

# Research on psychological intervention for physics students with difficulties

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**Abstract:** Based on a brief discussion of the psychological characteristics of physics poor students and the specific manifestations of psychological barriers, this paper starts from the causes, and carries out a comprehensive and in-depth exploration around the effective path of psychological intervention for physics poor students, in order to achieve the ultimate goal of effectively transforming physics poor students, On the basis of helping students with learning difficulties to master the professional knowledge of physics, comprehensively improve their quality and ability, and promote their healthy growth and long-term development.

**Key words:** Physics poor students; Psychological intervention; Effective path

## 1. Discussion on psychological characteristics of physics students with difficulties

### 1.1 "Inferiority complex" and "fear of difficulties"

The key reason for the inferiority complex is that the students with learning difficulties have poor physical performance and are seldom concerned by the outside world, so the students with learning difficulties may have a negative psychology of belittling themselves. Especially after the exam, in the face of their physical performance, they often feel helpless about their failure. Slowly, some students with learning difficulties begin to give up on themselves and gradually lose information. Even in the class, some students with learning difficulties dare not communicate with teachers and classmates. At this time, the inferiority complex of students with learning difficulties will increase. Especially in the face of parents' complaints and teachers' criticism, some students with learning difficulties may have a self abandoning mentality and treat physics learning negatively. In the long run, some students with learning difficulties will directly give up physics.

Fear of difficulties is simply the fear of difficulties, which is closely related to failure. It is mainly manifested in that when facing difficulties, students with learning difficulties often take a retreat, avoidance and circuitous attitude towards difficulties and lack self-confidence to solve them. At the same time, students with learning difficulties are not willing to actively solve problems and sometimes rely on teachers. Such a vicious circle may lead to students with learning difficulties' fear of difficulties when facing any difficulties, May even hate physics. Generally, when students with learning difficulties face difficulties, they often have mental disorders. With the increasingly weak ability to resist setbacks, students with learning difficulties lack courage and confidence in their words and deeds, which ultimately leads to a multiplier effect.

### 1.2 "Inertia" and "coping" psychology

Inertia psychology mainly refers to a psychological state in which students with learning difficulties are difficult to achieve the set goals due to various subjective factors, and they never want to change their old practices and ways. When physics poor students have indolence, they tend to procrastinate on physics learning tasks. Sometimes they also have negative thoughts of muddling along and relying on others. Due to lack of initiative and willpower and perseverance, they may eventually lack interest in understanding and learning everything around them. Slowly, they will be more and more separated from the group.

In addition, students with learning difficulties are also prone to "coping" psychology, which is mainly manifested in failing to complete their homework on time, not observing discipline, not listening carefully, and coping with learning and examination tasks. Some students with learning difficulties subjectively believe that learning is for their parents or teachers. When they encounter problems, they are not willing to delve into them and will not take the initiative to find the cause of the error. When students with learning difficulties slowly lose interest in learning physics, their academic performance will be worse and worse.

### 1.3 "Anxiety" and "weariness" psychology

The difficulty of learning physics in junior high school will gradually increase, and students with learning difficulties are prone to anxiety and weariness. In the process of daily teaching, students with learning difficulties have difficulty in mastering physics knowledge, which makes it difficult to concentrate in class. They think slowly and have negative emotions. They always feel that learning is a burden, a burden, and even a headache at the sight of physics. Slowly, they become more and more perfunctory to their learning tasks, their learning efficiency is not satisfactory, and their academic performance will be worse and worse. Based on the above situation, students with learning difficulties will face huge learning pressure, and they will gradually lose their learning and progress goals. Sometimes their emotions will become irritable and excitable, which makes them in a passive state in the whole learning process. Slowly, the problems will accumulate, and eventually they may have the psychology of "learning weariness".

## 2. Performance of psychological disorder of physics students with difficulties

### 2.1 Volitional disorder

The subjective initiative of learning is not strong. As far as the students with learning difficulties are concerned, most of them lack goals and ideals. Many times, the students with learning difficulties do not fully realize the importance and necessity of learning physics.

Lack of interest in learning. Interest is an effective guide to action. It can be seen from the above content that students with learning difficulties are often in a psychological state of boredom and anxiety. They deeply feel that learning physics is not easy, and then their interest in learning is not fully mobilized, and ultimately it is difficult to achieve the established learning goals.

