

Review Article

Problem-Based Learning in Action: Review of Empirical Studies

Loghman Ansarian^{1*} and Fateme Shir Mohammadi²

¹*Faculty of Languages and Linguistics, University of Malaya (UM), 50603 Kuala Lumpur, Malaysia*

²*Allameh Tabatabai University, Tehran 5668787656, Iran*

ABSTRACT

Problem-based learning (PBL) is an innovative approach to language learning. Its effectiveness has been the subject of empirical studies in English as a foreign language and second language contexts such as Malaysia, Taiwan, Singapore, Pakistan, Iran, and Nigeria. Although the results have been promising, research in this area is still very scant. This paper examines studies that have been done on PBL with the aim of ascertaining what has been achieved and what areas warrant further research. The researchers conducted an online search using scientific databases to identify studies that had dealt with problem-based language learning. They found that most studies focused on the effect of PBL on the productive skills of speaking and writing, and were conducted mainly using quantitative and experimental approaches. They suggested that more studies could be done using qualitative approaches that examined the processes involved, as well as studies on PBL assessment.

Keywords: Cognitive thinking, English as a foreign language (EFL), English as the second Language (ESL), higher order thinking skill, language learning, problem-based learning (PBL)

INTRODUCTION

Trends in language teaching and learning have undergone so much development in recent years that they heralded a new era in language education termed the

“post-method era” (Kumaravadivelu, 2006). The traditional three-dimensional approach to learning in which learners, teachers, and learning materials formed 3 angles of the education triangle is no longer an accepted paradigm in education (Tan, 2004). Indeed, new approaches to education have de-emphasized the teacher’s role, from being “a sage on the stage” to a role with less authority in the class. On the other hand, learners’ pivotal role in education has been further emphasized by

ARTICLE INFO

Article history:

Received: 27 November 2017

Accepted: 30 April 2017

Published: 24 December 2018

E-mail addresses:

Loghmanelt@siswa.um.edu.my (Loghman Ansarian)

fa.mohamadi@yahoo.com (Fateme Shir Mohammadi)

* Corresponding author

attempting to get them involved in their own learning process, listening to their voice and using approaches that involved the use of their cognitive and metacognitive skills (Ansarian, Adlipour, Saber, & Shafiei, 2016; Savery, 2006). Banning (2005) called this new trend a movement from didacticism to constructivism. Simply put, the lecture-based approach to teaching and learning has been challenged by more cognitive approaches to learning (Hmelo-Silver, 2004).

In congruence with this shift in education, new philosophical paradigms challenged the traditional definition of reality. The positivist approach to observable reality was challenged by social constructivists who preferred the approach through which reality is formed in the mind of learners (Creswell & Poth, 2017). Not only did this issue pave the way for constructivist approaches to learning to emerge, but it also began to solve problems with traditional and didactic forms of education.

One of the constructivist approaches which has held well against lecture-based education is problem-based learning (PBL) (Lee & Kwan, 2014). PBL is an innovative, student-centered, self-directed approach to learning in which learners are asked to solve real-life problems in order to encourage learning (Shin & Azman, 2014). Among the main characteristics of PBL are; learners taking an active role in learning, diminished role of teachers to facilitators (tutors), involvement of cognitive and metacognitive skills, scaffolding through peer feedback and various team dynamics in PBL groups,

and later, well-structured and defined PBL processes. Empirical evidence so far has proven that the approach is promising (Hmelo-Silver, 2004; Hung, 2006; Savery, 2006; Savery & Duffy, 1995).

PBL's success in medical education in North America in 1970s and its subsequent adoption by other medical schools in other countries paved the way for this approach to enter other disciplines such as engineering, geography, nursing and mathematics (Larsson, 2001). At the same time, not only was PBL used at postgraduate level, but also it was used at undergraduate level (Biggs, 1987). However, it took PBL some time to enter language education.

The inception of PBL in language classes dates back to less than two decades ago. At the beginning, educators were skeptical about the effectiveness of this new form of tutorship (Ansarian et al., 2016). The main problem with PBL in language classes, as stated by Larsson (2001), was the simultaneous use of language as learning target and learning tool. Simply put, the answer to the question of whether language can be used to learn language was uncertain. Another problem with implementing PBL in language classes was its open structure. PBL, similar to other inquiry-based approaches to learning, does not assume one correct answer to learning problems. As long as an answer can be used to solve the learning problem, it should be accepted by the tutor. Educators have used main characteristics of PBL and designed their own PBL tutorship models. Some of them, it was found, have misunderstood the concept of PBL and

misapplied it (Maudsley, 1999). The main problems with these studies are improper problem-presentation, not following rules of higher order thinking, excessive aid by tutors and ignoring delicacies of learning language through PBL (Ansarian et al., 2016; Lantolf & Poehner, 2004; Larsson, 2001).

In addition, a need for a new approach to language education is being felt. Against widespread use of recent language teaching methods such as Communicative Language Teaching (CLT), these methods have failed to successfully grow independent learners. For example, Koosha and Yakhabi (2013) who study language teaching methods in Iran state that CLT is the dominant approach used in Iran; yet not very successful, as the learners suffer from a number of issues such as lack of practice time and lack of autonomy. Other scholars (e.g., Griffiths & Oxford, 2014; O'malley and Chamot, 1990) who have elaborated on the issue of language learning strategies have emphasized the role of cognitive and metacognitive learning strategies which get learners' involved in the learning process. Despite the already discussed significance of these strategies in the literature, many language teachers in various parts fail to provoke the use of these strategies by the learners (Oxford, 1994; Rivers, 2001).

