFR-aligned vocabulary with explicit pronunciation practice. Grounded in Krashen's Affective Filter Hypothesis and Vygotsky's Sociocultural Theory, the game lowers speaking anxiety while facilitating peer-scaffolded learning during interactive gameplay. Transitioning from this conceptual foundation to empirical research will validate its efficacy and solidify Phonostack as an engaging, commercially viable tool for language classrooms.

Phonostack offers a low-cost, durable, screen-free pedagogical tool tailored for Malaysian classrooms. By replacing expensive digital infrastructure with tactile tabletop mechanics, it provides an equitable, accessible resource for rural and under-resourced schools. The game holds high commercial potential for school board procurements, language centers, and home-based supplementary learning.

ACKNOWLEDGEMENTS

The successful completion of this project was made possible by the utmost commitment, sense of responsibility, and teamwork spirit of all team members.

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APPENDIX

Word list

2 syllables

Artist /'ɑ:tɪst/
Awful /ɔ:fl/
Bucket /'bʌkɪt/
Busy /'bɪzi/
Bizarre /br'zɑ:(r)/
Climate /'klaɪmət/
Forest /'fɒrɪst/
Gentle /'dʒentl/
Hidden /'hɪdn/
Hazard /'hæzəd/
Hostile /'hɒstail/
Lesson /'lesn/
Merger /'mɜ:dʒə(r)/
Narrow /'nærəʊ/
Pocket /'pɒkɪt/
Persist /pə'sɪst/
Robust /rəʊ'bʌst/

3 syllables

Addition /ə'dɪʃn/
Accountant /ə'kaʊntənt/
Attachment /ə'tætʃmənt/
Authorise /'ɔ:θəraɪz/
Beloved /br'lʌvɪd/
Battlefield /'bætlfi:ld/
Beautiful /'bjʊ:tɪfl/
Cognitive /'kɒgnətɪv/
Casino /kə'si:nəʊ/
Candidate /'kændɪdət/
Collector /kə'lektə(r)/
Composer /kəm'pəʊzə(r)/
Determined /dr'tɜ:mɪnd/
Defender /dr'fendə(r)/
Effective /ɪ'fektɪv/
Emission /ɪ'mɪʃn/
Financial /faɪ'nænʃl/
Magical /'mædʒɪkl/

4 syllables

Ability /ə'bɪləti/
Architecture /'ɑ:kɪtektʃə(r)/
Accurately /'ækjərətli/
Accompany /ə'kʌmpəni/
Babysitter /'beɪbɪsɪtə(r)/
Communicate /kə'mju:nɪkeɪt/
Composition /,kɒmpə'zɪʃn/
Combination /,kɒmbɪ'neɪʃn/
Controversial /,kɒntrə'vɜ:ʃl/
Comprehensive
/ ,kɒmprɪ'hensɪv/
Familiar /fə'mɪliə(r)/
Intelligent /ɪn'telɪdʒənt/
Reasonable /'ri:znəbl/
Magnificent /mæg'nɪfɪsnt/
Meticulous /mə'tɪkjələs/
Overwhelming / ,əʊvə'welmlɪŋ/