The Effects of Brain-based Learning Strategies on Low Ability Malaysian English as a Second Language Learners' Writing Performance

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ABSTRACT

The main goal of Brain-based Learning (BBL) is to create effective learning conditions that allow the brain to naturally learn. A plethora of studies on BBL learner performance and perceptions have been conducted in a variety of contexts. However, BBL studies on low-ability ESL learners are still in their infancy. Therefore, this study investigated low-ability ESL Malaysian learners' BBL performance and perceptions in the classroom. A purposive sampling technique is used to collect quantitative data from 150 learners. A quasi-experimental design compares the learners' pretest and post-test scores. The descriptive analysis indicated a favorable outcome when the post-test mean score was higher than the pretest scores in the literature critical response writing test. A paired sample t-test was also conducted, and results showed that there is a statistically significant improvement in the scores from the pretest ($M = 2.45$, $SD = 1.50$) to the post-test ($M = 5.35$, $SD = 2.40$), $t(149) = -15.48$, $p<.05$. A qualitative design is also used to investigate three learner-focus groups' (five in each group) responses after BBL intervention. Findings revealed that there are generally positive responses related to the BBL theoretical framework of this study. However, there are some negative responses pertaining to two components of the framework. This study indicates that BBL can enhance low-ability ESL learners' writing performance and active learning engagement.

Keywords: Brain-based learning, learner literature critical response writing, low ability ESL learner performance, meaningful learning, retention and recall, social interaction

INTRODUCTION

Since the 1990s, educators have had a growing interest and awareness in exploring how the brain functions in an educational setting and how it would benefit learners (Howard-Jones et al., 2016). Caine and Caine (1994) define BBL as the recognition of the brain's codes for meaningful learning and adjusting the teaching process in relation to those codes. Jensen (2008) defines BBL as learning that is "aligned with how the brain naturally learns, and it is learning with the brain in mind" (p. 4). Both BBL researchers agree that it is seen as a way of thinking about learning and not a solution to problems faced by educationists. The focus is to provide and explain the best or appropriate conditions in which effective learning occurs in relation to how the brain functions.

In English language learning, brain-based learning (BBL) equips teachers with an array of brain-compatible teaching and learning approaches to reach learners (Lombardi, 2008). Previous BBL studies on English language learning had concluded an improvement in the learners' overall academic performance (Duman, 2010; Salem, 2017), speaking skills (Syahbandi, 2018), reading skills (Kohar, 2020; Valipour & Araghi, 2014) and writing skills performance (Khalil, 2019; Zuhriyah & Augustina, 2020). BBL also enhanced the learners' ability to retain and recall English vocabulary items taught in the classroom (Kandasamy et al., 2021; Kosar & Bedir, 2018).

In the Malaysian English as a Second Language (ESL) teaching and learning curriculum, English literature with a small 'l' has been incorporated into the syllabus since 2000 (Malaysian Ministry of Education [MOE], 2013). The main reason for the inclusion is to enable learners to enjoy literary texts at a level suited to their language proficiency and develop their ability to express themselves critically and creatively. However, previous studies revealed that the teaching and learning practices were mainly teacher-centered, uninteresting, and did not sufficiently engage the learners. (Govindasamy & Jan, 2017; Omar, 2017). In addition, there was too much focus on the content and preparing learners for public examinations (Choo et al., 2017; Ismail et al., 2008). One of the literature components, the prescribed English novel, is assessed in the Malaysian Certificate of Education public examination. Learners are required to write a critical response essay based on the literary elements found in the novel. Therefore, the focus of the present study was on ESL writing performance.

Problem Statement

First, previous BBL studies conducted in Malaysia are currently limited. Research documenting the effectiveness of BBL in the classroom is largely focused on Malay Language (Baba & Aziz, 2009), Physics (Saleh, 2012) and Additional Maths (Yatim et al., 2022). In ESL, Kandasamy et al. (2021) revealed that BBL-compatible strategies strengthened intermediate L2

proficiency learners' vocabulary learning and retention. Therefore, there is a need to investigate BBL in relation to low-ability ESL learners. Moreover, ESL learners' views on BBL have yet to be explored extensively in Malaysia. Second, studies have shown that ESL Malaysian learners could not write a critical response essay well (Singh et al., 2018), resulting in their inability to answer questions in public examinations (Malini & Kaur, 2014) due to their limited ability to provide adequate reasoning in the language (Alagozlu, 2007). Hence, this study examines the effects of BBL strategies employed in the context of the ESL literature component among low-ability Malaysian secondary school learners' writing performance.

