A Decade of Research on Learning Difficulties among University Students: Review and Prospects from a Multidimensional Integrative Perspective (2016–2026)

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Abstract: Amid the intersecting trends of universal access, digitalization, and internationalization in higher education, learning difficulties among university students have become increasingly prominent, posing a substantial constraint on educational quality and individual development. This paper systematically reviews relevant Chinese and international research from 2016 to 2026 and develops a multidimensional analytical framework encompassing types of difficulties, influencing factors, intervention strategies, and future research directions. The review finds that, over this decade, scholarly understanding of learning difficulties expanded from a conventional focus on individual psychological and cognitive deficits to a systematic examination of multiple complex factors, including online learning ecosystems, linguistic and cultural adaptation, disciplinary characteristics, and technological interventions. Research priorities evolved from describing phenomena and analyzing causes to implementing interventions. Nevertheless, gaps remain in longitudinal tracking, cross-cultural comparison, the assessment of long-term intervention outcomes, and the substantive integration of emerging technologies. Future research should develop dynamic monitoring and preventive support systems, strengthen evidence-based intervention practices, and use the principle of inclusion to guide innovation in the integration of technology and education, thereby fostering high-quality and equitable learning environments.

***Keywords*:** learning difficulties; online learning; cultural adaptation; psychological and cognitive factors; intervention strategies; educational technology

1. An Overview of Learning Difficulties among University Students

1.1 Conceptualization and Manifestations

1.1.1 Defining Learning Difficulties

Learning difficulties among university students refer to persistent difficulties encountered during learning by students with intellectual functioning in the normal range. These difficulties may arise from psychological, cognitive, environmental, cultural, technological, or other factors. Compared with learning difficulties in basic education, learning difficulties among university students place greater emphasis on dysfunctional interactions between individuals and their environment within the specific, complex setting of higher education, which demands a high degree of autonomy. Synthesizing scholarly perspectives, learning difficulties among university students can be defined as follows: a university student has intellectual functioning in the normal range and no sensory impairments but experiences substantial difficulties in acquiring, organizing, understanding, or applying disciplinary knowledge and skills, resulting in academic performance that consistently falls below expectations based on their potential. These difficulties are not primarily caused directly by external factors such as socioeconomic status, differences in the language of instruction, or a lack of educational opportunities, but result from interactions among multiple factors, including individual psychological characteristics, cognitive strategies, and the learning environment[1,2].

1.1.2 Manifestations

Learning difficulties among university students manifest across intertwined academic, behavioral, and psychological dimensions. Poor academic performance: This is the most direct manifestation. Students may experience persistent difficulties in specific subjects, such as advanced mathematics and foreign languages, or in general academic tasks, such as academic writing and complex problem-solving. Their characteristics include a lack of depth and criticality in thinking, avoidance of tasks requiring higher-order cognitive abilities, low learning engagement, mechanical learning methods, weak metacognitive abilities, and difficulty planning, monitoring, and adjusting their own learning processes. Pronounced psychological and behavioral problems: These include insufficient motivation to learn, low self-efficacy, academic anxiety, and severe procrastination. Some students may experience difficulty adjusting to university, manifested in social withdrawal and low

mood, or develop behavioral problems such as aggression and hostility following repeated setbacks[3]. Negative self-concept and attributional patterns: Persistent learning difficulties undermine self-esteem and lead to low self-evaluations. These students often attribute academic failure to stable, uncontrollable internal factors, such as a lack of ability, while attributing success to external factors, such as luck, thereby developing learned helplessness. International research presents a similar picture: a meta-analysis of 59 studies by Zhou et al. found that metacognitive beliefs and metacognitive regulation were significantly associated with passive procrastination[4]; a systematic review and meta-analysis by Sheldon et al. showed that mental health problems were prevalent among university students and that anxiety and depression substantially undermined learning engagement[5]; and, using data from the World Health Organization World Mental Health International College Student (WMH-ICS) surveys, Auerbach et al. further found that common mental disorders frequently emerged during the critical period around university entry and were closely associated with impaired academic functioning[6].

1.2 The Need for Remediation and Intervention

Effectively preventing, addressing, and remediating learning difficulties among university students requires a systematic endeavor with implications for both individual development and educational quality. Its necessity lies in the following: Promoting holistic individual development: Helping university students overcome learning difficulties, regain confidence, realize their academic potential, and achieve healthy personality development. Improving the quality of higher education: Identifying and supporting students with learning difficulties is essential to ensuring equity in educational processes and improving the overall quality of student development. Responding to contemporary challenges: Changes in higher education, such as the widespread adoption of online teaching, have introduced new barriers that urgently require systematic support strategies.