In view of the issues stated, this paper reviews previous attempts to implement PBL in language classes to guide future tutors and researchers. Understanding approaches to implementing PBL in language classes can help reduce problems with misapplication of PBL.

What is PBL?

One of the main questions confronting educators is how successful education has been in terms of its practicality in real life. The problem with many traditional approaches to learning was that students' performance was below their achievement scores in the final exam (Lee & Kwan, 1997). There is thus a need for an approach that deals with education in real life. As a result, PBL was introduced to education.

PBL tutorship utilizes real-life learning problems as its main learning objectives (Barron, Lambert, Conlon, & Harrington, 2008; Cooper & Carver, 2012). Students are exposed to an ill-structured real-life problem to solve (Schmidt, 2012). Ill-structured problems are preferred over well-structured problems, as they can represent unsystematic problems people encounter in their day-to-day life. The problems can be presented to the learners in a variety of forms such as dilemmas, designed problems, policy analysis problems, and strategic performance problems. One of the most used forms in classes is story telling (Jonassen, 2000). Here, learners attempt to decode the problem and search for ideas to solve the problem. Later they discuss their ideas with group members and create a map to solve the problem (Hung, 2006). The results are applied to the problem situation and their effectiveness is observed (Hmelo-Silver, 2004). The classes are also replete with peer feedback and tutor guidance (usually after students have found the answer). An example of ill-structured problem is challenging the learners to buy or adopt a

pet. In this example, the learners are asked to consider this issue as a real-life problem and attempt to take necessary steps to bring the right pet home. They should create conversations that may occur in such an occasion. Through these conversations, they can elicit information from friends, pet shop sellers, or even from family members. These conversations are finally performed in front of the class and learners receive feedback on the quality of their conversations in terms of linguistic and non-linguistic features of the conversation.

Indeed, PBL is based on two major theories in education, i.e. higher order thinking skill and zone of proximal development (ZPD). Contrary to traditional approaches to learning, higher order thinking theory accords focus to cognitive thinking through evaluation of the problem, analysis, synthesis, application, and knowledge. In the first step of the process, the learners should be exposed to a real-life ill-structured problem which is based on an imaginary problem. This allows the learners to evaluate the problem and attempt to understand the underlying construct which is being discussed. Next, the learners analyze the problem. Through analysis they should think about the problem, its consequence and possible solutions. They can make a list of possible solutions or significant aspects of the problem. Next they attempt to create the situation in which the problem can be solved. In terms of language classes, they attempt to create a conversation (synthesis) and solve the problem. They should then use their findings and receive feedback to

find out how successful they have been. In language classes, for example, they can present their conversation to the class and receive feedback from other peers and the teacher. This eventually results in creation of knowledge. Although the model has been challenged due to its linearity (Anderson et al., 2001), it has survived the criticisms and is being used as an innovative approach to learning. Higher order thinking also has proponents (e.g., Boud & Feletti, 1997; Hmelo-Silver, 2004; Savery, 2006) who advocate its use in education.

ZPD was suggested by Vygotsky (1987, as cited in Chaiklin, 2003). The theory emphasizes that learning without external help is partial and incomplete, therefore, successful learning depends on one's ability to enter other zones of learning (the aided zone). Many class activities such as group work, team work, feedback sessions and many approaches to learning such as problem-based and project-based learning are based on this approach. As explained above, as learners are directed through higher order thinking skills in PBL classes, they are asked to represent their results to the class. This allows other members of the class and the teacher to aid the learners by providing them with feedback. Thus, PBL uses ZPD to enhance learning and understanding among the learners.

Moreover, it should be mentioned that PBL is different from conventional language teaching methods which are being used in language classes. For example, although both PBL and CLT are considered to be meaningful approaches to learning L2,

they are different from many perspectives. Firstly, the inception of a PBL process is by presentation of an ill-structured problem. Secondly, the role of teachers in PBL is diminished to a ‘tutor’ who guides learners rather than teaching content. In PBL classes, learners are expected to have more autonomy, as the teacher does not teach. Indeed, learners should form learning hypotheses and delve into the answer of their questions (Hung, 2006).

The Research Study Compilation Method

In order to find studies that dealt with PBL in language classes, we searched scientific databases (Springer, SCOPUS, Science Direct, Taylor and Francis, and Sage Journals) which published articles on education and language learning. The main keywords used in this search were “problem-based learning”, “PBL and language learning”, “inquiry-based language learning”, “cognition and metacognition in language learning”. We also traced article citations in order to find other papers dealing with problem-based language learning. As there is no specific journal dealing with problem-based language learning, finding articles dealing with this issue was cumbersome. In addition, research on problem-based language learning is quite scant. We found 29 articles dealing with this issue in ESL/EFL contexts such as Malaysia, Singapore, Taiwan, Thailand, Pakistan, Iran, and Nigeria which were published since 2001. Out of the articles, only those that were related to language education were

identified and presented in this study. We also found 2 books by Tan (2004), and Wee and Kek (2002) which dealt with the issue of problem-based learning; however, these books had not targeted language learning. In addition, we ignored empirical studies which had failed to represent the research information properly and attempted to select articles which were published by well-recognized publications.

