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Social Mobility and Factors Influencing Academic Achievement among Undergraduate Students in Shandong, China

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Abstract

The poor academic achievement of students has caused a crisis, which has affected their reputation and requires mitigation to achieve high student excellence. In China, students at the University of Jinan and the Qilu University of Technology in Shandong have experienced poor academic achievement, which is attributed to a lack of social mobility, educational inequality, and inadequate utilisation of digital technologies, resulting in subpar academic outcomes. This study investigates the social mobility and factors influencing academic achievement among undergraduate students in Shandong, China. This study employed a case study design, targeting a location of the University of Jinan and the Qilu University of Technology in Shandong, China. The research employed a case study design, focusing on the University of Jinan and the Qilu University of Technology. The researcher conducted interviews with 20 participants (ten from each university) to assess the academic achievement of students. The participants included students (aged 16-40) from both universities. Data was collected through interviews, observations, and document analysis, and analysed using NVivo version 12 software. The results confirmed that students face challenges due to poor social mobility, which negatively impacts their academic achievement. Furthermore, education inequalities have a profound impact on educational outcomes. The improved leveraging of digital technologies has a significant impact on academic achievement, thereby enhancing students' digital literacy and skills. In conclusion, enhancing social mobility and addressing education inequalities have helped boost students' academic achievement and lessen teachers' challenges in guiding the learning process. Enhancing the leveraging of digital technologies has significantly contributed to the development of students' academic achievement, having a positive impact on both students and teachers. This study fills a gap identified in previous research, thereby contributing to the existing body of knowledge and supporting the academic achievement of students in China.

Keywords: Social Mobility, Education Equality, Leverage Digital Technology, Academic Achievement, Shandong

Introduction

Education is essential for pursuing social justice because it equips individuals with the skills and knowledge necessary for personal and societal advancement (Anirudha & Rupali, 2024). It helps to increase the catalyst for breaking the cycle of poverty, offering pathways to better employment and economic stability, and fostering social cohesion by promoting understanding and inclusivity (Liu, Cao & Zhang, 2023). Students face challenges that lead to poor academic achievement, hindering their future career pathways. However, these issues associated with student academic achievement result from educational equality, social mobility, and lack of leveraging digital technology, thereby creating menace for the student's academic welfare, reducing the lecturer's flexibility and responsibility to work efficiently and promoting students' academic achievement among undergraduate students (Mulvey & Li, 2023; Liu, Colak & Agirdag, 2024; Shen & Zhang, 2024). Based on the statistics proved that there is a massive decline in academic achievement among undergraduate students in Shandong, China, recorded from 42.8% to 30.1%, which emanated from a lack of education equality, poor social mobility, and inadequate leveraging of digital technologies to capture the students' capacities towards achieving academic excellence (Mulvey & Li, 2023; Liu et al., 2024; Shen & Zhang, 2024). These issues contribute to the high rate of unemployment, reduced living standards, and negatively influence productivity, as well as the economic and social opportunities of students (Lei, 2023). In 2024, around 37.75 million undergraduate students were enrolled in degree programs in China's public colleges and universities (Avsec et al., 2023). These further proved that there is a high stake in enhancing education quality and giving opportunities for students to develop skills and knowledge. Reduces the rate of poor social mobility, allowing low-income students to acquire skills that improve their lives. They were improving digital technologies to enhance students' capacity to learn and transform their knowledge and skills, thereby improving future career opportunities and pathways (Huang & Xu, 2024; Gui & Alam, 2024). A study by Li and Cao (2023) revealed that poor social mobility minimises students' capabilities to excel in their academic achievements, thereby reducing their chances of improving future career paths. Education inequality has impacted the overall perception of fairness and diversity among students during their learning, as they agree that every student needs to access quality education without discrimination (Wang, 2024). A study by Liu, Colak, and Agirdag (2024) affirms that a lack of fairness and mobility reduces the rate of student academic achievement, thereby inflaming their future with an unhealthy standard of living. It was further agreed that these issues would not only create disparities in students' minds but also create a vacuum of inequality that might affect their well-being during career progression. Lyu, Chi, and Zheng (2024) systematically reviewed e-learning, m-learning, and d-learning. It revealed that electric learning (e-learning) and mobile learning (m-learning) are generally sub-sets of digital learning (d-learning) that help students excel in their academic pursuits. They also mentioned that technology-focused learning systems are electric, mobile, and digital. They are essential in teaching and enhancing students' capabilities to capture the required skills and knowledge for better academic achievement.

Poor academic achievement has been a significant issue that negatively impacts students' future career paths due to limited access to quality education, discrimination among students, inequitable selection processes, and a lack of required skills by both lecturers and students to excel in academic pursuits (Liu, Cao & Zhang, 2023). Globally, these issues, including poor quality of education, diversity, and equality, have created considerable

