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Factors influencing student satisfaction of undergraduate students during online learning

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Abstract

This paper investigates the factors affecting students'satisfaction including participation, emotional well-being, and adaptation to online learning. We designed the research to collect quantitative data using survey questionnarie among undergraduate students This study explored the possible correlation between the rapid switch to online learning and student satisfaction and the perspective of considering offline or regular education. Our results show that live group discussions are positively associated with satisfaction. The level of stress experienced by the students was a significant factor during online learning. It was revealed that the satisfaction level decreases as the stress level increases during online learning. Moreover, students belonging to the university community by participating in cultural activities actively are linked to higher satisfaction levels. Lastly, access to technical equipment, such as cameras, microphones, and headphones, is also essential for student satisfaction.

Keywords: Student satisfaction, belongingness, online learning, participation, emotional well-being

Çevrimiçi öğrenme sırasında lisans öğrencilerinin öğrenci memnuniyetini etkileyen faktörler

Abstract

Bu makale öğrencilerin memnuniyetini etkileyen faktörlerden öğrenme sürecine katılım, duygusal olarak kendilerini iyi hissetme ve çevrim içi öğrenmeye uyum gibi faktörleri araştırmaktadır. Bu çalışmanın amacı çevrim içi öğrenmeye hızlı geçiş ile öğrenci memnuniyeti arasındaki olası ilişkiyi ve çevrim dışı veya normal eğitimi değerlendirme perspektifini ortaya koymaktır. Elde edilen sonuçlar canlı grup tartışmalarının öğrenci memnuniyeti ile pozitif yönde ilişkili olduğunu göstermektedir. Öğrencilerin çevrim içi öğrenme sırasında yaşadıkları stres seviyeleri memnuniyet üzerinde önemli bir faktördür. Çevrim içi öğrenme sırasında stres düzeyi arttıkça memnuniyet düzeyinin azaldığı ortaya çıkmıştır. Ayrıca, üniversite topluluğuna ve kültürüne mensup öğrencilerin üniversite faaliyetlerine aktif olarak katılması, daha yüksek memnuniyet düzeyleriyle bağlantılıdır. Son olarak kamera, mikrofon, kulaklık gibi teknik ekipmanlara erişim de öğrenci memnuniyeti açısından önemlidir.

Anahtar Sözcükler: Öğrenci memnuniyeti, aidiyet, çevrim içi öğrenme, katılım, duygusal esenlik

Kaynak Gösterme

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Introduction

The COVID-19 pandemic had an unprecedented impact on higher education institutions worldwide. The emergency transition to online learning posed a significant challenge for educational institutions as they had to quickly adapt their classes to the new "online" reality. In Kazakhstan, on March 12, 2020, instant switch to remote teaching and learning mode was announced. It followed that all universities in the country closed their doors to the face to face teaching. According to the data, tertiary education institutions in 175 countries had closed in response to the rapid spread of the coronavirus infection by April 8, 2020 (World Bank Group, 2020). This experience highlighted the constant need for higher education institutions to be prepared for unexpected shifts in learning modes, as unforeseen events like pandemics are an inherent part of our lives.

This paper will compare student participation, emotional well-being, and adaptation to online learning in order to evaluate their satisfaction. Over the course of the two years of the COVID-19 pandemic, a wealth of academic research has been conducted on the effects of online teaching and learning. However, there is a dearth of literature that compares how emergency online learning has influenced students when they return to traditional face-to-face learning. It has been reported that students who have experienced online modalities tend to be more confident in their use of digital tools (Landrum, 2020) and are likely to perform better in the future (Xing, 2022). In the context of this study, Kazakhstan, as a member of the Bologna Process since 2010, is particularly interested in the European Higher Education Area (EHEA), especially in how emergency remote teaching and learning was implemented during the COVID-19 pandemic. Kazakhstan's higher education institutions' experiences can be compared to those in the EHEA to demonstrate how different higher education systems handled the process of online learning.

