

Application of Bloom's Taxonomy to Teaching Design of English for Specific Purpose

Jiao Chen^a, Yuxuan Zhang^b, Wenjun Zhong^c

English Department, High-Tech Institute of Xi'an, Xi'an, China

^a827301276@qq.com, ^b240372383@qq.com, ^c492615469@qq.com

Abstract. This paper aims to use Bloom's taxonomy to systematize English learning objectives and form a hierarchical structure of objectives from easy to difficult, so as to design interlocking teaching links and construct a teaching design framework that conforms to the rules of cognitive hierarchy. As an extension of English teaching on the basis of college General English, English for Specific Purpose (ESP) is generally designed to train and enhance students' ability via application of English in a certain field, closely following the actual demand of relevant tasks with language skills in the field as the core.

Keywords: Bloom's Taxonomy; ESP; Teaching Design.

1. Introduction

English for Specific Purpose is a further expansion of English teaching on basis of college General English. It focuses on language skills and its application to a certain field, usually practical; therefore, it is essential to make a transition to practical use in a certain circumstance, compared with general English study. For ESP in this school, practice and application is an effective way to consolidate and deepen theoretical knowledge, an important teaching link to cultivate high-quality professional talents with innovative consciousness, and an important platform to integrate theory with practice and train students to adapt to career development, international exchanges and other situations.

Based on Bloom's Taxonomy, the author studies how to use scientific and effective teaching design, by adopting six cognitive levels, namely remember, understand, application, analyze, evaluate and create, to improve students' English application abilities and comprehensive quality in terms of knowledge, skills and actions. This is to ultimately achieve fundamental vocational purpose of English teaching, and optimize its teaching effect, via climbing up to the higher, or even top of cognitive capabilities.

The second chapter reviews Bloom's Taxonomy and the studies on situation of application of this cognitive hierarchy to teaching designs. The third chapter illustrates the methodology employed in this paper and chapter four reports the findings and elaborates the doings in ESP teaching design by resorting to the theoretical framework. Chapter five concludes this paper and points out the limitations of the present study and suggestions for future research.

2. Literature Review

Bloom's Taxonomy, originated in the 1940s, is designed to build a cognitive framework in the form of classification, which in turn help educators set clear and meaningful learning goals (Gershon, 2018). Its essence lies in focusing on cognitive structure, relying on the classification of cognitive domain, helping teachers to design teaching framework and leading students to create knowledge step by step. Bloom's theory of classification of educational objectives was initially applied to primary education in the United States, and then extended to higher education, which has had an important impact on promoting the establishment of educational objectives, curriculum and educational evaluation in American universities. Western scholars mainly focus on the influence of this theory on the cultivation of college students' thinking ability and think that it is more in line with the development laws of students' cognitive psychology (Anderson, 2009). In China, researchers use it in the establishment of university education objectives, teaching evaluation and other aspects.

Bloom's taxonomy consists of six cognitive hierarchies from easy to difficult, namely, “remember, understand, apply, analyze, evaluate and create” in terms of revised version in 2001. "Remember" means being able to remember what you have learned by recalling basic facts, terms, concepts, etc.; "understand" means understanding facts and opinions and being able to demonstrate this process by organizing information, translating, contrasting and stating main points; "apply" refers to the use of acquired knowledge to deal with new situations and solve new problems; "analyze" refers to the decomposition of information into elements and establishment of connections between elements, identification of motives or causes, seeking evidence, making inferences, etc.; "evaluate" means judging the validity of ideas and the quality of results based on a set of standard options; "create" is to rearrange information in different ways to come up with entirely new solutions(Gershon, 2019). Bloom’s Taxonomy is shown below in Figure1.