Research Questions

RQ1: How do Malaysian ESL low-ability learners perform in a literature component critical response writing test after BBL strategies were applied in the classroom?

RQ2: What are the learners' responses to using BBL strategies in an ESL literature component in a Malaysian classroom?

LITERATURE REVIEW

BBL and English Language Learning Performance

Recent BBL studies have provided learning gains in English language proficiency and learning retention among learners. Kandasamy et al. (2021) showed that BBL had a positive effect on Malaysian learners' ESL vocabulary acquisition and

retention. There was a significant difference between the post-test and delayed post-test (three weeks after BBL intervention) compared to the pretest between the control and experimental groups. Similar results were also revealed among young Turkish adults (Kosar & Bedir, 2018). Therefore, establishing a learning environment compatible with BBL principles enables knowledge retention among English language learners (Haghighi, 2013; Salem, 2017).

Since this study involved ESL learners' critical writing response performance, it has been argued that non-native English language learners' critical thinking writing skills were limited because they could not express themselves critically in the language (Alagozlu, 2007; Stapleton, 2002). Critical thinking skills require learners to be able to justify and state their arguments logically in problem-solving situations (Ahangari & Sepehran, 2014). However, studies have shown that BBL positively affects English language critical writing skills among Egyptian secondary school learners (Khalil, 2019) and adult Indonesian learners (Zuhriyah & Agustina, 2020).

English Language Learner Perceptions Towards BBL

English language learners' perceptions of BBL were generally positive. Weimer (2007) surveyed middle school learners' perceptions of learning engagement and BBL in Chicago. Results showed active learner engagements related to fun learning, cooperative learning, role play, telling

stories, debates and other interactive activities that required them to move physically in class. Similarly, eighth-grade English language learners in the United States revealed that active engagement in BBL was related to frequent use of physical movements, active social interaction, the supportive physical aspects of the classroom and school environment, positive emotions, and meaningful repetition of the items learned (Wlodek, 2018).

Other BBL studies also revealed that learners' positive emotions were important in creating a conducive atmosphere for effective learning. Ali et al. (2019) investigated secondary public school Pakistani ESL learners' perceptions of BBL. Findings from the questionnaires indicated that 98.4% of the respondents agreed that stress had a negative impact on learning, and 60% responded that emotion was critical to effective decision-making. The study also showed that the learners were equally divided between learning challenges and threats. In addition, Runganurak et al. (2022) revealed that tenth-grade EFL Thai learners who were taught employing educational neuroscience instruction (BBL compatible strategies) had less learning stress than students taught using the conventional approach. In another BBL study, Oghyanous (2017) found a generally positive feeling with less emotional disturbance toward learning achievement among 90 young EFL Iranian learners as they were more confident in their abilities.

Kosar and Bedir (2018) interviewed 27 EFL young adult Turkish learners and concluded that BBL had facilitated knowledge retention. These learners also perceived that BBL was more effective than the traditional way of teaching because learning was engaging and enjoyable. The studies being reviewed have indicated that BBL has the potential to improve learners' academic achievement, retention and recall, active learning engagement, and positive emotional state of being.

THEORETICAL FRAMEWORK

As the study examined the use of BBL in an ESL instructional context, the principles of BBL adapted from Caine and Caine (1994) and Kapur's (2018) Second Language (L2) Constructivism classroom principles formed the theoretical basis. Constructivism is recommended as one of the guidelines for instructional practices in the national curriculum (MOE, 2013). The rationale for incorporating both theories was that they share overlapping principles that focus on creating an optimum condition for effective learning (Gulpinar, 2005; Kahveci & Ay, 2008). The theoretical framework is shown in Table 1 as follows.

