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Research on the resilience analysis of college students with academic difficulties in science and technology majors

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Abstract: Academic resilience refers to the ability of students to adapt positively, respond effectively, and recover quickly from academic pressure and challenges. This article explores the impact of family background, school support, social policies, and other factors on their academic resilience. It can be found that there are significant differences in academic resilience among college students with academic difficulties in science and technology majors, and they are constrained by various factors. Based on this, this article proposes effective strategies to enhance the academic resilience of college students with academic difficulties in science and technology majors from the levels of individuals, families and schools, society and policies, aiming to provide strong support for college students' academic success and comprehensive development.

Key words: science and technology majors; college students; academic difficulties; resilience analysis

1 Introduction

In current higher education system, science and technology majors have attracted a large number of students' attention and choices due to their close integration of theory and practice, and broad employment prospects. However, with the increasing difficulty of various disciplines and intensified academic competition, some students majoring in science and technology are facing academic difficulties, which has become an issue that cannot be ignored in higher education. Academic resilience, as an important evaluation indicator of students' ability to actively adapt and overcome difficulties in the face of academic challenges, is of great significance for college students with academic difficulties in science and technology majors. Therefore, studying the resilience factors of college students in science and technology majors when they face academic difficulties and developing corresponding coping strategies can help better solve the difficulties faced by college students.

2 The performance of college students with academic difficulties in science and technology majors

The performance of college students with academic difficulties in science and technology majors is reflected in multiple aspects, but usually focuses on academic performance, learning motivation, and psychological state. Firstly, from the perspective of academic performance, these students often have a high failure rate in disciplines, especially in difficult specialized courses, and they may frequently fail exams or get lower grades. This not only affects their academic progress,

but may also make them doubt their own abilities. Secondly, in terms of learning motivation, college students with academic difficulties in science and technology majors often lack clear learning objectives and sustained learning enthusiasm. Moreover, dull technology knowledge can further suppress students' enthusiasm, leading to a loss of learning interest and motivation [1]. Finally, in terms of psychological state, college students with academic difficulties in science and technology majors also experience negative emotions such as anxiety and depression, which not only impact on their academic performance but may also have long-term negative impacts on their physical and psychological health.

3 Analysis of resilience factors of students with academic difficulties in science and technology majors

3.1 Personal factors

3.1.1 Psychological resilience

Psychological resilience refers to an individual's ability to adapt well, recover, and grow from stress, adversity, or trauma. For college students majoring in science and technology, those with weak psychological resilience find it difficult to maintain a positive attitude and overcome academic difficulties.

3.1.2 Learning strategies

The knowledge logic of science and technology majors is complex, and the effectiveness of learning strategies will directly affect students' learning outcomes. Learning strategies include learning plans, learning skills, time allocation, and resource utilization and other aspects. The effectiveness of learning strategies means that students can quickly find solutions to academic difficulties.

3.1.3 Self-consciousness and self-efficacy

Self-consciousness refers to an individual's level of understanding of himself, including his strengths, weaknesses, interests, abilities, etc. Self-efficacy is an individual's confidence and expectations in their ability to successfully complete tasks. In the face of academic difficulties, whether or not science and technology majors have a clear understanding of their abilities, as well as a strong belief in their own abilities determines the likelihood that they will be able to cope positively with their academic difficulties.

3.2 Family and social factors

3.2.1 Family environment

The family environment has a significant impact on college students' academic resilience. A warm and supportive family environment can provide emotional support and psychological comfort for students, helping them better cope with academic pressure. On the contrary, a cold and unsupported family environment may exacerbate students' academic difficulties.

3.2.2 Social support

In addition to family support, a broad social support network for college students majoring in science and technology can be established, which can provide students with academic assistance, emotional support, and psychological encouragement, thus helping them better cope with academic difficulties [2].

3.3 School and educational resource factors

3.3.1 School atmosphere and educational resources

From a school perspective, a positive, open, and inclusive school atmosphere can encourage students to face academic difficulties bravely and seek help and support. At the same time, schools, which provide educational resources such as libraries, laboratories, and online courses, can also provide students with more learning opportunities and resource support.

3.3.2 Academic tutoring and counseling services

The academic tutoring and counseling services provided by higher education institutions are very important for science and technology majors. These services can help students identify and solve academic difficulties, provide individualized learning plans and strategy tutoring, as well as psychological support and counseling.