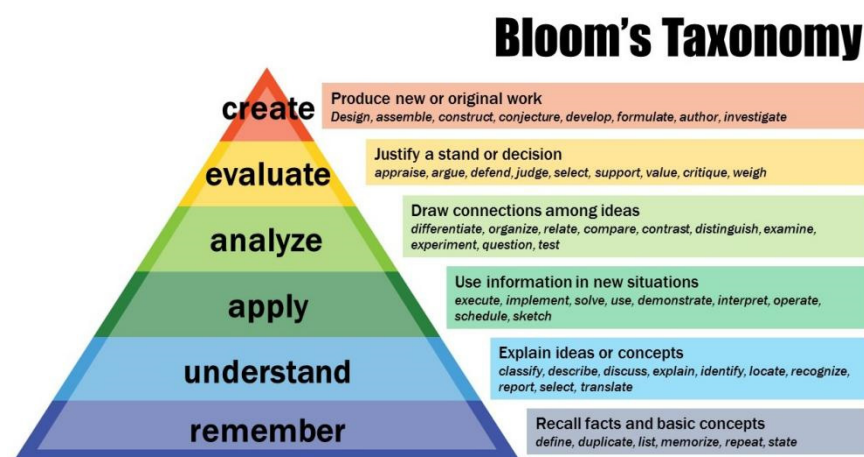


Figure 1. Bloom’s Taxonomy in revised version

The studies of on Bloom's taxonomy to teaching design of college English are relatively fewer. Relevant studies are only confined to the fields of college English for general use and purpose. Generally speaking, these studies fall into two categories: teaching design of English course for speaking, and that for flipped or blended classes. Miao (2020) explores the teaching design of college oral English and activities under the guidance of the cognitive classification and the flipped mode in order to improve college oral English teaching effect. Han (2020) studies the application of mixed teaching mode in order to solve the separation of teaching and learning objectives, lack of teaching interaction and other problems, based on Bloom's cognitive classification theory. Li (2021) endeavors to probe into the reform and practice of college English blended teaching via information technology by adopting Bloom's taxonomy. Du (2021) studies the ideological teaching design of English audio-visual speaking courses based on Bloom's taxonomy of educational objectives. Tan (2021) focuses on the study of online/offline blended teaching of English speech, and discusses the practical methods for flipped teaching from two cognitive levels of low and high order respectively, guided by Bloom's classification of objectives. That is to say, research on teaching designs for ESP remain almost blank, where there's a lot of room for exploration. This paper is to discover unique teaching designs that is specific and efficient for English for specific purpose, by exploiting the six hierarchic levels of cognitive abilities.

3. Methodology

The present study aims to explore a systematic teaching design for ESP courses under the guidance of Bloom's taxonomy of educational objectives.

The research questions are as follows:

- (1) What are the major structures or elements in ESP teaching design according to the cognitive theory of Bloom's taxonomy, which can be used as a scientific and systematic designing pattern?

(2) What are the effective strategies that can be developed in accordance with the six cognitive levels within the design pattern, which can provide as the specific and concrete doings in achieving the highest level?

3.1 Analysis of Bloom's Taxonomy

To start with, the essence of theory of Bloom's taxonomy is to be understood and analyzed at a deeper and theoretical level, and most importantly, the definitions of the six cognitive levels are to be grasped one by one. At the same time, the teaching contents of ESP courses are rationalized and reorganized as clear theme and subject. Finally, the basic abilities and skills of ESP corresponding to each level of objective classification are studied, which are expected to be grasped by students. That is to say, this applicability analysis of the theory is done by untangling contents of English for specific purpose, thus arriving at appropriate strategies suitable for different subject at different levels.

3.2 Case Study and Classroom Practices

After developing specific strategies corresponding to theory study, these different strategies are applied to classroom practice to form a case study of a specific topic or theme, and the optimal level-corresponding strategies are discussed and selected according to the improvement degree of students' learning ability and classroom interaction effect. Based on the accumulated experience of teaching practice, effective teaching methods are promoted to further blossom and bear fruit. On the basis of multi-dimensional comparison after specific case study and experimental demonstration, teaching strategies and specific practices are re-explored further.

4. Finding and Discussions

4.1 Constructing Learning Goals and Outcomes

Learning objectives are the direction of effort, while learning outcomes are what students are expected to achieve at the end of the course. Sharing goals and results with students is the best practice in teaching activities, because it contributes to the transparency and openness of success criteria. By making internal standards of the course public, teachers can give students a clearer purpose and a better chance of meeting or even exceeding those standards. Therefore, constructing goals and corresponding outcomes are of first priority within the teaching design pattern, trying to realize the very first goal-----making your goals clear so that students can make their own clear.

4.1.1 Setting Challenging Learning Goals

Maximizing progress is one of the central goals of teaching; that is to say, if the goal is set too simply, students will scarcely make progress, for possibilities are blocked. Therefore, we need to enable students to make progress beyond their own expectations by setting challenging goals. Clearly, educational objective classification can do this. Typically, teachers set challenging goals for students by invoking the three higher levels of the pyramid -- analyze, evaluate, and create. It should be pointed out that the realization of higher level goals depends on the achievement of lower level goals; to be exact, higher-level goals will not only encourage students to deepen and expand their learning, but also sweep up previously simpler cognitive processes.

The ESP course uses a textbook that has a clear unit theme, but probably with all the relevant information scattered around in other units; at the same time, each unit does not specify the clear-cut skill objectives that need to be achieved in actual activities. Therefore, in accordance with international missions, exchanges and other vocational needs, Bloom's taxonomy is helpful in setting learning objectives in an orderly and scientific outlook after untangling all the relevant elements and reorganizing them as a systematic whole. By analyzing the whole unit and classifying the objectives at the six levels according to the Bloom's taxonomy, higher levels can be sorted out and the challenging goal will be made quite clear to both teachers and students, which provide as ultimate learning target.

4.1.2 Creating Differentiated Teaching Results

Taking into account the different starting points students have and the fact that each student may not get the same amount in the same class, creating different results becomes a necessity. In this regard, it should be pointed out that differentiated results do not set an upper limit that is difficult to reach for different students, let alone label them for different starting points (Gershon, 2019). Teachers need to understand, and more importantly, explain to students that setting different outcomes for “all, most, and some” does not mean that “all, most, and some” are fixed as a specific group; Instead, students should be encouraged to make progress through efforts. This progress is completely open, and each student can make their own progress at different cognitive stages, and each student is likely to achieve the highest level of cognitive progress.