Experiential Learning

This study investigates the ESL low-ability learners' performance in an English literature component test after BBL strategies were applied in the classroom. The performance depended on the learners' recall of what was taught in the lessons. In BBL, Caine and Caine (1994) suggest experiential learning because the brain remembers best when facts and skills are embedded

Table 1

A theoretical framework based on the overlapping principles between BBL and L2 Constructivist Classroom

Brain-based Learning	L2 Constructivist Classroom
Experiential learning for better comprehension and retention through hands-on learning.	Learning is action-oriented.
Each brain is unique and can grow by maximizing learner's needs, styles and context.	Individual differences in learning
Learning is enhanced by challenge and inhibited by threat.	Coping with problem-solving activities.
Emotion is critical to inculcate positive social interaction.	Learning is mediated through social interaction.
The search for meaning occurs through patterning.	New Learning is based on previous knowledge.
The brain processes the whole and parts simultaneously.	Meaningful and functional use in language practice.

Source: Caine and Caine (1994), Kapur (2018)

in natural spatial memory. Jensen (2005) states that this type of memory is "loci, spatial, event-related, or a contextual recall process with learning and memory are being prompted by a particular location or circumstance" (p.133). It has an unlimited capacity, requires less effort as compared to rote learning and occurs naturally. Learners must be immersed in classroom activities, actively engaged in the learning process through hands-on experiences, and not static in one location (Aziz & Aziz, 2019; Roberts, 2002). The activities suggested are role-play, content mapping, reflective portfolios, and simulation sessions (Kolb, 1984).

Individual Differences in Learning

In BBL, each brain is unique because the integration of senses and emotions is different, even though everyone has the same set of systems in their brain (Caine & Caine, 1994; Suarez et al., 2019). Nevertheless, BBL strategies allow different learners to recognize how they learn and immerse themselves positively in the learning process (Duman, 2010). Therefore, BBL supports differentiation as a learner instructional model to maximize learning, focusing on learner differences and similarities in learning styles and abilities (Jensen, 2005; Sousa & Tomlinson, 2011). For example, Tomlinson (2014) suggests that information in the lesson content should be reduced and should come from various sources to accommodate low-ability learners' learning needs. In this study, the researcher investigated how the teaching and learning context was differentiated to reflect the low-ability L2 learners' L2 proficiency and learning styles.

Low in Threat but High in Challenge

Optimal learning occurs when the brain is challenged appropriately. However, on the other hand, its performance decreases when it is under perceived threat, and therefore, it is not an easy task to achieve this delicate balance (Caine & Caine, 1994). The brain is forced and, at the same time, motivated to try to learn (Given, 2002). In addition, threats are perceived when the learner experiences fear, anxiety, stress, or helplessness in the learning process (Caine et al., 2005). In this study, the researcher investigated whether the learners had experienced negative emotions after using BBL strategies. In BBL, ESL learners view threats as a form of stress that has a negative impact on learning (Ali et al., 2019). Learning should capitalize on the learners' previous knowledge and sense of novelty or curiosity and provide opportunities for their willingness to participate in challenging activities (Jensen, 2005).

Positive Social Interaction

The brain is a social entity, and effective learning results from the learner's need to have a satisfying and engaging relationship with others (Caine & Caine, 1994). A brain scan study by Li and Jeong (2020) indicated that positive social interaction facilitated L2 learning when brain activity increased in a stimulated partner-based learning environment compared to individual-based learning of word meanings. Positive social interaction promotes active learner engagement and depends on the learner's emotions (Chowdhury, 2020; Glick, 2012;

Kayalar & Ari, 2016). Jensen (2005) suggested that learners should be given opportunities to work in pairs or groups, such as those found in Cooperative learning strategies. However, the type of group, pair, or team they join could be a source of depression if they are not part of that specific group. Therefore, it is suggested that they should be involved in activities that create strong emotional connections, such as small debates or doing plays and drama.

Search for Meaning through Patterning

The brain has the inborn tendency to attempt to recognize and understand certain familiar patterns and create new ones (Pan et al., 2020). When learners can relate new information to their previous knowledge, which is accepted and integrated, patterning occurs (Bayer, 2022). Patterning refers to the meaningful organization and categorization of information or making sense of life experiences (Caine & Caine, 1994; Dekker & Jolles, 2015; Wolfe, 2001). On the other hand, the brain is also designed to resist having meaningless patterns imposed by others. It suggests that BBL is meaningful and effective when the new information is integrated into the learners' previous knowledge or life experiences. Jensen (2005) suggests that problem-solving and critical-thinking activities help the brain create meaningful patterns.

