

THE EFFECTS OF BOARD-GAME-BASED LEARNING ON ENGLISH VOCABULARY ACQUISITION AND LEARNER ATTITUDES AMONG THAI UNDERGRADUATE EFL STUDENTS

Chayakorn Jeenpracha¹ and Benjaporn Meeprom^{2*}

^{1,2}Faculty of Liberal Arts, Rajamangala University of Technology Thanyaburi

*Corresponding author

e-mail: benjaporn@rmutt.ac.th

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Abstract

Vocabulary knowledge is central to effective communication in academic and professional settings, yet many Thai undergraduates, particularly non-English majors, have limited opportunities to use new words meaningfully. This study examined English ARENA, a non-digital board-game-based intervention, in relation to English vocabulary acquisition and learner attitudes in a Thai EFL context. A mixed-methods, one-group pretest-posttest quasi-experimental design was used with 50 undergraduates. Data were collected through a vocabulary achievement test, pre- and post-intervention attitude questionnaires, and semi-structured interviews. Vocabulary scores increased from $M = 5.44$ ($SD = 3.63$) to $M = 9.74$ ($SD = 4.97$). The paired-samples t test showed a statistically significant difference, $t(49) = -5.63$, $p < .001$, with a large effect ($d = 0.80$); a Wilcoxon signed-rank sensitivity analysis led to the same conclusion ($Z = -4.47$, $p < .001$). Questionnaire patterns and interview accounts indicated greater enjoyment, confidence, participation, and peer support during gameplay. The qualitative findings also showed that learners valued repeated vocabulary retrieval and contextual use, although unfamiliar rules, time pressure, and difficult words sometimes disrupted play. Taken together, the findings provide preliminary evidence that structured board-game-based learning can support vocabulary acquisition and positive learner experiences in EFL and ESP-oriented classrooms.

Keywords: board-game-based learning, EFL learners, ESP, game-based learning, learner attitudes, vocabulary acquisition

Introduction

English vocabulary is closely tied to learners' ability to comprehend texts, follow spoken input, participate in interaction, and communicate in academic and professional settings. Vocabulary knowledge is also incremental: knowing a word extends beyond a single meaning to its form, use, associations, and contextual behavior (Nation, 2013; Schmitt, 2010). For non-English-major undergraduates, this makes vocabulary development particularly important when English is needed not only for university study but also for workplace communication and standardized assessments.

In Thai EFL settings, vocabulary learning can be constrained by limited opportunities for sustained use beyond the classroom and by teaching practices that still depend heavily on explanation, word lists, and short-term memorization. Thai studies using game-based activities have therefore explored ways of increasing learner involvement, motivation, and vocabulary practice (Na Chiangmai, 2023; Sutthiroj, 2023; Teemueangsai et al., 2025). These studies point to a practical issue for English courses serving non-English majors: learners need repeated encounters with useful vocabulary, but they also need reasons to retrieve and use those words during interaction rather than simply recognize them on a list.

Game-based learning (GBL) offers one response to this problem. Plass et al. (2015) describe games as learning environments in which cognitive, motivational, affective, and social processes can operate together. Research on gamified and game-based language learning likewise suggests that well-designed game conditions can increase participation and provide repeated practice, although effects depend on the design of the activity and its fit with the learning goal (Dehghanzadeh et al., 2021). Within this broader category, board-game-based learning (BGBL) is distinctive because interaction occurs face to face around shared physical materials. This format can make vocabulary retrieval, peer checking, negotiation of meaning, and immediate feedback part of the same classroom task (Cambazoglu & Girgin, 2022; Lailia et al., 2024).

English ARENA was developed for this study as a classroom application of BGBL for TOEIC-related vocabulary practice. GBL provides the broad pedagogical orientation, BGBL provides the non-digital interactional format, and English ARENA is the specific intervention through which these principles were implemented. Although recent work has reported positive learner responses to board games and other game-based vocabulary activities (Hanna & Listyowati, 2025; Na Chiangmai, 2023; Sutthiroj, 2023), evidence remains limited for physical board games used with Thai undergraduates in ESP-oriented vocabulary instruction. The present study therefore examined

vocabulary achievement and learner attitudes together, while also using interview data to explore how learners experienced repeated retrieval, peer interaction, and the demands of gameplay.