We acknowledge that the articles presented in this paper might not represent all studies conducted with regard to problem-based language learning. Nevertheless, they provide a useful guide for researchers in the field and for future research.

Effect of PBL on Language

Generally, scholars (Abdullah, 1998, Larsson, 2001) are of the opinion that PBL can be effectively employed with the productive language skills of speaking and writing. Therefore not many researchers have delved into the effects of PBL on the receptive skills of listening and reading as compared to its effects on the speaking and writing skills.

Lin (2017) conducted a study to determine whether PBL tutorship delivered via a web-based English course had any effect on the reading comprehension of English language learners. In addition, the participants’ perception of the tutorship was also gauged. The study compared the results of the pre-test and post-test on reading comprehension conducted on a PBL group and a non-PBL group that had been taught a reading course using two different

modes. A questionnaire that gauged learners' perception of tutorship of the PBL reading course was also administered at the end of the course. The results revealed that PBL has a positive effect on reading comprehension of language learners who underwent the PBL-based reading course. The participants' perceptions about the course using the PBL mode were positive and they asserted that they enjoyed their active role in learning that synthesized their cognitive processing. Lin not only investigated the effect of PBL on reading comprehension, but also examined the strategies used and active learning attitudes. In addition, the learning problems were well presented in the paper. The overall results showed the effectiveness of the approach. Lin drew this conclusion by calling for more studies into the use of the PBL approach in the fostering of reading skills. The researcher also presented a model for small group scaffolding in PBL process which was used in the study. Although the model represents a well-defined step-by-step procedure to implement PBL, it seems to have excluded some aspects of higher order thinking skills. The stages presented in the model are: 1) confronting the problem, 2) examining the problem, 3) re-examining the problem, 4) reviewing the problem, and 5) presenting the solution. While steps 1 to 4 refer to the first stage of Bloom's Taxonomy of higher order thinking model (Evaluation) and the last stage refers to another stage of the model (Application), little attention has been given to two other stages (Synthesis and Comprehension). Hung (2006) felt that

all stages of the higher order thinking model should be attended to in order to achieve effective results.

Aliyu (2017) examined the use of PBL in the development of metacognition and writing performance among Nigerian Undergraduates. In this PhD study, the researcher had two main objectives, to determine if PBL could enhance writing among Nigerian students and to examine how it affected participants' metacognition. Ill-structured problems in this study were formulated based on the criteria proposed by Gallagher and Gallagher (1994) and Candlin (1987). Using a convergent parallel design and an intact class of second-year university ESL learners, this study was conducted over a 12-week duration. The researcher administered a metacognitive thinking questionnaire adapted from Kim (2013) before and after the treatment and reported significant positive change in the participants' metacognitive knowledge. In addition, there was improvement in the participants' writing in terms of knowledge of content, organization, vocabulary, language use and mechanics of writing. This study is among the first studies on PBL in the Nigerian context.

Fonseca-Martínez (2017) implemented PBL on basic-level language classes to find out whether it could increase participant's talking-time. The study was a reaction to behaviorist approaches to learning and a response to the need for meaning-focused learning. However, the researcher used TBLT interchangeably with PBL on the

mistaken notion that PBL and TBLT were similar forms of learning as she wrote, “problem-based learning for language learning, i.e. task-based language learning”. Although the study concluded that PBL can positively affect language learners’ talking-time it seems that the study has not used the higher order thinking model correctly. Again, ill structured problems were absent when they should have been included. This glaring weakness resulted in low cognitive engagement with learning content. It should be mentioned that PBL tutorship begins with presentation of an ill-structured problem; however, TBLT does not necessitate the use ill-structured problems.

Another study was conducted by Mohammadi (2017) who gauged the effects of PBL on vocabulary learning of Iranian EFL learners. The researcher had hypothesized that increasing the participants’ cognitive and metacognitive engagement with the learning content through PBL may result in increased level of vocabulary learning. This experimental study made use of 47 participants who were homogenized into a control group and an experimental group out of 64 participants using NELSON language proficiency test. Through 10 sessions of treatment conventional vocabulary tasks were given to the control group participants and PBL vocabulary tasks were given to experimental group learners. The study revealed that PBL vocabulary tasks can have positive effects on both recall of vocabulary and retention of vocabulary. In the paper, the researcher has explained the process of implementing PBL vocabulary tasks,

and believed that language teachers should provoke the feeling of need in learners in the first place, so that they become more eager to learn.

Ansarian et al. (2016) conducted a study on the effect of PBL on speaking proficiency of Iranian EFL learners at both intermediate and advanced levels. The study was based on the constructivist theory, and Hmelo-Silver’s (2004) PBL tutorship model was the main model used. A speaking test was administered as a homogeneity test, and a second speaking test as a pretest. After 30 sessions of treatment, a post-test was conducted and the data revealed that PBL could affect speaking proficiency of the learners at both levels, however, the intermediate level learners’ speaking improved more than advanced learners. It should also be mentioned that the researchers had modified the learning materials as they believed that stapled language learning books result in low cognitive engagement with content. Another notable feature of the study is that it considered two different proficiency levels in PBL classes. Previous studies have not considered this issue as the general belief is that the implementation of PBL in low proficiency level classes is not feasible. Interestingly, this study revealed that intermediate level learners benefited more than advanced learners from the implementation of PBL in language classes. The authors believed that intermediate learners had enough autonomy to conduct online search and find the answers to their learning hypotheses.