concern (Luo, Chen, Yu & Zhang, 2023). Various European and Asian countries are affected, which has gradually reduced adequate student achievement among undergraduate students, posing a danger to future career opportunities (Luo et al., 2023; Li, Chan, & Hu, 2023; Liu et al., 2024). In China, undergraduate students face poor academic achievement as a significant challenge resulting from a lack of educational equality, limited social mobility, and inadequate utilisation of digital technology to foster a quality learning process for students (Gui & Alam, 2024). Based on the findings generated from the empirical and statistical data, it revealed that there has been a vast decline in students' academic achievement in the past five (5) years, as recorded from 2020 (42.8%) to 2024 (30.1%), due to poor education equality, lack of sustainable social mobility, and inadequate leveraging digital technology for undergraduate students, and which has reduced the achievement rate, create enormous emotional stress, anxiety and create fears of employment in their future (Mulvey & Li, 2023; Liu et al., 2024; Shen & Zhang, 2024). Social mobility is essential for promoting students' academic excellence (Mulvey & Li, 2023). Poor access to quality education, which hinders students' ability to foster self-esteem, and the lack of social and cultural capital have created a significant issue, preventing students from excelling in their academic activities (Bao, Li & Zhao, 2023). Various empirical studies have shown that poor academic achievement stems from financial constraints, leading to an inability to access quality education and create value for future career growth. They also emphasised that students' background and status significantly reduce their chances of acquiring such skills and knowledge, posing a threat to their future job prospects (Li & Cao, 2023; Yang, 2024). The researcher tends to investigate the influence of education equality on academic achievement among undergraduate students in Shandong, China, by extensively addressing the gap relating to inadequate social mobility that emphasises poor access to quality education, inability to acquire skills and knowledge, social and cultural capital implications, and financial constraints, thereby making it difficult for students to instil confidence in themselves for continuously improving their academic excellence and activities that will help to eradicate the poor social mobility and promote academic achievement for undergraduate students. Equality is a crucial attribute of a high-quality education system, helping to nurture and promote students' academic achievement (Wang, 2024). In situations of inequality, they tend to yield unhealthy outcomes, leading to student bias and disruption (Song, 2023). However, many undergraduate students in Shandong, China, have expressed significant concerns about inequality in access to education, which has impacted their perception of their peers' achievements. Students have noticed the segregation of rural and urban areas as a form of discrimination, emphasising that this discrimination and poor standards have marginalised rural areas due to poverty, and recognised the advantages of urban areas (Liu et al., 2024). Despite the students' involvement and participation, the education system exhibits inequality and discrimination in its selection and recognition processes. This tends to create a monster in the mindset of Undergraduate students in Shandong, China (Tang, 2023). Still, some students feel and experience marginalised and discriminated against due to their background, status, and financial strength in accessing quality education. These education system policies have crippled the rural students' academic success rate (Li & Xue, 2022). The researcher tends to investigate the influence of social mobility on academic achievement among undergraduate students in Shandong, China, by diligently addressing the gap relating to education equality that deals with discrimination between gender disparities, disparities in resource allocation, rural and urban segregation due to regional quota allocation and diversity challenges, thereby making it problematic for students to trust and believe in the academic system process to provide

continuously improving suitable recommendations that will help to eradicate the education inequality among undergraduate students, to yield a high level of academic achievement. Leveraging digital technologies helps promote the sustainability of undergraduate students, enabling them to acquire skills and learn effectively, thereby improving their academic excellence (Li & Christophe, 2024). A lack of awareness about digital technology among students results in low commitment and engagement, leading to unproductive academic activities (Lyu et al., 2024). Students have faced various challenges in adopting digital technologies, which can distort their awareness and success rate (Zhou et al., 2023). Leveraging digital technologies is helpful for so many student-created class assignments and projects. Still, they are beneficial for lecturers to create a course syllabus, make visuals for the classroom, or create a flipped lesson and display all the learning materials in one graphic (Pang et al., 2023). The researcher tends to explore the influence of leveraging digital technology on academic achievement among undergraduate students by addressing the gap concerning the poor leveraging of digital technology that affects the quality of education of students, cultural resistance to change, lack of technical talent, integrating legacy systems, data privacy issues, ensuring student agility and adaptability, thereby making it difficult for the students to excel, build and strengthen the digital technology to leverage in the pursuit of enriching their studies quality education towards academic achievement. In this study, the researcher seeks to explore the influences of social mobility, education equality and leveraging digital technology among undergraduate students in Shandong, China, by extensively addressing the gap relating to inadequate social mobility erupted from poor access to quality education, the inability of students to acquire skills and knowledge, poor social-cultural capital and financial constraints, discrimination between gender disparities, disparities in resource allocation, rural and urban segregation due to regional quota allocation and diversity challenges, cultural resistance to change, lack of technical talent, integrating legacy and data privacy issues, facilitating student agility and adaptability, thereby making it problematic for students to trust and believe in the academic system process to provide continuously equal quality education, reduce the biases and disparities among students, cultural resistance to change and facilitate the agility and adaptability of students for digital integration by improving suitable recommendations that will help to eradicate the poor access of education, education inequality, and lack of skills to integrate digital learning among undergraduate students, to yield a high level of academic achievement. Based on the researcher's knowledge, limited studies and literature have hindered social mobility, education equality, and leveraging digital technology toward academic achievement. The novelty lies in examining how social mobility, educational equality, and digital technology jointly influence academic achievement among undergraduate students in Shandong, China. Contributions include identifying digital technology as a mediating factor that can either enhance or mitigate disparities caused by unequal social background and providing a localised analysis of how these forces interact to impact student outcomes. This research contributes to a more nuanced understanding by moving beyond traditional analyses to explore the complex, synergistic relationships between socioeconomic status, equitable access, and the leverage of digital tools in a developing region. Therefore, the researcher aims to investigate the social mobility and factors influencing academic achievement among undergraduate students in Shandong, China.

Literature Review

Academic Achievement

Academic achievement refers to the outcomes that indicate how well a student has achieved their learning goals (Sun et al., 2024). It may include completing educational milestones, such as earning a bachelor's degree. Academic achievement is often measured through exams or continuous assessments. It reflects the progress made in acquiring educational skills, knowledge, and resources across various disciplines (Gui & Alam, 2024). It specifically relates to success in academic settings rather than general knowledge gained outside of school. Academic achievement influences a student's self-concept by shaping how they perceive themselves and how others see them. It also affects the time and energy a student can devote to social activities, which, in turn, affects their social interactions and sociability. Lei et al. (2023) noted that academic achievement is influenced by numerous factors. He reports that exam grades can make a significant difference to a student. According to Jin (2024), academic achievement measures how well a student, lecturer, or institution has met their short-term or long-term educational goals. Completing educational milestones, such as earning a university diploma or a bachelor's degree, signifies substantial academic achievement. This achievement impacts students' current and future lives, highlighting their productivity and capabilities (Lin & Wang, 2024). Students learn accounting concepts and principles to develop analytical skills, language proficiency, business knowledge, and competence in information and communication technology, while also fostering higher education values (Bao et al., 2023; Sparfeldt & Schwabe, 2024). However, other researchers confirm that students' academic achievement is a "net outcome" of both cognitive and non-cognitive attributes (Guo et al., 2023). According to Harpaz, Vaizman and Yaffe (2024), assignments offer opportunities for self-learning and self-regulated learning, promoting academic achievement, better time management, and a supportive learning environment that keeps students focused. A study by Zhao, Liu, and Li (2023) found that teaching quality positively impacts students' achievement, reflecting their human capital development and their ability to succeed in the global market. Additionally, teamwork and brainstorming help improve students' achievement and prepare them for their future careers.