Purpose and Objectives

The primary goal of this research is to investigate the factors that influence student satisfaction among undergraduate students at Nazarbayev University during the online education during the COVID-19 pandemic between 2020-2022. This investigation considers their recollections of pre-pandemic studies. While studies on online education in Kazakhstan have explored the perspectives of students at Al-Farabi Kazakh National University regarding the challenges of the emergency shift to online learning (Guncaga et al., 2022), more

comprehensive research, including surveys and interviews, has been conducted by Bokayev et al. (2021) involving various stakeholders in the educational process, such as teachers, parents, and students, to shed light on online education during COVID-19. However, no previous studies have specifically addressed the factors influencing student satisfaction among undergraduate students, or developed a critical aspect for deriving valuable insights and improving teaching and learning methods. This research can serve as a model for other higher education institutions in Kazakhstan, helping them address the issues that students face during the online learning mode, which have been magnified by the crisis caused by the COVID-19 pandemic. We found that it was essential to scrutinize and appropriately analyze student satisfaction surveys. The data obtained from these surveys was cleaned, analyzed, and visualized to establish potential relationships between student satisfaction during online studies and various factors.

Research Question: What factors influence student satisfaction during online learning amid the COVID-19 pandemic?

Hypothesis 1: There is a positive relationship between student satisfaction during online learning and their level of participation.

Hypothesis 2: There is a negative relationship between student satisfaction during online learning and the perceived level of stress.

Hypothesis 3: A positive relationship exists between student satisfaction during online learning and their sense of belonging to the NU community.

Hypothesis 4: There is a positive relationship between student satisfaction during online learning and their access to technology.

Literature Review

Numerous studies conducted since the beginning of the pandemic aimed to gather and generate knowledge from available articles concerning education during the COVID-19 era. In their systematic review, Kohl and Daniel (2022) identified eight strategies used by instructors in higher education to support online course delivery. Despite instructors' efforts to create asynchronous learning materials, Kohl and Daniel's study highlighted the significant impact of

home environment factors on students' learning outcomes (Kohl & Daniel, 2022). This impact ultimately boils down to differences in students' levels of engagement and self-study strategies.

Quality assurance in higher education institutions is also of paramount importance for the effective functioning of all stakeholders involved in the educational process. Simunich et al. (2022) conducted a mixed methods study to assess online course quality assurance using the Quality Matters (QM) framework. Their findings suggest that adopting a more horizontally flexible approach, as opposed to a rigid "top-down" approach, is vital for educational policies, processes, and tools aimed at ensuring and enhancing the quality of online learning (Simunich et al., 2022).

Moreover, it's crucial to consider the unique context of each institution, including its faculty, staff, and students. This uniqueness is particularly evident in regional educational policy decisions. The World Bank conducted an investigation of educational systems across Europe and Central Asia during the COVID-19 pandemic and provided recommendations for a learning recovery plan (World Bank, 2021). While the plan primarily addressed educational systems in general, the World Bank emphasized the significance of quality assurance and the introduction of educational innovations, using the pandemic as a catalyst to highlight the shortcomings within these systems.

The sudden shift to online learning posed substantial challenges for both students and faculty, as neither group had received formal preparation for online education. Recent studies on online learning have highlighted several issues reported by students, including technological competence problems (Tan et al., 2021), slow internet connections (Howcroft & Mercer, 2022; Guncaga et al., 2021), difficulties in self-regulation (Barak et al., 2016), psychological challenges such as anxiety and feelings of isolation (Howcroft & Mercer, 2022; Rabe-Hemp et al., 2009; Ritzhaupt et al., 2022), distractions from the home environment (Howcroft & Mercer, 2022; Guncaga et al., 2022), and the lack of social interaction and communication with peers and university faculty (Conrad et al., 2022; Tan et al., 2021).

Student satisfaction is a central focus of this research study, as there are standardized methods for evaluating it across educational systems and institutions. Nevertheless, there are still systemic gaps in addressing these issues. In this context, Hettiarachchi et al. (2021) conducted an investigation into the factors influencing university students' satisfaction in Sri Lanka during the online learning period. Their findings identified three primary factors that

played a pivotal role in determining student satisfaction: students' motivation, student interactions, and perceived challenges in online learning (Hettiarachchi et al., 2021).

Motivation among learners significantly shapes self-regulated learning, a critical consideration in the creation of a productive learning environment. At the onset of the pandemic, studies began to explore the relationship between self-regulated study efforts and student satisfaction, as this was predicted to be a concern in the context of online learning. For instance, at Wingate University in the United States, undergraduate students were surveyed regarding their perceptions of their learning processes, including self-study, flexibility, and satisfaction with distance education (Unger & Meiran, 2020). Many students exhibited signs of anxiety and stress due to the abundance of misinformation and disinformation in the media. The variables of self-study, learning flexibility, and satisfaction had a substantial impact on students' satisfaction levels (Unger & Meiran, 2020).