In an innovative study, Beltran, Perez, and Yucely (2016) used PBL to teach values in EFL classes. The study had its focus on a different perspective of human education. i.e., values in society. A total of 20 fifth-grade language learners who took part in this study carried out language tasks related to vocabulary dealing with the lack of respect in society. Real life situations were presented to the participants and they were asked to find solutions to the problems. Besides practicing language, another aim of the study was to prepare the students to deal with situations where they face lack of respect. The results of the study revealed that such training can be useful for family members who have problem understanding each other and who disrespect other family members. At the same time, it also increases the learners' ability to communicate in the target language. In addition, the authors used the PBL model suggested by Bueno and Fitzgerald (2004) which considered PBL tutorship in eight stages but seemed to have ignored the significance of synthesis, and comprehension. The stages in the model are: 1) reading and analyzing the problem, 2) brain storming, 3) making a list of what is already known, 4) making a list of what is unknown, 5) making a list of what is necessary to solve a problem, 6) defining the problem, 7) getting information, and 8) presenting the results. It was found that the learners were more aware of the strategies they could use and this issue affected their language learning awareness.

In a Taiwanese study, Lin (2015) focused on the effect of PBL on elementary

language learners with regard to vocabulary learning. Not only the experimental group participants' vocabulary knowledge was improved, but they could also produce longer essays after the intervention. The study also revealed that the implementation of PBL in language classes increased language learners' talk-time in the class. This study is one of the rare studies that dealt with PBL tutorship at the elementary level.

Shin and Azman's (2014) study aimed to gauge the effects of PBL on language learning in the English as the Second Language (ESL) context of Malaysia. The researchers designed and used ill-structured problems in this study. The results revealed that PBL could have positive effect on language learners. Since ill-structured problems were used, it was to determine learners' cognitive thinking ability prior to the treatment to ensure that the problems suit the cognitive thinking ability of the students. Although this study revealed that PBL could have significant positive effect on learning English as L2, focus had not been accorded to any particular language skill in the study.

Sy, Adnan and Ardi (2013) attempted to examine how implementation of PBL could increase language learners' speaking skill with regard to describing places, people and things. This experimental study utilized 60 language learners who were divided into two groups, 30 in the experimental group and 30 in the control group. Grammar, pronunciation, vocabulary, and fluency were the main components considered in this study. By comparing the results of the

post-tests, they found out that the difference between the participants in the control group and the experimental group was significant in terms of giving description. In congruence with this study, Ansarian et al. (2016) reported on the positive effect of PBL on speaking proficiency of the learners by considering the same rubrics based on the Common European Framework of Reference (CEFR). Abdullah (1998) had also noted that PBL could have significant effect on communicative skills.

Other researchers such as Othman and Shah (2013) conducted an in-depth investigation of PBL and language learning. They targeted the effects of PBL on course content and language development and employed an experimental research design with 128 participants. Although no obvious difference was observed with regard to the effect of PBL on course content (as both groups showed progress), PBL had significant effect on experimental group learners' language development.

Having realized that PBL is a challenging procedure for the learners, elsewhere Othman et al. (2016) studied these challenges. Using an open-ended survey, they analyzed qualitatively the responses of 30 respondents to the survey. They concluded that learners generally assumed that PBL is costly. They also found it very time-consuming.

Coffin (2013) believed that the answer to the question of whether PBL could be used in writing classes is ambivalent. Therefore, she conducted a study with 166 EFL language learners in a Thai University. She

investigated the participants and teachers' perceptions regarding the use of PBL in writing classes. Comparing the results of the pre and post surveys, the study revealed that the participants believed that PBL could be beneficial in terms of self-directed learning, critical thinking, communicative skill, and collaborative skills. The researcher also triangulated the data collected from teachers' survey, interviews and final scores and concluded that PBL had positive impact on learners' writing. One of the novel aspects of the study is that the researcher used both qualitative and quantitative data. Another is that the researcher considered the local culture (Thai culture) as one of the main variables considered in this study. Other researchers like Aliyu (2017) and Ansarian (2015) who also examined PBL and writing skill had concluded that PBL could impact it positively.

Elizabeth and Zulida (2012) implemented PBL in English for Specific Purposes (ESP) in Malaysia. Their study used semiotic approach with a focus on co-construction of meaning in a social context. The researchers observed and video recorded 12 weeks of an ESP course that implemented PBL. They also conducted unstructured interviews with lecturers and learners and collected field notes and journals from the participants. The results of data analysis through triangulation revealed that PBL had linguistic and affective benefits for the participants. Communication was stimulated in PBL classes and classes were replete with discussions. Learners became more cooperative and gained confidence in

learning. The researchers made use of Torp and Sage (2002) concept as the framework for their study. Although details of the method of implementing PBL were not given in the paper, the study provided a more in-depth look at PBL tutorship as the sessions were video recorded. The study could also be considered innovative as it looked at PBL in ESP courses.

Huang and San (2012) incorporated PBL in an English language class with university freshmen. The focus of this qualitative study was on participants' perception, satisfaction and motivation. Interview questions were adopted from Marcangelo and Gibbon's (2009). The results of the interviews with 42 freshmen revealed that the participants perceived PBL as an effective approach to language learning. Most of the students disclosed that they felt more independent in their language learning. The participants' response to questions regarding motivation was indeterminate as they had mixed feelings. However, the majority of them asserted that they had gained self-confidence. Participants' interest in language learning also increased as they developed their language learning skills. The findings in this study are in line with Jin and Bridges (2016) who conducted a qualitative meta-analysis on PBL. They concluded that not all learners perceive PBL as a motivator to learn in medical education. And, a number of studies (e.g., Aliyu, 2017; Hmelo-Silver, 2004; Savery, 2006) acknowledged that PBL results in more independence in learning.

