



ผลการสอนคำศัพท์โดยใช้วิธีการสอนแบบล่างขึ้นบนและบนลงล่างที่มีต่อความรู้คำศัพท์ของนักเรียน ระดับมัธยมศึกษาชาวภูฏาน

Effects of Vocabulary Instruction Using Bottom-up and Top-down Instructional Approaches on Bhutanese Secondary Students' Vocabulary Knowledge

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งานวิจัยนี้มีวัตถุประสงค์เพื่อ (1) ศึกษาประสิทธิภาพของการสอนคำศัพท์โดยใช้วิธีการสอนแบบล่างขึ้นบน (BU) และวิธีการสอนแบบบนลงล่าง (TD) ที่มีต่อความรู้คำศัพท์ของผู้เรียนภาษาอังกฤษเป็นภาษาที่สอง (2) เปรียบเทียบประสิทธิภาพของวิธีการสอนทั้งสองแบบที่มีต่อการพัฒนาความรู้คำศัพท์ของนักเรียนระดับมัธยมศึกษาชาวภูฏานและ (3) สำรวจความคิดเห็นของผู้เรียนที่มีต่อวิธีการสอนทั้งสองแบบ กลุ่มตัวอย่างที่ใช้ในการวิจัยได้แก่นักเรียนระดับชั้นมัธยมศึกษาปีที่ 4 ชาวภูฏานจำนวน 70 คนจากโรงเรียนมัธยมศึกษาแห่งหนึ่งโดยแบ่งผู้เรียนออกเป็นสองกลุ่ม แต่ละกลุ่มเรียนคำศัพท์ด้วยวิธีการสอนที่ต่างกันคือเรียนด้วยวิธีการสอนแบบ BU และเรียนด้วยวิธีการสอนแบบ TD ผู้เรียนได้รับการสอนด้วยวิธีดังกล่าวเป็นระยะเวลา 2 เดือนในการเรียนคำศัพท์เชิงวิชาการจำนวน 168 คำ จากนั้นหาข้อมูลเชิงปริมาณด้วยการทดสอบผู้เรียนด้วยแบบทดสอบวัดขนาดความรู้คำศัพท์ (VST) และแบบทดสอบวัดระดับความรู้คำศัพท์ (UVLT) การวิเคราะห์ข้อมูลใช้สถิติพรรณนาและสถิติอ้างอิง นอกจากนี้ใช้การสัมภาษณ์กึ่งโครงสร้างเพื่อศึกษามุมมองของผู้เรียนที่มีต่อวิธีการสอนดังกล่าวเพื่อหาข้อมูลเชิงคุณภาพ โดยสัมภาษณ์ผู้เรียนจำนวนทั้งสิ้น 8 คน (กลุ่มละ 4 คน โดยผู้เรียนที่ได้คะแนนสูงและต่ำอย่างละ 2 คน) การวิเคราะห์ข้อมูลจากการสัมภาษณ์ใช้การวิเคราะห์เนื้อหา ผลการวิจัยพบว่าวิธีการสอนทั้งสองแบบช่วยพัฒนาความรู้คำศัพท์ของผู้เรียนได้อย่างมีประสิทธิภาพ และไม่พบความแตกต่างอย่างมีนัยสำคัญทางสถิติระหว่างผลการพัฒนาความรู้คำศัพท์จากวิธีการสอนทั้งสองแบบ ผู้เรียนส่วนใหญ่มีความเห็นเชิงบวกต่อวิธีการสอนทั้งสองแบบ

คำสำคัญ : วิธีการสอนแบบล่างขึ้นบน (BU), วิธีการสอนแบบบนลงล่าง (TD), ความรู้คำศัพท์, นักเรียนระดับมัธยมศึกษา

