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نشاط آموزشی دانشجویان در فضای مجازی: مطالعه‌ای در دوره شیوع کووید-۱۹

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چکیده

با شیوع کووید-۱۹ و اجبار دانشجویان به یادگیری در فضای مجازی، پرداختن به نشاط آموزشی و سهم آن در عملکرد مراکز دانشگاهی اهمیت بیشتری یافته است. این پژوهش به بررسی نشاط و سرزندگی آموزشی دانشجویان در فضای مجازی و شناسایی عوامل مرتبط با آن می‌پردازد. جامعه آماری این پیمایش شامل دانشجویان دانشگاه کاشان در سال تحصیلی ۱۴۰۰-۱۳۹۹ است. حجم نمونه با استفاده از نرم‌افزار سمپل پاور برابر با ۴۸۹ نفر برآورد شده است. قابلیت اعتماد متغیرهای پژوهش نیز با استفاده از ضریب پایایی ترکیبی بررسی و مورد تأیید قرار گرفته است. یافته‌های پژوهش نشان می‌دهند که بین متغیرهای «دسترسی به منابع و امکانات آموزش مجازی»، «رضایت از سامانه آموزش الکترونیک دانشگاه»، «کیفیت آموزشی»، «تجربه زیست دانشجویی در فضای مجازی»، «سرمایه اجتماعی درون‌گروهی» و «رعایت حقوق دانشجویی» با متغیر «نشاط آموزشی» رابطه مستقیم وجود دارد. همچنین، نتایج ارزیابی مدل ساختاری نشان می‌دهد که حجم اثر متغیر «تجربه زیست دانشجویی در فضای مجازی» در حد زیاد، متغیر «کیفیت آموزشی» در حد متوسط رو به پایین و سایر متغیرها در حد کم بوده و توان پیش‌بینی کنندگی مدل نیز در سطح بالا برآورد شده است. در مجموع، یافته‌های این پژوهش نشان دادند که پرداختن به امکانات آموزش مجازی و ارتقاء کیفیت آن‌ها از یک سو و توجه به سرمایه اجتماعی درون‌گروهی دانشجویان و رعایت حقوق آنان می‌تواند در تجربه زیسته دانشجویی و در نتیجه نشاط آموزشی حتی در فضای غیرحضوری نقش بسزایی داشته باشد.

واژه‌های کلیدی

نشاط آموزشی، سرزندگی آموزشی، آموزش مجازی، کیفیت آموزش مجازی، دانشگاه نشاط‌محور.

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ORIGINAL ARTICLE

Student Educational Vitality in Virtual Spaces: A Study During the COVID-19 Pandemic

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ABSTRACT

Following the outbreak of COVID-19 and the compulsory shift to online learning for students, addressing educational vitality and its contribution to the performance of academic institutions has become increasingly important. This research investigates the educational vitality of students in virtual spaces and identifies factors associated with it. The statistical population for this survey comprises students at the University of Kashan during the academic year 2020-2021. The sample size was estimated at 489 participants using Sample Power software. The reliability of the research variables was assessed and confirmed using the composite reliability coefficient. Research findings indicate a direct relationship between the variables "access to virtual education resources and facilities," "satisfaction with the university's e-learning system," "educational quality," "student lived experience in virtual space," "bonding social capital," and "respecting student rights," and the variable " educational vitality." Furthermore, the structural model evaluation results show that the effect size of "student lived experience in virtual space" was large, the effect size of "educational quality" was medium-to-low, and the effect sizes of other variables were small. The model's predictive power was estimated to be high. In conclusion, the findings demonstrate that addressing virtual education facilities and enhancing their quality, on one hand, and paying attention to students' bonding social capital and respecting their rights, on the other hand, can play a significant role in student lived experience and consequently in educational vitality, even in a non-in-person environment.

KEYWORDS

Educational Vitality, Educational Liveliness, Virtual Education, Quality of Virtual Education, Vitality-Oriented University.

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Introduction

As a fundamental, positive emotion that influences behavior and other states, vitality and happiness play a crucial role in individual and societal health. According to Diener (2021), happiness is a subjective experience, meaning it is shaped by an individual's personal evaluation of their life conditions and emotional states. He believes that the concepts of happiness and well-being are interconnected. Well-being is a psychological and social concept encompassing various life domains, with happiness considered one of its components (Sewaybricker & Massola, 2023). Diener often uses *happiness*, *subjective well-being*, and *life satisfaction* interchangeably, emphasizing that happiness is an overall assessment of an individual's quality of life from their own perspective (Chykhantsova, 2020). Veenhoven (2017) also argues that happiness refers to an individual's judgment about the degree or level of desirability and quality of their life as a whole—meaning how much an individual likes the life they lead. He distinguishes between affective components (how good a person feels most of the time) and cognitive components (the extent to which a person perceives they are getting what they want from life) of happiness, arguing that both are essential for a comprehensive understanding of the concept (Veenhoven, 2017).