Boothe, Vaughn, Hill and Hill (2011) believed that a feature of PBL, being based

on real life, is very beneficial in language classes. They focused on the issue of PBL in language classes and discussed its benefits and challenges. The main benefits of PBL, as identified by the authors are: 1) construction of useful knowledge, 2) effective collaboration of the learners, 3) meaningful and authentic interactions, 4) focus on communicative and argumentative skills, and 5) becoming skillful language users. The main challenges are: 1) use of first language within the groups, 2) not being appropriate for very basic learners, 3) difficulty in designing authentic tasks, and 4) lack of resources for the educators.

Hussain, Nafees and Jumani (2009) examined the effect of PBL in the English as a Foreign Language (EFL) context of Pakistan. Using an experimental study (pretest/posttest), they designed ill-structured problems (case-based PBL) and compared the effect of PBL instruction to traditional lecture-based instruction. The researchers focused on the achievement of the learners (n=67) and found that PBL could significantly affect their language achievement. They also concluded that the learners had developed cognitive learning skills such as analysis and evaluation. The study, however, provided very little information about the main approach to implementing PBL, and more importantly, the approach to assessing the problem-based performance of the learners.

Abdullah and Tan (2008) focused on the effect of PBL on the learning of linguistic features of the language. They developed asynchronous online conferencing forums

and attempted to increase learners' cognitive engagement with learning content. This study proved that PBL had effect on both linguistic features and affective factors of the learners. The concluded that PBL could increase self-directed learning among learners.

In Singapore, Tan (2004) focused on the features of PBL tutorship and attempted to investigate how familiar the learners were with three main components of PBL, the ill-structured problem presented to them, facilitation process and problem-solving process. The researcher made use of survey questionnaire, case vignettes and interviews and found that although PBL was a significant approach with high possibility of positive impact, misapplication of PBL, especially at the problem creation level, could lead the whole study astray.

In a paper discussing implementation of PBL in language classes Hearn and Hopper (2008) introduced strategies for implementing PBL. The authors believed that PBL could be a gate to authentic language learning (if implemented correctly). They discussed the difference between PBL and TBLT and elaborated on how ill-structured problems could be presented to the learners. They believed that the concepts presented through ill-structured problems should enhance systematic inquiry and be modified based on the language learners' proficiency level. As they believed that the most beneficial component of PBL in language classes was group discussion. They came up with a table for enhancing group discussion within PBL groups.

Ab Rashid, et al. (2016) studied the use of PBL in language teacher training program in Singapore. The study lasted for 8 weeks (20 sessions). After the study, the participants were interviewed. The participants acknowledged that through PBL they could increase their level of critical thinking, and they became independent learners. They also believed that PBL could contribute to the development of four language skills.

This section has discussed the studies conducted on the use of PBL in language classes in an ESL/EFL context. A summary of these studies is presented in Table 1.

As Table 1 shows, a number of studies have been conducted with regard to PBL and language learning. These studies were conducted in various EFL/ESL contexts though most of them were conducted in the East Asian context. Both qualitative, and quantitative analyses were used to study the use of PBL in language classes. Among favorite sources based on which ill-structured problems were designed were Gallagher and Gallagher (1994), Candlin (1987), and Hmelo-Silver (2004). Although many studies have only focused on language learners, some studies (i.e., Coffin, 2013; Shin & Azman, 2014) also focused on language tutors in PBL classes. Moreover, observation field notes, video recording, interviews and survey questionnaires were among the most frequently used instruments for qualitative data collection by the researchers. On the other hand, quantitative data was mostly collected through tests (usually researcher-made). It

Table 1
Summary of studies on PBL

N	Author and Date	Main Theme	Sample Size and Location	Instruments	Research Design	Main Findings
1.	Lin (2017)	Reading Comprehension through a web-based English course	60/ Taiwan	Reading test, Instructional questionnaire	Mixed-Mode	PBL has effect on reading comprehension of language learners. The participants enjoyed their active role in learning and PBL synthesized their cognitive processing.
2.	Aliyu (2017)	Writing and metacognition	18/ Nigeria	PBL questionnaire adopted from Tan (2004) metacognitive questionnaire (Kim, 2013), Writing samples, Audio-video recording, Semi-structured interview, Reflective journal	Mixed-mode	PBL has positive effect on writing and metacognition of ESL learners in Nigeria.
3.	Fonseca-Martinez (2017)	PBL in basic-level language classes and its effect on talking time.	47/ Peru	Systematic observation form Lessons' video-recordings, Lesson transcripts	Independent Group Design (Control vs. Experimental)	PBL can positively affect language learners' talking-time
4.	Mohammadi (2017)		60/Iran	vocabulary pretest and posttest	experimental	PBL can positively affect recall and retention of vocabulary.
5.	Ansarian, et al. (2016)	Speaking Proficiency	95/Iran	IELTS speaking test	Quasi-Experimental	PBL has positive effect on speaking proficiency of both intermediate and advanced language learners.
6.	Bejarano, et al. (2016)	Used PBL to teach Social Values (disrespect) and effect of PBL on Vocabulary learning	20/ Colombia	Observation field notes, Students' artifacts	Mixed-Mode	PBL has positive effect on learning how to deal with disrespect and also enhanced English vocabulary