Social Mobility

Social mobility is a vital aspect of the educational experience for students with disabilities, as it demonstrates how much students feel they belong and can participate in the academic community (Xie, Dong, Zhou & Song, 2022). It is also another key aspect of the educational experience for these students (Yu, Cheng & Xu, 2022). Inclusive education is a fundamental principle that ensures all students have equal access to learning opportunities, regardless of their physical, sensory, cognitive, or emotional abilities. When working in inclusive settings, such as classrooms and universities, questions arise about how university-level mobility outcomes can be effectively implemented. In a different study, Li and Cao (2023) examined four main themes of social participation identified by Lo, Li and Tan (2023): contacts/interactions, acceptance by classmates, social friendships/relationships, and perceptions of acceptance. They found that students with special educational needs often feel isolated and have fewer friendships with their classmates than students without such needs. Previous research indicates that students with vision impairment may face significant social challenges at university, including a lack of positive social interactions with sighted classmates and lecturers (Chen & Wu, 2022) and limited participation in university activities (Yu, Cheng & Xu, 2022). Some Chinese universities are using social interaction to promote

communication and social engagement among students. These interaction strategies help students handle social situations by providing support that encourages interaction. Building social connections through social mobility can help students with disabilities feel more included on campus and reduce their sense of isolation (Chen & Bhuiyan, 2023). Additionally, social mobility and interactions support students with disabilities in navigating academic and social environments effectively. This social inclusion helps students manage their schedules, organise coursework, and communicate with peers and faculty, thereby reducing barriers to both social and academic engagement.

Education Equality

Inequality refers to the unequal distribution of resources, opportunities, and privileges within a society (Wang, 2024). This unevenness can manifest in various forms, including economic inequality (disparities in wealth or income), social discrimination (based on race, gender, or ethnicity), and political unfairness (disproportionate access to power and representation). Such disparities have a significant impact on individuals and society, creating divisions between social classes and causing unrest as efforts are made to reform the systems that sustain these inequalities. Additionally, those disadvantaged by inequality often need extra resources or opportunities to reach their full potential. People from socioeconomically disadvantaged backgrounds frequently require access to the same educational resources as their more affluent peers (Liu et al., 2024). This means that minority students from different economic backgrounds may not have equal access to high-quality instruction or educational materials. Typically, students in affluent neighbourhoods receive more funding for educational supplies, resources, and teachers compared to those in low-income areas. As a consequence, white students with higher socioeconomic status are often exposed to better facilities, lower dropout rates, more educational options, higher salaries, and advanced instruction than Black students. Disparities based on race and gender also play a crucial role in access to quality education (Shen, 2023). These can range from unfair treatment within classrooms to insufficient funding for school supplies and resources tailored to specific demographics. Everyone deserves access to the education they need; anything less falls short of societal standards. It is widely recognised that social and economic inequalities can disproportionately hinder a student's access to quality education. Inequitable school finance systems tend to harm minority and economically disadvantaged students more heavily. Education inequality is a complex issue that governments and nations have struggled to address with limited success (Li & Xue, 2022).

Leverage Digital Technology

Education is the most vital sector for achieving the Sustainable Development Goals (SDGs), where digital technology can play a crucial role. Today, digital technology has become an essential part of the learning environment. Integrating technology into education aims to improve education by 2030 (Lin & Wang, 2024). Utilising digital technology enables access to tools that transform traditional learning into a modern, digital system (Anirudha & Rupali, 2024). Digital technology provides an opportunity to bridge the gap between traditional methods and modern learning approaches, serving as an inclusive factor that supports human rights and dignity (Ding & Wu, 2024). In education, digital technology generally refers to a model that uses information and communication technology (ICT) to support, enhance, and facilitate teaching. It involves individuals or a combination of various digital devices for better learning outcomes. Key indicators of leveraging digital technology in education include

political commitment, curriculum development, infrastructure, teacher development, public participation, skills acquisition, outcomes, and impact (Huang & Xu, 2024). According to Lee et al. (2023), a digital learning environment can enhance capacity, creativity, collaboration, autonomy, and personalisation. It also promotes interaction focused on learning and fosters creative thinking. Xia (2023) argues that technology can quickly transform traditional lecture-based teaching into a modern digital learning environment. Several theories have been developed to digitalise learning and education systems. "Technological change is a constellation of what is chosen and what is not chosen; what is foreseen and what cannot possibly be foreseen; what is desired and what is not." The learning environment is crucial for effective learning, primarily depending on the learner and the techniques employed. Interaction between teachers and students is vital for better learning, promoting a learner-centred model. This study is primarily guided by a technology-focused, learner-centred system framework. Learning power theory is also referenced to shape the research. The learner-centred approach emphasises adapting technology to improve human learning processes (Avsec et al., 2023; Chen, 2024). Lyu et al. (2024) systematically reviewed e-learning, m-learning, and d-learning, revealing that electronic learning (e-learning) and mobile learning (m-learning) are generally subcategories of digital learning (d-learning). They also noted that technology-based learning systems include electronic, mobile, and digital learning, which play vital roles in teaching and learning. Li et al. (2024) examined the use of technology in education, focusing on educational delivery methods. They found that technology is essential for transforming an input-based education system into an outcome-based system. Shen and Zhang (2024) conducted a systematic review of ubiquitous learning, concluding that it is an effective learning paradigm. Jiang et al. (2024) analysed technology-implemented student learning practices and noted that while technology-integrated learning is suitable for students, the implementation of software poses challenges for a fully integrated system approach.

