Development of TETPR: Technology-Enhanced Total Physical Response for Elementary Students to Learn English Vocabulary in Indonesia

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Abstract: This study explores the potential of Technology Enhanced Total Physical Response (TETPR) as an engaging approach to teaching English vocabulary to Indonesian students to support their English reading. TETPR integrates technology to enhance language acquisition, using the web, multimedia, AI, and remote. The study involves elementary students in Indonesia and employs a pretest-posttest control-group design. Data analysis will utilise an independent sample t-test to compare vocabulary acquisition between the experimental group taught with TETPR and the control group taught through traditional methods. The hypothesis predicts a significant difference in favour of the TETPR group. If successful, this study will contribute to IDC Theory by emphasising the role of interest-driven approaches on TETPR in improving students' English vocabulary acquisition.

Keywords: IDC, TELL, EFL, Total Physical Responses, Elementary Students

1. Introduction

English is widely recognised as a global language (John & Yunus, 2021). Internationalisation is happening in all nations worldwide. (Tseng, 2012). More than 1.5 billion people are reportedly learning English (Dagvadorj, 2020). A student needs an extensive vocabulary to learn four English skills because vocabulary is essential for reading, speaking, writing, and listening (Mutalib, 2014). To introduce students to English book reading activities, Book Reading Centric (BRC) English begins with learning phonics, building basic vocabulary, and recognising common sentence patterns (Looi et al., 2023). However, Indonesian readers encounter a significant challenge: a deficiency of language aptitude when engaging with English books (Hidayati, 2018). Limited vocabulary can impede comprehension and make it difficult for readers to fully understand the text (Nanda & Azmy, 2020). According to Nation (2001), learning vocabulary in another language requires a systematic approach that considers the learners' needs and the best use of class time. TPR (total physical response) is an excellent technique for teaching vocabulary, particularly pre-reading or hearing words (Dixon, 2016). Total Physical Response (TPR) is a method for teaching language that emphasises the coordination of speech and action through physical activity (Astutik et al., 2019). TPR is particularly effective for teaching vocabulary because it engages students in physical movements and actions that assist them in comprehending and remembering new words (Nurhajati & Sulistyani, 2022). One of the benefits of using TPR for vocabulary learning is that it makes the learning process enjoyable and entertaining for students, resulting in greater motivation and engagement (Nuraeni, 2019). TPR can also be used in e-learning environments, where students can follow online instructions and perform physical movements (Dewi & Fatmawati, 2022). TPR can be effectively implemented when teaching young or adult learners (Nuraeni, 2019a; Nuraeni, 2019b).

This study aims to explore the potential of using Technology Enhanced Total Physical Response (TETPR) as a structured and engaging approach to teaching Indonesian elementary students to learn English vocabulary in the context of supporting their reading of English books.

2. Literature Review

2.1 IDC Theory on English Study

The interest-driven creator (IDC) theory is a design theory that aims to inform the design of future education in Asia (Chen et al., 2020). The theory posits that when students' learning is driven by interest, they can be engaged in knowledge creation (Looi et al., 2023). The Total Physical Response (TPR) is a fun and enjoyable method for students (Nuraeni, 2019b). Total Physical Response uses movement to teach a new language pleasantly and efficiently (Cook, 2022). TPR helps students to remember English words and expressions (Nuraeni, 2019a; Nuraeni, 2019b). Through multimodal learning, TPR activities using physical actions and commands can improve memory retention (Dewi & Fatmawati, 2022). TPR's fun factor can also improve the classroom atmosphere (Ningrum, 2021). This can boost students' English learning interest (Zur & Selfieni, 2022). TPR method uses psychology and kinesiology to help students learn and remember language. Physical and verbal movement improves young students' vocabulary (Mariyam & Musfiroh, 2019). Students learn vocabulary better by linking it with physical motions (Ningrum, 2021). This method teaches language through physical activity by emphasising speech-action synchronisation (Dewi & Fatmawati, 2022).

