



Unveiling Dimensions of Online Learning: A Comparative Study of Chinese and American University Students

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Abstract

Amid the COVID-19 pandemic, online education has gained prominence globally. This study compares online courses offered by universities in China and the US, with the aim of improving online education in China. We focus on the experiences of master's students in online learning and the factors that influence them. Five dimensions emerge: self, curriculum, interaction, impact, and environment. Notably, the differences in effects and environments are subtle; the curriculum and interaction experiences favor US E University. N University excels in hands-on learning experiences. Influencing factors include learner attributes, environment, achievement, and roles. Variances arise from self-efficacy and time spent on learning. Recommendations include optimizing learning time, fostering self-assessment, adjusting course difficulty, balancing scheduling, enriching teacher-student interactions, and cultivating peer learning communities.

Keywords

China-US online courses, master students, online learning experience, influencing factors

1. Introduction

Since the outbreak of the COVID-19 pandemic in 2020, various universities have adopted online teaching methods, hastening the development of online learning and pushing it to unprecedented levels. However, the actual effectiveness of online learning has not met people's expectations (Bahasoan et al., 2020; Hamid et al., 2020). Students' engagement in online learning is insufficient, and issues such as anxiety, helplessness, and low learning efficiency often arise during online learning sessions (Yang, 2016). In order to address these practical issues, researchers have gradually shifted their focus from the concepts, models, features, and academic performance related to online learning to the micro-level aspects of students' internal psychology, emotions, and reactions (Yu, 2021). As a result, the online learning experience has started to receive attention in academia.

Currently, extensive research is focused on the online learning experience of college students, primarily undergraduates (Almusharraf et al., 2020; Amin et al., 2022). Comparatively, there is less research on the online learning experience of master's students. In the development of online courses, universities in the United States have maintained a leading position, making their experience valuable for informing the construction of online courses in Chinese universities. Therefore, this study selects the online teaching of master's programs in computer science at a major U.S. university (referred to as "E University") and the online teaching of master's programs in educational management at a prestigious Chinese university (referred to as "N University") as case studies. The aim is to explore the differences and potential areas for inspiration

in the online course experiences of master's students between universities in China and the United States.

2. Current State of Research on Online Learning Experience

2.1 Research on Online Learning Experience

The term "learning experience" originally emerged from the realm of user experience on the internet. As the integration and development of the internet with various fields progressed, user experience transformed into a learning experience in the realm of education, drawing the attention of researchers. Scholars such as Veletsianos (2015) and Zutshi (2013) utilized methods like learning log analysis, surveys, and interviews to analyze learners' experiences in online learning. Building upon the analysis of learning experiences, Hu and Huang (2016) discussed the significance and structure of learning experiences in online and intelligent learning environments, respectively.

In the realm of research concerning the elements of online course students' learning experiences, the EDUCAUSE Center for Analysis and Research in the United States stands out as an early contributor. In 2013, this institution collaborated with 251 higher education institutions through surveys, acquiring data on university students' patterns of usage, learning environments, and information technology experiences in online courses (Dahlstrom & Brooks, 2014).

2.2 Factors Influencing Online Learning Experience Research

As direct participants and experiencers of online learning, students' learning experiences are influenced by various factors. Paechter (2010) studied the online experiences of 2196 learners and found that influencing factors mainly encompass online learning environments, learning resources, personal learning processes, teacher-student and peer interactions, as well as online learning outcomes. Regarding experiences, students' assessment of teachers' expertise in online instruction, along with teacher consultation and support, emerges as the prime predictor of academic performance and course satisfaction.

In summary, existing research on learning experiences predominantly focuses on exploring students' learning experiences primarily through external environmental factors, paying less attention to the impact of learners' inherent traits. This study aims to conduct a comparative analysis of online learning courses for master's students in two universities in China and the United States. The objective is to elucidate the influencing factors and internal structural relationships behind master's students' online learning experiences, thereby contributing valuable insights to enhancing the online learning experiences of master's students.

3. Understanding online learning experience from a Learning Activity Theory perspective

The concept of the learning experience is embedded within the activities of learning itself. Exploring students' online learning experiences necessitates observations and analyses of online learning activities. Helen Beetham (2007) encapsulated numerous domains of learning activities, leading to the formulation of the theoretical framework known as the Learning Activity Framework. This theory stands as a cornerstone for investigating online learning experiences (see Figure 1).