Theoretical Framework

The present study focuses on the social mobility and factors influencing academic achievement among undergraduate students in Shandong, China. This study further elaborates on the influence of social mobility, education equality, and leveraging digital technology on academic achievement. Hence, this study supports the development of three theories to promote undergraduate students in Shandong, China. Figure 1 depicts as following:

Boudon's Positional Theory	**Conflict Theory**	**Institutional Theory**
⬇	⬇	⬇
Education Opportunities	Access to Education	Adaptation & Agility.
Status	Curriculum Equality	Infrastructure
Less Affluent Families	Fairness	Legacy System
Cultural Identity	Sacrifices	Data Privacy
Choices	Social Resistance Change	Technical Talent
Employment	Impartial Resource Allocation	Legitimacy
Background	Allocation of Resources	Cultural System
Sacrifices	Equity and Mobility	

Figure 1: Theoretical Framework (developed by the researcher)

Research Methodology

In this study, collecting and analysing non-numerical data, such as text from observations, interviews, and document analysis, derived from qualitative research, is the rationale for adopting this research design. In contrast, a qualitative research design employs an interview protocol to determine the reasons and mechanisms behind the occurrence. An exploratory case study uses a qualitative methodology. It is employed to gather and analyse study participants' data to better understand how they perceive a phenomenon through observations and interviews (Creswell, 2014). In qualitative analysis, adopting a case study is a technique that involves a thorough investigation of a specific topic within its real-world environment. Accordingly, the researcher used this research design to gain a detailed understanding of social mobility and factors influencing academic achievement among undergraduate students in Shandong, China. The study was conducted at the Agricultural University of Hebei and Baoding University, both located in Baoding, Hebei Province, China. The researcher collected participant data through observations, interviews, and document analysis. The participants focused on students from these two universities. The students' age range was between 16 and 40 years old were directly involved. The total number of participants—students was twenty, with ten from each university. This study utilised in-depth interviews, observations, and document analysis to generate interview protocols during data collection. The researcher used NVivo version 12 software to analyse the data and determine the frequency percentages of each topic and sub-theme (Ghauri, Grønhaug & Strange, 2020). Rea and Parker (2014) explains that qualitative inquiry was used to assess the validity and reliability of the study. This research employed triangulation and member checking as techniques to enhance the reliability and validity of the findings. Prior to the study, a pilot test was conducted with two participants from each university to evaluate the reliability of the interview process protocol.

Results

Introduction

The findings derived from undergraduate students (respondents) at the University of Jinan and the Qilu University of Technology in Shandong, China, centre on social mobility and the factors affecting academic achievement among undergraduates in Shandong. A total of 20 interviewees were surveyed at both universities. Data collection involved three main qualitative methods: semi-structured interviews, observations, and document analysis. The data were analysed through a thematic approach, which facilitated the identification of key patterns, categories, and themes related to the research aims. For each research objective, the findings are systematically presented and discussed, supported by quotations from the data.

To investigate the influence of social mobility on academic achievement among undergraduate students in Shandong, China

Theme 1: Socio-Economic Status

Based on the findings generated from the interviews, which indicate that the socio-economic status of the students is reflected through the following sub-themes: family income and home environment, as well as institutional support for student welfare in terms of financial aid, tutoring services, and a conducive learning environment.

Sub-Theme 1: Family Factors (Income and the Home Environment)
The findings indicate that students from the University of Jinan and the Qilu University of Technology in Shandong, China, emphasise that family income and home environment play crucial roles in shaping students' willingness, commitment, and goal expectations, which also contribute to their academic achievement.

Sub-Theme 2: Institutional Support
The findings of this study suggest that universities should provide support to maximise their students' learning capacity and improve their comfort and efficiency. By providing tutoring services, financial aid such as student loans, and career guidance, students tend to gain the credibility they need to excel.

Theme 2: Unequal Access to Opportunity
Unequal access to opportunities for students results in significant disparities in educational outcomes, stemming from factors such as socioeconomic background, race, and geographic location, and leading to an unequal distribution of resources, funding, and qualified teachers.

Sub-Theme 1: Economic and Social Inequality Lead to Access to Resources, Opportunities, and Social Capital
The findings indicate that most students faced challenges that contributed to their poor academic achievement and emphasise the economic and social inequality resulting from a lack of access to resources, opportunities, and social capital, which hindered their ability to excel in their academic pursuits. Unequal access to educational opportunities for students can arise from various factors, including socioeconomic status, geographic location, and race-based policies, resulting in disparities in access to quality education, resources, and higher education opportunities.

Sub-Theme 2: Policies and Funding
The findings of this study show that most students reported a lack of funding, caused by ineffective policies and poor resource allocation by institutions and the government, which has affected the sustainability of students' wellbeing and academic performance at both universities involved. Insufficient policies and funding often weaken the resources available for students to develop their skills and knowledge, particularly impacting undergraduate students with diverse needs, such as those with disabilities.

During the class, most students are financially unable to cover their fees and manage their expenses. This can also affect the student's credibility regarding their academic progress. Institutions do not usually offer tutoring classes to bridge the gap and help students reach the same level as their peers. Although QUT offers a specific student loan for students with a minimum 3.5 CGPA, they are eligible for a 25% tuition fee waiver, provided they maintain their results continuously.

(Observation during mathematics class, 15 March 2025)

During their school visits, neither university can improve students' academic performance and activities efficiently. The buildings are far apart, requiring students to walk a long distance to attend classes. The university needs to have a bus to transport students, making it

convenient for a healthier learning environment for all students, including those with diverse special needs.

(Observation during conference, 21 February 2025)

The document highlights the challenges faced by students regarding social mobility and its impact on both local and international students, ultimately affecting their academic performance. It exhibits a declining slope, which necessitates institutional intervention to mitigate these challenges and facilitate further development.

(*Document: University Mobility Outcomes for Higher Education, 2023)*

Summary of Theme 1 (Socio-Economic Status)

The interviewer noted that financial income, residence location, and commuting to various university departments pose challenges to their academic achievement. Lastly, they pointed out that the lack of career guidance and tutoring services contributes to poor academic performance, significantly diminishing the motivation of undergraduate students from both universities to excel. Additionally, they emphasised that the institution's lack of financial aid adds to the challenges they face on campus.

Summary of Theme 2 (Unequal Access to Opportunity)

The interviewees agreed that discrimination and cultural bias have a negative impact on students' well-being, which in turn affects their academic performance and participation in activities. They also confirmed that limited resources hinder students' achievement, consequently restricting their opportunities to be creative and to acquire skills and knowledge on campus. These findings emerged from respondents at the University of Jinan and Qilu University of Technology in Shandong, China. They additionally mentioned that a lack of funding and limited resources influence students' achievement levels, thereby constraining their future chances to excel after university.

To explore the influence of education equality on academic achievement among undergraduate students in Shandong, China

Theme 1: Inclusion and Diversity

This study examines the inclusion and diversity of students, with a particular focus on the learning environment's failure to effectively address diversity challenges among students. It also emphasises differentiated instruction by lecturers to support personalised learning and enhance academic achievement.