In the context of English study, the IDC theory has been applied to improve English learning outcomes for undergraduate students in China (Wang & Chen, 2023).
A study designed a compulsory IDC-based English course in a blended setting for Chinese college students (Wang & Chen, 2023). The study aimed to enhance the listening and speaking proficiency of the students (Wang & Chen, 2023). In the IDC School in Taiwan, the BRC English approach is rooted in IDC Theory, prioritising immersive English book reading. Reader's Theatre activities or English drama performances connect reading with speaking and listening. Students create digital English picture books, aligning with IDC Theory's Creation Loop. Besides English classes, some subjects like arts and social studies are taught in English (Looi et al., 2023). Sulikatin (2023) has implemented a mini-lesson TPR activity supported by an online picture dictionary for learning English Listening and Vocabulary (LSV) at IDC Experimental School in Taiwan.

2.2 Technology-Enhanced Total Physical Response

TPR is particularly effective for teaching vocabulary, as it helps students remember words and expressions (Nurhajati & Sulistyani, 2022; Khakim & Anwar, 2020). It can be applied in large and small classes and is suitable for learners of all ages, including young learners and adults (Nuraeni, 2019). A technology-enhanced Total Physical Response (TPR) system in the classroom addresses the requirement for practical language learning approaches that engage students and encourage active engagement. TPR teaches vocabulary and grammar through haptic experiences (Swain & Lapkin, 2000). By using technology in TPR, educators improve learning and offer value. First, technology-enhanced TPR can support language acquisition using multimedia. Audio, video, and interactive features help students understand and motivate authentic language and cultural information (Nisa et al., 2022). Second, technology enables personalised and adaptive learning. Students can practice TPR at their own pace and receive rapid feedback using instructional software or applications (Jack & Higgins, 2019). This effective customised strategy lets students focus on their language learning needs and proceed at their own pace (Nisa et al., 2022). Technology-enhanced TPR fosters community and gives pupils social language practice (Richards & Rodgers, 2001). Several studies conducted TPR with technology, such as Wang et al. (2019), implemented Collaborative kinesthetic EFL learning with a collaborative total physical response. Kuo et al. (2013) evaluated the effects of the Embodiment-based TPR approach on student English vocabulary learning achievement, retention, and acceptance. Huang and Wang (2021) implemented an Artificial Intelligence learning approach through total physical response embodiment, teaching French vocabulary learning retention. Sulikatin (2023) has implemented a mini-lesson TPR activity supported by an online picture dictionary for learning English Listening and Vocabulary (LSV) at IDC Experimental School in Taiwan. The result showed a positive impact.

3. Learning Environment

3.1 Technology Enhanced TPR for Learning English Vocabulary

Total Physical Responses is a structured learning strategy that facilitates language acquisition through commands, speech, and action (Astutik et al., 2019). This technology-enhanced TPR for learning English vocabulary for elementary students differs from previous studies. As shown in Table 1, this study has innovated from the technology, user, learning activity and language.

Comparison	This study	Kuo, *et al.* (2013)	Wang, *et al.* (2019)	Huang & Wang (2021)	Sulikatin (2023)
TPR with Technology	✓	✓	✓	✓	✓
Picture Animation	✓	✗	✗	✗	✓
TPR with Technology and Teacher	✓	✗	✗	✓	✓
Audio of Word from Computer/Web	✓	✗	✗	✓	✓
Microsoft Kinect	✗	✓	✓	✗	✗
Using Video for Learning	✗	✓	✗	✗	✗
Collaborative Learning	✓	✗	✓	✗	✗
Learn English	✓	✓	✓	✗	✓
Audio Generated with AI	✓	✗	✗	✗	✓
Participant (Elementary Student)	✓	✗	✗	✗	✓
Friendly User Interface	✓	✗	✗	✗	✗
Using Air Remote	✓	✗	✗	✗	✗