2. Causes of Learning Difficulties among University Students: An Analysis Based on Ecological Systems Theory

Learning difficulties among university students arise from multiple factors operating through interactions between individuals and the university environment. These factors can be broadly classified into the following three categories:

2.1 Individual Factors: Learners' Internal Foundations

Psychological and motivational systems: A lack of motivation for deep learning, low self-efficacy, and maladaptive achievement goal orientations, such as an excessive emphasis on performance avoidance, are central determinants of learning persistence[7]. Emotional problems such as anxiety and depression can substantially deplete cognitive resources and impair learning outcomes[8]. Cognitive and metacognitive strategies: Inadequate metacognitive abilities, namely weak capacities to plan, monitor, and regulate one's own learning processes, are a key contributor to inefficient learning[1]. Students may rely on rigid learning methods and struggle to use effective cognitive strategies such as elaboration and organization. Prior knowledge and adaptability: Weak foundations in disciplinary knowledge, insufficient language proficiency, particularly among ethnic minority or international students, and difficulty transitioning from passive receptive learning to the autonomous, inquiry-based learning required at university all constitute barriers to learning[9]. A systematic review by Honicke and Broadbent on the relationship between academic self-efficacy and academic performance found that self-efficacy was among the most consistent psychological predictors of academic achievement[10]; a systematic review of meta-analyses by Schneider and Preckel on variables associated with achievement in higher education further showed that ability-related and motivational variables jointly constituted the central explanatory pathways for academic achievement[11].

2.2 Instructional and Environmental Factors: The Mediating Processes and Settings of Learning

Teaching approaches and curriculum design: Traditional teaching dominated by one-way lecturing, insufficient interaction in online teaching design, outdated course content disconnected from practice, and limited assessment methods are important external contributors to low student engagement and difficulties in understanding[12,13]. Kahu and Nelson noted that student engagement emerges from interactions between individuals and institutions within the "educational interface," and that its emotional, cognitive, and behavioral dimensions are directly shaped by the organization of teaching[14].

Academic support systems and resources: The absence or limited accessibility of support services, including academic tutoring, psychological counseling, and career planning, inadequate digital library resources, and poor user experiences on learning platforms create barriers associated with inadequate learning support[15,16]. Crucially, the "existence" of support services does not necessarily mean that they are "accessible." Reducing the psychological barriers that prevent students from seeking help is a practical issue that must be addressed when developing support systems.

Campus culture and peer relationships: An excessively competitive or indifferent and alienating campus atmosphere,

together with negative peer relationships, such as social exclusion, can intensify students' psychological stress and weaken their sense of belonging and motivation to learn[17]. A longitudinal study by Kelly et al. confirmed that a sense of belonging influenced students' intentions to persist through academic enjoyment and motivation, making it a key mediator of the relationship between campus climate and academic performance[18].

2.3 Technological and Social Factors: Influences of the Broader Context

Technological access and literacy: The digital divide, including disparities in internet access and devices, and insufficient technological literacy place some students at a disadvantage in digital learning environments[19]. Poorly designed technological tools may instead increase cognitive load. International evidence from a systematic review of self-regulated learning strategies in online higher education indicates that the extent to which students use goal-setting, time management, and self-monitoring strategies significantly predicts online academic achievement[20]; Wong et al. further noted that learning platforms designed without support for self-regulation can leave learners caught in an "intention–behavior gap"[20].

Social expectations and family support: Excessively high expectations or insufficient support from families and society, along with employment-related pressure experienced early in university life, can profoundly influence university students' attitudes toward learning.