In Vietnam, students' satisfaction is significantly influenced by the quality of learning materials and their interactions with peers and instructors (Pham et al., 2021). Students pointed out that online education alone is insufficient for a quality learning experience. To make e-learning effective, teaching methods and tools should be aligned with students' needs during the online learning period (Pham et al., 2021).

Quantitative studies on student satisfaction often employ the Likert satisfaction scale and various statistical analysis methods, such as the Cronbach's Alpha test, ANOVA, and t-test, which will also be utilized in our study. In quantitative studies, a 4-point Likert scale is used to measure the levels of learner interaction and satisfaction.

Compared to traditional face-to-face classes, online courses possess a unique "climate." Kaufmann et al. (2016) define this climate as "the emotional atmosphere, feeling, and connection in the course with the instructor and students" (p. 312). Consequently, the interaction between students and faculty receives significant emphasis. A survey on student experiences with online learning during the COVID-19 pandemic at universities in Slovakia, the Czech Republic, and Kazakhstan revealed that the issue of student-teacher communication in virtual classrooms was particularly prominent during the initial stages of the pandemic when institutions were still adapting to the changes (Guncaga et al., 2022).

Communication in online environments plays a pivotal role in shaping students' perceptions of online learning. Some students may experience a sense of isolation during online

classes due to the absence of immediate interaction and real-time feedback available in face-to-face classes (Popa et al., 2020; Rabe-Hemp et al., 2009). Therefore, interactions with peers and communication with faculty members contribute significantly to higher levels of satisfaction with the online learning environment (Cole, 2016).

The literature review also indicates that student participation and engagement in online classes are closely tied to interactions and relationships with other students online (Cole et al., 2021). This underscores the importance of promoting online learning practices that facilitate peer communication. Hence, instructors should incorporate course elements that incorporate online learning activities where interactions with both students and the instructor are ensured (Cole et al., 2021; also see Tan et al., 2021).

The post-pandemic reality of the education system, particularly in the context of its long-term effects, warrants comprehensive study. The pandemic has brought to the forefront numerous pre-existing issues in various socio-economic domains. Rapanta et al. (2021) examined the challenges posed by the post-pandemic world and emphasized "the importance of pedagogization over mere digitalization of higher education" (Rapanta et al., 2021). This implies that while digitalization is important, it has yet to be fully realized in global educational systems. The development of pedagogical methods is the foundational element that influences all other educational mechanisms (Rapanta et al., 2021).

Methodology

In line with the existing literature on online education and COVID-19 pandemic-related education studies, a quantitative cross-sectional questionnaire-based research approach was identified as the most suitable method. As per Fraenkel, Wallen, and Hyun, "a cross-sectional survey collects information from a sample drawn from a predetermined population" (2012). Following the steps of survey research, the initial problem or topic of interest was identified.

In this study, we employed the investigator triangulation method to explore the potential correlation between the rapid transition to online learning and student satisfaction, as well as their perspectives on traditional offline learning. A second objective was to identify the target population. The final preparatory step in conducting a cross-sectional study, as described by Fraenkel et al. (2012), involved determining the data collection method. To this end, we sent an email invitation to students, including a questionnaire. We utilized Qualtrics, a highly

reliable tool for this purpose. The anonymous survey was distributed to participants via their institutional email accounts near the end of the Fall 2022 semester and remained open for a duration of two weeks.

For data analysis, we employed regression analysis to assess the relationships between various aspects of online learning during the COVID-19 pandemic and student satisfaction. This approach allowed us to identify which predictors significantly influenced student satisfaction and estimate the effects of these predictors.

This study received an approval by IREC (Institutional Research and Ethic Committee) in 2022. Students are invited to participate in this research study focuses on their experiences of online learning during the COVID-19 pandemic and after the return to face-to-face mode by an email sent to the student body. They took the anonymous survey to contribute to knowledge about teaching and learning at the college level. They were provided with information regarding the survey's length and an informed consent form that explained the procedure, potential risks, benefits, confidentiality, privacy, the voluntary nature of participation in the study, and contact points for any questions or concerns.