Objectives

1. To examine the effects of English ARENA, a board-game-based learning intervention, on undergraduate students' English vocabulary acquisition.
2. To investigate learners' attitudes toward English learning after participating in the board-game-based learning intervention.

Literature Review and Conceptual Framework

Vocabulary Acquisition in the EFL Context

Vocabulary acquisition develops through repeated encounters with words and through progressively richer knowledge of form, meaning, and use. Nation (2013) and Schmitt (2010) both emphasize that lexical knowledge is multidimensional rather than an all-or-nothing state. Repetition matters, but repeated exposure is more useful when learners attend to and work with the target item. Webb (2007), for example, found that repeated encounters supported gains across several aspects of word knowledge. In the present study, these principles are relevant because English ARENA repeatedly returns learners to target vocabulary and requires them to retrieve, interpret, pronounce, or use the words as part of gameplay.

Game-Based Learning and Board-Game-Based Learning

GBL can support these lexical processes when game mechanics are tied closely to the learning task. Plass et al. (2015) conceptualize game-based learning as an environment in which cognitive, motivational, affective, and social factors interact, while Dehghanzadeh et al. (2021) show that game and gamification research in English learning commonly draws on challenge, feedback, goals, and engagement. BGBL narrows this design to a face-to-face, tabletop setting. Studies of board-game use in English classrooms have reported benefits related to active participation, interaction, motivation, and vocabulary practice, although contexts and research designs vary considerably (Cambazoglu & Girgin, 2022; Hanna & Listyowati, 2025; Lailia et al., 2024).

Evidence from Thailand further suggests that game-based activities can be useful when learners need repeated English practice in a relatively low-pressure setting. Na

Chiangmai (2023) found that game-based vocabulary activities supported intrinsic motivation among Thai vocational learners, while Sutthiroj (2023) reported gains in oral communication and motivation after a situated board-game intervention with Thai EFL learners. More recently, Teemueangsai et al. (2025) showed that game-like drawing activities elicited cognitive, behavioral, and affective engagement among Thai EFL learners. Taken together, this work supports further investigation of non-digital board games with Thai undergraduates, especially when vocabulary achievement and learner experience are examined within the same study.

English ARENA as the Learning Intervention

English ARENA is a researcher-developed, non-digital board game designed for classroom vocabulary practice. The game uses 60 vocabulary cards selected from Barron's 600 Essential Words for the TOEIC (Lougheed, 2008) and targets upper-intermediate to advanced vocabulary relevant to academic and professional communication. Players work with shared cards, character boards, and game actions that require them to recognize, pronounce, explain, retrieve, and apply target words in order to continue play.

Definition and scope. In this study, English ARENA refers to the specific instructional board game used to operationalize BGBL. It is not treated as a separate learning theory; rather, it is the classroom intervention through which vocabulary, task, interaction, and motivational principles were brought together.

Main features. The design combines repeated lexical retrieval, rule-governed task completion, peer checking, strategic choices, and immediate social feedback. These features were intended to move vocabulary practice away from isolated recognition and toward repeated use within a shared activity.

Implementation. Learners played in small groups and had to make choices, check answers, ask for help, and respond to vocabulary prompts during their turns. The teacher introduced the rules, monitored play, and intervened when clarification was needed, while learners carried most of the interaction themselves.

Rationale for selection. English ARENA was selected because its mechanics make repeated retrieval and peer interaction necessary for progress in the game. The present study evaluates whether this design was associated with measurable vocabulary gains and

how learners perceived the experience; its effectiveness is therefore treated as an empirical question rather than assumed in advance.