Table 1. The Comparison of Technology Enhanced TPR

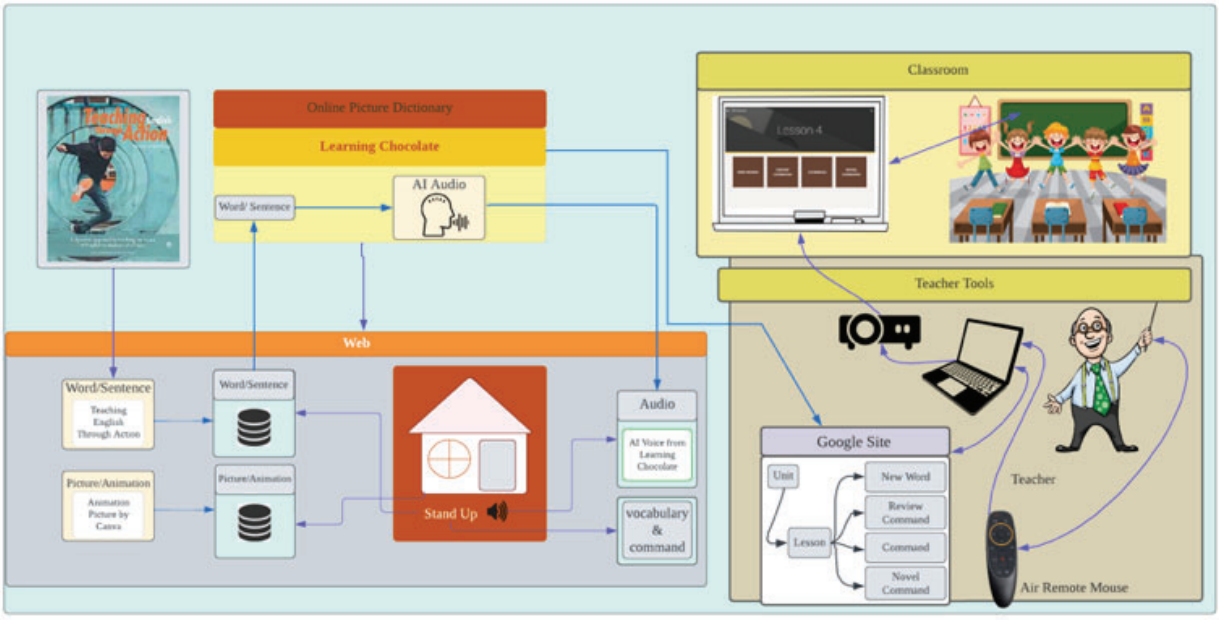

Figure 1. Learning Environment

As shown in Figure 1, this study uses technology to teach TPR for learning English vocabulary in the classroom. During a learning session, the teacher can utilise an air remote mouse to control the website. The website was modified to help Total Physical Response—AI speech generated by the text, and picture animation was developed as an online picture dictionary. AI was employed with children's sounds for primary or young learners. AI turned the text to audio. The text is the command inserted from the book into the web. Canva made the picture animation. Find two images to animate in Canva. Set the time in Canva. Export as a GIF file. Figure 1 displays the website's system architecture with three primary components: audio, text, and animation. The whiteboard must be linked to the internet to use this system. Google

Site helps the teacher easily select and connect the learning content from an online picture dictionary. The projector shows the learning content on a whiteboard so the student can see the picture animation and text commands from the online picture dictionary. Teachers can easily control the web from afar with an air mouse.

3.2 Learning Design

TETPR in the English class at the elementary school every week they have one time for learning English; it has 40 minutes for one hour of learning. The learning material will use a book named “Teaching English through Action: A Dynamic Way of Teaching the Basics of English to Students of all ages” by Berty Segal Cook. In this study, students will learn from units 1 to unit 2 (lesson 1 to lesson 17), in which the students learn about body parts, classroom items, colours, and numbers. Cook (2022) divided it into four steps to teach TPR in the lesson: New Word, Review Command, Command, and Novel Command. The experiment class (experimental group) will begin the lesson by showing new vocabulary or new words on the picture dictionary website, then show the review command to review last week's lesson, the command for the meeting today, and the novel command to review all learned lessons.

At every meeting, the teacher will teach one lesson. There are several steps to teach English vocabulary through this TETPR: 1) The teacher stands at the front of the classroom; 2) The teacher displays the content of the new word page; 3) The teacher instructs students to watch the picture animation, listen, and repeat; 4) The teacher directs students to perform the action word from the new word page; 5) The teacher shows the content of the review command/command/novel command pages; 6) The teacher asks students to listen and repeat the commands; 7) The teacher requests students to act out the commands at the front of the class. However, in the traditional class (control group), students learn English vocabulary by reading and memorising.