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Abstract

This study aimed to (1) investigate the effectiveness of bottom-up (BU) and top-down (TD) instructional approaches on ESL learners' vocabulary learning, (2) compare the effects of the two approaches on the development of vocabulary knowledge of Bhutanese secondary school students, and (3) explore the learners' opinions towards the two approaches. The participants of this study were seventy tenth-graders from a Bhutanese secondary school. They were divided into two groups: BU and TD, and each group of students learned vocabulary through a different instructional approach. The learners underwent treatment sessions for two months to learn 168 new academic vocabularies. The students' English vocabulary knowledge was measured quantitatively through vocabulary tests: the vocabulary size test (VST) and the updated vocabulary levels test (UVLT). The data were analyzed through descriptive and inferential statistical techniques. This was followed by a semi-structured interview to extract the views of the participants on the instructional approaches for qualitative data. A total of eight participants (two each of high performers and low performers) from two groups were selected for the interview and the data were analyzed through content analysis. The research findings revealed that both approaches were effective in helping to improve the students' vocabulary knowledge but the results also showed that the improvement in the students' vocabulary knowledge attributed to the BU instructional approach was not significantly different from that of the TD instructional approach. Most participants expressed positive views towards both approaches.

Keywords: Bottom-Up Instructional Approach (BU), Top-Down Instructional Approach (TD), vocabulary knowledge, secondary school students

Introduction

Vocabulary learning has consistently been a significant issue for language students as procuring new words is accepted to be the premise of language learning (Chin, 2002; Hedge, 2001; Kwon, 2004; Pae, 2016). Decades of research have shown to approve the fundamental job of vocabulary in English as a Second Language/English as a Foreign Language (ESL/EFL) learning (Helman, 2008; Manzo & Manzo, 2008; Nation, 2013; Scott et al., 2008). According to Umurova (2018), the amount of vocabulary mastered by language learners correlates with their communicative competence. Alqahtani (2015) also highlights how poor vocabulary knowledge affects the quality of communication in the target language, demonstrating how important vocabulary knowledge is in the language learning process. Therefore, it can be concluded that without a large vocabulary, it will be difficult to employ the structures and functions acquired for coherent communication.

Lately, bottom-up (BU) and top-down (TD) instructional approaches, which have for some time been notable instructional methods in L2 learning, were acquainted with vocabulary learning as an elective learning procedure to the customary way, for example, procuring just a denotative significance of a word. Students need an open door to extend their understanding of vocabulary information through a progression of the procedure from

signifying the importance of a word to understanding its utilization in bigger settings, for example, sentences, or the other way around; at that point, they may get significant results in language use. Some empirical evidence supports the impacts and appropriateness of using BU and TD instructional approaches with L2 students, particularly those in ESL contexts. Given that methodology, such as the depth of preparation and guaranteeing procedures, is closely associated with EFL students' vocabulary achievement (Pae, 2016) and that such teaching approach is significantly more compelling than basic word-list treatment for EFL students' vocabulary learning (Chin, 2002), there is no doubt that using vocabulary learning methodologies such as BU and TD in an ESL setting is essential to improve student's vocabulary knowledge.

Vocabulary Learning Practices in a Bhutanese context

Although English is the medium of instruction for decades in schools in Bhutan, the English competency of Bhutanese students is significantly low. For example, a study by LaPrairie (2014) revealed that a large number of Bhutanese students fail to attain the minimum mandatory score on the International English Language Testing System (IELTS).

Bhutanese classrooms emphasize didactic teaching-learning approaches. Generally, language teachers in Bhutan pay less attention to the importance of learning vocabulary and have not been found to deploy many strategies for teaching vocabulary. The effect of this practice can be seen through students having considerably low vocabulary knowledge. Teachers tend to educate toward terminal examinations and stick to traditional teacher and student roles (LaPrairie, 2014). The teaching and learning of vocabulary take place through either direct translation of the first language (L1) or the provision of a synonym or an antonym of the target word. One of the most common strategies for learning vocabulary by Bhutanese students is the use of a bilingual dictionary (English to Dzongkha) to learn new words which do not seem to lead to successful vocabulary learning outcomes. A study by Akbari (2017) pointed out that the vocabulary learning strategies adopted by learners are the use of dictionaries and repeated practice of the target words. Such practices are one of the most common strategies practiced by most learners across different cultures, schools, and fields. However, the results of these on students' vocabulary development are not prominent.