Participants

It is crucial to examine students' perceptions of online learning during COVID-19, particularly after the return to in-person learning at higher education instutions. Beginning in March 2020, Nazarbayev University, located in the capital city of Astana, initiated online course delivery in response to the COVID-19 outbreak, and this mode of education continued beyond the pandemic. The university offered all programs through the Moodle learning management system, both synchronously and asynchronously. Students studied entirely online until the Fall semester of 2021 when the university began allowing students to reside in dormitories and introduced a limited number of courses through a hybrid learning system. Starting in the Fall of 2022, the university transitioned entirely to in-person teaching and learning as COVID-19 restrictions within the country eased.

The participants in this study comprise undergraduate students enrolled at Nazarbayev University. The target population consists of undergraduate students who have either experienced the transition from in-person learning to fully online learning or have started their bachelor's degree and switched to the face-to-face learning mode. Two hundred sixty two

students initially agreed to participate in the study, however, after the data cleaning process, only 172 valid responses remained.

To assess the central tendency of the data, the median survey duration was calculated, which stood at 7.95 minutes. This measure serves as a robust indicator of the typical time required for respondents to complete the survey. In the case of online respondents, their Internet accessibility was also examined. The distribution of responses revealed that 38.37% of online respondents confirmed having Internet access during the survey, while 22.67% disagreed. Additionally, 16.86% neither agreed nor disagreed, 14.53% strongly agreed, and 7.56% strongly disagreed.

Data Collection Instruments

The survey questionnaire consisted of 44 items. The first eight questions asked for a student's basic demographic information, such as gender, age, and school. The remaining items were used to assess student satisfaction with online learning, participation and communication with faculty and peers, and the accessibility of technology during the remote learning period. Students reported their answers on a 5-point Likert scale ranging from ‘strongly agree’ to ‘strongly disagree.’

Furthermore, the survey incorporated the Online Student Engagement Scale (OSE) developed by Dixon (2015) to assess the level of student engagement in online learning. This scale measures student engagement across four primary factors: skills, emotion, participation, and performance, employing a set of 19 items. However, as our study focuses solely on measuring student participation during online learning, we excluded the other three factors and concentrated only on items related to assessing student participation. This subset of questions pertains to activities such as forum discussions, peer interactions, and group discussions (Dixon, 2015).

The Cronbach's alpha coefficient for the scale used to assess student satisfaction with online learning was determined to be 0.87, indicating a high level of internal consistency reliability. In contrast, the scale measuring Access to Information and Learning Materials exhibited an internal consistency reliability coefficient of 0.63, as evaluated by Cronbach's alpha. Although this coefficient falls within an acceptable range, it suggests a moderate level of internal consistency. Finally, the internal consistency reliability of the scale that assesses

student satisfaction using Dixon's OSE scale yielded a Cronbach's coefficient of 0.62, indicating a moderate level of internal consistency for this scale.

Data Cleaning

The data-cleaning procedure revealed that out of the 260 students who had agreed to participate in the study, only 172 responses were valid. To achieve this, several steps were taken. First, the data was examined for any missing values, and it was discovered that 172 out of the 260 responses were genuine. This suggested that some respondents might have skipped questions or left the survey unfinished. Second, the data was scrutinized for duplicate entries in the survey responses and these duplicates were removed. This step is crucial to ensure that each response accurately represents a distinct participant. Following that, data outliers that could potentially bias the analysis or visualization were identified and adjusted. Survey responses were also reviewed for any flaws or discrepancies, such as misspellings or inconsistent answers. This thorough review was essential to ensure the data's accuracy and dependability. Finally, the data was re-coded and converted to variables as needed to ensure it was in the proper format for analysis. This process involved checking for data input errors, confirming data correctness, and addressing any data discrepancies. These steps collectively guaranteed the validity and accuracy of the analysis and any inferences drawn from the data.

Findings

The findings of this study provide valuable insights into the levels of student satisfaction with online learning, as assessed through a comprehensive scale designed to measure various dimensions of the learning experience.