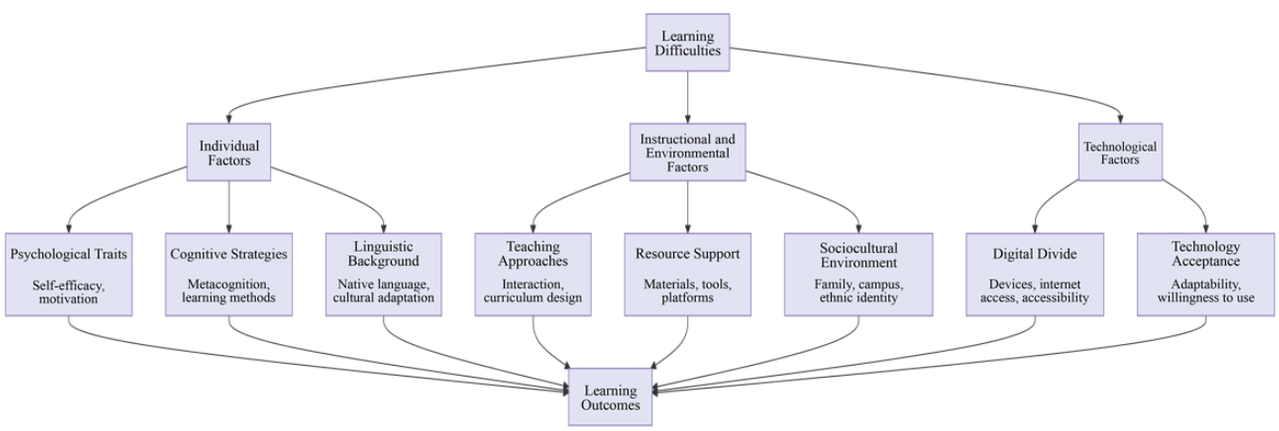

Figure 1. A Model of Factors Influencing Learning Difficulties among University Students

3. Research on Learning Difficulties among University Students in China: An Examination of Key Variables

A review of the literature over the past decade (2016–2026) reveals that research in China has extensively examined a range of variables related to learning difficulties among university students and generated substantial findings. Overall, these variables can be grouped into several key strands: psychological traits, cognitive strategies, online learning environments, cultural adaptation, technological support, and the characteristics of disciplines and courses.

3.1 Psychological Traits and Learning Difficulties

Numerous studies have confirmed significant associations between learning difficulties among university students and psychological traits such as learning motivation, self-efficacy, attributional style, and resilience. For example, empirical research has identified insufficient learning motivation as the primary internal cause of academic difficulties among students at private higher education institutions[21]. Research by Wang Yingli et al. showed that improving self-efficacy through group counseling could effectively improve students' learning[7]. In addition, different types of institutions and student populations exhibit distinct characteristics: psychological barriers to learning among students at private higher education institutions have pronounced behavioral manifestations. Regarding procrastination as a typical manifestation, meta-analytic evidence on the relationship between metacognition and academic procrastination indicates that deficiencies in metacognitive beliefs and metacognitive regulation are important sources of passive procrastination[4].

3.2 Cognitive Strategies and Learning Difficulties

Research by Zhou Xiaoqin et al. indicated that university students with learning difficulties lagged significantly behind high-achieving students in their use of metacognitive and resource management strategies[1]. They struggled to develop

learning plans, monitor their learning progress, and adjust their learning methods. International intervention research provides related evidence: a meta-analysis by de Boer et al. showed that metacognitive strategy instruction had significant long-term effects[22]; Dignath and Veenman further confirmed that both direct strategy instruction and indirect strategy activation could effectively improve self-regulated learning[23].

3.3 Online Learning Environments and Learning Difficulties

This area has become a major research focus in the post-pandemic era. Research by Han Dan et al. revealed how insufficient teacher–student and student–student interaction constrained online learning outcomes[24]. Gu Tianqi, Liu Liangxing, and others emphasized the crucial roles of time management and self-discipline in asynchronous learning environments[25,26]. International research presents a similar picture: Adedoyin and Soykan revealed the underlying challenges of emergency online learning in terms of accessibility and instructional organization[27].

3.4 Cultural Adaptation and Learning Difficulties

Studies of ethnic minority university students show that pressure associated with trilingual acquisition and conflicts in cultural adaptation are central contributors to academic difficulties[28]. Research by Yuan Xiaonan et al. further called for the development of cross-cultural support systems[29]. Related research has also strengthened the explanatory power of the cultural adaptation perspective by examining, among other issues, the mechanisms through which academic difficulties develop using grounded theory[30]. International literature provides a cross-cultural point of reference: Mao et al. noted that international students' linguistic, cultural, and academic adjustment were intertwined and verified a significant association between cultural adaptation and academic adjustment in the context of Chinese higher education institutions[31].

3.5 Technological Support and Learning Difficulties

He Xin, Xu Juan, and others have examined the importance of accessible learning environments for university students with disabilities[32,33]. Sun Xinlu et al. explored the potential applications of AI technologies in the early prediction of and intervention for psychological disorders, representing a new research direction[3]. Internationally, Moriña noted that inclusive education continued to face institutional and cultural barriers in higher education[34]; Schreffler et al. demonstrated that Universal Design for Learning (UDL) could substantially reduce barriers to learning for students with disabilities, offering an actionable approach to developing accessible learning environments[35].