Table 1 (continue)

N	Author and Date	Main Theme	Sample Size and Location	Instruments	Research Design	Main Findings
7.	Lin (2015)	The effect of PBL on vocabulary learning	28/ Taiwan	Pre- and post-tests on vocabulary knowledge, Topic-based composition, Self-report	Experimental	Participants' vocabulary knowledge was improved. In addition, they could produce longer essays after the study.
8.	Shin and Azman (2014)	The effect of PBL on language learning	32 students/ 2 teachers/ Malaysia	Interview, Speaking test	Experimental	PBL can positively affect language learning.
9.	Sy, et al. (2013)	The effect of PBL on language learners' speaking skills with regard to describing places, people and things.	49/ place not mentioned	Speaking test	Experimental	PBL increases learners' ability to describe people, places and things.
10.	Othman and Shah (2013)	The effect of PBL on course content and language development	128/ Malaysia	Pre-writing test Post-writing test	Experimental	PBL does not have any effect on course content but can facilitate language development procedure
11.	Othman, et al. (2016)	Challenges of learning through PBL	30/Malaysia	Open-ended survey, Video recording	Qualitative	PBL is costly and time consuming for the learners.
12.	Ab Rashid et al. (2016)	Language Teacher Training Through PBL	Singapore	Interview	Qualitative	PBL could increase their level of critical thinking, and they became independent learners. They also believed that PBL can contribute to the development of 4 language skills.
13.	Coffin (2013)	The effect of PBL on writing	182students/ 3 teachers/ Thailand	Pre and post survey	Mixed-mode Triangulation of interview results, survey results and writing test	PBL is beneficial in terms of self-directed learning, critical thinking, communicative skills, and collaborative skills

Table 1 (*continue*)

N	Author and Date	Main Theme	Sample Size and Location	Instruments	Research Design	Main Findings
14.	Elizabeth and Zulida (2012)	The use of PBL in ESP courses	25/ Malaysia	Video recording, Unstructured interviews, Field note, Reflective journal	Qualitative through field note, interview, and video recording.	PBL has linguistic and affective benefits for participants
15.	Huang and San (2012)	The effects of PBL on participants' perception, satisfaction and motivation.	42 / Taiwan	TOEIC diagnostic reading tests, Interview	Qualitative/ interview	PBL has positive effects on learners' perception and satisfaction; however, not all learners agreed that it affects their motivation.
16.	Hussain, et al. (2009)	The effect of PBL on language achievement	67/ Pakistan	Researcher-made pretest and posttest	Quantitative/ experimental	PBL has positive effect on language achievement of university language learners at postgraduate level.
17.	Abdullah and Tan (2008)	The effect of PBL on learning linguistic features of the language.	19 groups/ Malaysia	Asynchronous text	Quasi experimental/ data obtained from asynchronous online conferencing forums)	PBL has effect on both linguistic features and affective factors of the learners
18.	Tan (2004)	Familiarity of learners with ill-structured problem, facilitation process and problem-solving process	100 students/ Singapore	Questionnaire	Qualitative/ survey questionnaire, case vignettes and interviews	PBL is a significant approach with high possibility of positive impact but misapplication of PBL, at the problem creation level can jeopardize the whole study.

was also found that scant research had been conducted with regard to PBL assessment. Research on PBL assessment is significant, as PBL tutorship should be followed by PBL assessment.

Considering the findings of the studies, a number of justifications can be presented on why PBL affects language learning, i.e. 1) PBL increases the learners' practice time, 2) PBL creates a learning gap in the minds of the learners, 3) learning in PBL is meaningful, as the context of use is already presented to the learners through the ill-structured problem, and 4) unlike conventional learning materials which usually provide the language learners with one conversation model, the conversations created in PBL language classes vary; thus, learners get acquainted with more approaches to discuss an issue.

CONCLUSION

Many of the studies that have been conducted with regard to implementation of PBL in language classes have reported promising results (e.g., Aliyu, 2017; Ansarian et al., 2016; Fonseca-Martínez, 2017; Hussain et al., 2009, Tan, 2004, etc.). It seems that PBL is a suitable approach to enhance communicative skills, specifically speaking and writing (Abdullah, 1998, Ansarian, et al., 2016). It has also been observed to have a positive effect on learning vocabulary (Lin, 2015), grammar, pronunciation and fluency (Sy et al., 2013). Qualitative studies that have been conducted with regard to PBL and language learning have also reported promising results with regard to

its impact on language learners' perception and learning interest (Huang & San, 2012).

Studies on PBL in language classes have mostly focused on productive language skills such as speaking and writing. Thus, research on other language skills such as the reading skill and the listening skill is very scant. Another issue is the lack of qualitative studies. Most studies have had their focus on quantifying the effect of PBL, whereas there are only a few studies that have focused on the learners' voice. This shortcoming in current research results in highlighting products and ignoring processes. Indeed, more insights are needed on the dynamics of learning process while language learners attempt to achieve independence and find answers to their own problems.

More research is also required with regards to problem presentation. The problems presented to the learners should match their cognitive level or they would be overwhelmed. Though this issue can determine the success or failure of PBL tutorship, it has been taken for granted in the field.