Table 1

The correlation between student satisfaction and participation

	Estimate	SE	t	p
Intercept	1.71	0.84	2.04	0.043
I felt comfortable sharing my thoughts/opinions with my	0.83	0.23	3.57	< .001

classmates outside of my classes during online learning due to COVID-19.				
I felt comfortable collaborating with classmates during group projects during online learning due to COVID-19.	0.30	0.21	1.43	0.155
During online learning due to COVID-19, I felt comfortable posting an entry to the Forum discussions.	0.72	0.22	3.29	0.001
I was able to start new friendships during online learning due to COVID-19.	0.45	0.19	2.37	0.019

*p < .05

Table 1 displays the correlation between student satisfaction and various factors related to their participation during online learning due to COVID-19. Each predictor variable is listed along with its estimate, standard error (SE), t-value, and p-value.

The first predictor variable, "I felt comfortable sharing my thoughts/opinions with my classmates outside of my classes during online learning due to COVID-19," has an estimate of 0.83. It suggests that for every unit increase in the comfort level of sharing thoughts/opinions, student satisfaction is predicted to increase by 0.83 units. The standard error is 0.23, the t-value is 3.57, and the p-value is less than 0.001, indicating a statistically significant relationship. The second predictor variable, "I felt comfortable collaborating with classmates during group projects during online learning due to COVID-19," is estimated at 0.30. The standard error is 0.21, the t-value is 1.43, and the p-value is 0.155, indicating no statistically significant relationship at the conventional significance level ($p > 0.05$). The third predictor variable has an estimate of 0.72. The standard error is 0.22, the t-value is 3.29, and the p-value is 0.001, indicating a statistically significant relationship. The fourth predictor variable, "I was able to start new friendships during online learning due to COVID-19," has an estimate of 0.45. It

suggests that for every unit increase in the ability to start new friendships, student satisfaction is predicted to increase by 0.45 units. The standard error is 0.19, the t-value is 2.37, and the p-value is 0.019, indicating a statistically significant relationship.

Table 2

The correlation between student satisfaction and level of stress

	Estimate	SE	t	p
Intercept	12.99	0.80	16.26	<.001
I felt stressed during online learning due to COVID-19.	-1.25	0.20	-6.14	<.001

*p < .05

Findings suggest that students' stress levels (B = -1.25, b = -.43, p <.001) statistically affected student satisfaction with online learning. The coefficient (B) for the predictor variable is -1.25. It suggests that for every unit increase in the feeling of stress during online learning, the outcome variable is predicted to decrease by 1.25 units. The effect size, R^2 was. 18 (considered 'small', Cohen, 1993), suggesting that only 18% of the item variation was explained by the variables in the model. Even though the effect size is small, the relationship between stress and course satisfaction is still significant. The results show a significant negative relationship between student satisfaction and perceived stress level; therefore, the null hypothesis is rejected. We assume that the student's satisfaction with online learning decreases as the level of stress increases.

Table 3

The correlation between student satisfaction and student belongingness

	Estimate	SE	t	p
Intercept	5.11	0.71	7.22	< .001
I felt like a member of the NU community during online learning due to COVID-19.	0.83	0.25	3.30	0.001

I participated in activity(-ies) conducted by the university during online learning due to COVID-19.	0.64	0.24	2.69	0.008

*p < .05

The table presents the correlation between student satisfaction and student belongingness during online learning due to COVID-19. The predictor variables are related to the sense of belongingness experienced by the students. According to the regression model results, students' level of belongingness to the university community (B = 0.83, b = 0.24, p <.005) had a statistically significant effect on student satisfaction with online learning. The first predictor variable, "I felt like a member of the NU community during online learning due to COVID-19," has an estimate of 0.83. It suggests that for every unit increase in the sense of belongingness to the NU community, student satisfaction is predicted to increase by 0.83 units. The standard error is 0.25, the t-value is 3.30, and the p-value is 0.001, indicating a statistically significant relationship. The second predictor variable, "I participated in activity(-ies) conducted by the university during online learning due to COVID-19," has an estimate of 0.64. It suggests that for every unit increase in participation in university activities, student satisfaction is predicted to increase by 0.64 units. The standard error is 0.24, the t-value is 2.69, and the p-value is 0.008, indicating a statistically significant relationship.