4. Method

4.1 Participants

The participants are 48 fourth-grade elementary students at SDS Aisyiyah Bengkalis, Riau, Indonesia. The school gave research permission to the student’s parents for the research ethical. Student assignment data will be collected and recorded with photos and videos during the learning process.

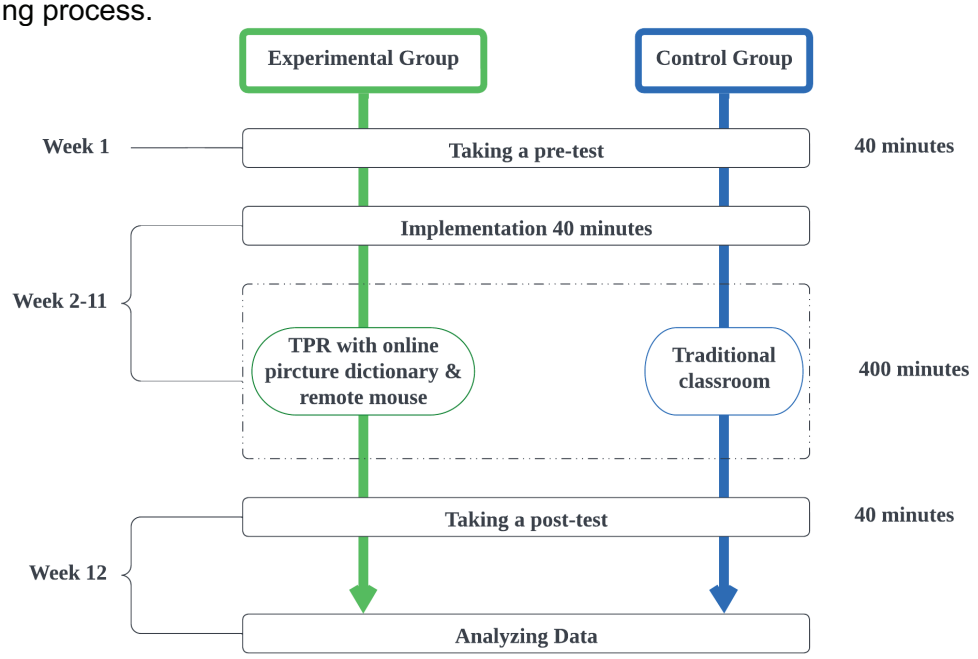

Figure 2. Experimental design

4.2 Instruments and Experimental Procedure

This research used pre-tests and post-tests from the Teaching English through Action book assessment. The researcher will administer 25 questions taken from the book. The correct response to each of the 25 questions on the pre-test is worth 4 points. The cumulative score is, therefore, 100. The test will evaluate the vocabulary skills of the students. In both the pre-test and post-tests, students will be written using pencil and paper.

This study will use quantitative methods to test TETPR's learning efficiency, which is the pretest-posttest control-group design will be used. It is an excellent experimental design, effectively controlling for rival hypotheses threatening the experiment's internal validity (Johnson & Christensen, 2014). The investigation will be implemented for three months (from July to October 2023).

4.4 Data Analysis & Hypothesis

The study will employ an independent sample t-test. The Independent Samples t-test compares the means of two separate groups to answer the hypothesis. Before conducting further analysis, the researcher will assess whether the data is a normal distribution. The researcher intends to employ SPSS 27 to perform data analysis.

Null Hypothesis (H0): There is no significant difference in vocabulary acquisition between the group of students taught using TETPR (experimental group) and the group of students taught using traditional methods (control group).

Alternative Hypothesis (Ha): There is a significant difference in vocabulary acquisition between the group of students taught using TETPR (experimental group) and the group of students taught using traditional methods (control group).

5. Conclusion

Suppose the study's findings can enrich the Interest-Driven Creation (IDC) Theory by emphasising the significance of interest-based reading choices, intrinsic motivation, active engagement, and the development of lifelong reading habits, especially if students demonstrate the positive impact of interest-driven approaches like Total Enhanced Total Physical Response (TETPR) on vocabulary acquisition and comprehension when reading English books. These findings align with IDC Theory's fundamental principles and promote an approach to English book reading centred on the learner.

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