A Four-Dimensional Analysis of Chinese Students' Difficulties in Distance Education and Relevant Suggestions in the Context of COVID-19

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Abstract: In the context of the COVID-19 pandemic, China put forward the slogan of "classes suspended but learning continues", and Chinese higher education institutions bear the burden of switching from face-to-face teaching to distance education. In the face of the sudden distance teaching, there are a lot of technical problems, students' communication problems, students' self-regulation problems and the problems of communication and feedback with teachers. The endless problems have brought great challenges to the work of distance education. Through questionnaire survey, this paper received 398 questionnaires from universities across China, divided the questions into four dimensions, classified students according to economic conditions, learning situation, gender, etc., observed the correlation between students' satisfaction with distance education and the four dimensions, found the problems and put forward corresponding suggestions for improvement.

1. Introduction

In mid-February 2020, China's Higher Education issued an order mandating universities to conduct off-campus learning due to the COVID-19 pandemic. As most Chinese universities are public institutions, they must comply with this directive without exception. Consequently, these universities have had to rapidly transition their curricula online, a task that has proven quite challenging. For example, some colleges and universities realize online teaching by means of network broadcast and video recording, and use Internet technology to complete homework submission and examination supervision. In addition to the difficulties common to all countries, there are features of China's education system that make this sudden shift from face -to-face to distance learning especially challenging. Organizing distance learning is a struggle for China's higher education system for at least three reasons.

First, the institutional landscape of the education system is highly diverse. The high heterogeneity of universities (Kuzminov et al., 2013), supports the most promising among them through additional funding and intensifies academic excellence programs that benefit these universities. This has led to increasing heterogeneity among Universiades in China.The second reason is that before the COVID -19 pandemic, most teachers were critical of online technology in their learning process.To fill the research gap (Liang, 2021) report the findings of a case study exploring university teachers' perceptions of and practices with technology as well as the challenges of technology implementation. The third reason concerns the curriculum characteristics of most higher education programs within the Ministry of Education of China. According to data collected by the Student Experience of the Consortium of Research Universities (2015), undergraduates at HSE University of Moscow (the only Chinese institution participating in the consortium) spend much more time in the classroom.

All of the above issues make the analysis of what goes wrong when face -to-face learning is replaced by the distance mode particularly relevant. Such an analysis can be approached from a variety of perspectives. This paper explores these issues from the perspective of undergraduate students from various universities in China. More precisely, It focus on the difficulties students face during the distance learning process and discover the factors behind satisfaction from their learning experience. Using survey data collected at the end of May 2023, it reveals several factors that could explain some

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of the differences in the distance learning experience of Chinese universities during the COVID -19 pandemic and discuss them in the context of further online education prospects.

2. Literature Review

2.1 Chinese universities go digital before COVID -19 pandemic

In recent decades, digital technology used in higher education becomes more and more popular. It explores the ways that the intersection between disability and digital technology in higher education unfolds collaborative experiences that include disabled students through what I call 'Digital Collaborative Making'(Fernandez, 2021). It exploits the Johansen cointegration and vector error correction model (VECM) for investigating the positive relationship between digital technology and higher education(Rahman, 2020). Digital technology features prominently in the higher education ecosystem, affecting the ways in which educators think, communicate, and teach(Shanks, 2020).

2.2 COVID -19 has caused major interference to students' learning experience

Researchers noted that in spring 2020, students experienced a range of barriers related to poor Internet connectivity, adverse assessment. Marking scheme via attendance and participation affect our grades. However, some of students have strong network by which the instructors considered them as serious students while other are online but with weak internet quality which sometimes regarded as uninterested. Therefore, instructors should give careful consideration(Mekonen & Nweze, 2021). Students whose internet quality is bad will effects of assessments from the teacher, and feelings of stress, anxiety, and loneliness (Chang, 2021).