Table 4

The correlation between student satisfaction and access to technology

	Estimate	SE	t	p
Intercept	5.59	1.12	5.00	< .001
I had all of the necessary technical equipment for studying, such as a camera, microphone, and headphones during online learning due to COVID-19.	0.66	0.27	2.49	0.014

*p < .05

Table 4 presents the correlation between student satisfaction and access to technology during online learning due to COVID-19. The predictor variable focuses on whether students had all the necessary technical equipment for studying, such as a camera, microphone, and headphones. Findings suggested that students' access to technology ($B = .66$, $b = .19$, $p < .05$) had a statistically significant effect on student satisfaction with online learning. The intercept value is 5.59, indicating the expected student satisfaction score when all predictor variables are zero or not applicable. The intercept's standard error (SE) is 1.12, the t-value is 5.00, and the p-value is less than 0.001, indicating a statistically significant relationship between the intercept and student satisfaction. The effect size, R2 was .04 (considered 'small', Cohen, 1993), suggesting that only 4% of the variation in items was explained by the variables in the model. We assume a statistically significant positive relationship exists between access to technology and student satisfaction with online learning. Therefore, the null hypothesis is rejected.

Statistical analysis of the survey results revealed that stress and sense of belonging were negatively associated with student satisfaction. Granted, the general ambiguity, anxiety, and stress surrounding the COVID-19 pandemic provided enough of a stress factor to the undergraduate students; however, the institution of online mode of learning without proper teaching and learning methodology nor the allocation of resources might have magnified the existing perception of stress, which aligns with the global research on the association between stress and student satisfaction. The study conducted by Kumalasari and Akmal among a sample of public and private university students in Indonesia noted a negative relationship between academic stress experienced by students and their satisfaction levels with online learning (Kumulasari & Akmal, 2021). One of our study hypotheses was to determine such a negative relationship. Considering the mixed responses to student satisfaction with online learning, most of our sample of students were either satisfied or felt ambiguous.

Therefore, inspecting our sample to see the differences between the different categories of students is valuable. Those who felt stressed during online learning were less inclined to start new friendships, with 19.77% strongly disagreeing and 19.11% disagreeing with the statement about being able to make new friends during online classes. Furthermore, family pressure was likely to influence stress and possibly satisfaction levels. Among those who felt the most stressed, the majority of them agreed with exhibiting the sense of pressure from family members during online learning.

Another factor this study has found to be associated with student satisfaction is the sense of belongingness to the university community and peers. In this context, the sense of belonging

can be interpreted as the feeling of connection and respect towards the actors in the educational process, including the instructors, fellow students, and the administration. The sense of belonging proves to be a determining factor in many pieces of literature on the topic, as the feeling of connectedness with the community they are embedded in, even online, is crucial for the feeling of satisfaction with their academic and social lives during their undergraduate years (Mehmet, 2023; Cole et al., 2021).

The relationship between student satisfaction and access to technology is especially significant in the context of online learning. Access to technology plays a crucial role in facilitating the participation and engagement of students in the online environment. This study reveals a statistically significant positive relationship between access to technology and student satisfaction with online learning. The results of the data analysis and findings indicate that having all the necessary technical equipment for studying, such as a camera, microphone, and headphones, is positively and significantly correlated with student satisfaction during online learning. Access to the required technology contributes to higher levels of satisfaction among students.

When it comes to student participation during online learning, according to the results of the study, a sense of belongingness to the NU community and active participation in university activities during online learning are positively and significantly correlated with student satisfaction. Hence, feeling like a community member and engaging in university-led activities increase student satisfaction. Moreover, the studies on student participation during online learning suggest that communication with peers and collaborating on projects is a crucial component of positive attitudes toward online engagements (Cole, 2021). The findings of this study suggest that factors such as comfort in sharing thoughts during class debates and participating in forum discussions, as well as the ability to form friendships, positively impact student satisfaction during online learning. However, the comfort level in collaborating during group projects does not influence satisfaction significantly.

Student participation increased after the switch back to offline mode, which aligns with previous studies on face-to-face learning being particularly beneficial to students' satisfaction levels. The psychological component of interacting with "real" people positively affects students. However, they are watching recorded lectures of their instructors and seeing or hearing their peers on the screen (Aragon, 2003).

Discussion and Conclusion

The COVID-19 pandemic had a profound impact on among the students at Nazarbayev University. This transition posed numerous challenges for students including technological difficulties, psychological issues, and a heightened need for social interaction (Conrad et al., 2022; Howcroft & Mercer, 2022; Tan et al., 2021). We emphasize the significance of factors like student motivation, interactions, and perceived challenges in shaping student satisfaction with online learning.