Sub-Theme 1: Supportive Learning Environments and Diversity

The findings demonstrate that supportive learning environments are vital for promoting diversity by creating inclusive spaces where students from all backgrounds feel safe, valued, and respected, fostering richer learning experiences and enabling students to share their unique strengths and perspectives.

Sub-Theme 2: Differentiated Instruction and Personalised Learning

The findings of this study suggest that the researcher emphasised the credibility of undergraduate students in understanding different instructions from various lecturers to support their personalised learning at university.

Theme 2: Promoting Quality Equal Education for Students

In this study, promoting quality and equal education for students requires fairness in resource distribution and equal access to good education. It also means that encouraging the fair distribution of learning materials to all students who need them helps maintain their academic progress and achievement.

Sub-Theme 1: Fairness in Resource Allocation

The findings show that students' expectations are high when learning resources are fairly allocated, including the quality of teachers, on-campus learning opportunities, and a supportive learning environment that motivates students to engage in an extensive learning process to reach their goals.

Sub-Theme 2: Equal Access to Quality Education

The findings of this study demonstrate that equal access to quality education ensures that all students, regardless of their background or circumstances, have the opportunity to receive a high-quality education that meets their individual needs and prepares them for future success. In this study, students will have the opportunity to attend schools that offer high-quality resources, qualified teachers, and a supportive learning environment.

During the interview, students find the university's learning environments generally conducive to learning, with quality infrastructure and various departments, including halls. Classes are suitable for learning. However, they are not fully integrated into the care of students with special needs. Consequently, due to health challenges, students are unwilling to participate in any entrance examinations for either university.

(Observation during library visitation, 17 May 2025)

During their visits, both universities lack inclusivity and diversity in their environments, which can manifest in several ways and negatively impact students. This may include limited representation of diverse perspectives in the curriculum, insufficient accessibility for students with disabilities, and a culture that fails to value or celebrate different identities and backgrounds. These issues can cause students to feel marginalised, excluded, and less engaged in their learning.

(Observation during library visitation and conference, 21 May 2025)

The document highlights the Chinese government's education equality policy, which harnesses the success of inclusiveness and educational equality for its students. However, the documents also indicate a rapid decline in their students' achievement.

(*Document: Education Equality for China Government Policy, 2023)*

Summary of Theme 1 (Inclusion and Diversity)

The findings agreed that it is essential to promote learning environments that embrace students' diversity and enhance academic achievement. Although one interviewee disagreed with this view, arguing that they lack the credibility to be considered a university because they do not encourage diverse learning styles that could help improve students' mindsets for future growth. Finally, students recognised that they did not receive a quality education or a satisfying learning experience at their universities, which significantly affected their academic performance.

Summary of Theme 2 (Promoting Quality Equal Education for Students)
The findings revealed that students who participated feel they face various challenges in their academic development. Both students and lecturers are complaining about the high prevalence of outdated resources, as they have limited access to essential materials that enhance students' knowledge and skills. Lastly, students agreed that there is a significant disparity in access to quality education opportunities at their universities, which has hindered their academic freedom and achievement.

To explore the influence of leveraging digital technology on academic achievement among undergraduate students in Shandong, China

Theme 1: Enhancing Learning and Engagement
The students believe that to enhance student learning and engagement, educators can implement active and interactive learning strategies, such as project-based learning, group discussions, and gamification, to foster participation and make lessons more engaging and dynamic.

Sub-Theme 1: Personalised Learning Styles with the Use of Technology
In this study, personalising learning styles through digital tools helps students adopt various strategies to enhance their studies with ease, thereby alleviating the challenges associated with poor academic achievement.

Sub-Theme 2: Interactive and Engaging Content for Students
The findings of this study indicate that students are expected to be interactive during lessons to excel and grasp ideas that will consistently enhance their performance. Interactive and engaging student content can take many forms, including quizzes, games, simulations, videos, animations, and infographics. In this study, students develop teamwork, collaborate effectively, and provide feedback on assessments to achieve academic success.

Theme 2: Developing 21st Century Skills
The students indicated that developing 21st-century skills can be identified in several sub-themes, namely digital literacy to navigate and access information, as well as collaboration, communication, critical thinking, and problem-solving skills.

Sub-Theme 1: Digital Literacy to Navigate and Access Information
The findings indicate that most students believe digital literacy equips them with the skills necessary to effectively navigate and access information in the digital world, including using search engines, evaluating online resources, and communicating digitally. In this study, it helps prepare students for academic success, thereby improving their skills and knowledge to adapt to digital learning styles that support student achievement.

Sub-Theme 2: Collaboration, Communication, Critical thinking, and Problem-solving Skills
The findings of this study suggest that students need to strengthen their skills in addressing critical issues and improving their communication to foster effective collaboration in classes, encompassing teamwork, feedback, assessment, and tutoring services. These skills are interconnected and crucial for academic success, future career opportunities, and effective participation in society.

During the class, a lack of personalised learning styles for students resulted from an unclear understanding of what constitutes personalised learning, inadequate pedagogical adaptation of technology, and potential biases within AI-powered learning systems. The development and implementation of technology often fail to fully account for the diverse learning styles, prior knowledge, and interests of individual students.

(Observation during commerce class, 12 April 2025)

During their mid-term academic tutorials and seminars, universities can promote digital literacy, enabling students to navigate their activities and access information effectively. They can be used to empower students to utilise digital tools for learning, research, and communication. This includes skills such as accessing digital libraries, using online learning platforms, and managing assignments with digital tools. It also involves leveraging the university's online library, databases, and e-resources to find relevant materials.

(Observation during academic tutorial and seminars, 21 April 2025)

The document presents a framework for digital transformation in the Chinese government to promote academic success among its students. A policy has been formulated to ensure that these strategies are carried out, harnessing and enhancing the quality of learning and the development of 21st-century digital skills throughout the educational process.

(*Document: University Education Policy Framework, 2023)*

Summary of Theme 1 (Enhancing Learning and Engagement)

The summary of this finding agreed that students believed integrating digital learning, such as AI and machine learning, would effectively enhance the credibility of their achievements. They also agreed that it should be included in their syllabus to ensure teachers comply with the academic curriculum requirements for effective personalised learning. Personalised learning experiences can make education more relevant and engaging for students, which leads to increased motivation and a deeper understanding of concepts. By tailoring instruction to individual needs, technology can help students learn more efficiently and effectively, thereby improving academic performance. Finally, interviewees agreed on the need to encourage interactive, engaging content for students.