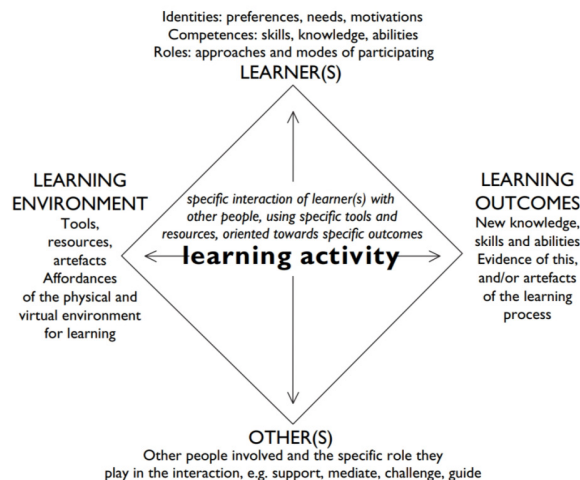


Figure 1. An outline for a learning activity.

According to Beetham, the study of learning activities should encompass four interconnected and independent components: the learning environment, the learners themselves, specific learning outcomes, and other roles present in the interactive processes. Within formal learning settings, tasks prescribed by the curriculum are passive, requiring learners to fulfill them. In contrast, the activities responsive to these tasks are active, as learners actively engage in their completion. Regardless of the guidance and support offered by educators and facilitators, learners invariably manifest a considerable degree of autonomy throughout the learning journey. Consequently, learners necessitate suitable opportunities for skill development within the learning process.

Building upon this theoretical framework, the present study further dissects the constituent factors across these four dimensions. In the context of case analysis, the study will utilize these dimensions to analyze the influencing factors on the online learning experiences of E University in the United States and N University in China. Through the integration of interview data, a comprehensive depiction of master's students' online learning experiences can be achieved.

4. Methodology

4.1 Research questions

1) How do the online learning experiences of master's students in China and the US differ in terms of inherent traits and external environmental factors, and what are the key distinctions that contribute to these differences?

2) What are the interrelationships and relative significance of inherent traits and external environmental factors in shaping the online learning experiences of master's students?

4.2 Participants

In the context of research courses, this study selected two online courses for investigation: "Algorithms" from a U.S. university's Master's program in Computer Science, and "Educational Statistics and Evaluation" from a Chinese university's Master's program in Education Management. Both courses are practical in nature, allowing for comparability. The U.S. university, E, is ranked 39th in the 2020 U.S. News university rankings. The Chinese N University, a prestigious institution in China classified as a "Double First-Class" university.

Regarding the selection of interview subjects, two groups were targeted. The first group comprised students from the "Algorithms" course at E University, with 20 students in total. Through purposive sampling, 10 interviewees were chosen based on classroom interaction levels, demographics, and randomness. The second group consisted of 16 students from N University's "Educational Statistics and Evaluation" course, selected through purposive sampling and post-interview de-duplication.

4.3 Data collection and analysis

This study aims to comprehend the online learning experience of master's students. In the past, many researchers have leaned towards employing quantitative research methods to analyze the factors influencing students' online learning experiences (Almaiah et al., 2022). While this approach showcases the standardization and rigor of research, it fails to account for the intricate nature of individual student experiences, often characterized by their uniqueness. A comprehensive analysis necessitates observations and profound interactions rather than solely relying on quantitative research methods, which struggle to unearth individual disparities. Hence, this paper employs a semi-structured interview format to deeply engage master's students participating in online courses. The study interviewed a total of 27 participants, resulting in 24 valid samples. The average interview duration was 30 minutes, generating a total of 84,096 words when transcribed.

5. Findings

In this study, the online learning experiences of students can be categorized into five dimensions: self-perception experience, interaction experience, effectiveness experience, course experience, and environmental experience. Among these dimensions, there are significant differences between the students of the two schools in terms of self-perception experience and course experience.

5.1 Self-Perception Experience

Taking into account students' self-perception across both schools, this study categorizes such experiences into online learning focus, anxiety encounters, satisfaction with online learning, and self-evaluation. Graduate students from N University in China exhibit better experiences in terms of online learning concentration and satisfaction compared to those

from E University in the US. On the other hand, graduate students from E University demonstrate a more positive self-assessment and experience less anxiety.

In terms of self-assessment, graduate students from E University in the US displayed greater confidence in their own learning abilities compared to their counterparts from N University in China. Additionally, they did not perceive significant differences in their peers' capabilities. This positive self-assessment empowered the students to question the teaching methods and content more confidently. This positive self-assessment was also linked to a lower sense of anxiety during online learning among E University students, contributing to an optimistic outlook on successful academic completion. In contrast, self-assessment among N University graduate students tended to be more negative. They were more concerned about the timely completion of their thesis and consequently experienced higher levels of anxiety.