PBL requires problem-based assessment. However, little research has focused on assessment through PBL. Research on this issue is in no uncertain terms a significant milestone with regard to PBL in language classes.

Finally more research is required to find out how culture can be integrated in PBL classes. Learning culture is a *sine qua non* in language classes, however, as researchers mostly make use of PBL models designed for medical courses, the role of culture is often neglected.

REFERENCES

- Abdullah, M. H. (1998). *Problem-based learning in language instruction: A constructivist model*. Retrieved November 27, 2017, from <https://files.eric.ed.gov/fulltext/ED423550.pdf>
- Abdullah, M. H., & Tan, B. H. (2008). Wired together : Collaborative problem-based language learning in an online forum. *Malaysia Journal of ELT Research* 4, 54–71.
- Ab Rashid, R., Mazlan, S. N., Wahab, Z., Anas, M., Ismail, N., Syed-Omar, S. N. M., & Anwar, O. D. M. (2016). Problem-based learning in language education programme: What educators and learners have to say. *Man In India*, 96(12), 5315-5322.
- Aliyu, M. M. (2017). *Problem-based learning on metacognition and writing performance of Nigerian undergraduates* (Unpublished doctoral thesis), University Putra Malaysia, Malaysia.
- Anderson, L. W., Krathwohl, D. R., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., ... & Wittrock, M. (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy*. New York, USA: Longman Publishing.
- Ansarian, L. (2015) Teaching essay writing: A comparative study of traditional lecture-based teaching method and tutored problem-based learning. *Proceedings of International Conference on Challenges in ELT and English Literature*, Ahar, Iran. Retrieved August 5, 2017, from https://www.academia.edu/12171789/Teaching_Essay_Writing_A_Comparative_Study_of_Traditional_Lecture-Based_Teaching_Method_and_Tutored_Problem-Based_Learning
- Ansarian, L., Adlipour, A. A., Saber, M. A., & Shafiei, E. (2016). The impact of problem-based learning on Iranian EFL learners' speaking proficiency. *Advances in Language and Literary Studies*, 7(3), 84-94.
- Banning, M. (2005). Approaches to teaching: Current opinions and related research. *Nurse Education Today*, 25(7), 502-508.
- Barron, C., Lambert, V., Conlon, J., & Harrington, T. (2008). "The child's world": A creative and visual trigger to stimulate student enquiry in a problem based learning module. *Nurse Education Today*, 28(8), 962–969. <http://dx.doi.org/10.1016/j.nedt.2008.05.017>
- Beltran, D. P. B., Perez, G., & Yucely, D. (2016). *Using problem-based learning approach to experience values from a different perspective in the EFL classroom* (Published doctoral thesis), Corporación Universitaria Minuto de Dios, Spain.
- Biggs, J. B. (1987). *Study process questionnaire manual. Student approaches to learning and studying*. Melbourne, Australia: Australian Council for Educational Research.
- Boothe, D., Vaughn, R., Hill, J., & Hill, H. (2011, June). Innovative English language acquisition through problem-based learning. *Proceedings of the International Conference: The Future of Education*. Retrieved November 27, 2017, http://conference.pixelonline.net/edu_future/1_morning.php
- Boud, D., & Feletti, G. (1997). *Challenge of problem based learning*. London, England: Kogan Page Ltd.
- Bueno, P. M., & Fitzgerald, V. L. (2004). Aprendizaje basado en problemas. *Theoria*, 13, 145-157.
- Candlin, C. N. (1987). Towards task-based language learning. In C. N. Candlin, & D. Murphy (Eds.), *Language learning task* (pp. 5-21). Eaglewood Cliffs, USA: Prentice Hall.

- Chaiklin, S. (2003). The zone of proximal development in Vygotsky's analysis of learning and instruction. *Vygotsky's educational theory in cultural context*, 1, 39-64.
- Coffin, P. (2013). The impact of the implementation of the PBL for EFL interdisciplinary study in a local Thai context. *PBL Across Cultures*, 191-197.
- Cooper, C., & Carver, N. (2012). Problem based learning in mental health nursing: The students' experience. *International Journal of Mental Health Nursing*, 21(2), 175– 183. <http://dx.doi.org/10.1111/j.1447-0349.2011.00788.x>
- Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches*. London, England: Sage publications.
- Elizabeth, M. A., & Zulida, A. K. (2012). Problem-based learning: A source of learning opportunities in undergraduate English for specific purposes. *The International Journal of Social Sciences*, 3(1), 47-56.
- Fonseca-Martínez, R. (2017). An attempt to increase student talking time through task-based interaction among basic level language learners at ICPNA, Cajamarca branch (Master's dissertation), Universidad de Piura, Peru.
- Gallagher, J. J., & Gallagher, S. A. (1994). *Teaching the gifted child* (4th ed.). Boston, USA: Allyn and Bacon.
- Griffiths, C., & Oxford, R. (2014). Twenty-first century landscape of language learning strategies. *System*, 43, 1-10.
- Hearn, B. J., & Hopper, P. F. (2008). Instructional strategies for using problem-based learning with English language learners. *MEXTESOL Journal*, 32(8), 39-54.
- Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational psychology review*, 16(3), 235-266.
- Huang, K. S., & San, C. (2012). A study on the incorporation of problem-based learning (PBL) in a university freshman English class. *The Journal of International Management Studies*, 7(2), 125-134.
- Hung, W. (2006). The 3C3R model: A conceptual framework for designing problems in PBL. *Interdisciplinary Journal of Problem-based Learning*, 1(1), 6.
- Hussain, M. A., Nafees, M., & Jumani, N. B. (2009). Second language learners' achievement in literature through problem-based learning method. *Journal of the Scholarship of Teaching and Learning*, 9(3), 87-94.
- Jin, J., & Bridges, S. (2016). Qualitative research in PBL in health sciences education: A review. *Interdisciplinary Journal of Problem-Based Learning*, 10(2), 13.
- Jonassen, D. H. (2000). Toward a design theory of problem solving. *ETR & D*, 48(4), 63-85.
- Kim, S. H, (2013). *Metacognitive knowledge in second language writing* (Unpublished doctoral thesis), Michigan State University, USA.
- Koosha, M., & Yakhabi, M. (2013). Problems associated with the use of communicative language teaching in EFL contexts and possible solutions. *International Journal of Foreign Language teaching and research*, 1(2), 63-76.
- Kumaravadivelu, B. (2006). *Understanding language teaching: From method to postmethod*. New York, USA: Routledge.
- Lantolf, J. P., & Poehner, M. E. (2004). Dynamic assessment of L2 development: Bringing the past into the future. *Journal of Applied Linguistics*, 1(1), 49-72.
- Larsson, J. (2001). Problem-based learning: A possible approach to language education? Retrieved May 5, 2017, from <http://www.nada.kth.se/~jla/docs/PBL.pdf>