In the context of this study, researching student satisfaction with online learning becomes a critical endeavor. It not only informs educational policies and practices but also provides valuable insights into students' learning experiences during such critical situations (Pham et al., 2021). By comprehending the factors that contribute to student satisfaction, educational institutions can design more effective online courses and allocate resources appropriately to address student needs. This research endeavors to shed light on student experiences during online learning and to examine the factors that influence their overall satisfaction.

The sample of undergraduate students from Nazarbayev University could be generally categorized into multiple groups based on their learning mode when they started pursuing their bachelor's degree. They had to witness the break of the COVID-19 pandemic during their studies, either at their undergraduate studies at NU or when they were finishing high school, meaning they started their undergraduate studies entirely online. As enough time has passed to investigate the students' reflections on their satisfaction levels, this study aimed to use the current time, as the offline mode of learning is back at NU, so possible comparisons could also be made. There was a small category of students whose first year of undergraduate studies began during the hybrid mode. The reasoning behind this sampling decision was to investigate various perspectives of current NU students, accounting for possible differences between these two categories. The decision-making was based on selecting the most representative groups to provide their invaluable insights and experiences.

By viewing the breakdown between these three categories, 78 students experienced offline learning before the pandemic, 90 students started learning their first year online, and only four students experienced a hybrid learning mode at the beginning of their studies. Various groups of students proved to experience the sudden shift, as well as online education in general, differently. However, the majority in both the groups that started their undergraduate degree online and offline were "satisfied with online learning, with a slight difference in the online

category being more "dissatisfied," at 20%, with 15.38% of respondents having experienced the traditional learning before the outbreak of the pandemic.

The study's results yield several key conclusions regarding the factors influencing student satisfaction during online learning. First, active student participation in online classes, which involves collaborating with peers on group projects, engaging in forum discussions, and participating in live group discussions, is positively associated with satisfaction. Secondly, stress levels experienced by students play a significant role in online learning satisfaction. The study revealed that as stress levels increase during online learning, satisfaction levels tend to decrease. Therefore, it is crucial for educational institutions to monitor and manage student stress levels, particularly during unexpected and unprepared instances like online learning due to the COVID-19 pandemic. Thirdly, just as there is a positive relationship between student participation and satisfaction, the degree of a student's belongingness to the university community and culture, along with active participation in university activities, is linked to higher satisfaction levels. Lastly, access to technical equipment, such as cameras, microphones, and headphones, is also essential for student satisfaction.

To enhance student satisfaction with online learning, educational institutions should prioritize the creation of a supportive learning environment that encourages active participation and collaboration, addresses student stress and needs, and ensures access to essential technology for learning. By focusing on these factors, institutions can enhance students' overall satisfaction and engagement in online learning settings.

While the COVID-19 pandemic disrupted traditional pedagogy, it also presented numerous opportunities to integrate digital technologies into education. These technologies enable the delivery of high-quality materials that align with current global trends and developments in educational technology.

The COVID-19 pandemic and the nationwide shift to online education as a precaution compelled Kazakhstan's educational system to adapt to the online reality. Prior to the global pandemic, none of the higher education institutions in Kazakhstan were prepared to adjust their teaching and learning programs for the online environment. Nonetheless, all universities were obligated to transition to online education without compromising the quality of instruction. This forced shift to online education due to COVID-19 marks the inception of the development

of an educational sphere that aligns with modern technological standards and international requirements.

Recommendations

To gain a better understanding of the student experience during the 2020-2022 online learning environment, it is imperative to explore the perspectives of students. Researchers interested in identifying and studying the various effects of online learning and post-COVID-19 learning environments on student satisfaction levels may find it beneficial to expand their sample to include graduates of Nazarbayev University and current students. This broader scope allows for a comparative analysis among different categories of students. Additionally, investigating the factors contributing to student stress can help refine methodologies and improve tools and resources to address the diverse needs of students from various social and economic backgrounds.

Strenghts and Limitations

This article aimed to assess students' reflections on their satisfaction with learning during the COVID-19 pandemic, taking into account factors such as participation, emotional well-being, and adaptation to online learning, both during and after the return to in-person classes. We encountered challenges in finding sufficient literature for this comparison, with a specific focus on Kazakhstan's higher education system and its adaptability to online learning during crises like COVID-19. Furthermore, our research was limited to Nazarbayev University.

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