3.6 Language Courses and Learning Difficulties

Among all disciplinary areas, language courses, particularly English, account for the greatest concentration of research on learning difficulties among university students in China. Existing research indicates that difficulties in English learning among university students occur at multiple levels: at the skills level, characteristic difficulties have been identified in listening, speaking, reading, writing, and translation; at the psychological level, feelings of inferiority, frustration, and an attitude of merely getting by significantly inhibit learning engagement[36]; at the cultural level, barriers to comprehension arising from differences between Chinese and Western cultures cannot be overlooked[37]. Because ethnic minority university students must undertake "trilingual decoding" across their native language, the national common language, and a foreign language, their difficulties have a pronounced cumulative character[9]. Recent studies have continued to call for differentiated language support systems[28,38].

3.7 Disciplinary and Specialized Courses and Learning Difficulties

Beyond language courses, learning difficulties in disciplinary and specialized courses in science, engineering, the arts, and physical education have also attracted attention. Mathematics has been identified as a subject with a high incidence of learning difficulties; chemistry courses exhibit pronounced learning difficulties because of their highly abstract content and demanding prior knowledge requirements[39]. Psychological barriers in physical education courses, such as swimming, together with barriers to developing curricular resources for inquiry-based learning, indicate that disciplinary characteristics are an important contextual variable in the emergence of learning difficulties[40,41].

4. Developing Intervention Strategies and Support Systems: From Remediation to Development

Drawing on an in-depth understanding of the causes, research has proposed multilevel intervention approaches ranging from the micro to the macro level.

4.1 Interventions in Teaching and Curriculum

Innovating teaching approaches: Blended learning, flipped classrooms, and PBL-based instruction should be actively promoted to increase student engagement and opportunities for practical experience[13]. A systematic review by Regmi and Jones of the factors facilitating and hindering digital learning in health sciences education indicates that interaction design, learner motivation, and technological ease of use are the three principal factors determining online learning outcomes[37].

Enhancing curriculum design: Emphasis should be placed on providing learning scaffolds and integrating learning strategy training into subject-specific instruction. Differentiated instruction should be implemented to address students' diverse learning needs. International experience indicates that explicitly embedding strategy training in subject-specific instruction is a key approach to improving the transferability of interventions[22].

4.2 Interventions in Support Systems

Strengthening support institutions: Universities should establish student support centers that integrate academic tutoring, psychological counseling, career guidance, and special education support to provide one-stop services[15]. Qualitative research indicates that institutional barriers and the absence of support are more decisive than individual difficulties[39].

Providing targeted assistance: Dedicated support programs should be established for particular groups, including ethnic minority students, students experiencing financial hardship, and students with disabilities[38].

Building collaborative networks: Communication between families and universities should be strengthened, and community resources should be mobilized to coordinate educational efforts[2].

4.3 Interventions in Individual Capacities

Strengthening learning strategy training: Learning workshops should be offered to provide focused training in metacognitive strategies, time management, note-taking skills, and related areas[1]. Theobald's meta-analysis[39] of self-regulated learning training programs confirms that such training can simultaneously improve university students' academic achievement, strategy use, and learning motivation.

Providing psychological counseling and guidance: Group counseling, individual counseling, and mindfulness training should be offered to help students manage emotional difficulties and enhance psychological resilience[8,40]. Mindfulness-based interventions have also demonstrated positive outcomes: a randomized controlled study by Sampl et al. indicates that mindfulness-based self-leadership training can significantly reduce students' stress levels and improve their learning performance[41].

Offering attribution retraining and career planning: Students should be guided toward positive attributions and encouraged to connect their current learning with their future career development to stimulate intrinsic motivation.