The Brain Processes the Whole and Parts Simultaneously

Learners learn more effectively when their experiences give them a sense of the whole

that links the details to facts and information (Caine & Caine, 1994). These experiences are dependent on the interaction between the left and right brain hemispheres. The right brain tends to see the whole, while the left perceives the parts of the learning process (Corballis, 2003). The left brain is also more logical, analytical, and objective. However, the right brain is more visual, intuitive, and artistic. The two hemispheres are inextricably interactive and designed to work together naturally (Lombardi, 2008). For example, Genesee (2000) states that the left brain sees words and numbers in the text, but the right brain may see them as images and patterns, respectively. Therefore, it is suggested that learners should integrate information from many different sources. Among the techniques suggested by BBL researchers are supplementing graphics with verbal descriptions or backed up with printed materials, providing role models to illustrate written concepts, such as in role-play, and using posters or graphics to communicate concepts that are difficult to visualize (Chowdhury, 2020; Wolfe, 2001).

METHOD

The current study employed both quantitative and qualitative research designs. First, the quantitative design was quasi-experimental because many studies in L2 tend to be quasi-experimental rather than true experiments (Brown & Rodgers, 2002). The aim was to investigate the causal relationship between the BBL strategies implemented in the classroom (interdependent variable) and their effect on the learners' critical response writing test scores (dependent variable). The purpose was to gauge the learners' ESL performance. Bryman (2012) added that a quasi-experimental design would only have a single group followed throughout treatment, with the pretest and post-test administered in between. Second, the qualitative design involved semi-structured interviews to investigate what these learners had experienced during the BBL lessons. Three learner-focus groups were chosen by their respective teachers from the three schools and were interviewed once.

Participants

Three schools in one of the education districts in East Malaysia were chosen because they underperformed in English language subjects in public examinations. Data from the Sarawak State Education Department (2019) show that from 2016 to 2018, the passing rate for the three schools was 58 to 64%, and on average, the learners scored a D grade (40 to 49 marks out of 100).

The 150 seventeen-year-old ESL learners selected from these three schools were low-ability ESL learners because they underperformed in their English language tests compared to other learners of the same age. ESL low-ability learners are referred to as struggling learners who do not meet the required subject area proficiency levels or who have difficulty keeping up with classmates of the same age and are constantly struggling to meet the English language proficiency goals (Malaysian English Language Training Centre [ELTC],

2015). In this study, they were selected through purposeful sampling because they have characteristics that the researcher needed as a sample to address the research question (Bryman, 2012). The selection was based on two criteria. Firstly, they scored an E grade (did not achieve a minimum pass) for the English Language subject in the Malaysian PT3 standardized school-based assessment while in Form Three (15 years). Secondly, they achieved marks within the range of 0 to 5 out of the total 15 marks for writing a literature critical response essay to a prescribed English novel.

Five learners from the BBL intervention classes were chosen by their respective teachers for the focus group interview through convenience sampling in each school. They had indicated their willingness to participate in the interview. In these schools, there were two BBL intervention classes with 25 learners in each class. While they attended scheduled classes during the normal school session, their respective teachers held the BBL classroom sessions in the afternoon. The teachers were all Teaching English as a Second Language (TESL) graduates with teaching experiences ranging from 10 to 28 years. They had undergone an extensive in-service course on BBL strategies prior to the six-week intervention class. In the intervention classes, these teachers employed a variety of BBL-compatible teaching and learning strategies incorporating visual aids and novelty to grab learner attention, cooperative learning, simulations, role plays, problem-solving tasks, group presentations with learner feedback, and reflective practices. They also demonstrated or scaffolded difficult tasks, provided constant encouragement, and celebrated learner success.

Data Analysis

Quantitative data was analyzed to investigate any significant difference in the participants' L2 performance on two occasions: before (pretest) and after the BBL classroom intervention (post-test). For this purpose, a paired sample t-test from the SPSS statistical procedure was employed. According to Brown and Rodgers (2002), the *t*-test is the most frequently used measure in L2 research, and it can be used to compare the mean scores of just one group between a pretest and a post-test to find out if the group had acquired some skill during training.