Summary of Theme 2 (Collaboration, Communication, Critical thinking, and Problem-solving Skills)

The summary of this finding agrees that students recognise the need to adopt digital literacy, which would improve their access to information and learning resources, thereby boosting their academic success. A lack of digital literacy can significantly hinder students' ability to navigate and access information effectively in today's digital world. Without these skills, students struggle to use technology for learning, distinguish credible sources from misinformation, and may face difficulties with digital citizenship. Finally, interviewees agreed that using digital learning enhances their collaboration, communication, teamwork, and critical thinking, while also fostering problem-solving skills.

To explore recommendations and suggest a framework for social mobility, education equality, and leveraging digital technology to increase academic achievement among undergraduate students in Shandong, China

In this study, the researcher emphasised conducting interviews and observations to explore recommendations and suggest a framework for social mobility, education equality, and leveraging digital technology to increase academic achievement among undergraduate students in Shandong, China.

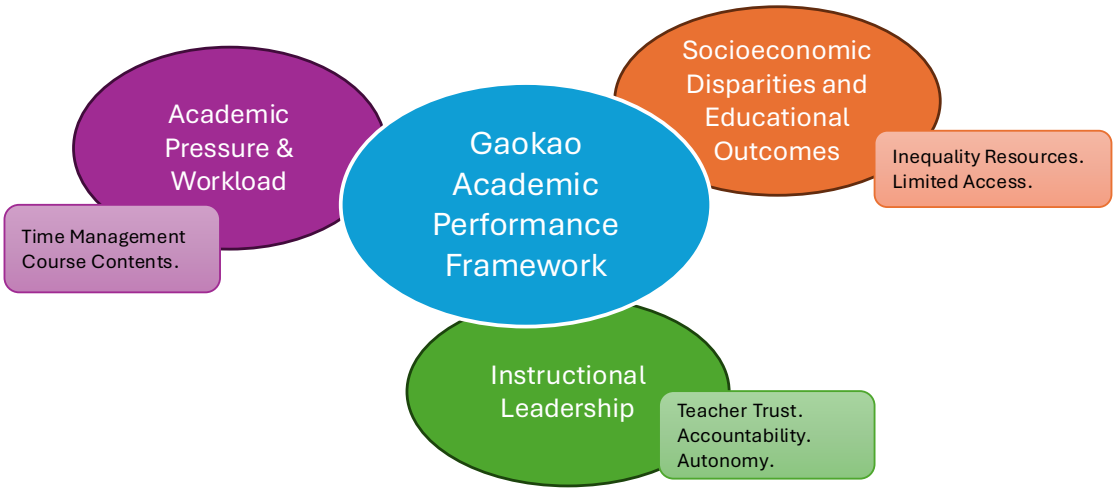

Figure 2: Gaokao Academic Performance Framework (Source: designed by the researcher).

Theme 1: Socio-Economic Status

The findings show that most students are concerned about the challenges they face due to social inequality in their educational experiences. Furthermore, this issue contributes to the unequal distribution of resources and opportunities, resulting in disparities in income, wealth, education, healthcare, and other aspects of life. Such inequality can impact students in various ways, affecting their access to quality education, opportunities, and overall well-being. Understanding the dynamics of economic and social inequality is essential for developing effective strategies to promote fairness and opportunity for all students, especially in education. The role of universities is to offer support systems, such as financial aid, tutoring services, and career guidance, to help students overcome the challenges of higher education and transition into the workforce.

During the class, the researcher observed that students' issues can be resolved by implementing targeted programmes to address the root causes of inequality, promoting equitable access to resources, and fostering social connections. Implement policies that ensure schools, regardless of their location or student population, receive adequate funding to provide high-quality education. Universities should offer mental health counselling, personal counselling, and resources to help students manage stress and anxiety. Financial aid assistance and resources for managing student loans can alleviate financial stress and enable students to focus on their studies.

(Observation during mathematics class, 18 March 2025)

Summary and Recommendations for Theme 1 (Socio-Economic Status)

Ultimately, the students recognised that the lack of economic and social equality has negatively impacted their academic achievement and led to lower university grades. They also emphasise that limited access to resources reduces students' opportunities to perform well. These issues can be addressed by implementing targeted programmes to tackle the root

causes of inequality, promoting equitable access to resources, and fostering social connections. Future research should develop policies that ensure schools, regardless of their location or student demographics, receive sufficient funding to provide high-quality education. It is also important to ensure that all students have access to technology, including computers and the internet, as these tools play a crucial role in education. Providing financial aid to students from low-income families can help them afford tuition, books, and other educational expenses. Increasing the number of scholarships available to students from underserved communities is equally vital.

Theme 2: Promoting Quality Equal Education for Students

In this study, students emphasise the importance of equal access to quality education and the fair distribution of learning resources across all universities, as these factors encourage students to perform well in their studies. Furthermore, ensuring equal access to quality education and equitable resource allocation for all students is vital for promoting educational fairness and maximising learning opportunities.

During the visit, both university educators should concentrate on flexible learning strategies, inclusive curriculum development, and fostering a sense of belonging. This involves incorporating diverse materials, encouraging intercultural collaboration, and providing teachers with resources to develop culturally responsive practices. Using a blended learning approach enables students to learn at their own pace and in various formats, including lectures, group work, and interactive multimedia, catering to different learning preferences. Integrating various perspectives and materials into the curriculum broadens students' understanding of different cultures and enriches their learning experience.

(Observation during library visitation and conference, 9 May 2025)

Summary and Recommendations for Theme 2 (Promoting Quality Equal Education for Students)

The student lamented that personalised learning and cultural diversity for students with special needs are not sufficiently promoted, and that teaching methods require improvement so students can better engage and succeed academically. To create personalised learning environments and celebrate cultural diversity, educators should focus on flexible learning approaches, inclusive curriculum design, and fostering a sense of belonging. Lastly, students expressed considerable dissatisfaction with the unequal access to quality education resulting from inadequate resource allocation, which has affected both lecturers' and students' performance. To promote equal access and fair resource distribution, it is crucial to implement targeted policies and strategies that address existing disparities. Future research should incorporate diverse perspectives and materials into the curriculum to expand students' understanding of different cultures and enrich their learning experience.