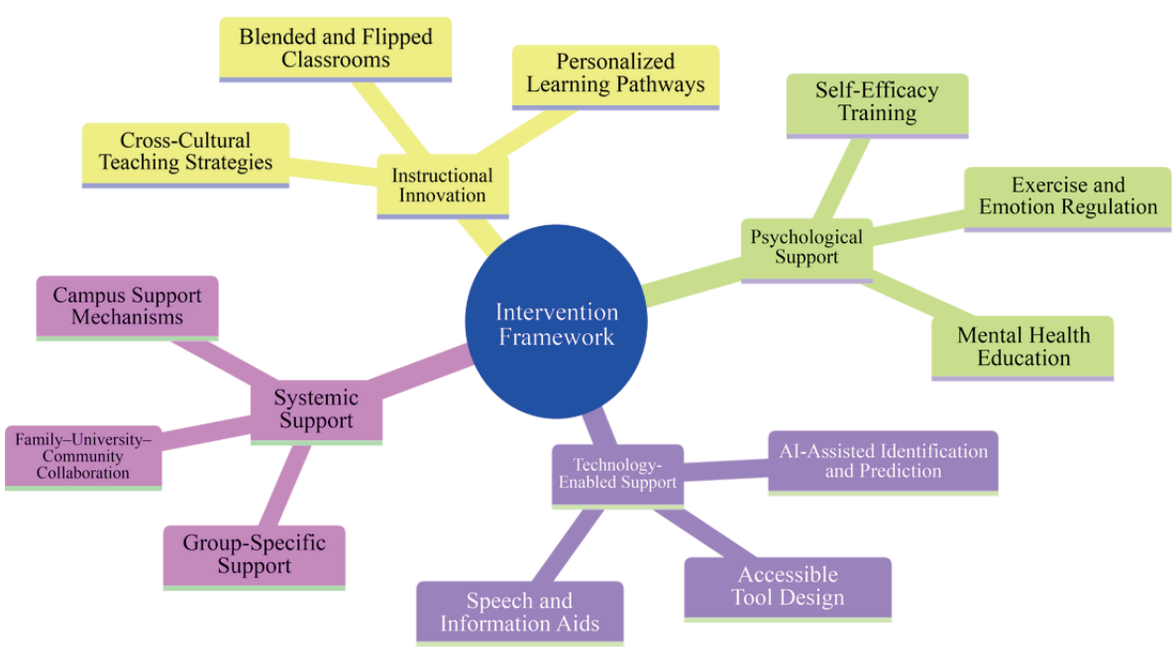

Figure 2. Framework of Intervention Strategies for Learning Difficulties among University Students

5. Future Research Directions

Although research has made significant progress over the past decade, many areas still require further investigation.

5.1 Advancing Research Paradigms

From cross-sectional studies to longitudinal follow-up: More long-term follow-up studies are needed to reveal the dynamic developmental trajectories of learning difficulties and the long-term effects of interventions.

From correlational analysis to causal investigation: Experimental and quasi-experimental research should be strengthened to provide higher-level evidence for the effectiveness of interventions. In this regard, meta-analyses of self-regulated learning training studies have already provided experimental design paradigms that can serve as references[39].

From single-disciplinary approaches to interdisciplinary integration: Close collaboration among education, psychology, cognitive science, computer science, sociology, and other disciplines should be encouraged to address these challenges jointly.

5.2 Expanding the Scope of Research

Focusing on the prevention and early identification of difficulties: Research should shift toward earlier stages by developing big data-based early warning systems, enabling a transition from remediation to prevention. Internationally, learning analytics has developed relatively mature technological approaches: a systematic review by Ifenthaler and Yau indicates that learning analytics can significantly improve the accuracy of predictions of academic success[42]; Bañeres et al. developed an early warning system for academic risk in online higher education, providing a methodological reference for related research in China[43].

Advancing research on technology-enabled support: The applications and ethical boundaries of emerging technologies, such as artificial intelligence, learning analytics, and virtual reality, should be actively explored in areas including personalized diagnosis of learning difficulties and adaptive learning support. A systematic review by Zawacki-Richter et al.[44] of artificial intelligence applications in higher education indicates that existing research predominantly focuses on teaching administration and assessment, with markedly insufficient attention to the diagnosis of and support for learning difficulties. However, a meta-analysis by Zhang et al.[46] focusing on students with disabilities has confirmed that artificial intelligence interventions have a moderate positive effect on learning outcomes. Memarian and Doleck[45] also emphasize that fairness, accountability, transparency, and ethics (FATE) are unavoidable considerations in defining the boundaries of technological intervention.

Strengthening cross-cultural comparative research: In the context of internationalization, research should compare similarities and differences in university students' learning difficulties across cultural settings and draw on advanced international experience.

5.3 Advancing Practice

Promoting systemic student-centered reform: Universities should make supporting students' academic development a core mission and systematically improve curricula, teaching, assessment, and support services.

Enhancing teachers' capacity to identify difficulties and provide support: Knowledge of the learning sciences and special educational needs should be incorporated into teacher training systems, enabling teachers to guide and support students' learning effectively.

Building a smart educational support ecosystem: Technology should be used to create personalized, intelligent, and inclusive learning support environments that truly serve students' development.

6. Conclusion

Looking back over the decade from 2016 to 2026, research in China and internationally on learning difficulties among university students has made substantial progress in both breadth and depth, shifting from a focus on individual deficits toward the development of supportive ecosystems. Looking ahead, research and practice in this field should become more forward-looking, integrated, and action-oriented, with a commitment to transforming universities into communities of development capable of identifying and understanding the needs of every learner and effectively supporting them in overcoming difficulties and realizing their potential. This is not only an essential route to improving the quality of higher education but also an important expression of educational equity and holistic human development.

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