4.2 Designing Teaching Activities

Teaching activities are containers, and relevant teaching content is placed in the corresponding containers. All teaching activities require behaviors from the students based on certain level of cognition. In other words, different teaching activities necessarily require students to use different cognitive processes to participate in the interaction of specific curriculum content. Therefore, taxonomy can quickly outline the basic framework of a course, and determine the progressive attributes and characteristics within the framework, so that teachers can pin down the direction of each teaching activity. According to the six cognitive levels of Bloom's taxonomy, the development of ESP teaching activities can be designed from the following three aspects, with two adjacent levels as one group.

4.2.1 Activities to Remember and Understand

To remember and understand are the first two levels in Bloom's taxonomy, which are the initial starting point for individuals to learn. Therefore, teaching activities based on these two levels are generally used to start a class, or as an introduction or lead to the theme. To remember serves as the foot-stone of further learning objectives and higher cognitive hierarchy, involves recalling facts and basic concepts by defining, listing, repeating or paraphrasing, etc.

4.2.2 Activities to Apply and Analyze

Next, teachers need to study how to extend basic knowledge and understanding to a higher level. Students' ability to apply and analyze is a key to upgrade from theory to practice, as is clarified above that real practice is one of the important objectives for ESP teaching.

For a large amount of ESP teaching, application-based teaching activities, scaffolding or demonstration can provide accurate and effective paths for students to complete application activities. Generally, teachers will arrange application and analysis successively, with application before analysis. Analytical process promotes and deepens understanding and fosters a spirit of pursuit and exploration in learning by encouraging students to develop a more critical view on familiar knowledge and skills.

4.2.3 Activities to Evaluate and Create

Evaluation and creation, at the highest level of the taxonomy, are the end of the lesson. All evaluations are for the only purpose, or to create something new.

Evaluation refers to students making judgments about what they have learned based on information known, understood, applied and analyzed, which is related to students' critical ability. In ESP teaching in this school, judgment and evaluation are made by analyzing the elements of the briefing simulation and role play completed according to the basic paradigm. Making new things is the ultimate goals of learning. During ESP learning, students will find themselves confronting more profound or detailed problems while reaching a higher cognitive level after they are able to make evaluations. The new situation of educational development requires teachers to change from knowledge sender to designers, guides and illuminators (Wang, 2017), so as to efficiently cultivate students' excellent self-learning ability.

4.3 Assessing Students' Learning Effects

Assessment acts as the location on the learning map and the actual feedback of teaching. Objectively speaking, all evaluation is man-made and subjective, so the quality of evaluation depends largely on the fundamental concept and its main framework.

4.3.1 Ladder Questioning

To ask questions is to make demands on students. These requirements tend to be cognitive, and for this reason, teachers' questions can't just pop up on the fly or make students guess rather than think. Therefore, according to Bloom's cognitive hierarchy, questioning step by step can be carried out, and these carefully prepared questioning is scientific, effective and guiding, which conforms to the cognitive law of students' mastery of learning. For example, after finishing learning a convoy escort, you can design the following laddering questions:

- ① What are the frequently used terms in convoy escort? (remember)
- ② How to explain the basic principles of convoy formation in convoy escort? (understand)
- ③ How to use the formation principle in the following escort mission cases? (application)
- ④ What is the purpose of such formation principle? (analysis)
- ⑤ Do you think this principle is too stereotypical? (evaluation)
- ⑥ If you could redeploy this formation, what additions or innovations would you make? (create)

4.3.2 Output Assessment

ESP learning, on a large extent, emphasizes on the transformation of knowledge into skills and abilities, so practice is the starting point and foothold of ESP teaching. For ESP courses in this school, with strong practical elements, output is the most direct and appropriate way and channel to assess students' mastery of learning. Teachers should pay more attention to students' ability to transform knowledge. By designing outputs, students are supposed to experience various cognitive processes while teacher are able to assess their learning accordingly. More importantly, it further strengthens the core position of practice in English teaching through output.

5. Conclusion

Based on Bloom's taxonomy and taking ESP learning as the background, this paper explores how to guide students to create knowledge and learn independently through innovative teaching design. In this study, it constructs and clarifies learning objectives and results, designs teaching activities at different cognitive levels as outputs, and implements scientific and evidence-based assessment strategies for students' learning process and achievements. By this means, a set of new teaching design methods, on the one hand, are provided that are in line with cognitive laws in theory and practice and welcomed by students. Most importantly, it tries to solve the problem of lack of systematic teaching design at the beginning of ESP teaching. On the other hand, it is of great theoretical significance and application value to fundamentally assist and cultivate students' cognitive ability and learning strategies for autonomous English learning, help them understand the conceptualization, overlap, continuity and process of knowledge (Shi 2020), and provide effective programs for students to achieve efficient autonomous learning. The major findings, limitations of this study and future suggestions are presented below.

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