Integrated Theoretical Framework

The study integrates four complementary perspectives. Task-Based Language Teaching (TBLT) explains the goal structure of play: vocabulary is used to complete meaningful, outcome-oriented game actions rather than practiced only as isolated items (Ellis, 2003; Nunan, 2004). Sociocultural Theory explains the interactional layer, as learners ask questions, negotiate meaning, and scaffold one another during play (Vygotsky, 1978). Self-Determination Theory explains why the same environment may sustain engagement through strategic choice (autonomy), achievable challenge and feedback (competence), and team interaction (relatedness) (Deci & Ryan, 2000; Ryan & Deci, 2017). Retrieval practice provides the cognitive mechanism that links repeated recall to stronger access to learned material (Roediger & Karpicke, 2006; Webb, 2007). In English ARENA, these four perspectives work together rather than independently: the game supplies a goal-oriented task, the task creates occasions for social support, the social and strategic conditions help learners remain engaged, and continued engagement produces repeated opportunities to retrieve and use vocabulary. The expected outcomes are therefore both lexical (vocabulary achievement) and affective (learner attitudes and engagement).

Methodology

Research Design and Participants

This study used a mixed-methods, one-group pretest-posttest quasi-experimental design. The quantitative component examined change in vocabulary achievement and descriptive patterns in learner attitudes; the qualitative component used semi-structured interviews to clarify how learners experienced the intervention. Because the study was conducted in an intact classroom and did not include a comparison group, the design supports evidence of change across the intervention period but does not by itself establish a definitive causal effect.

The final analytic sample comprised 50 first-year, non-English-major undergraduates enrolled in an English for Conversation course at a public university in Thailand. Participants were drawn from Computer Science and Food and Nutrition programs and were selected

purposely because they were members of the target course and required English vocabulary for academic and future professional communication. English was a foreign language for all participants. A standardized proficiency score was not required at university entry; therefore, no CEFR band was used as an inclusion criterion. Participation followed institutional permission, informed consent, and approved research-ethics procedures.

The intervention lasted eight weeks. In each weekly 60-minute session, students played English ARENA in groups of four to five. The target vocabulary was drawn from the game's TOEIC-related lexical set, and turns required learners to recognize, pronounce, explain, retrieve, or use target words. Group composition and the core gameplay procedure were kept consistent across sessions so that learners received repeated opportunities to work with the same type of lexical task.

Learning activities. Learners worked in team mode and used the rules of play to check answers, discuss meanings, and retrieve target vocabulary during successive turns.

Teacher and learner roles. The teacher acted primarily as a facilitator by introducing the rules, monitoring progress, and clarifying language or game procedures when necessary. Students were active players who managed the game components, made strategic choices, negotiated meanings, and supported one another during play.

Three data-collection instruments were used alongside the English ARENA intervention: a vocabulary achievement test, pre- and post-intervention attitude questionnaires, and a semi-structured interview protocol.

Vocabulary achievement test. The same 30-item multiple-choice item bank was used for the pretest and posttest, with question and option order randomized at posttest to reduce simple recall of item position. The test sampled vocabulary embedded in English ARENA and focused on recognition of meaning and contextual use. Each correct response received one point, giving a maximum score of 30.

Attitude questionnaires. The pre-intervention survey contained five sections covering demographic information, language background and English attitudes, play behavior and board-game experience, familiarity with board games, and expectations toward an English vocabulary board game. The post-intervention survey contained four sections covering changes in board-game behavior, experience with English ARENA, attitudes toward vocabulary board games, and changes in attitudes toward English. Attitudinal items used a

five-point Likert response format. Because the sections represented different constructs, they were analyzed by section rather than collapsed into a single overall score.

