

Online Learning Attitude, Engagement, and Academic Achievement of College Students in China

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Abstract: With the rapid development of online education, understanding the performance and experiences of college students in this emerging learning mode is of paramount importance for improving educational quality. This study aims to delve into the close relationship between Chinese university students' learning attitudes, engagement, and academic performance in the context of online learning environments. Employing a questionnaire survey and quantitative analysis, this study explores the intricate relationships between learning attitudes, engagement, and academic performance among Chinese university students engaged in online learning.

Keywords: Online learning; Learning attitudes; Engagement; Academic achievement; Education quality

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1. Introduction

With the continuous development of information technology, online education has profoundly impacted the current educational landscape. Online learning not only aligns with the trend of networked education but also challenges traditional teaching methods. At the onset of 2020, the sudden outbreak of pneumonia caused by the novel coronavirus (COVID-19) became a global crisis, profoundly affecting various sectors, including education. The COVID-19 pandemic has resulted in the most extensive disruption of education in history, prompting many countries and regions to suspend in-person classes in response to the outbreak.

To mitigate the spread of the virus on campuses, China's Ministry of Education implemented measures to postpone the start of the semester and mandated universities nationwide to transition to online teaching and learning. Online learning emerged as a practical solution to ensure continuity in educational activities during the pandemic. According to Ministry of Education statistics, during the spring semester of 2020, all ordinary undergraduate universities nationwide adopted online teaching, with 1.08 million teachers offering 1.1 million courses totaling 17.19 million sessions. The number of college students participating in online learning reached 22.59 million, encompassing 3.5 billion interactions.

In the context of online learning, enhancing the quality of education for college students and ensuring equivalence between online and offline learning have become focal points for universities. The level of engagement in online learning significantly influences the effectiveness and persistence of college students' online learning endeavors. Elevating students' engagement levels in the online learning process is crucial to improving the efficacy of online education. Amidst the rapid advancement of modern information technology, the integration of Internet technology in education has become increasingly profound and widespread, particularly in the era of "Internet+."

This study aims to investigate the relationships among Chinese university students' learning attitudes, engagement, and academic performance through a questionnaire survey and quantitative analysis. The study sample comprises 365 full-time undergraduate students from regular higher education institutions. Exploratory factor analysis and confirmatory factor analysis were conducted to assess the reliability and validity of the scale, while path coefficients and significance levels were analyzed to construct a moderated mediation model. This paper explores the impact of learning attitudes and engagement on the academic performance of university students in online learning environments. Additionally, recommendations for enhancing academic performance, learning quality, and the overall development of Chinese university students are proposed.

2. Materials and methods

For this study, students from Hetao College, a local application-oriented undergraduate institution in China, were selected for a questionnaire survey. An online questionnaire was distributed to all 356 students majoring in Chinese Language and Literature, Journalism, and Network and New Media at Hetao University. The distribution of questionnaires commenced in early June 2023, with 30 questionnaires collected for reliability testing. Following the preliminary reliability test, questionnaires were distributed to students from June 28 to July 20, 2023, resulting in the collection of 365 questionnaires, achieving a 100% response rate.

Based on relevant theories and literature research, this study identifies three research variables: college students' learning attitude, learning engagement, and academic achievement in online learning. The questionnaire on the comparison of online and offline learning attitudes of senior primary school students compiled by Liu ^[1] was adopted. Moreover, the questionnaire consists of 3 subscales with a total of 29 questions. The subscales of the questionnaire included cognitive attitude, affective attitude, and behavioral attitude. It has a 4-point Likert scale. The questionnaire on online engagement compiled by Martin and Bolliger ^[2] was adopted, comprising three subscales and 29 items in total. The subscales include learner-learner, learner-instructor, and learner-content interactions. It utilizes a 5-point Likert Scale modified to a 4-point Likert Scale. Additionally, the questionnaire on academic achievement compiled by Bernard *et al.* ^[3] was adopted, comprising three subscales and 25 items. The subscales include skills, behavior, and self-direction. It employs a 4-point Likert Scale.