- Lee, R. M., & Kwan, C. Y. (1997). The use of problem-based learning in medical education. *J Med. Education, 1*(2), 11-20.
- Lee, K.Y., & Kwan, C. Y. (2014). McMaster University. PBL: What is it? "The Use of problem-based learning in medical education". Retrieved November 27, 2017, from http://fhs.mcmaster.ca/mdprog/pbl_what.html on 01, June, 2017
- Lin, L. F. (2015). The impact of problem-based learning on Chinese-speaking elementary school students' English vocabulary learning and use. *System, 55*, 30-42.
- Lin, L. F. (2017). Impacts of the problem-based learning pedagogy on English learners' reading comprehension, strategy use, and active learning attitudes. *Journal of Education and Training Studies, 5*(6), 109-125.
- Marcangelo, C., & Gibbon, C. (2009). Problem based learning evaluation toolkit. Retrieved September 16, 2017 from <http://insight.cumbria.ac.uk/id/eprint/183/1/pbltoolkitsept09.pdf>
- Maudsley, G. (1999). Do we all mean the same thing by "problem-based learning"? A review of the concepts and a formulation of the ground rules. *Academic Medicine, 74*(2), 178-85.
- Mohammadi, F. S. (2017). The effect of authentic problem-based vocabulary tasks on vocabulary learning of EFL learners. *International Journal of Education and Literacy Studies, 5*(3), 35-40.
- O'Malley, J. M., & Chamot, A. (1990). *Learning strategies in second language acquisition*. Cambridge, England: Cambridge University Press.
- Othman, N., & Shah, M. I. A. (2013). Problem-based learning in the English language classroom. *English Language Teaching, 6*(3), 125-134.
- Othman, A. B., Shah, K. S. H. A., Ibrahim, M. I. B. M., Ridzwan, I. U. B., Mohaiyadin, N. M. B., & Besi, K. S. (2016). Factors contribute towards challenges faced by the students in the implementation of problem-based learning (PBL). *Journal of Education and Social Sciences, 4*(June) 133-139.
- Oxford, R. (1994). *Language learning strategies: An update*. Retrieved Nov 15, 2017, from <http://www.cal.org/resources/digest/oxford01.html>
- Rivers, W. P. (2001). Autonomy at all costs: An ethnography of metacognitive self-assessment and self-management among experienced language learners. *The modern language journal, 85*(2), 279-290.
- Savery, J. R. (2006). Overview of problem-based learning: Definitions and distinctions. *Interdisciplinary Journal of Problem-based Learning, 1*(1), 9-20.
- Savery, J. R., & Duffy, T. M. (1995). Problem based learning: An instructional model and its constructivist framework. *Educational technology, 35*(5), 31-38.
- Schmidt, H. G. (2012). Chapter 2: A brief history of problem-based learning. In G. O'Grady, G. Yew, & H. G. Schmidt (Eds.), *One-day, one-problem: An approach to problem-based learning* (pp. 21-40). Singapore: Thomson Learning Asia. doi: 10.1007/978-981-4021-75-3_2
- Shin, L. K., & Azman, N. (2014). Problem-based learning in English for a second language classroom: Students' perspectives. *International Journal of Learning, 18*(6), 109-126.
- Sy, R. A. M., Adnan, A., & Ardi, H. (2013). The effect of problem based learning strategy toward students' speaking ability at the first grade of SMAN 1 Enam Lingkung. *Journal of English language teaching, 2*(1), 314-323.

- Tan, O. S. (2004). Students' experiences in problem-based learning: Three blind mice episode or educational innovation? *Innovations in Education and Teaching International*, 41(2), 169-184.
- Torp, L., & Sage, S. (2002). *Problem as possibilities: Problem-based learning for K-16 education*. Alexandria, USA: Association for Supervision and Curriculum Development.
- Wee, L. K. N., & Kek, M. Y. C. A. (2002). *Authentic problem-based learning: Rewriting business education*. Singapore: Prentice Hall.