Semi-structured interviews. Fifteen participants took part in post-intervention interviews addressing perceived vocabulary learning, affective responses, peer interaction, benefits, and challenges. The interview protocol was included in the expert-validation process. Initial IOC review identified three interview items (Items 3, 8, and 10) with coefficients of .33; these items were revised for clarity and closer alignment

Content Validity (Expert Review)

Content validity was examined by three experts with backgrounds in English language teaching, instructional media, and educational innovation. Using the Index of Item-Objective Congruence (IOC), the experts judged the alignment of the board-game components, vocabulary test, questionnaires, and interview questions with the research objectives. Initial item-level IOC coefficients ranged from .33 to 1.00. Items meeting the predetermined criterion of .50 or above were retained; three interview items that received .33 were revised before implementation. Reporting the initial range and the subsequent revisions makes the validation process explicit rather than treating all items as equally strong at first review.

Reliability (Pilot Study)

Following expert review, the questionnaires were piloted with 30 undergraduates who were similar to the target group but were not included in the main study. Cronbach's alpha was calculated for the multi-item questionnaire sections. The coefficients varied across sections rather than showing uniformly high internal consistency: the pre-intervention sections ranged from .521 to .873, and the post-intervention sections ranged from .502 to .705. The strongest coefficients were obtained for pre-intervention Language Background and Attitudes toward English ($\alpha = .873$), pre-intervention Attitudes and Expectations toward an English Vocabulary Board Game ($\alpha = .825$), and post-intervention Experience with English ARENA ($\alpha = .705$). Sections with lower coefficients were treated descriptively and interpreted cautiously, particularly where the items covered heterogeneous behaviors or where the section contained only a few items (Cronbach, 1951).

Data collection followed three stages. Before the intervention, participants completed the vocabulary pretest and pre-intervention questionnaire. During the eight-week intervention, they took part in weekly English ARENA sessions. After the final session,

participants completed the vocabulary posttest and post-intervention questionnaire, and 15 participants subsequently joined semi-structured interviews. Interview audio was transcribed verbatim and anonymized before analysis.



Figure 1 User Instruction of the English ARENA Board Game

Data Analysis

Means and standard deviations were used to summarize vocabulary scores, while questionnaire sections were interpreted descriptively because their internal-consistency estimates varied. Shapiro-Wilk tests indicated non-normal pretest, $W = .914$, $p = .001$, and posttest distributions, $W = .943$, $p = .018$. Because a paired-samples t test assumes normality of the paired difference scores rather than normality of each measurement separately, these results were treated as evidence of non-normality in the observed score distributions rather than as a direct test of the paired-difference assumption. The paired-samples t test was retained as the primary analysis for the continuous achievement scores ($N = 50$), and a Wilcoxon signed-rank test was reported as a nonparametric sensitivity analysis. Cohen's d for paired data and a 95% confidence interval for the mean difference were used to describe the magnitude and precision of change. Statistical significance was evaluated at $\alpha = .05$. Qualitative interview transcripts were transcribed verbatim, read iteratively, coded for recurring meanings, and grouped inductively into themes.

Results

Vocabulary Acquisition

Vocabulary achievement increased from the pretest ($M = 5.44$, $SD = 3.63$) to the posttest ($M = 9.74$, $SD = 4.97$). In the SPSS contrast coded as pretest minus posttest, the mean difference was -4.30 points, 95% CI [-5.83, -2.77], and the paired-samples t test was statistically significant, $t(49) = -5.63$, $p < .001$. Cohen's d for the paired difference was 0.80, indicating a large standardized change (Cohen, 1988).

The Wilcoxon signed-rank sensitivity analysis led to the same substantive conclusion, $Z = -4.47$, $p < .001$, $r = .63$. Thirty-six participants obtained higher posttest scores, eight obtained lower scores, and six showed no change. Agreement between the parametric and nonparametric analyses indicates that the conclusion of improved post-intervention vocabulary performance was not dependent on a single statistical test.

Table 1

Comparison of pretest and posttest vocabulary achievement scores.

Measure	Pretest M	Pretest SD	Posttest M	Posttest SD	$t(df)$	p
Vocabulary achievement	5.44	3.63	9.74	4.97	-5.63 (49)	< .001

Note. Cohen's $d = 0.80$, indicating a large effect size.