There are variations in the factors influencing self-perception experiences between the two countries, primarily evident in students' self-efficacy beliefs.

Self-efficacy beliefs among graduate students from E University in the US are generally positive, instilling confidence in their individual abilities. As a result, these students encounter reduced anxiety in online learning, possess the ability to self-regulate their learning speed and exhibit greater readiness to challenge teaching methods and content. On the contrary, self-efficacy beliefs among graduate students from N University in China are more negative, as they perceive disparities in their own learning abilities and foundations compared to their peers.

5.2 Course experience

The course experiences of students from the two universities can be summarized in terms of course assessment, course difficulty, and course scheduling. In this regard, the course assessment and course scheduling experience of master's students at E University in the United States are superior to those at N University in China.

At E University in the United States, course assessment is carried out through a combination of regular group assignments and final projects. This approach achieves a balance between individual and group tasks, guiding students to review class materials in a timely manner and leveraging the collaborative benefits of group learning. Students express satisfaction with this assessment method, deeming it effective and reasonable. On the other hand, N University in China primarily relies on in-class exams for course assessment, neglecting the cultivation of group collaboration.

Concerning course scheduling, the American University E employs a balanced approach. For instance, the "Algorithm" course is held once a week on Thursday evenings, with each session lasting 3 hours. This scheduling allows students ample time for post-class practice. In contrast, at the Chinese University N, course scheduling is overly concentrated, depriving students of sufficient time to assimilate the knowledge gained during class.

6. Discussion

Based on these differences, this study draws upon the theoretical framework of online learning activities and systematically examines the interrelationships among four key elements that influence the online learning experiences of graduate students in both Chinese and American universities (see Figure 2). The learner element can be subdivided into intrinsic and adjustable factors. Learners' agency plays a role in shaping their learning outcomes, while learning outcomes, in turn, reciprocally influence learners. The learning environment and other contextual factors influence learning outcomes by acting upon the adjustable factors of the learners.

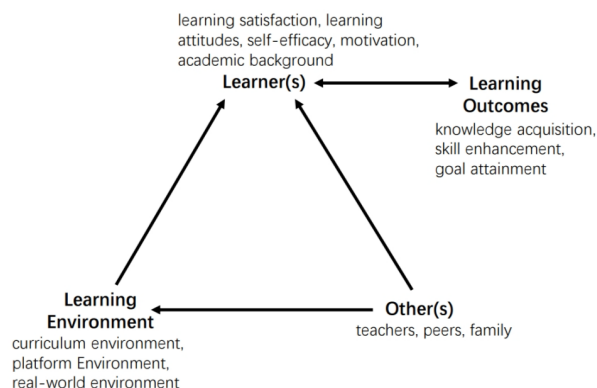


Figure 2. Interrelationships among four key elements.

6.1 Learner Factors: Inherent Factors and Adjustable Factors

6.1.1 Inherent Factors

The study highlights the significant impact of learning style on learning satisfaction, especially when considering the moderating effect of available learning time. Limited time availability prompts learners to optimize their in-class efficiency. Self-efficacy plays a direct role in shaping learning attitudes, with lower self-efficacy correlating to heightened anxiety and serious learning attitudes. Negative emotions like anxiety hinder cognitive abilities, impeding performance on challenging tasks. Academic background influences students' perception of course difficulty; diverse academic foundations lead to varied difficulty perceptions in the same course. Learning motivation, comprising external and internal factors strongly influences learning satisfaction for both American and Chinese master's students.

6.1.2 Adjustable Factors

From the gathered interviews, learners' adaptability is influenced by their attitude and satisfaction. Notably, satisfaction encompasses learning experiences and associated factors. Besides inherent traits, external roles and the learning environment also shape attitudes and satisfaction. Utilizing these factors is vital for improving online learning.

6.2 Other Role Factors: teachers, peers, and family

6.2.1 Teachers

In interviews, teachers' personal qualities strongly influence students' class perceptions. Both schools' students noted teachers' kindness, rigorous approach, and student-centered perspective, fostering familiarity. Teacher attitudes impact engagement, shaping overall learning experiences (Liu et al., 2016). Interactive teaching, using methods like questioning and roll calls, engages students during lectures. Roll-call enforces attention. Effective teacher-student communication during and after classes impacts psychological closeness. University E's Master's students value post-class communication, building rapport, and addressing queries promptly.