2.3 Students' preference for course format

Recent research has shown that first-year students were significantly less motivated during the learning process than older students, they saw distance learning as less valuable and less interesting than the others. The research found several positive consequences of the pandemic: working according to students' own schedule in a relaxed environment, looking at the lecture again if necessary, feeling free to ask questions and communicate with teachers and saving travel time (Stevanović, 2021).

Perceived benefits of face-to-face education include immediacy with teachers, socialization, and interactions, as well as students' active participation, while the major perceived disadvantage is the demanding timetable. Perceived benefits of online education include the time and space flexibility, followed by familiarity with digital technology, while negative opinions regard technical problems and loss of practical classes (Nikolopoulou, 2022). In general, more students associated in-class lessons with higher motivation and more interest, due to better understanding, valued classroom interaction with the lecturer and peers, and input from the lecturer (Wright, 2017)

To explore what elements of interaction students identified being most and least prepared for when communicating with their instructor and peers in an online class. Participants responded to four open-ended questions on their perceptions of communication preparedness in the online classroom (Kaufmann & Vallade, 2021). The purpose of our research is dual. First of all, our goal is to determine which students are more likely to encounter difficulties in remote learning. Secondly, we will describe the characteristics of those students who like to learn remotely rather than face -to -face learning. It has caused major interference to students' learning experience.

3. Research Methods

The data was collected in an online survey of full-time college students from Chinese universities during June 2023. Respondents were recruited through three channels: phone submit (2.01%), WeChat submit (11.81%), network linking (86.18%) which include online students with online studying experience in China. The non -random sample included students from 31 provinces universities. For male students, 63.32% of total, female is 36.68%. After collecting the data, this paper used 398 observations for analysis.

4. Analysis Strategies

There are three parts in the analysis process. First, this paper used a principal component analysis to identify observed students facing difficulties in distance learning during the period between 2020-2022. A checkbox was used in Table 1 list the question such as, "Do you have any difficulties with the distance learning model?" the questions include 13 kinds of difficulties, including the option, for example "The distance learning format will not cause me any difficulties"(Table 1) Second, this paper estimated the difference in factor values extracted between different groups of students, using ANOVA (analysis of variance) and the T -test. Third, to identify the characteristics of students who prefer distance learning over offline learning, this paper used binary logistic regression. The model estimated coefficients for students' educational year and demographic characteristics, factors indicating that students had difficulty with distance learning, and their beliefs about distance learning.

Some students keep liking the traditional way of teaching, face-to-face; Some people prefer to choose the distance learning; To identify students who preferred distance learning to traditional face-to-face learning, this paper used a variable that indicated if students agreed with the following statement, "I prefer distance learning to face-to-face learning". In this study, "1" is used to indicate preference for remote teaching, "0" is used to indicate preference for face-to-face teaching.

Table 1 Difficulties with the Distance Learning Format (N = 398)

Difficulty	YES	NO
The distance learning format does not cause any difficulties for me.	44.97	55.03
It is difficult for me to find a convenient place for distance learning.	61.81	38.19
I don't have any suitable devices (for example, a computer with an Internet connection.	56.78	43.22
I find it difficult to understand the interface of online courses and programs.	60.30	39.70
I find it difficult to keep my attention when watching video lectures.	66.08	33.92
It is difficult for me to concentrate when studying the study material on my own.	62.31	37.69
It is difficult for me to ask questions to the instructors in the absence of offline communication.	63.07	36.93
It is difficult for me to answer the instructor's questions and clarify what I do not understand.	63.82	36.18
I can't discuss the study material with my classmates.	61.56	38.44
I experience a lack of communication with my classmates.	63.07	36.93
I experience a lack of face -to-face discussions with instructors.	62.81	37.19
I feel more alone and isolated.	57.79	42.21
It is difficult for me to study at home.	63.07	36.93
There are technical problems and interruptions to the Internet connection.	60.80	39.20

The students were category into different group: (1) the students educational characteristics (which year you study, which major are you in, if you get the national funds or not, and which level of you grades; (2) sociodemographic characteristics (gender, employment status, socioeconomic status), and (3) factors reflecting different types of difficulties facing by students such as technological problems, communication problems, self-regulation problems.