The concept of academic vitality extends the general theory of vitality and liveliness to the specific domain of education and learning experiences. Theoretical advancements concerning vitality in education are linked to the studies and perspectives of Martin Seligman. Seligman views happiness and vitality in educational settings as more than just fleeting positive emotions. Within his theoretical framework, the primary goal of "Positive Education" is to achieve flourishing and well-being. According to Seligman, the five components of flourishing (PERMA) are: 1. *Positive Emotion*: Encouraging feelings such as joy, gratitude, and optimism in the learning environment; 2. *Engagement*: Promoting deep involvement in educational activities; 3. *Relationships*: Fostering supportive and positive connections between learners (students) and instructors; 4. *Meaning*: Helping learners find purpose and significance in their studies and lives within the educational setting; and 5. *Accomplishment (Achievement)*: Supporting learners in setting and achieving goals, enhancing their sense of competence and success (Seligman, 2018; Seligman, 2019).

Seligman's definition of educational happiness and vitality extends beyond momentary pleasure to include psychological well-being, resilience, and character development. While positive education does not seek to replace traditional teaching methods, it provides a foundation for academic achievement and life satisfaction among students. Accordingly, environments conducive to advancement, as crucial settings for growth and development in young people's (students') lives, can be a primary source of skills and competencies that support adaptability and become effective factors in their thriving and flourishing (Salehzadeh et al., 2017). In summary, academic vitality can be defined as a sense of satisfaction and tranquility resulting from increased knowledge, encompassing both internal and external facets (in interaction with others) within an educational space, manifesting in affective, cognitive, and behavioral dimensions. Academic vitality, along with fostering motivation and hope for the future, is considered not only a sign of mental health but also a primary factor in students' academic progress. Therefore, its continuous assessment in educational

environments has always been emphasized by university administrators and planners.

The university is always considered a symbol of higher education in the country and an influential, infrastructural institution with a prerequisite role in scientific development and knowledge creation in any society. Therefore, achieving vitality and happiness within it is highly important. In this context, the University of Kashan is classified as a national comprehensive university according to the ranking by the Ministry of Science, Research, and Technology (2016). As indicated by the objectives of the University of Kashan's strategic plan, vitality and vitality-oriented educational spaces (in both in-person and virtual education) are consistently considered essential axes and symbols of enhancing academic quality (University of Kashan, 2014).

With the sudden onset of COVID-19 and the requirement for universities to conduct courses virtually, concerns about the quality of education in this space increased, particularly affecting faculty-student interactions and satisfaction with the educational process. This made investigating the state of academic vitality among students more urgent than ever. Indeed, researching academic vitality under current unpredictable conditions ensures the validity and reliability of virtual education. Ignoring or neglecting this issue not only slows down university educational and scientific activities but also weakens the scientific and professional literacy level of graduates in the long run. Therefore, this research employs a scientific approach to answer the following questions: 1. What is the status of academic vitality among University of Kashan students in the virtual space? 2. What factors correlate with the academic vitality of University of Kashan students in the virtual space? 3. What is the level of each factor associated with student academic vitality?

Literature Review

The COVID-19 pandemic accelerated the transition from traditional in-person education to virtual learning environments, fundamentally altering the higher education landscape worldwide. This shift increased the importance of understanding factors contributing to student academic vitality in virtual spaces. In this regard, a review of past studies indicates that while research on student vitality and happiness has increased recently, relatively less attention has been paid to the role of the educational environment (especially virtual learning spaces) in fostering student vitality. Nevertheless, existing studies show significant correlations between contextual variables—such as gender, GPA, residence, education level, satisfaction with field of study, economic status (Hemmati, 2018), virtual education (Abdolmaleki et al., 2022; Pourshalchi et al., 2022), quality of education (Boonlue, 2014), and social capital/support (Boonlue, 2014; Sanatkhah & Dadkhahfar, 2016; Fathi & Jamalabadi, 2017; Hemmati, 2018; Barkhoda & Karami, 2023)—and students' academic vitality.