Therefore, newer methods and practices must be applied to improve students' vocabulary knowledge. Based on the importance of vocabulary in language learning, and the very limited amount of research on teaching and learning vocabulary carried out in the Bhutanese context; the present study which is considered new vocabulary teaching approaches in the Bhutanese context tried to fill the gap by exploring the effects of using the BU and TD instructional approaches on students' vocabulary learning. The study investigated the impacts of the two approaches on the students' vocabulary knowledge and students'

opinions towards such approaches. The study also tried to compare the two instructional approaches to find the best practicable teaching approach of learning vocabulary in the Bhutanese context.

Research Questions

This study aimed to answer the following research questions:

1. To what extent can the BU instructional approach improve the vocabulary knowledge of secondary school students in Bhutan?
2. To what extent can the TD instructional approach improve the vocabulary knowledge of secondary school students in Bhutan?
3. Is there any difference in the effect of BU and TD instructional approaches on students' vocabulary knowledge?
4. What are students' opinions towards BU and TD instructional approaches?

Objectives of the Study

1. To investigate the effects of the BU instructional approach on secondary students' vocabulary knowledge
2. To investigate the effects of the TD instructional approach on secondary students' vocabulary knowledge
3. To compare the effects of the BU and TD instructional approaches
4. To explore students' opinions toward BU and TD instructional approaches

Literature Review

Vocabulary Knowledge: Importance of Vocabulary Instruction

Vocabulary knowledge is one of the most important components of language teaching and learning. There are various viewpoints on this aspect. For example, Richards and Renandya (2002) suggest that vocabulary is an essential constituent of linguistic skills that provides a considerable basis for how well learners speak, listen, read and write. Likewise, Bromley (2004) points out that vocabulary knowledge improves reading comprehension and fluency, encourages thinking and communicating, and assists in academic achievement in general.

Despite its importance, it is surprising that vocabulary teaching and learning have not received much attention in English language teaching contexts. This is exemplified in the claim made by Carter and McCarthy (2014) that for many years, vocabulary has been the victim of discrimination by some researchers who consider syntax to be a more significant issue in the language development process.

Bottom-Up or Top-Down Instructional Approaches of Vocabulary

Some previous studies have highlighted the roles and the benefits of BU and TD instructional approaches in vocabulary instruction. A study by Schouten-van Parreren, (1989, as cited in Lee and Yoon, 2019), for instance, claimed that the BU or TD instructional approaches helped participants store words in their long-term memory and systematically deepen their vocabulary knowledge. Seventy-three participants (59.8%) claimed that the BU or TD instructional approaches was a more productive way than rote learning to enhance their vocabulary knowledge. Parallel to this, a study in a Chinese context by Moskovsky et al. (2015), witnessed that both the BU and TD groups had significant gains in the accomplishment of English vocabulary knowledge, both in terms of receptive and productive vocabulary.

Characteristics of BU and TD Instructional approaches

BU Instructional Approach

It is a form of inductive (or data-driven) processing starting with smaller and/or lower-ranked units and moving upwards through larger and/or higher-ranked units. In BU processing, the learner “focuses on individual words and phrases and achieves understanding by stringing these details elements together to build up a whole” (Harmer, 1991, p.201). Regarding the BU instructional approach of vocabulary, the process was based on the stages from word-formation to definition and related words, to family words, to phrases and collocations, to sentences, and finally to context.

TD Instructional Approach

It is a form of deductive (or schemata-driven) processing working in the opposite direction: from higher-to lower-ranked units, (Jay, 2003). In top-down processing, student utilizes the previous information to make presumptions about the content (Lingzhu, 2003). Regarding the Top-Down instructional approach of vocabulary, the process was based on the stages from learning words from context to sentences, phrases, and collocations, to family words, to the definition and related words then finally to word-formation.

Methodology

Participants

The participants of this research were seventy tenth-graders from a secondary school in Chukha, Bhutan. The age group of the population ranged from sixteen to nineteen years. They shared similar educational backgrounds and English proficiency levels. The participants were set into two classes (thirty-seven students and thirty-three students, respectively): the former was taught by the use of the BU instructional approach, and the latter by the use of the TD instructional approach.