Learner Attitudes and Qualitative Findings

Questionnaire responses were interpreted by section and alongside the interview data rather than as a single composite attitude score. Descriptive comparison of the pre- and post-intervention surveys, together with responses to the post-intervention change items, showed a more favorable pattern for enjoyment, willingness to participate, confidence, and perceived usefulness of the board game. Because several questionnaire sections had modest internal-consistency coefficients, these patterns are treated as supportive attitudinal evidence and are triangulated with the interview accounts below.

Qualitative Findings on Learner Attitudes and Learning Experiences

Interview transcripts ($n = 15$) were transcribed verbatim, read iteratively, coded for recurring meanings, and grouped inductively into themes. Four themes were sufficiently recurrent and directly relevant to the research objectives: vocabulary retrieval and contextual use, reduced anxiety and greater enjoyment, peer support and social interaction, and challenges during gameplay.

Theme 1: Vocabulary Retrieval and Contextual Use

Learners frequently linked vocabulary learning to having to retrieve words in order to continue the game. Student 4 explained, "I think I learned more because when I played, I had to use the words to win the battle, which made me remember them better than just reading a list." Student 8 also noticed the oral dimension of this repeated use: "The game helped with my pronunciation because I had to listen to how my friends said the words on the cards to understand the game state." The experience appeared to extend beyond the game for some learners; Student 10 stated, "I found myself remembering TOEIC words from the game while I was doing my other English exercises in class."

Theme 2: Reduced Anxiety and Greater Enjoyment

A second theme concerned the emotional tone of the activity. Student 12 said, "Usually, I am very bored in English class, but with this board game, I felt excited to come to the session because it didn't feel like studying." Student 1 similarly described the activity as different from routine university language work: "This was my first time using a game to learn at the university. It made English feel like a social hobby rather than just a difficult subject I have to pass." Student 5 connected the relaxed atmosphere with greater tolerance of

mistakes: "I used to be afraid of making mistakes, but in the game, everyone makes mistakes and we just laugh and try again."

Theme 3: Peer Support and Social Interaction

Peer interaction was not simply a background feature of gameplay; several learners described it as part of how they managed unfamiliar language. Student 7 noted, "The best part was playing with my friends; if I didn't know a word, I could just ask the person next to me without feeling embarrassed." Student 6 gave a similar account of learning both the language and the procedure through peer explanation: "Whenever I got stuck on a rule or a difficult word, my group helped explain it to me, so I actually learned the rules and the English at the same time."

Theme 4: Challenges During Gameplay

The interviews also identified constraints, which are important for interpreting the positive findings. Student 3 reported, "At first, the card mechanics were a bit confusing and I struggled to read the instructions quickly enough during my turn." Student 15 added, "Some TOEIC words were very new to me, so I felt pressured when I had to choose a card in a short time." These comments indicate that the same challenge and time pressure that can sustain engagement may become a barrier when rules or vocabulary exceed learners' immediate processing capacity.

Discussion

Interpretation and Comparison with Previous Research

The vocabulary results show a substantial pretest-posttest difference, supported by both the paired t test and the Wilcoxon sensitivity analysis. The large paired effect size ($d = 0.80$) indicates that the change was meaningful in standardized terms, although the one-group design means that the improvement should be interpreted as associated with the eight-week intervention rather than as proof that the board game alone caused the gain. This pattern is consistent with broader evidence that game-based language activities can support repeated practice and learner engagement (Dehghanzadeh et al., 2021) and with studies reporting positive vocabulary or participation outcomes in board-game contexts (Hanna & Listyowati, 2025; Lailia et al., 2024).

The qualitative findings add a more specific contribution. Learners did not describe the board game only as 'fun'; they repeatedly referred to having to retrieve vocabulary to act in the game, hearing and checking words with peers, and being able to ask for help without embarrassment. This combination resembles findings from Thai game-based studies in which social participation and motivation accompanied language practice (Na Chiangmai, 2023; Sutthiroj, 2023; Teemueangsai et al., 2025). At the same time, the challenge theme shows that face-to-face play is not automatically supportive: unfamiliar mechanics, lexical difficulty, and time pressure can compete with language processing. The contribution of a physical board game may therefore lie less in being inherently superior to digital tools and more in the particular social affordances it creates when task difficulty, rules, and teacher support are well calibrated.