Questionnaires were slightly modified to align with the study objectives and divided into four parts: basic information (grade, gender, and major), learning attitudes (30 items), learning engagement (29 items), and academic achievement (25 items). After modification, the questionnaires underwent validity and reliability evaluation. A pilot study involving 30 university students was conducted to verify validity, and Cronbach's alpha was used to assess reliability. Results indicated satisfactory internal consistency, as shown in **Table 1**.

Table 1. Statistical table of reliability analysis results

Indicators	Cronbach alpha	Remarks
Cognitive attitude	0.942	Excellent
Emotional attitude	0.947	Excellent
Behavior attitude	0.974	Excellent
Learner-learner	0.970	Excellent
Learner-instructor	0.968	Excellent
Learner-content	0.966	Excellent
Skills	0.965	Excellent
Belief	0.960	Excellent
Self-direction	0.954	Excellent

Rules of thumb provided by George and Mallery (2003) as follows: > 0.9, excellent; 0.8–0.9, good; 0.7–0.8, acceptable; 0.6–0.7, questionable; 0.5–0.6, poor; < 0.5, unacceptable.

Data analysis utilized various statistical tools. Frequency and percentage distributions described the demographic profile of respondents. Weighted averages and rankings assessed motivation, work-life balance, and productivity. The Shapiro-Wilk test was used to determine whether a data set is normally distributed. Non-parametric tests (Mann-Whitney U test and Kruskal Wallis test) were employed to assess significant differences. Spearman's rho determined significant correlations among variables. The Likert scale was used for assessment, and the variables are categorized as follows: (1) 3.50–4.49 = strongly agree, to a very great extent, very high; (2) 2.50–3.49 = agree, to a great extent, high; (3) 1.50–2.49 = disagree, to the least extent, low; and (4) 1.00–1.49 = strongly disagree, not at all, very low. PASW version 26 statistical software was utilized with an alpha level of 0.05.

3. Results and discussion

In terms of respondents' gender, there were 154 males, accounting for 42.2%, and 211 females, constituting 57.8%. The sample distribution showed some gender imbalance, with fewer male participants. This can be attributed to the prevalent focus on liberal arts majors in the surveyed institutions, where the ratio of female students in liberal arts majors is usually higher than that of male students. The survey primarily targeted liberal arts majors, with 141 students majoring in Chinese Language and Literature (38.6%), 103 in Journalism (28.2%), and 121 in Network and New Media (33.2%). The sample's grade distribution was relatively even, with freshmen, sophomores, juniors, and seniors representing 28.5%, 23.0%, 33.2%, and 15.3%, respectively.

Scholars have differing conclusions on online learning situations for students of different genders. Some suggest no significant gender differences in learning attitudes and participation levels. Conversely, some scholars assert gender differences in classroom participation. Feng and Sun found that samples of different genders performed differently in overall learning effectiveness in online learning compared to traditional teaching ($t = 4.862, P = 0.000$)^[4]. Specifically, the average score for males (3.82) was significantly higher than that for females (3.49). Gong *et al.*'s research indicated that male students showed higher motivation for online learning than female students^[5].

University students exhibit a positive attitude towards online learning, with a high level of sustained engagement. Their tendency for sustained participation in learning activities exceeded their existing knowledge

levels and learning experiences. When asked about the question whether “believe that students should do well in all subjects even if they are online,” it ranked first with an average score of 3.34. It was closely followed by “believe students need to study hard to improve their grades in online courses” and “students think whether to go to school or study online is important,” with each scoring 3.28. While students were willing to participate in online learning activities, there was room for improvement in their recognition of the value of online learning advantages and their experience of positive and enjoyable learning.

In China, education is of paramount importance, with compulsory education provided for children aged 8 to 17. Some regions offer nine years of free compulsory education, allowing children to complete primary and junior high school studies, while other regions offer twelve years of free compulsory education, allowing children to complete primary, junior high school, and high school education. During this educational stage, students become aware of the importance of academic performance from a young age, as certain schools have higher prerequisites. This attitude extends to the university stage, where students place significant importance on both online and face-to-face learning for academic performance.