### 2.2 Affective disorder

Positive emotions are conducive to further promoting students with learning difficulties to study and think deeply, but negative emotions will limit students with learning difficulties to certain rules and regulations. As far as physics poor students are concerned, they tend to have strong negative emotions, which can easily lead to emotional disorders. Specifically, on the one hand, parents or teachers have high expectations of their children. Students with learning difficulties have weak basic knowledge. It is obviously unrealistic to require them to reach the same level of ability as excellent students. On the other hand, teachers have not adopted personalized teaching methods, which is difficult to achieve the goal of teaching students in accordance with their aptitude. If the physics teacher can organize the students with learning difficulties to conduct vivid physics experiments and use interesting language teaching, it will actively mobilize the positive emotions of the students with learning difficulties. On the contrary, if the teacher blindly adopts the traditional single teaching method, the feelings of the students with learning difficulties are easy to become negative, and it is difficult to achieve satisfactory teaching results.

### 2.3 Thinking disorder

Generally speaking, thinking quality mainly includes the extensiveness, flexibility, logic and agility of thinking. Physical thinking ability usually shows the characteristics of abstraction, profundity and indirectness. The difference of thinking ability of students with learning difficulties mainly depends on the above abilities. The thinking ability of physics poor students is very weak, which may directly form the thinking barrier, and it is difficult to assist the effective learning of physics.

## 3. Effective path of psychological intervention for physics students with difficulties

### 3.1 Guide students with learning difficulties to establish correct self cognition

First of all, students with learning difficulties should treat themselves objectively and accept themselves. Research shows that only when students with learning difficulties establish correct self cognition, can they find a more accurate position in the whole learning process. To actively accept themselves, students with learning difficulties are required to objectively understand their own advantages and disadvantages, and be good at developing their strengths and avoiding their weaknesses. From the perspective of teachers, teachers should actively put the advantages of poor college students into full play. Once they find that they have done well, they should praise them in time. When they are not doing well, they should not criticize or give up. Instead, they should change their thinking and encourage them. As far as physics is concerned, in order to satisfy the curiosity of students with learning difficulties in the daily teaching process, teachers should actively lead them to carry out physics experiments, and fully mobilize the learning enthusiasm of students with learning difficulties through the strange phenomenon of experiments. For example, students with organizational difficulties can research and repair household appliances, explain natural phenomena, and promote the close connection between physics and real life. In short, teachers should change their old teaching ideas, aiming to stimulate the desire for knowledge of students with learning difficulties and guide them to have a positive learning psychology, so that the subjective initiative of students with learning difficulties in learning physics will be mobilized to the greatest extent.

Secondly, students with learning difficulties should strive to overcome their inferiority complex and frustration. Students with learning difficulties should actively communicate with teachers and students about their learning experience, problems and puzzles, and should also enthusiastically participate in class collective activities. Activities provide a good platform for students with learning difficulties to show their talents, so as to enhance their self-confidence; Teachers should evaluate students with learning difficulties objectively and comprehensively and be good at digging out the shining points of students with learning difficulties; Guide students with learning difficulties to split their physics learning goals into small goals that are easy to complete, and improve their sense of achievement and satisfaction.

### 3.2 Emotional motivation to shorten the psychological distance between teachers and students

The psychology of students with learning difficulties is complex and sensitive, and they often need to be understood, tolerated and cared for. At the same time, they also want to be respected and affirmed by teachers, classmates and parents. The main responsibility of teachers is to teach and educate people. While imparting physics knowledge, they should pay more attention to the cultivation of healthy personality and conduct of students with learning difficulties. In particular, they should care for every student with learning difficulties and treat them equally. Although it is difficult to do so, this is the direction for teachers to strive for in the future. Based on the abstract and complex characteristics of physics, the proportion of physics poor students is higher than that of other disciplines. At this time, teachers should be good at using the emotional incentive method, and apply the concept and requirements of the new curriculum reform to every detail of physics teaching, truly committed to promoting the comprehensive development of students with learning difficulties.