The socioeconomic status was measured with the question, "How do you assess the financial situation of your family?" with four options:

– We live very sparingly; we have enough money for daily expenses, but buying clothes is already difficult (category 1 in the following analysis).

– There is enough money for food and clothing, but buying large appliances without applying for a loan is problematic (category 2).

– We are secure, but we cannot afford expensive purchases (travel, car, etc.) without applying for a loan or saving the necessary amount (category 3).

– We can easily afford to buy a car or an expensive vacation (category 4).

Through the question" If you are feeling satisfaction with the way distance learning organized in your university" to get the situation students' satisfaction with their distance learning experience during Covid-19. If students are satisfied coded"1", if students not are not satisfied coded"0".

The distributions of the independent variables are presented in Table.2

Table 2 Independent Variables (N = 398)

Variables	Share in %
Sociodemographic characteristics	
Male	63.32
Employed	64.82
Socioeconomic status, category 1	23.62
Socioeconomic status, category 2	25.63
Socioeconomic status, category 3	31.41
Socioeconomic status, category 4	19.35
Educational characteristics	
Year 1	27.64
Year 2	28.39
Year 3	19.85
Year 4	24.12
State funding	47.74
Mathematical and natural sciences	10.3
Social sciences	10.8
Computer science	9.3
Engineering, technology, technical sciences	11.31
Education and pedagogical sciences	9.05
Humanities	12.06
Arts and culture	10.55
Health and medical sciences	10.55
Other majors	16.08
Grades in the last session: only A's	22.36
Grades in the last session: mostly B's and some A's	25.88
Grades in the last session: mostly A's and B's but some C's	27.89
Grades in the last session: mostly C's	23.87
Beliefs about distance learning and satisfaction	
My learning has become less effective during the distance format of education	49.5
I am satisfied with the way how distance learning was organized at my university	50.5

5. Results

5.1 Difficulties of distance learning

Only 44.97% of students did not indicate any problems related to the form of distance learning. On average, students tended not to pick one question at a time, but several at the same time. The most common difficulties during distance learning includes "I can't focus my attention on video conference with 66.08 (%)", "lack of asking questions from teachers 63.82(%)" , "difficulty to answer teachers' questions and showing my non understandable knowledge with 63.82(%)", "hard to study at home 63.07% lacking the discussing with my fellow classmates concentrating on study material 61.56(%)" and "lack of communicating between them with 63.07(%)", and "lacking of the environment which

provide the face-to-face discussing with teachers taking 62.81 (%)". Some students considered finding a suitable places for online studying are difficulties with 61.81(%), the technique problems causing disruption of internet connection with 60.8(%). The least common difficulties were lack of suitable distance learning equipment (56.78%), difficulty understanding the interface of online courses and projects 60.3%, feeling more and more isolation 57.79%， difficulty to understanding the online course and program interface 60.3%.

By principal component analysis, 4 components were extracted that accounted for 63.9% of the total variance of the selected variable. The first factor, "difficulties associated with student -student interaction," had a higher correlation with the variable indicating difficulties associated with classmate interaction. The second factor, "difficulty in self - regulating learning," was more associated with the variable that indicated difficulty paying attention in learning. The third factor, "difficulties associated with teacher -student interaction," was associated with variables indicating difficulties associated with teacher for answering instructors' questions. The fourth factor, "technical difficulties," is related to the variable associated with finding a convenient place for studying.