As for the qualitative data, the interview responses in Malay were audio recorded, transcribed, and later translated to English by a native Malay teacher who is also an English language teacher in the district. The data were analyzed through an inductive approach employing Braun and Clarke's (2006) six-step thematic analysis - becoming familiar with the data, generating codes, generating themes, reviewing themes, defining and naming themes, and locating exemplars. To minimize the issue of trustworthiness, the researcher strictly followed the research procedures and interpreted and analyzed the data to find out whether they were semantically related to the theoretical framework, as Brown and Rodgers (2002) suggested. The researcher

also did not exert personal values or a theoretical inclination while conducting the research and interpreting the data.

Research Instruments

The research instrument used in this study was the literature response essay question item. Learners were expected to respond critically based on their understanding of the literary elements in the prescribed English novel. The two questions from the pretest and post-test were not the same but similar in context, justifying their choice of events in relation to a specific theme from the novel. Both questions were designed by experienced English language teachers and vetted by the district education officer. They had met the test specification requirements the state education office set and, therefore, had the same difficulty level.

The teachers employed the state education standardized holistic marking scheme. The total marks for the test item were 15: 10 marks for content and five marks for language use. The content focused on whether the main supporting ideas were relevant to the task specified, and the discussions were supported with evidence from the text. The language criteria focused on the accuracy and organization of ideas. A mark moderation session was conducted by an experienced assessor and the participating teachers in each school after every test.

As for the semi-structured interview, the research instrument contained four predetermined questions in Malay, the Malaysian schools' instruction medium.

These questions (translated into English) were as follows:

1. What was your overall experience in the English novel intervention class?

   (*Apakah secara keseluruhan pengalaman anda dalam kelas intervensi Bahasa Inggeris?*)

2. What do you like about learning the English novel in the intervention class? Please describe your experience.

   (*Apakah yang anda suka apabila mempelajari novel Bahasa Inggeris dalam kelas intervensi anda? Ceritakan pengalaman anda.*)

3. What do you dislike about learning the English novel in your intervention class? Please describe your experience.

   (*Apakah yang anda tidak suka apabila mempelajari novel Bahasa Inggeris dalam kelas intervensi anda? Ceritakan pengalaman anda.*)

4. Do you think this English novel intervention class is useful? Explain.

   (*Adakah anda berpendapat bahawa kelas intervensi untuk novel Bahasa Inggeris ini berguna untuk anda? Terangkan dengan lebih lanjut.*)

According to Bryman (2012), a semi-structured interview allows the interviewer to change the words used in the predetermined questions and offer explanations for inappropriate questions for a particular interviewee or omit and add additional questions.

RESULTS

Learner ESL Writing Performance

A descriptive analysis of the pretest and post-test scores was conducted for the 150 learners, as follows (Table 2):

Table 2
Descriptive analysis of pretest and post-test scores

Test	Range of Marks	Mode	Mean
Pretest	0–6	2	2.45
Post Test	0–11	6	5.35

Source: Authors' work

In the pretest, the learners scored within the range of zero to six marks out of the maximum of fifteen. The most frequent score was two marks. The overall mean score was 2.45. It showed that these learners underperformed in the test. In the post-test, the overall mean score was 5.35. The marks ranged from zero to eleven, with the most frequent score of six. Results showed some improvement in the learners' performance because the mean score in the post-test was higher than the pretest. A comparison between the pretest and post-test mean scores for the three participating schools (schools A, B, and C), as follows (Figure 1):
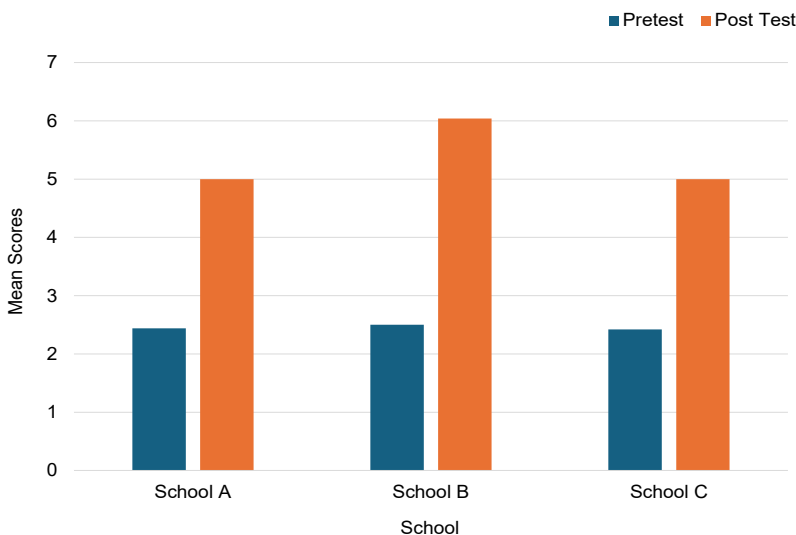