However, in an online learning environment, spatial and temporal isolation requires teachers and students to rely on the Internet or tools for interaction. The role of teachers in knowledge transfer faces challenges, with the teacher’s “authority” being challenged. Teachers shift from being the disseminators of knowledge to being assistants in knowledge transfer, transitioning from the leaders of teaching to participants in teaching, becoming chief participants in equality. This leads to students experiencing fewer constraints in online learning than in classroom learning, requiring students to exert more self-control and focus on learning when acquiring knowledge.

University students have achieved satisfactory academic achievements through online learning, with students majoring in Network and New Media expressing the highest recognition of skill achievements. This is attributed to the continuous development of society, where new media has become integrated into people’s lives and profoundly influences various industries. With rapidly evolving new media technologies and constantly innovating communication concepts, a fully mediated information dissemination path has emerged. Against this backdrop, the Network and New Media major has emerged. The advent of smart media technology has brought significant challenges to the media industry, leading to a transformation in industries that originally relied on traditional technologies. As a major directly supplying talent to the media industry, Network and New Media professionals need to stay abreast of the times ^[6]. The current global trend of media convergence is becoming increasingly evident, with Internet-dominated new media rapidly developing and emerging as a new force driving social, economic, and cultural development. The rapid development of new media has increased the demand for professionals in this field, such as web design and graphics, network editing, and mobile software development. Compared to majors in Journalism and Chinese Language and Literature, the Network and New Media major is more “youthful” and closer to the internet in terms of curriculum and course arrangements. Therefore, students majoring in Network and New Media are more familiar with the online education model, more adaptable during online education, and have a stronger belief in academic achievement.

University students’ learning attitudes significantly impact their academic achievements, with better attitudes correlating with higher academic achievements. Senior students have a more comprehensive understanding of the value of online learning. Li and Wei also reached a similar conclusion in their research ^[7]: maintaining a positive attitude is an individual strategy for utilizing intrinsic forces to change behavior, focusing on positive self-guidance and the power of self-restraint. Establishing a positive learning attitude during the online learning process and presetting task goals are optimal ways for learners to achieve learning objectives. Task goals are hierarchically designed based on the learner’s situation. As learners complete the learning

task goals for each topic, they manage their thoughts, psychology, behavior, etc., motivating and organizing themselves to ultimately achieve their self-striving goals. In this process, learners' behavior is constrained through self-control and a proactive learning attitude, rather than traditional external forces.

University students' level of learning engagement significantly influences their academic achievements, with higher engagement correlating with better academic achievements. Compared to majors in Journalism and Chinese Language and Literature, students majoring in Network and New Media have better academic achievements, showing a significant difference.

In response to these research findings, schools and teachers, when arranging online learning for university students, need to change students' attitudes towards online learning. This involves helping students recognize the importance of online learning and increasing students' engagement in online learning by designing interactive elements in the curriculum. This shift empowers students to take ownership of the online learning classroom. Teachers can design a variety of classroom exercises or practical activities for assessment, comprehensively developing students' skills during the online learning process. This approach enhances students' self-efficacy, enabling them to achieve satisfactory academic achievements.

In the future, other researchers may explore additional demographic variables in their studies, such as students' majors, academic grades, gender, and family backgrounds. Additional variables, such as whether students hold leadership positions or the availability of online teaching resources provided by instructors, can be employed in subsequent research to further understand the factors influencing academic achievements in the online learning process for university students. This approach aims to enhance students' capabilities in online learning.

School administrators and teachers can continuously improve the online learning experience based on students' online learning status. This ensures that students have a higher recognition of the value of online learning and simultaneously derive positive and enjoyable learning experiences. Students engaging in online learning should also develop personalized online learning plans based on their learning status. They should increase communication and interaction with teachers, informing them of their needs and challenges encountered during online learning. This proactive approach enables students to achieve more satisfactory academic results.

Disclosure statement

The author declares no conflict of interest.

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