Theme 3: Enhancing Digital Learning Styles and Skills

The findings of this study demonstrate that digital literacy enables students to effectively access, evaluate, and utilise information from digital sources, which is crucial for learning and success in the modern world. In this study, students focus on using digital learning to enhance their studies, maximise their performance, and achieve their goals. It also helps students tap into a wide range of online resources, expanding their learning beyond the traditional classroom.

During their mid-term academic tutorials and seminars, educators should prioritise funding and resources for schools and districts in low-income areas, rural communities, and regions with high concentrations of students from marginalised backgrounds. They should ensure equitable funding formulas that consider student demographics, needs, and school location, rather than merely distributing resources based on a per-pupil average.

(Observation during academic tutorial and seminars, 18 April 2025)

Summary and Recommendations for Theme 3 (Enhancing Digital Learning Styles and Skills)

Ultimately, some students recognised that digital tools are vital for achieving 21st-century academic Excellence and have helped them find practical solutions to their academic challenges. Instead of treating digital literacy as a separate subject, future research should incorporate it into existing curriculum areas such as research projects, data analysis, and creative expression. This approach would encourage students to utilise digital tools to solve problems, create content, collaborate with peers, and communicate ideas effectively. Teach students how to evaluate information sources, identify bias, and distinguish credible information from misinformation. Implement strategies to bridge the gap between students with access to technology at home and those without, possibly through after-school programmes, community technology centres, or mobile libraries. Digital learning supports students in navigating and improving their academic achievement by exploring online platforms for discussion and sharing ideas related to growth. These technologies enable flexible pathways, provide personalised feedback, and increase engagement, ultimately enhancing academic success performance.

Discussion

Objective 1: To investigate the influence of social mobility on academic achievement among undergraduate students in Shandong, China

Objective 1 of this study presented findings from interviews with students, indicating that their socio-economic status is reflected in sub-themes such as family income, home environment, and institutional support for student welfare, including financial aid, tutoring services, and a conducive learning environment. The findings noted that financial income, residence location, and commuting to various university departments pose challenges to their academic achievement. They also highlighted students' learning capabilities and expectations as barriers to their academic progress. Improving family income and creating a supportive environment can help students achieve academic success. According to Lo, Li, and Tan (2023), the lack of career guidance and tutoring services contributes to poor academic performance. It has significantly diminished the motivation of undergraduate students from both universities to excel. This result aligns with the finding that the absence of institutional financial aid adds to the challenges they face on campus (Chen & Bhuiyan, 2023). The findings agreed that discrimination and cultural bias negatively impact students' well-being, which in turn affects their academic performance and participation in activities. This clarifies and confirms that limited resources hinder students' achievement, thereby restricting their opportunities to be creative and acquire skills and knowledge on campus (Xie et al., 2022). These findings align with prior studies conducted among respondents at the University of Jinan and Qilu University of Technology in Shandong, China. They further noted that a lack of funding and limited resources influence students' achievement levels, constraining their future prospects after university. Additionally, they concurred that students with special needs should be encouraged to learn in a high-quality environment, enabling them to utilise

their skills and knowledge to achieve greater academic success. Based on classroom observations (specifically in mathematics), most students are unable to cover their fees and manage their expenses due to financial constraints. This can also affect the student's credibility regarding their academic progress. Institutions do not usually offer tutoring classes to bridge the gap and help students reach the same level as their peers. The present findings concur that QUT offers a specific student loan for students with a minimum 3 3.5 CGPA; they are eligible for a 25% tuition fee waiver, provided they maintain their results continuously.

Objective 2: To explore the influence of education equality on academic achievement among undergraduate students in Shandong, China

Objective 2 of this study examines the influence of educational equality on academic achievement among undergraduate students in Shandong. The findings demonstrate that supportive learning environments are essential for promoting diversity by creating inclusive spaces where students from all backgrounds feel safe, valued, and respected, fostering richer learning experiences and enabling students to share their unique strengths and perspectives. According to Mulvey and Li (2023), promoting quality and equal education for students requires fairness in resource distribution and equal access to good education. Similarly, this finding aligns with prior studies that confirm that encouraging the equitable distribution of learning materials to all students who need them helps maintain their academic progress and achievement (Li & Xue, 2022). The findings agree that it is vital to promote learning environments that embrace students' diversity and enhance academic achievement. Students recognised that they did not receive a quality education or a satisfying learning experience at their universities, which significantly affected their academic performance (Cao, 2022). This finding is consistent with Taraza et al. (2024), who found that a lack of differentiated instruction and personalised learning can lead to several problems, including a one-size-fits-all approach to teaching that may not effectively address the diverse needs and learning styles of all students. The findings revealed that students who participated feel they face various challenges in their academic development. Both students and lecturers are complaining about the high prevalence of outdated resources, as they have limited access to essential materials that enhance students' knowledge and skills. According to Song (2023), there is a significant disparity in access to quality education opportunities at their universities, which has hindered their academic freedom and achievement. This finding is consistent with Xia's (2023) results, which showed that unequal access to quality education is a major issue that limits individual potential and societal progress. Students with fewer opportunities may struggle to reach their full potential, which can affect their future career prospects and overall well-being (Cao, 2022). The researcher also observed that disparities in learning opportunities and outcomes at both universities lack inclusivity and diversity in their environments, which can manifest in several ways and negatively impact students. This may include limited representation of diverse perspectives in the curriculum, insufficient accessibility for students with disabilities, and a culture that fails to value or celebrate different identities and backgrounds. These issues can cause students to feel marginalised, excluded, and less engaged in their learning.