Figure 1. Comparison of pretest and post-test learners' mean score
Source: Authors' work

School A's pretest and post-test mean scores were 2.44 and 5.0, school B was 2.5 and 6.04, and school C was 2.42 and 5.0. A paired sample t-test was conducted to investigate the difference between the learners' pretest and post-test scores after BBL intervention. There was a statistically significant improvement in the scores from the pretest ($M = 2.45, SD = 1.50$) to the post-test ($M = 5.35, SD = 2.40$), $t(149) = -15.48$, $p < .05$), as shown in Table 3 as follows:

Table 3
Paired samples t-test results

	Number of Participants	SD	Correlation	T	df	Sig. (2-tailed)
Pretest and Post-test scores	150	2.29	.387	-15.5	149	.000

Source: Authors' work

Results showed that the probability value Sig. (2-tailed) .000 is less than the traditional specified alpha value of .05. Therefore, the difference between the two sets of scores indicated a significant improvement in performance since the post-test mean score was higher than the pretest score. The correlation value of .387 indicated that quite a high percentage (85.1%) of the pretest and post-test scores were not similar. In addition, the analysis also explored the magnitude of the BBL intervention by calculating the effect of size. Even though the paired sample t-test showed a significant difference in the learners' test scores, it did not indicate how important the difference was. One of the most commonly used effect size statistics is eta squared (Pallant, 2007). The value of eta squared for this study was 0.617. This value was more than .14, indicating that the effect on the size was large (Cohen, 1988). It showed that the BBL strategies employed greatly affected the differences between the learners' test scores. There was a substantial and significant difference in improving the learners' test scores after BBL implementation.

Learners' Responses to BBL Strategies

Three main themes emerged from the thematic analysis of the data: L2 written test performance, teaching and learning techniques, and learner-group interaction.

In the learners' L2 written test performance, many responded that there was an improvement in their L2 writing test. For example, it was revealed that the BBL intervention class had "*helped students to improve,*" enabled them to "*learn how to answer the question easily,*" and "*elaborate much better.*" The improvement resulted from their ability to recall what they had learned in the intervention classes. For example, learners explained that "*it helped me to recall the overall story in the test*" and "*through acting* (in role-play), *we could recall what happened in each chapter of the novel.*" These findings were related to two components of the theoretical framework. First, experiential learning enhances learning retention. Second, the learners' ability to answer and elaborate more on the test showed their critical thinking capabilities, consistent with meaningful patterning.

Learner performance was also related to the use of the simplified plot text. It contains a summary of the main events in

the novel, and the L2 used was appropriate to the learners' proficiency. Learners remarked that "*the language suits our level of understanding… very simple words, phrases, or sentences,*" "*we could apply it to our writing,*" and "*we could memorize a lot more events and facts in the story. It helped us to write well in the essay question*." Hence, the use of the text was consistent with aspects of tailoring learning to cater to individual differences. These learners were low-ability learners, and the reduced content in the text was aligned with their L2 proficiency.

As for the teaching and learning techniques, they responded that the BBL techniques in the classes were effective. Among the techniques mentioned frequently were role-play, gallery walks, and the use of slide shows. For example, they concurred that "o*ur most effective learning experience was when we acted out a scene in the novel in our groups*" and "*the teacher's use of the various teaching and learning techniques was very effective.*" The effectiveness was also due to physical movements. One responded*, "There was a lot of movement, and I could walk around to exercise my muscles. It was interesting and effective.*" These responses were interpreted as being consistent with this study's theoretical framework. First, the teaching and learning techniques mentioned required the learners' hands-on application of what they had learned in the previous lessons and were closely related to experiential learning. Second, these interactive techniques engaged both the left and the right brain,

thus conforming to the brain's tendency to process the whole and parts simultaneously. Third, their learning preference for physical movements was aligned with the individual differences component in BBL.