4 Effective strategies for enhancing academic resilience of students majoring in science and technology

4.1 Personal level

From a personal perspective, students in science and technology majors often face heavy academic burdens and complex experimental projects. Therefore, they need to be equipped with good self-management skills, set clear learning goals for themselves, formulate reasonable learning plans, and then adhere to them. Through scientific time planning, students can allocate their time in study, rest, and leisure more effectively, avoiding last-minute cramming or overwork [3]. At the same time, it is crucial to maintain a positive learning attitude. Science and technology studies are often full of challenges. When encountering difficulties, students should maintain an optimistic attitude, be brave enough to face them, and actively seek solutions. In addition, it is advisable to develop a habit of self-reflection and regularly evaluate the effectiveness of their learning progress and methods, which can help them adjust learning strategies in a timely manner and ensure learning efficiency and outcomes. Personal efforts can ensure that science and technology students can better adapt to academic requirements, enhance their academic resilience, and achieve excellent academic results.

4.2 Family and school level

At both the family and school levels, enhancing the academic resilience of science and technology students requires close cooperation between both parties to create a supportive and motivating growth environment. As a strong support for students, families need to understand their children's academic progress, provide emotional support and understanding to avoid excessive pressure on students, and encourage children to maintain a positive attitude when facing academic difficulties. At the same time, parents should assist their children in developing reasonable learning strategies, supervise their implementation, and provide them with sufficient autonomy to cultivate their ability to solve problems independently. In terms of schools, a comprehensive academic tutoring system should be established, including learning skills training courses and academic counseling centers, to provide individualized learning support and guidance for students. Teachers should pay attention to each student's learning progress, identify learning difficulties and key points in a timely manner, and help students overcome difficulties through after-school tutoring, group discussions, and other methods. In addition, schools should also enrich educational resources, provide online learning platforms, open laboratories, etc., to meet the needs of students with different learning styles and ability levels. Through the joint efforts of families and schools, we aim to build a comprehensive and multi-level support system for students, effectively enhancing their academic resilience and promoting their all-round development.

4.3 Social and policy level

At the social and policy level, in order to effectively enhance college students' academic resilience in science and technology majors, the following measures can be taken. Firstly, the government and all sectors of society should increase investment in science and technology education, and improve the learning environment and conditions for college students in science and technology majors through financial support and resource construction. For example, the establishment of special funds, scholarships, and grants can not only motivate science and technology majors to actively participate in learning and research activities, but also reduce their financial burden. At the same time, policy makers need to pay attention to the curriculum design and teaching quality of science and technology education, promote educational and teaching reforms and ensure that the teaching content is in line with the actual needs of enterprises, so as to enhance

students' practical abilities and employment competitiveness [4]. In addition, the government and schools should strengthen school-enterprise cooperation, build industry-university-research platforms, and provide students with more opportunities for internships, practical training, and scientific research cooperation, so that they can deepen their theoretical knowledge and enhance their problem-solving abilities in practice. In terms of policy support, policies such as tax reduction and funding subsidies can be introduced to encourage enterprises to participate in the training of science and technology talents, forming a good mechanism for school-enterprise cooperation in education. Society should also strengthen the publicity of science and technology education and research work, improve public awareness and recognition of science and technology majors, guide students to choose science and technology majors according to their own interests and advantages. Through such comprehensive measures at the social and policy levels, the academic flexibility of science and technology students can be effectively enhanced, and more high-quality and versatile talents can be cultivated for the scientific and technological innovation and economic development.

5 Conclusion

In conclusion, the study on academic resilience of college students with academic difficulties in science and technology majors not only reveals their adaptation mechanisms when facing academic challenges, but also provides new ideas for improving education quality and promoting individual development. Through in-depth analysis, it is found that academic resilience is the result of multiple factors working together, and comprehensive measures need to be taken from multiple aspects such as individuals, families, schools, and society. In the future, the attention to this group should be continuously deepened, more precise and effective intervention strategies should be explored. At the same time, higher education institutions need to strengthen interdisciplinary cooperation and build a comprehensive support system, in order to provide more assistance to college students with academic difficulties in science and technology majors, thereby promoting students' healthy growth and comprehensive development, and contributing to the technological progress and talent cultivation of society.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

References

[1] Zhang J, Han Y, Yin P, et al. 2023. Prevention and assistance of academic difficulties for retired college students. *Chinese Journal of Multimedia and Online Teaching*, 2: 179-182

[2] Pei LY. 2021. How to effectively intervene in academic difficulties caused by psychological disorders among college students: a case study of college counselors' work. *Psychology Monthly*, 16(18): 205-206+230.

[3] Zhou Y, Wang XL. 2021. Qualitative study on the influencing factors and development process of academic difficulties among college students. *Campus Psychology*, 19(02): 111-114

[4] Xu YT. 2018. Research on the causes of academic difficulties among college students and precise assistance strategies. *Western Quality Education*, 4(21): 165-166.