Objective 3: To explore the influence of leveraging digital technology on academic achievement among undergraduate students in Shandong, China

Objective 3 of this study emphasises that students believe that to enhance student learning and engagement, educators can implement active and interactive learning strategies, such as

project-based learning, group discussions, and gamification, along with digital literacy to navigate and access information, as well as collaboration, communication, and critical thinking, to foster participation and make lessons more engaging and dynamic. The findings agree that students believe integrating digital learning, such as AI and machine learning, would effectively enhance the credibility of their achievements. They also agree that it should be included in their syllabus to ensure teachers comply with the academic curriculum requirements for effective personalised learning. According to Lee et al. (2023), personalised learning experiences can make education more relevant and engaging for students, thereby increasing motivation and fostering a deeper understanding of concepts. This result supports the findings that, by tailoring instruction to individual needs, technology can help students learn more efficiently and effectively, resulting in improved academic performance (Guan, 2024). Finally, the findings concur on the importance of encouraging interactive and engaging content for students. However, their university does not fully implement it, which hampers students' smooth learning opportunities. The findings agree that students recognise the need to adopt digital literacy, which would improve their access to information and learning resources, thereby boosting their academic success. A lack of digital literacy can significantly hinder students' ability to navigate and access information effectively in today's digital world (Lyu, Chi, & Zheng, 2024). The results of this study indicate that without these skills, students struggle to utilise technology for learning, distinguish credible sources from misinformation, and may encounter difficulties with digital citizenship (Avsec et al., 2023). Finally, the findings agree that using digital learning enhances their collaboration, communication, teamwork, and critical thinking, while also fostering problem-solving skills. The development of students' academic achievement depends on the quality of feedback they receive, which can significantly improve their performance. Observations during classroom activities and seminars reveal that a lack of personalised learning styles resulted from an unclear understanding of what constitutes personalised learning, inadequate pedagogical adaptation of technology, and potential biases within AI-powered learning systems. Universities have the capacity to promote digital literacy, enabling students to navigate their activities and access information effectively.

Objective 4: To identify recommendations and suggest a framework for social mobility, education equality, and leveraging digital technology to increase academic achievement among undergraduate students in Shandong, China

In this study, the researcher emphasised conducting interviews and observations to explore recommendations and propose a framework for social mobility, education equality, and the utilisation of digital technology to enhance academic achievement among undergraduate students in Shandong, China. The findings indicate that most students are concerned about the challenges they face due to social inequality in their educational experiences. Furthermore, this issue contributes to the unequal distribution of resources and opportunities, leading to disparities in income, wealth, education, healthcare, and other aspects of life. The students recognised that the lack of economic and social equality has negatively affected their academic performance, resulting in lower university grades. They also emphasise that limited access to resources reduces students' chances to succeed (Chen & Bhuiyan, 2023). These issues can be addressed by implementing targeted programmes to tackle the root causes of inequality, promoting fair access to resources, and fostering social connections. Future research should focus on developing policies that ensure schools, regardless of their location or student demographics, receive sufficient funding to deliver

high-quality education. Providing financial aid to students from low-income families can help them afford tuition, books, and other educational expenses. Increasing the availability of scholarships for students from underserved communities is equally essential (Xie et al., 2022).

The current findings support the idea that students emphasise the importance of equal access to quality education and the equitable distribution of learning resources across all universities, as these factors foster better academic performance. According to Mulvey and Li (2023), ensuring equal access to quality education and equitable allocation of resources is essential for promoting fairness in education and increasing learning opportunities. The student expressed concern that personalised learning and cultural diversity for students with special needs are not sufficiently promoted, and that teaching methods need improvement to enable students to engage more effectively and succeed academically (Li & Xue, 2022). To create personalised learning environments and embrace cultural diversity, educators should focus on flexible learning methods, inclusive curriculum design, and fostering a sense of belonging. Future research should incorporate diverse perspectives and materials into the curriculum to broaden students' understanding of different cultures and enhance their overall learning experience. Promoting group projects, cooperative learning activities, and peer mentoring can support intercultural learning and help develop social skills through collaboration (Cao, 2022). Future studies should prioritise funding and resources for schools and districts in low-income areas, rural communities, and regions with high numbers of students from marginalised group backgrounds.

The findings of this study show that digital literacy helps students to effectively access, evaluate, and utilise information from digital sources, which is essential for learning and success in the modern world. Ultimately, some students recognised that digital tools are vital for achieving 21st-century academic excellence and have helped them find practical solutions to their academic challenges. Instead of treating digital literacy as a separate subject, future research should integrate it into existing curriculum areas such as research projects, data analysis, and creative expression. This approach encourages students to utilise digital tools to solve problems, create content, collaborate with peers, and communicate ideas effectively (Lyu, Chi, & Zheng, 2024). Teach students how to evaluate information sources, identify bias, and distinguish credible information from misinformation (Zhou et al., 2023). Implement strategies to bridge the gap between students with access to technology at home and those without, possibly through after-school programmes, community technology centres, or mobile libraries. Based on observations, the researcher concludes that educators should prioritise funding and resources for schools and districts in low-income areas, rural communities, and regions with high numbers of students from marginalised backgrounds. They should ensure equitable funding formulas that consider student demographics, needs, and school location, rather than simply distributing resources based on a per-pupil average.

Conclusion

Empirical findings indicate that social mobility, educational equality, and the use of digital technology influence academic achievement among undergraduate students in Shandong, China. The findings concluded that financial income, residence location, and commuting to various university departments pose challenges to students' academic success. They also highlighted students' learning abilities and expectations as barriers to their progress. It was further agreed that discrimination and cultural bias negatively affect students' well-being,

which in turn impacts their academic performance and participation in activities. Additionally, limited resources restrict students' achievement, limiting their opportunities to be creative and to acquire skills and knowledge on campus. The findings emphasised the importance of creating learning environments that embrace students' diversity and promote academic success. A lack of differentiated instruction and personalised learning can lead to a one-size-fits-all approach that may not effectively meet the diverse needs and learning styles of all students. The findings also noted that students believe integrating digital learning, such as AI and machine learning, would effectively enhance the credibility of their achievements. They also recognised the need to develop digital literacy, which would improve access to information and learning resources, thereby boosting their academic potential and success. Future research should focus on policies that ensure schools, regardless of their location or student demographics, receive sufficient funding to deliver high-quality education. It is also essential to guarantee that all students have access to technology, including computers and the internet, as technology plays a crucial role in education. Future studies should incorporate diverse perspectives and materials in the curriculum to broaden students' understanding of different cultures and enrich their learning experiences. Promoting group projects, cooperative learning activities, and peer mentoring can foster intercultural understanding and help develop social skills through collaboration. Strategies should serve as a bridge to close the gap between students who have access to technology at home and those who do not, possibly through after-school programmes, community technology centres, or mobile libraries. Digital learning supports students in navigating and enhancing their academic achievement by exploring online platforms for discussion and idea-sharing. This research is significant for addressing gaps identified in previous studies and for contributing to the body of knowledge aimed at improving academic achievement among undergraduate students in Shandong, China.

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