The effectiveness of the teaching and learning techniques was also related to meaningful learning. Learners described that "*it* (the BBL intervention class) *was a meaningful learning experience*" and that meaningful learning occurred when *"my friends and I could exchange ideas and opinions and… I could learn something from my friends.*" These responses were consistent with the search for meaning through the patterning component. Learning was meaningful when learners could connect or integrate their prior knowledge (ideas) in a new context (other people's ideas). In addition, learners also perceived that these techniques were effective because they enjoyed the lessons. When learning was viewed as "*enjoyable*" and "*fun,*" it was interpreted as being low in threat but high in challenge. Even though they had limited L2 proficiency, they had fun in challenging activities such as role plays or Gallery Walk sessions.

However, some learners also expressed concern about the effectiveness of the BBL techniques. They experienced difficulties comprehending unfamiliar L2 words. For example, learners were uncomfortable when they "*disliked that they could not identify the words*" because they "*found it difficult to understand the meaning of unfamiliar words.*" One admitted*, "I am still weak, so … I was quite slow.*" Hence, learning was

viewed as high-threat instead of low-threat because they expressed dissatisfaction with being unable to comprehend L2 words.

The third main theme was learners' interaction when working in groups. It also registered mixed responses. Positive responses were related to the benefits of working in groups. For example, they revealed that group work strategies "*inculcate the value of cooperating with one another,*" while others agreed that it "*could strengthen their relationship with their friends*." A few of them commented that they "*could communicate better in English"* and that it *"strengthened their self-confidence to use the language.*" They also opined that group work strategies were useful because they were not "*afraid*" anymore if they encountered "*problems*" in the lesson. Hence, group work strategies enhanced the learners' social interaction to facilitate learning. It was consistent with the theoretical framework to establish a conducive learning atmosphere through positive classroom social interaction.

Despite the favorable outcome in learners' social interaction, some learners complained that there were also uncooperative group members. They expressed their dissatisfaction when these learners "*did not try to give any ideas,*" "*were not interested and they got fed up easily* (so) *they did not play an active role in the group,*" while others disliked that "*when my friends in the group disturbed me.*" These responses were interpreted as inconsistent in creating positive classroom social interaction.

In addressing RQ2, the findings on learners' responses to using BBL strategies in the ESL classroom were generally positive, despite registering a few mixed responses to two components of this study's BBL theoretical framework.

DISCUSSION

Low-ability ESL Learner Performance

This study investigated BBL strategies employed in ESL literature component classrooms among low-ability learners. It was found that the learners' ESL writing performance improved significantly after BBL implementation. Previous research also showed that BBL can significantly positively change the learners' overall English language performance (Salem, 2017; Valipour & Araghi, 2014). This improvement was attributed to the learners' ability to recall and retain what was taught previously in the BBL lessons. Similarly, other BBL studies, such as Kosar and Bedir (2018) and Kandasamy et al. (2021), concluded that BBL enhanced English language learners' recall and retention of learned items. Furthermore, this improvement also indicated that the learners could write a literary critical response essay. It is consistent with earlier BBL studies that significantly improved English language learners' critical writing performance (Khalil, 2019; Zuhriyah & Agustina, 2020). However, it was also argued that non-native English language learners cannot express themselves critically in the language (Alagozlu, 2007; Stapleton, 2002). This argument has two perspectives.

On the one hand, this could be true if these learners were asked to write without proper and adequate guidance or were exposed to an ineffective teaching and learning strategy. On the other hand, these arguments would not hold when BBL strategies were employed, as shown in this study. Therefore, BBL could enhance the critical writing performance of low-ability Malaysian ESL learners.

Low Ability ESL Learners' Responses to BBL

The low-ability ESL learners in this study were generally positive towards BBL. First, they responded that the BBL-compatible strategies, such as role-play, had facilitated their learning retention and recall. BBL suggests that retention and recall are best represented by natural spatial memory, which often involves physical movements in learning and can be fully utilized through experiential learning (Caine & Caine, 1994). A previous BBL study by Weimer (2007) also mentioned that physical movements in role plays enhanced learners' ability to recall and retain learned items in the BBL lessons.