Research Instruments

Vocabulary Tests

The quantitative measure of vocabulary knowledge was determined by two vocabulary test instruments (fifty items in total): the Vocabulary Size Test (VST) (twenty items) and the Updated Vocabulary Levels Test (UFLT) (thirty items). The VST, which is a widely used test, deployed a multiple-choice format intended to measure the written receptive vocabulary size, which is the vocabulary knowledge required by learners in reading. The UFLT looks at how well students know useful English words. The tests were administered at the beginning and the end of the instructional approach. The same set of pre-test and post-test involved different academic words following the participants' level of proficiency.

Interview Protocol

The overall purpose of the interview was to extract the participants' opinions towards the two instructional approaches. Four participants (two high achievers and two low achievers) from each approach attended the interview. The interview questions were designed based on the research question to find out the participants' opinions. To increase the credibility of the qualitative data the 'Member checking' technique, which is also called the respondent validation technique, was undertaken. Data or answers were returned to participants to check for accuracy and resonance with their experiences. Besides, students' L1 (Dzongkha) was also used during the interview to gain an accurate response.

To strengthen the validity of the research instruments, three experts were asked to validate the tests and the interview questions. Changes were made according to their comments and suggestions.

Data Collection

The two groups of participants went through forty-eight sessions of instructional activities for vocabulary learning using two distinct instructional approaches. The BU and the TD groups comprised thirty-seven and thirty-three participants, respectively. A pre-test was administered a day before the actual eight weeks of academic vocabulary treatment sessions followed by the post-test. A total of eight participants (four from each BU and TD group) were involved in a semi-structured interview to learn their opinions on the instructional approaches.

Data Analysis

Data analysis in this research was divided into quantitative and qualitative parts. In the quantitative part, the collected test scores data were analyzed by using both descriptive and inferential statistical techniques. For research questions one to three, t-tests were conducted to examine the differences in the scores of vocabulary tests each of which has a total score of 50, comprising VST and UFLT. Specifically, paired *t*-tests were conducted to examine the differences between the scores of pre-test and post-tests for each of BU and TD instructional

approaches, as in research questions one and two, while an independent t-test was performed to examine the difference in the impact of the BU and TD instructional approaches on students' vocabulary knowledge, as in Research Questions 3. The data were analyzed using SPSS statistical package, version 25.0.

In addition to the quantitative data analysis, this research also utilized qualitative data analysis. In this part, interview data were coded and analyzed by using content analysis.

Results

1. To what extent can the BU instructional approach improve the vocabulary knowledge of secondary school students in Bhutan?

The first research question determined whether the BU instructional approach improved the vocabulary knowledge of secondary students through vocabulary tests. To answer this research question, VST and UVLT, with a possible fifty points, were used to evaluate several aspects of students' vocabulary knowledge. A comparative analysis between the mean scores of the pre-test and post-test was conducted. The results of the statistical analysis comparing the pre-test and post-test scores of each vocabulary instruction are presented below.

Table 1

Pre-test and post-test mean scores of BU instructional approach

Vocabulary Test	n	M	SD	Mean Difference	df	t	sig	Effect Size
Pre-test	37	23.91	8.53					
				8.25	36	9.96	.000	1.64
Post-test	37	32.16	8.25					

* $p < .05$

The data in Table 1 indicates that the mean of the students' scores in their post-test ($M = 32.16$, $SD = 8.25$) was higher than that of their scores in the pre-test ($M = 23.91$, $SD = 8.53$), and this difference in the performance between the pre-test and post-test was statistically significant ($t = 9.96$, $p < .05$). Calculated using Eta square, the effect size of these mean scores of pre-test and post-test reveals a value of 1.64. Given a statistically significant improvement in each students' score, it reflected the evidence that the students improved their academic vocabulary knowledge significantly after taking the academic vocabulary course using the BU instructional approach.

2. To what extent can the TD instructional approach improve the vocabulary knowledge of secondary school students in Bhutan?

Table 2

Pre-test and post-test mean scores of TD instructional approach

Vocabulary Test	n	M	SD	Mean Difference	df	t	sig	Effect Size
Pre-test	33	24.21	5.97					
				7.34	32	6.30	.000	1.10
Post-test	33	31.55	6.99					

* $p < .05$

In Table 2, the mean of the students' scores in their post-test ($M = 31.55$, $SD = 6.99$) was higher than that of their scores in the pre-test ($M = 24.21$, $SD = 5.97$), and this difference in the performance between the pre-test and post-test was statistically significant ($t = 6.30$, $p < .05$). The effect size of these mean scores of pre-test and post-test is valued at 1.10. Hence, this is statistical evidence to suggest that the students improved their vocabulary knowledge significantly after taking the academic vocabulary course using the TD instructional approach.