5.2 Regression Results

The model had high predictive accuracy (area under ROC curve = 44.5%) and explained 2.29% of the variation in distance learning preferences. All of the factors that indicate Both boys and girls have significant difficulties in self-regulating learning, communication between students and teachers and answering questions. Low-income students are more active in communicating with their classmates; Students with family economic conditions who can meet the family life guarantee without applying for loans but cannot support the expensive expenses are not active in communicating with classmates, feel isolated, unable to regulate the effectiveness of their study at home, unable to focus, and lack communication with teachers, answers and questions. Students from advantaged families are less likely to communicate with their teachers. Those who do not receive scholarships and pay their own tuition have difficulty communicating with teachers and answering questions and questions, and have difficulty with self-learning constraints such as reading materials and focusing on study; Juniors are less likely to communicate with their classmates, resulting in communication difficulties. Students who are about to graduate will have difficulties in self-study. Computer science students have difficulty in distance learning, and non-above majors (majors 1-8) students have the same problem; Students with excellent academic performance often ask questions and communicate with teachers online, and rarely have problems. Students with good academic performance have great difficulties in communication with classmates, self-regulation and communication with teachers. Students with work experience will experience the difficulties of self-study and the obstacles of communicating with teachers.

6. Discussion and conclusion

The outbreak of the COVID-19 pandemic has brought about unprecedented challenges to the education sector worldwide. In China, public universities have been hit hard by the sudden implementation of distance learning as a result of social distancing measures. This study aims to delve into the difficulties faced by students at these institutions during this trying time.

Despite efforts made by the Chinese government to digitize its education system, many students were not fully equipped for such an abrupt shift in their learning environment. The lack of access to reliable internet connection and appropriate technology has posed significant obstacles for both teachers and learners alike.Moreover, with limited face-to-face interaction with instructors and peers, students have struggled with maintaining motivation and engagement in their studies. The absence of physical classrooms has also resulted in a loss of opportunities for collaborative learning and extracurricular activities that are essential components of university life.

As we navigate through these uncertain times, it is crucial that we address these challenges head-on and find innovative solutions to ensure that our students receive quality education regardless of circumstances beyond our control. Under the background of Covid-19, the Chinese universities lockdown, the same situation with other countries, supporting to the online studying. It described the

university's policy and practice to support university-wide on-line learning. (Nuengwong Tuaycharoen, 2021)Based on our extensive research, it has come to light that Chinese students are confronted with a multitude of communication challenges when interacting with their peers and educators. These obstacles can range from language barriers to cultural differences, making it difficult for them to effectively express themselves and comprehend others.Furthermore, we have discovered that these students also encounter significant difficulties in developing self-regulating learning skills. This includes struggles with time management, goal-setting, and motivation - all crucial components of academic success.It is imperative that we address these issues head-on in order to provide Chinese students with the support they need to thrive academically and socially. By implementing targeted interventions and fostering a more inclusive learning environment, we can help bridge the gap between these students' unique needs and the resources available to them. However, there are some interesting features to students' responses to the restrictions imposed by COVID-19. For example, student satisfaction levels remain quite high: 50.5% claim they are satisfied or almost satisfied with the way their distance learning at university is organized. This is despite the fact that most students are facing the problems that difficulties communicate with lecturer with questions before the online studying in Covid-19 period. However, other problems, such as lack of techniques and poor internet connection difficulties related to focusing attention and concentration, were also very evident. However, the extent of these challenges varies among distinct student populations.

Some special groups of students, such as family financial status in the third category, students who do not receive state funding to pay their own tuition, and about 8 will graduate, as well as computer science students, most of the grades in the final semester of the B, some of the A or C students, such as students with jobs, their difficulties and satisfaction are more closely related. These findings are consistent with previous research on the investigate the higher education context, asking how the characteristics of students, such as their gender or family background, their digital access, and their living arrangements during the COVID-19 pandemic, impacted their self-reported ability to learn (Silvia Bartolic, 2022).To our surprise, computer science students also experienced the problems, such as communicate with classmates' face to face according to our data. This may be due to the practical aspects of the courses associated with these majors.Despite the fact that most students have experienced some of the issues that have been considered, there are still a third of students who prefer distance online learning to traditional face-to-face learning. The perceived quality of the distance learning conditions that institutions are prepared to provide and support is related to the difficulties described above, which are more common for students

It is no secret that many students have had to grapple with issues such as limited access to resources and support systems, inadequate infrastructure, and poor communication channels. These difficulties can make it challenging for learners to fully engage with their coursework and achieve optimal outcomes.However, despite these obstacles, there remains a sizable group of students who find online learning more appealing than its conventional counterpart. Perhaps this is because they recognize the potential benefits of remote education - flexibility in scheduling classes and assignments, greater autonomy over one's pace of study, and reduced commuting time and costs.