6.2.2 Peers

This study finds that peers' influence on the online learning experience for Master's students primarily falls into two categories: academic support and emotional resonance. This influence is manifested in whether students form a learning community. Within a learning community, students share ideas, collaboratively solve doubts, and cooperate in addressing various challenges (Shea et al., 2022). Such collaborative exchanges enrich students' knowledge and enhance their self-efficacy in learning and problem-solving.

6.2.3 Family

Interviews revealed that, for married learners, the influence of family members is pronounced. At University E, where the majority of Master's students are unmarried, only one married female student mentioned the influence of her husband and child on her online learning. In contrast, at University N, out of 16 interviewed Master's students, 8 were married. While two married male students didn't mention the family influence on online learning, the remaining 6 married female students reported that domestic responsibilities and childcare disruptions at home hindered their learning effectiveness compared to attending classes at school. The disadvantaged position of married and parenting women in their academic pursuits warrants attention (Hillier, 2023).

6.3 Learning Environment: Curriculum Environment, Platform Environment, and Real-world Environment

6.3.1 Curriculum Environment

Course scheduling's significance emerged in interviews with N University's graduate students, emphasizing its impact on learning effectiveness. Liu et al. (2016) stressed flexible timing for enriched educational experiences, while online courses now offer adaptable timelines for collaborative learning. Assessment methods strongly influence online students' performance. The assessment phase is pivotal, involving independent study, quizzes, and assignments. Effective assessment design aids in teaching evaluation and frequency management. Aligning content difficulty with students' knowledge follows the "zone of proximal development." Excessive challenge or simplicity hinders engagement.

6.3.2 Platform Environment

Regarding the user experience of online platforms, E University courses utilize the Microsoft Teams platform, while N University courses use the Tencent Meeting platform. Respondents from both institutions reported favorable experiences, with few instances of platform-related issues affecting their classes. Additionally, when comparing the experience

of online classes to traditional in-person classroom sessions, apart from the commonly acknowledged advantage of real-world authenticity, students from both universities noted that online classes provide clearer audio, overcoming the distance-related challenges of sitting far from the instructor in a physical classroom.

6.3.3 Real-world Environment

The impact of the real-world environment is related to learners' class locations, marital status, and gender. This study revealed that married female learners, participating in online education from home, encounter significant disruptions from their immediate real-world surroundings. Pajariato (2020) researched the environmental conditions of Indonesian students engaged in online learning, suggesting that, amid the extensive implementation of online learning, assigning homework remained a norm, but the absence of a conducive study environment and peer companionship hindered students' ability to complete tasks with the same efficiency, leading to substantial psychological pressure.

6.4 The Impact of Learning Outcomes

Learning outcomes, influenced by learners, the environment, and other factors, encompass knowledge acquisition, skill enhancement, and goal attainment. These outcomes impact learners' attitudes and satisfaction, shaping their engagement. Liu et al. (2016) highlight learning effectiveness perception as part of experiential learning. It reflects learners' evaluation of course outcomes, influencing continued engagement. The question "What did we gain from the course?" addresses this. Perceived learning effectiveness covers recognizing theoretical knowledge gains, problem-solving, and social and media skills through online learning, along with overall course assessment.

In master's students' knowledge assessment, practical knowledge prevails over theory for both Chinese and American students. Skill enhancement is related to the academic foundation and course difficulty. Learning motivation directly guides satisfaction and attitudes. External motivation dominates, with E University students seeking job-related knowledge, fostering positive attitudes. N University students are thesis-driven, focusing on practical knowledge for thesis writing. Consistent thesis-related guidance meets their expectations, enhancing dedication.

7. Conclusion

This study presents innovative elements in its approach and findings. The study primarily targets Chinese and American master's students, aiming to contrast the strengths and weaknesses of online master's programs. This informs improvements in Chinese online courses using insights from the American system. Additionally, it employs a creative approach by utilizing the online learning activities framework to analyze factors influencing students' online experiences. This approach underscores the framework's effectiveness in explaining these influences. Furthermore, the study's findings provide a novel perspective by introducing a new framework that illustrates connections among factors impacting master's students' online experiences. This results in actionable strategies for enhancing online learning.

However, limitations exist. The small sample size and disparities between the Chinese and American students affect the study's scope and depth. Resource and time constraints led to a focused case study approach, with differences in enrollment statuses further influencing behaviors. Future research should consider similar background identities for more robust outcomes.

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