Theoretical Interpretation

The vocabulary gains are consistent with the cognitive account underlying repeated encounters and retrieval. English ARENA required learners to recall target words during successive turns rather than merely reread them. This is compatible with Nation's (2013) view of vocabulary learning as cumulative knowledge built through repeated meaningful encounters, Webb's (2007) evidence that repetition supports multiple aspects of word knowledge, and retrieval-practice research showing that effortful recall strengthens later access to learned material (Roediger & Karpicke, 2006). The interview comments from Students 4 and 10 are particularly relevant here because they describe retrieval during gameplay and subsequent recall in other class work.

TBLT and Sociocultural Theory help explain why that retrieval occurred in an interactive rather than isolated form. The lexical items had an immediate purpose within game actions, which is consistent with task-based principles of using language to reach an outcome (Ellis, 2003; Nunan, 2004). At the same time, learners asked one another for meanings, checked answers, listened to pronunciation, and explained rules. Student 7's description of asking a nearby friend 'without feeling embarrassed' and Student 6's account of learning through group explanations illustrate the socially mediated support described in Sociocultural Theory (Vygotsky, 1978).

Self-Determination Theory adds an affective and motivational explanation. Strategic choices during play offered a degree of autonomy; successful turns and feedback could support competence; and group play created relatedness (Deci & Ryan, 2000; Ryan & Deci,

2017). The interview data are consistent with these conditions, particularly the reports of enjoyment, lower fear of mistakes, and peer support. Importantly, the challenge theme places a boundary on this interpretation: competence may be undermined when time limits, unfamiliar rules, or difficult vocabulary become excessive. This suggests a practical design principle for ESP board games: challenge should be sufficient to sustain purposeful engagement but accompanied by clear rules, scaffolding, and opportunities for peer assistance.

Conclusion and Implications

This study examined English ARENA, a board-game-based vocabulary intervention, with 50 Thai undergraduate EFL learners. Vocabulary achievement was higher after the eight-week intervention, with a large paired effect size and converging results from parametric and nonparametric analyses. The questionnaire and interview evidence also pointed to more positive learner experiences, especially enjoyment, confidence, participation, and peer support.

The study contributes preliminary classroom evidence that a non-digital board game can bring several processes into the same vocabulary task: repeated retrieval, purposeful use, immediate peer feedback, social support, and motivational engagement. The interview themes also show that these benefits are conditional. Clear rules, manageable lexical difficulty, and sufficient processing time are needed if the game is to support language learning rather than distract from it.

For classroom implementation, board-game-based learning may be employed as a structured supplement to explicit vocabulary instruction rather than as a replacement for it. Teachers should model the rules, group learners carefully, provide language support when needed, and use short post-game reflection to consolidate vocabulary. In ESP-oriented courses, the lexical content can be adapted to the professional domain while retaining the same retrieval and interactional principles.

Limitations and Recommendations for Future Research

Several limitations should guide interpretation. First, the one-group pretest-posttest design did not include a comparison group, so alternative explanations for change cannot be ruled out. Second, the sample was limited to 50 students in one university course, which

restricts generalizability. Third, some questionnaire sections had modest internal-consistency estimates; those results were therefore interpreted descriptively and triangulated with interview data. Finally, the study measured immediate post-intervention achievement rather than long-term retention.

Future research should use delayed posttests to examine retention, include comparison groups where feasible, and test the intervention across larger and more diverse ESP populations. Direct comparisons with digital game-based activities would also help determine which learning affordances are specific to physical board-game interaction. Further work could examine productive vocabulary use in speaking and writing and explore how rule complexity, time pressure, and group composition influence learning.

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