

Psychological Analysis of English Learning among Students of Science and Engineering

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Abstract : Undergraduate students of science and engineering maintain a positive attitude towards English learning. However, some barriers undoubtedly take a toll on their success in English learning. Starting from their mentality, this paper first studies and analyzes their learning habits, state of mind, and other characteristics, and then propose some positive English learning strategies for them.

Keywords : Psychology; Strategy; English Learning

1. Introduction

With the continuous deepening of the global economy, the importance of English learning is undeniable. Chinese people have relied mainly on English to learn advanced science and technology from foreign countries. With the help of English, we Chinese people have carried out international trade and cooperation on the business platform of world scale. Even in today's context where many people speak English well, the importance of English learning is still not negligible.

Meanwhile, language learning is a complex process that includes input, output, monitoring, emotion filtering, and other procedures. It involves attention, memory, mindset, information processing, and other aspects. In addition to that, language learning is closely related to the physiological and psychological factors of language learners. Most students of science and engineering are male students who are not good at language learning. Distinct differences exist in male and female learning preferences. Women tend to have a better memory for words and letters. The fact is that the hippocampus, a long-term storage space helping people find relevant information, in women's brains is more active than that of men. Compared with women, most men have a physical and psychological disadvantage in language learning, which has been proved by a lot of scientific studies.

English learning obstacles lie in the common weakness of students of science and engineering. On one hand, modern scientific study and research require them to use English to exploit scientific and technological resources and data in the international corpus. On the other hand, there is a lack of ability in their language learning. If this contradiction cannot be resolved, anxiety and frustration about English learning will be generated among them.

2. Psychological characteristics

Based on long-term observations on English teaching in universities, we found that the English learning attitude for students of science and engineering generally has the following psychological characteristics.

2.1 Anxiety

American psychologist Gordon Willard Allport believes that if a person has a pathological attitude towards a certain defect, it will cause strong and lasting mental stress, which is anxiety. What causes this mental pressure on science and engineering students is mainly due to the relatively low scores of English in the college entrance examination. Since their English foundation is weak, depression and fears often come over them. This anxiety further developed into avoidance: shirk their responsibilities, feel self-

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doi: 10.18686/ah.e.v5i11.4220

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defeated or self-pity, or even hate English teachers. In class, they rarely answer the teachers' questions. After class, although they acknowledge the importance of language learning, they seldom actively participate in oral practice or other English activities.

Students are in the stage of rapid transformation from dependence to independence, which is a concrete manifestation of the development of self-awareness among them. In teaching, they oppose English teachers who always deliver a long monologue and are eager to participate in teaching activities. However, anxiety has become a major stumbling block on their way forward.

2.2 Dependence

Students of science and engineering still have a strong psychological dependence on English teachers. In class, they wait for the teachers to explain every language point or grammar rule in detail. Some of them want to take the easy way and even require teachers to teach some so-called secret skills. After class, they are contented with only memorizing new words said by the teachers or new vocabularies in the textbooks. As for some challenging and demanding assignments, many students will give up or rely on a few straight——a students. Unfortunately, they mistakenly believe that by doing these things can learn English well. As a result, without the teachers' guidance, they become aimless and do not know how to achieve higher levels in their English. They seldom actively develop a long-term English reading plan, rely heavily on the teachers to recommend English reading materials, and depend strongly on some English apps. Consequently, they will become less and less interested in English, and even fall into the trouble of giving up.

2.3 Rebellious psychology

More or less, rebellious psychology exists in many adolescents. Especially, it is prominent among college students of science and engineering. In their studies, some college students challenge teachers' opinions, have a skeptical or negative attitude towards existing theories. In interpersonal relationships, they are sometimes dismissive of teachers' comments. Instead of taking the advice of parents or teachers, sometimes, they go their own way.

The physiology and psychology of these college students are becoming mature because their abstract logical thinking during this period of life has greatly developed. College students have the capacity for independent thinking and the ability to distinguish right from wrong. During college years, they initially form their outlook on life and have the analytical ability. They accept the right views, deny the wrong ideas, and keep suspicious opinions.

2.4 Pragmatic psychology

College students of science and engineering like pragmatic thoughts rather than seemingly fancy or showy ideas. They pay attention to the immediate and actual effects instead of a grand but possibly fruitless aim. Pragmatic psychology of them is manifested in various ways, such as the choice of coursework, the learning attitude toward different subjects, the learning effect, and the motivation of learning. However, this utilitarianism transforms the primary purpose for many students of science and engineering from speaking or using English fluently to getting satisfactory scores in the English final exams or obtaining certificates of CET-4 and CET-6. Driven by this pragmatic motivation, they lose interest in routine English learning. They underestimate basic knowledge and skills. For them, English learning is not as important as cramming for exams, and the basic knowledge is not as vital as the test skills. Such a mentality will make them unwilling to work hard. Instead, they cut corners such as copying others' English homework or skipping English classes.

3. Strategies

Martin Seligman, the founder of American positive psychology, believes that satisfaction allows a person to enter a state of involvement or experience a state of immersion. This psychological theory inspires the English teachers that we should cultivate the internal driving force of students' English learning, and help students to obtain a sense of continuous satisfaction. Therefore, English teachers' aim is not only to teach students specific learning skills but also to help them realize their self-actualization through English learning. Suggestions are as follows.

First of all, English teachers should do everything they could to eliminate the anxiety of English learning and enhance self-confidence among students. On one hand, students should strengthen their willpower and perseverance. They must keep their ego in check, and objectively understand and analyze themselves. On the other hand, teachers should give them more proper guidance and positive encouragement. English teachers can instruct them to eliminate anxiety by helping them objectively and scientifically evaluate themselves.

Secondly, English teachers should do their utmost to help students overcome the psychology of dependence. English teachers need to change the nanny-style teaching method, push students to rely more on self-study, and cultivate students' self-learning ability and independent thinking ability. Both students and teachers should recognize the principle of student-centeredness. Students

are the principal subject of English learning, not just an object waiting to be crammed. Under the guidance of English teachers, students should learn independently.

Thirdly, English teachers should fight to resolve the rebellious and resisting psychology. The focus is on promoting the development of their correct ideas, rather than simply placing the students in the position of criticism. College students have high self-esteem, for example, they have the demand to achieve their English learning objectives, be competent in their English learning, gain approval from the teachers and peers, and excel in English learning. If the English teachers make demands blindly and arbitrarily, it will possibly provoke resistance. Only when self-regulation and self-discipline have been imprinted on their minds will they actively overcome rebellious psychology.

Fourthly, English teachers should remind students not to be overly pragmatic. Moreover, teachers can improve their teaching methods, choose more interesting teaching material, and stimulate students' learning curiosity. Also, English teachers can take advantage of students' pragmatic psychology to set up online and offline hybrid assessments in addition to the final exams to block their shortcuts to a high score. English teachers can tip the scales of average scores, such as increasing the proportion of regular quizzes, etc. Thus students have to follow a step-by-step English learning procedure to achieve the goal of higher English grades.

4. Conclusion

In short, after conducting in-depth investigation and research on these psychological characteristics of science and engineering students, this paper believes that only by carrying out teaching tasks in this way can we help students continuously develop in the bumpy way of English learning.

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