3. Is there any difference in the effect of the BU and the TD instructional approaches on students' vocabulary knowledge?

To study the effect of BU and TD instructional approaches on students' vocabulary knowledge, the independent sample t-tests between the improvements of the students' test scores for the two instructional approaches were conducted as shown below.

Table 3

Independent sample t-test of the effects of the BU and TD instructional approaches

Vocabulary Test	n	M	SD	Mean Difference	df	t	sig	Effect Size
BU	37	8.25	5.03					
				0.91	68	0.65	0.22	0.15
TD	33	7.34	6.99					

* $p < .05$

As indicated in Table 3, the means of the improvement in the test scores were ($M = 8.25$, $SD = 5.03$) and ($M = 7.34$, $SD = 6.99$) for the BU and TD instructional approaches respectively. The mean difference of the improvement was only 0.91 and it was not statistically significant. This revealed that neither of the instructional approaches was more effective than the other.

4. What are students' opinions towards BU and TD instructional approaches?

This research question investigated the students' opinions regarding the BU and TD instructional approaches towards learning vocabulary. To answer this research question, seven questions were constructed to interview a total of eight students at the end of the course. The interviewees were selected based on their pre-test and post-test scores and were divided into four groups (two each of high and low achievers from the BU and TD groups).

The keywords that appeared most frequently in the answers during the interview were coded, recorded, translated into English, and presented below. The students' responses towards BU and TD instructional approaches of learning vocabulary were categorized and summarized under the aspects: Students' feelings towards the BU/ TD instructional approaches, Advantages, and disadvantages of the BU/ TD instructional approaches, and Comments & feedback.

1) Students' feelings toward the instructional approaches

All eight participants who were interviewed perceived both approaches as helpful, useful, and interesting strategies through which they attained and expanded their vocabulary knowledge. A student said, "I found the BU method very interesting. I learned many useful academic vocabularies." It was reported that such approaches with six explicit stages were new for them. One student reported, "I never experienced such a vocabulary learning approach before. I learned vocabularies through the translation of mother tongue and also with the help of the dictionary." According to the interview, all students responded that they placed heavy reliance on learning vocabulary by memorizing the L1 meaning of the target English words. Some of them added that they used a dictionary to look for the meaning.

Generally, the participants from both instructional groups reported that the strategies practiced were found to be effective in learning vocabulary. One of the students claimed, "I felt that the TD instructional approach of learning vocabulary was effective and meaningful as I was exposed to many unknown lexical families of a target word." Furthermore, the participants also reported that the effectiveness of the instructional approaches can be related to the enhancement of reading and speaking abilities. A student from the TD group said, "I learned a good number of unfamiliar academic words which helped me comprehend well and speak confidently." However, some participants also reported some shortcomings of the instructional approaches. "I did not like the activity part the most as it consumed a lot of time and had many details that confused me a lot," claimed a student.

2) Advantages of the BU instructional approach

The students' interview reports expressed that the approach helped them learn vocabulary explicitly and facilitated them in remembering words for a longer time. "When I forgot the target word I tried to think of its lexical families through which I could easily recall and remember the new target vocabulary", a student reported. The participants pointed out

that through such approaches they got more opportunities to explore and learn related words from the lexical family of the target word.

3) Disadvantages of the BU instructional approach

The respondents from the low achiever group described this approach as a lengthy process that took a long time to learn the meaning of just one word. A participant also mentioned that the activities were confusing because they had to think of a lot of details of a particular word (lexical family, collocations, spoken and written form).

4) Advantages of the TD instructional approach

A student from the high achiever group stated, “the activities were interesting and it motivated me to learn more new academic vocabularies.” A respondent from a high achiever group expressed that one of the advantages was differentiating the meaning of words at a context level. A student from the low achiever group enjoyed learning phonetic symbols which she expressed as a useful technique to learn pronunciation.