Second, the learners opined that they elaborated better on the writing test. It showed that the learners had capitalized on the brain's tendency to search for meaning through patterning (meaningful learning) because it involved critical thinking skills (Jensen, 2005) and connecting learners' previous knowledge to the new items learned (Pan et al., 2020). They could justify their responses and relate them to their life experiences, which further complemented their significant improvement in L2 writing performance.

Third, individual differences were accounted for when learners revealed the appropriateness of the language in the simplified plot text to their L2 proficiency. The text facilitated their ability to understand the lesson content. Sousa and Tomlinson (2011) concurred that effective learning should consider the learners' abilities in the learning process.

Fourth, the variety of interesting lesson activities mentioned supports the brain's tendency to process the wholes and parts simultaneously because these activities involve multiple representations of learning (Connell, 2009; Genesee, 2000). Similar activities were also evident in another study by Khalil (2019).

However, two BBL components yielded mixed responses from the learners: positive social interaction and learning low in threat but high in challenge. In positive social interaction, favorable responses to learners cooperating and helping one another in group work strategies are consistent with other BBL studies (Chowdhury, 2020; Li & Jeong, 2020), but there were also some negative responses. Uncooperative learners are due to the negative emotions of not belonging to the group (Jensen, 2005). Thus, this study revealed that positive social classroom interaction depends on the type of group the learners are involved with.

Findings also showed that even though learning was low in threat but high in challenge when they had fun engaging in difficult tasks, there were also elements

of anxiety when learners were unable to comprehend the meanings of unfamiliar L2 words. Therefore, learning was also considered high in threat and challenge. Similar mixed responses were also revealed in a BBL study by Ali et al. (2019), where learners were divided in their perceptions of learning enhanced by challenge but low in threat. Hence, this study further confirms Caine and Caine's (1994) admission that achieving the delicate balance between threat and challenge is not easy.

Within the context of the Malaysian English literature component studies, these findings contrasted with earlier findings where it was found that the teaching and learning were teacher-centered, dull, and focused largely on answering examination questions (Choo et al., 2017; Govindasamy & Jan 2017; Ismail et al., 2008). The findings from this study indicated that the learners were engaged actively in the BBL lessons because learning was meaningful, and consequently, their ability to retain and recall learned items was enhanced.

CONCLUSION

This study investigated the effect of BBL strategies among low-ability ESL learners in a literature component classroom. Findings indicated a significant improvement in the learners' ESL writing performance after using BBL strategies. They were also generally positive towards BBL implementation. Their responses were mainly centered on their ability to recall the learned items in the lessons, meaningful learning experiences, learning by considering their abilities, and the effectiveness of the various teaching and learning interactive techniques. Despite experiencing favorable BBL conditions that were low in threat but high in challenge and promoting positive social interactions, there were also limitations to its effectiveness related to the learner's negative emotions and limited L2 proficiency.

Implications

This study provides opportunities for ESL teachers to adopt or strengthen their understanding and practices related to BBL because it can improve learners' academic performance. Hence, advocates of teacher-centeredness and their overemphasis on examination-oriented approaches might want to retreat from test-based practices to those that focus more on a learner-centered and meaningful learning process. Another implication to ESL teachers is the importance of designing BBL lesson activities considered low in threat but high in challenge to low-ability learners. They should consider that differences in language proficiency could still exist among low-ability L2 learners even though they were grouped based on their similar level of L2 academic performance, as shown in this study. Despite the positive outcomes, learning could still be negatively affected. It suggests the importance of learners' emotions in BBL theory and principles and adds to the current body of knowledge as issues in BBL implementation are revealed.

Limitations

This study has limitations. The data were collected through purposive sampling techniques, and findings might yield different results if other sampling techniques, such as cluster or random sampling, were employed. The study also relied only on low-ability ESL learners in East Malaysia, and it cannot be generalized to other learners in different contexts.

Recommendations

It is recommended that future researchers investigate the implementation of BBL with learners across different age groups and at different levels of L2 proficiency in various classroom contexts to get interesting results. Further studies could also examine the learners' and teachers' perspectives to find parallels and differences in responses. In addition, BBL researchers can conduct longitudinal studies to investigate the effectiveness of implementing BBL strategies in ESL classrooms with the same group of participants over an extended period. It is to analyze fully the potential effect of BBL strategies in a formal ESL classroom setting.

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