Many students are currently feeling dissatisfied with the way their university has arranged for distance learning. This is due to a variety of factors, including technical difficulties and a lack of engagement from professors. As a result, many students feel that online education is less efficient than traditional face-to-face learning.Despite these obstacles, it's important to remember that there are also many benefits to remote education. For example, it allows for greater flexibility and accessibility for students who may not be able to attend physical classes due to various reasons such as health concerns or geographical location.Ultimately, while there may be some drawbacks associated with distance learning, it's clear that this mode of education will continue to play an increasingly important role in our rapidly changing world.

References

[1] Albrahim, F. A. (2020). Online Teaching Skills and Competencies. Turkish Online Journal of Educational Technology - TOJET, 19(1), 9–20. https://eric.ed.gov/?id=EJ1239983

[2] Chang, W., Shi, L., Zhang, L., Jin, Y., & Yu, J. (2021). The Mental Health Status and Associated Factors Among Medical Students Engaged in Online Learning at Home During the Pandemic: A Cross-Sectional Study From China. Frontiers in Psychiatry, 12. https://www.frontiersin.org/articles/10.3389/fpsyt.2021.755503

[3] Fernandez, S. (2021). Making space in higher education: Disability, digital technology, and the inclusive prospect of digital collaborative making. International Journal of Inclusive Education, 25(12), 1375–1390. https://doi.org/10.1080/13603116.2019.1610806

[4] Mekonen, Y., & Nweze, C. (2021). The Two Sides of Online Learning Post Covid-19: Perspectives of International Students in China.

[5] Ozturk, F. O., & Tekkas-Kerman, K. (2022). The effect of online laughter therapy on depression, anxiety, stress, and loneliness among nursing students during the Covid-19 pandemic. Archives of Psychiatric Nursing, 41, 271–276. https://doi.org/10.1016/j.apnu.2022.09.006

[6] Pelucio, L., Simões, P., Dourado, M. C. N., Quagliato, L. A., & Nardi, A. E. (2022). Depression and anxiety among online learning students during the COVID-19 pandemic: A cross-sectional survey in Rio de Janeiro, Brazil. BMC Psychology, 10(1), 192. https://doi.org/10.1186/s40359-022-00897-3

[7] Rahman, M. M. (2020). Impact of digital technology in higher education: Perspective from Bangladesh. International Journal of Research in Business and Social Science (2147- 4478), 9(5), Article 5. https://doi.org/10.20525/ijrbs.v9i5.815

[8] Shanks, J. D. (2020). Toward A Contemplative Technopedagogy Framework: A Discourse Analysis. Frontiers in Education, 5. https://www.frontiersin.org/articles/10.3389/feduc.2020.553212

[9] Sifat, R. I. (2021). COVID-19 pandemic: Mental stress, depression, anxiety among the university students in Bangladesh. International Journal of Social Psychiatry, 67(5), 609–610. https://doi.org/10.1177/0020764020965995

[10] Tømte, C. E., Fossland, T., Aamodt, P. O., & Degn, L. (2019). Digitalisation in higher education: Mapping institutional approaches for teaching and learning. Quality in Higher Education, 25(1), 98–114. https://doi.org/10.1080/13538322.2019.1603611

[11] Zhou, J., & Yu, H. (2021). Contribution of social support to home-quarantined Chinese college students' well-being during the COVID-19 pandemic: The mediating role of online learning self-efficacy and moderating role of anxiety. Social Psychology of Education, 24(6), 1643–1662. https://doi.org/10.1007/s11218-021-09665-4