5) Disadvantages of the TD instructional approach

The respondents from the low achiever group of the TD instructional approach found it a complicated process to follow the steps. Some respondents claimed that it was a tiresome lesson learning seven words in a session. A student said, “although it was helpful, sometimes I feel the steps were so long talking about all the details and sometimes confusing too.”

6) Comments and Feedback on BU/TD Instructional Approaches

The respondents described that the approach they experienced helped them expand their vocabulary knowledge in a way that they did not usually get to in a normal class. A participant from the BU instructional approach group reported that the approach was suitable for learning vocabulary with the stages moving from simple to complex. In addition, low achievers from the TD instructional approach group stated that these approaches helped them gain a lot of tips and tricks to guess the meaning of an unfamiliar word, especially at a context level. Some respondents recommended having such effective instructional approaches in class while learning new words. A participant mentioned, “It will be of great help for the students if teachers could teach such vocabulary learning approaches in the class, not just the grammar and the content while teaching stories and poems.” A few mentioned that the teaching and learning activities were meaningful and interesting.

Discussion

The main research finding of this study was the increase in the students’ vocabulary knowledge after receiving eight weeks of vocabulary treatment. This implies that the BU and TD instructional approaches work effectively in developing and improving Bhutanese secondary school students’ English vocabulary knowledge. This research finding confirms the pedagogical principles of (Moskovsky et al., 2015), who claimed that both BU and TD

instructional approaches made significant gains in students' attainment of academic vocabulary.

This research finding is in line with the findings of previous research conducted by Lee and Yoon (2019), that there was no statistically significant difference between the BU and TD approaches, although both approaches were effective at improving the students' vocabulary knowledge.

The finding is also in alignment with the result of a different study conducted in a Chinese context (Moskovsky et al., 2015), that despite the high scores of both groups, on the post-test the BU group performed slightly better than the TD group in terms of vocabulary knowledge and controlled productive vocabulary knowledge. This could be possibly due to the fact of sequences of steps or stages involved in the BU instructional approach which moved from lower to higher or in other words from simple to complex stages, which helped them to comprehend easily. Another factor that is relatively likely to have played a role in this study's results is the learners' L2 proficiency level. This is because there is a general agreement in the relevant literature that TD processing is more common among high-proficiency learners, whereas lower proficiency learners tend to opt for BU processing (Eskey, 1988; Shohamy & Inbar, 1991; Tsui & Fullilove, 1998).

Another important finding from the study was the students' positive opinions toward the BU and TD instructional approaches. Being able to learn words explicitly and facilitating students in memorizing new words were some of the main benefits of these two approaches perceived by the participants. These support the claims made by Lee and Yoon (2019) that the two instructional approaches helped students memorize words and store them in their long-term memory.

It was also interesting to learn that these instructional approaches assisted the participants in exploring and learning related words from the lexical family of the target word. Although they knew the target word, the participants were unaware of many words from its lexical family. After learning through such instructional approaches, the students gained the knowledge and ability to group the words into their lexical families. At a larger part, learning academic vocabularies through these instructional approaches motivated the participants to learn more words thereby expanding their reading and speaking abilities.

However, it was noticeable that some students also raised the point about the process being time-consuming and tiresome. Thus, more concise activities in the lessons are recommended for teachers who would like to bring forward the BU and TD instructional approaches in real classrooms.

Conclusion

Bhutanese tenth-grade students participated in the academic vocabulary course using either of two instructional approaches, BU and TD, which lasted for two months with forty-eight sessions of vocabulary instruction to investigate the effectiveness of the two instructional approaches on learners' vocabulary learning.

The qualitative data revealed that the attainment of vocabulary knowledge from these instructional approaches supported their reading and speaking abilities at large. The findings from the study also revealed that the use of either of the two instructional approaches helped improve the Bhutanese students' vocabulary knowledge. There were significant improvements in the achievement of academic vocabulary knowledge of both groups. This signifies that either of the two instructional approaches adopted in the current study effectively achieved substantial vocabulary learning outcomes.

The qualitative data reported that the BU and TD instructional approaches expanded their vocabulary knowledge at a significant level and also developed a sense of motivation and interest to explore more new academic vocabularies.

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