The impact of problem-based learning on Chinese-speaking elementary school students' English vocabulary learning and use

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ABSTRACT

This study examined the impact of the problem-based learning (PBL) approach on English vocabulary learning and use in an elementary school in Taiwan. Two classes, each with 28 students, participated in the study. One class was assigned to be the experimental group and the other the control group. Both groups received the same learning content, but different instructional input. The experimental group used the PBL technique and learned the target vocabulary through learner-centered activities, while the control group used teacher lecture-based instructional techniques. All participants completed pre- and post-tests on vocabulary knowledge and wrote a topic-based composition and a self-report. The t-test results of the pre- and post-tests show that there were no significant differences between the two groups. However, the PBL group outperformed the non-PBL group in using the Off-List level of vocabulary in the writing task. The PBL participants also used a significantly higher proportion of vocabulary beyond the 2000-word level, and wrote significantly longer compositions than their counterparts. The PBL participants' self-reports suggest that PBL provided sufficient English conversation practice; it can be used to foster elementary school students' ability to learn and use vocabulary in context.

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1. Introduction

Vocabulary is considered essential to successful second/foreign language learning (Schmitt, 2000). Learners with a firm vocabulary foundation may experience an accelerated learning curve in later stages of language learning and perform the skills of listening, speaking, reading, and writing successfully. In addition, vocabulary serves as the foundation of real-life communication. The more vocabulary a learner understands, the more skillful expressions he/she can make. In the context of learning English as a foreign language (EFL), students have problems when learning English vocabulary. Students usually learn new English vocabulary by rote memorization, which often results in boredom (Min & Hsu, 2008). After being taught a significant set of vocabulary, most students fail to apply this knowledge appropriately in the situations in which they need to communicate, read, or write in English (Atay & Kurt, 2006; Barrow, Nakanishi, & Ishino, 1999; Hunt & Beglar, 2005). Many EFL learners believe that their most significant obstacle is learning vocabulary (Gordani, 2013). A common explanation for this phenomenon is the teacher-centered explicit lecture approach in vocabulary instruction. Much of what is taught with

the explicit teacher–lecture method produces inert knowledge that is not easily applied in new situations (Ellis, 2003). Thus, these students lack the skills required to actively apply their learned knowledge to real-life scenarios. Language instructors need to apply teaching methods that facilitate the students' ability to efficiently construct vocabulary knowledge and to use it in daily communication, reading, and writing activities.

Problem-based learning (PBL) is an approach that motivates students to learn through involvement in a real problem. Students receiving PBL training simultaneously develop both problem-solving strategies and disciplinary knowledge bases. In a PBL classroom, the instructor usually proposes a problem; students assume a dominant role to create their learning plans based on the analysis of the problem. In the literature, PBL emphasizes that social interaction is pivotal to knowledge construction, acquisition, and application. This approach can also foster active engagement in knowledge construction (Bridges, 1992; Evensen & Hmelo, 2000; Hmelo, 1998). Moreover, this approach stresses a learning scaffold with which learners are supported by teachers and peers. Using the PBL approach, second language (L2) learners may explore vocabulary meanings through teamwork, and can formulate their own knowledge of proper vocabulary usage in real-life contexts. This knowledge construction process may guide these learners to realize the vocabulary meanings and usage in communication contexts. In the EFL context, empirical research examining the effectiveness of the PBL approach has been limited. Accordingly, the purpose of this study was to incorporate the PBL approach into an English course with the aim of engaging elementary school students in constructivist learning activities (Foote, Vermette, & Battaglia, 2001; Savery & Duffy, 1996; Simone, 2008), thereby enhancing their English vocabulary learning and use.

2. Literature review

2.1. Problem-based learning

PBL organizes the curricular content around problem scenarios. Bridges (1992) indicated that the PBL curriculum is characterized by the following features (pp. 5–6):

1. The starting point for learning is a problem (that is, a stimulus for which an individual lacks a ready response).
2. The problem is one that students are likely to face as future professionals.
3. The knowledge that students are expected to acquire during their professional training is organized around problems rather than disciplines.
4. Students, individually and collectively, assume a major responsibility for their own instruction and learning.
5. Most of the learning occurs within the context of small groups rather than lectures.

Given these characteristics, the problem addressed by the students is not just the starting point to activate a course, but is the centerpiece of this learning approach. The instructor prepares problems and applies them in class to guide the students' learning. The problems should not simply be related to the content of the material or involve questions on a quiz or test, but can be designed as a variety of situations and tasks. The process of working out solutions to various problems is similar to experiencing a chain of events. The more problems the students learn to solve, the more opportunities they will have to apply their knowledge to different events.

The PBL pedagogy shares some specific features with those emphasized by the task-based language teaching (TBLT) approach. TBLT stresses the development of language learners' communicative competence. Adopting this as a goal, the instructor designs tasks requiring two-way information exchanges to increase negotiation (Ellis, 2003; Johnson, 2003). In the literature, various definitions for the word *task* have been offered (for overviews, see Bygate, Skehan, & Swain, 2001; Ellis, 2003; Johnson, 2003; Van den Branden, 2006). From the perspective of general functions, the tasks designed for the classroom activities can be "the one hundred and one things people do in everyday life, at work, at play, and in between" (Long, 1985, p.89), such as describing people, making a restaurant reservation, and completing a form. Regarding communicative language teaching, a task is designed to facilitate language use. Van den Branden (2006) further indicated that "tasks are supposed to elicit the kinds of communicative behavior (such as the negotiation for meaning) that arises from performing real-life language tasks (p.9)". TBLT advocates have commented that tasks play an essential role in promoting second language acquisition. In line with TBLT, PBL requires a close link between the tasks performed by learners in the classroom and those conducted in the outside world. However, the main differences between TBLT and PBL are related to the presentation of the problem and the level of teacher guidance. The problem presentation serves as a primary defining feature to distinguish TBLT from PBL. In TBLT, tasks are descriptive. In PBL, the instructor initially proposes a problem. Subsequent teaching activities are centered on the problem. In each class meeting, the teacher asks the students to review the problem, establish a new goal, review their learning schedule, and further search for new data. The problem plays a role in provoking a constant cycle of editing, revising, rethinking, and reformulating (Spronken-Smith, 2005). In general, problems provide the basis for an entire language learning curriculum.

The PBL approach emphasizes a learner-centered curriculum in which instruction is regarded as the process of helping the learner to actively acquire knowledge, and to independently interpret and operate it within the real world. Savery and Duffy (1996) proposed a constructivist framework for a PBL instructional model, indicating that a learner's understanding is gradually constructed through active engagement with problems. The construction process entails learners "setting or