First of all, teachers should have a detailed understanding of the basic situation of students with learning difficulties, such as family situation, learning foundation, ideological status, life and physical condition, etc. only in this way can teachers teach students in accordance with their aptitude in the process of teaching. Secondly, teachers should actively communicate with students with learning difficulties to further understand their current learning situation and the main problems they face, and then teachers should try to help them solve problems. At the same time, teachers should also accept the suggestions put forward by students with learning difficulties modestly and correct and improve themselves in time, so that the hearts of teachers and students can be closer. In this process, teachers mainly play the role of solving the psychological problems of students with learning difficulties, so as to promote their mental health.

Finally, in physics class, when students with learning difficulties dare to answer teachers' questions or express their ideas, teachers

should give praise and encouragement. Teachers should choose appropriate questions for students with learning difficulties to answer. When they answer the correct questions, they believe that they will deeply experience the joy of success, so as to enhance their interest in physics learning and eliminate the psychological haze of students with learning difficulties as much as possible.

### 3.3 Help students with learning difficulties form good learning habits

The fundamental purpose of education is to help students with learning difficulties form good learning habits, which play a positive role in the growth and development of a person's life. The poor performance of most students with learning difficulties in physics is not caused by intellectual factors, and non intellectual factors account for a large proportion. Therefore, teachers should actively help students with learning difficulties form good learning habits, whether in the physics classroom or in the process of experimental teaching. For example, through the creation of situations, the attention of students with learning difficulties should be focused on the teaching content as soon as possible, so as to improve the quality of students with learning difficulties; In experimental teaching, teachers can introduce multimedia teaching method, demonstration operation method and other methods to help students with learning difficulties familiarize and consolidate the equipment and precautions required by the experiment, and fully mobilize the initiative of students with learning difficulties to operate the experiment, so as to achieve the expected teaching purpose; When assigning physics homework after class, we should be good at layering students with learning difficulties. By layering homework, students with learning difficulties, and teaching objectives, each student with learning difficulties can make knowledge and progress in their own nearest Development Zone, so as to further meet their specific learning needs, help them master physics knowledge more solidly and digest and consolidate knowledge. Of course, if there are problems of principle, teachers should not blindly make concessions and compromises. On the contrary, teachers should guide students with learning difficulties step by step.

In addition, teachers should give students with learning difficulties enough space for self thinking and learning, and teach them the methods of self-learning. At this time, teachers can adopt the micro class + flipped classroom teaching method, first let the students with learning difficulties actively participate in the pre class preview process, let them experience the fun of physics learning, stimulate the students with learning difficulties' interest in physics learning and enhance their self-confidence and determination in learning.

### 3.4 Encourage by example and fully mobilize interest in learning

Teachers should not only be role models for students with learning difficulties, but also earnestly teach students with learning difficulties and become their good teachers and friends. Teachers use their own personality power to inspire students with learning difficulties to work hard and help them form a positive and scientific attitude towards physics learning, which has a subtle positive effect on students with learning difficulties to effectively get rid of psychological barriers. At the same time, teachers should strive to become "versatile", "innovative" and "pioneering" teachers, and really lead students with learning difficulties into the palace of physical knowledge, so that they can feel the magic and infinite charm of physical knowledge, such as understanding the "close relationship between energy and sustainable development", "the mysteries of home circuits", "how to save household electricity", etc.

At the same time, teachers can also introduce the advanced deeds of physical scientists to influence and inspire students with learning difficulties. For example, Edison was once regarded as a "fool" by teachers. After being forced to drop out of school, Edison eventually became a great inventor in China and even the world through unremitting efforts and hard work; Newton in his youth was not gifted, but he loved reading very much, especially reading books related to various simple mechanical model making methods. Inspired, he was willing to make some small items by himself, such as windmills, clocks and watches. It is precisely because Newton himself was willing to explore, study and operate that he created unprecedented amazing achievements. By using the deeds and growth experience of physicists to stimulate students with learning difficulties, they can help them form the correct physical consciousness and spirit, which is conducive to fundamentally changing the learning attitude of students with learning difficulties, and then fully stimulate their interest in learning. This is an effective way for teachers to carry out psychological intervention on students with learning difficulties.

## epilogue

In junior high school, physics poor students account for a large proportion, and they are more prone to psychological problems. Today, when quality education is widely advocated, physics teachers should pay special attention to the psychological problems of these students with learning difficulties and take effective measures to intervene at the right time, so as to truly run through the whole process of junior high school physics teaching with the concept of caring for, helping and paying attention to students with learning difficulties, and improve the quality of physics teaching as a whole.

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