E-learning in the university context refers to the use of information and communication technologies (ICT) to facilitate and support learning processes in higher education. This includes delivering course content, enabling communication between students and faculty, and providing access to educational resources through digital platforms such as learning management systems (LMS), online courses, virtual classrooms, and multimedia tools (Ayu, 2020; Rivera-Mamani et al., 2023). Numerous studies show that virtual education, especially using modern technologies like virtual reality and

interactive learning environments, can enhance student participation, satisfaction, and academic success. These factors align with the components of academic vitality in Seligman's theory (such as motivation, engagement, sense of belonging, and satisfaction). Well-designed virtual learning environments increase student engagement, motivation, and satisfaction, contributing to improved academic performance and vitality (Predescu et al., 2023; Ademola, 2023; Daniel et al., 2024; Kim, 2021; Nesenbergs et al., 2020).

Based on previous research findings, the primary dimensions of virtual education that relate to academic vitality are: 1. Interaction and Active Participation: The more students engage in online activities, the higher their academic performance and satisfaction (Kim, 2021; Ademola, 2023); 2. Innovative Teaching Techniques: Using methods like project-based learning, virtual reality, and interactive instruction increases student motivation and vitality (Nesenbergs et al., 2020; Daniel et al., 2024); 3. Instructional Support: Faculty support and appropriate course design play mediating roles in increasing student motivation and engagement, leading to enhanced academic vitality (García-Machado et al., 2024; Daniel et al., 2024); and 4. Flexibility and Accessibility: Virtual education reduces stress and increases feelings of control and satisfaction by providing temporal and spatial flexibility (Nieuwoudt, 2020; Fabriz et al., 2021). Overall, features of e-learning include flexibility (in time and place), extensive interactions (discussion forums, quizzes, multimedia content, collaborative tools), blended learning (combining traditional and online instruction), and access to resources (digital materials, recorded lectures, online assessments), all of which provide the necessary foundation for students' academic vitality.

Robert Birnbaum's *Quality Cube* concept offers a multidimensional framework for understanding educational quality in higher education, emphasizing the complexity and interconnectedness of university systems. This concept formulates educational quality as a three-dimensional structure where each axis represents a different way of defining or measuring quality in higher education. These dimensions are: 1. Stakeholder Perspectives: Quality is interpreted differently by various groups (students, faculty members, administrators, employers, and society), each having specific expectations and standards; 2. Institutional Functions of Higher Education: This dimension considers the multiple objectives of universities, such as teaching, research, and social engagement, emphasizing that quality must be assessed across all these areas; and 3. Assessment Approaches: Quality can be evaluated through inputs (resources, faculty qualifications), processes (teaching methods, curriculum design), and outcomes (student learning, research impact, graduate success) (Goedegebuure, 2021).

According to Birnbaum's approach, universities are complex organizations where quality improvement arises from the interaction of many elements, not from isolated individual efforts. Therefore, quality enhancement is only sustainable when institutionalized within the institution's culture and structure. In his view, quality in higher education is co-created by students, faculty, and staff, reflecting the collaborative nature of teaching, research, and social service. Hence, quality should be seen as the product of continuous dialogue and negotiation among stakeholders, not a static outcome (Goedegebuure, 2021). Overall, Birnbaum's quality cube model indicates that no single definition or criterion can encompass the full scope of educational quality in institutions with multiple and diverse missions. Instead, quality emerges from the intersection of these

dimensions, and its meaning changes depending on which perspectives, functions, and assessment methods are prioritized.

Erin Nordal (2016) conceptualizes student rights as comprising academic, social, and capability dimensions. The academic dimension focuses on the advancement and transfer of knowledge for societal benefit. The social dimension addresses individual academic freedom as a member of a democratic society, including freedoms of expression, publication, association, inquiry, dissent, and the right to due process and equal treatment under the law. The capability dimension pertains to the freedom and right to develop student capabilities, such as autonomy, critical thinking, and the ability to exercise one's rights as a citizen, viewing student rights as a means to achieve greater freedoms (Nordal, 2016). Although Nordal differentiates these three dimensions of student rights, it is evident that upholding student rights requires viewing these aspects as intertwined. The social dimension contributes to shaping the capability dimension, and conversely, the capability dimension plays a significant role in advancing the academic dimension of student rights. Furthermore, respecting student rights across various dimensions can increase institutional trust and contribute to enhancing social capital within the university environment.

According to Pierre Bourdieu, social capital is defined as the aggregate of actual or potential resources derived from membership in a group, based on a durable network of more or less institutionalized relationships of mutual acquaintance and recognition. In other words, social capital is the set of resources accessible through group membership, providing collective support, status, and influence within social structures for its members (Petrić & Tomić-Koludrović, 2021; Julien, 2014; Schirone, 2023). Bourdieu's theory allows for differentiation between types of social capital based on the nature of group membership and social network boundaries: 1. *Bonding Social Capital (Intra-group)*: Refers to resources and support derived from strong, close ties within a specific group, such as family, close friends, or tightly knit communities. In Bourdieu's view, bonding capital aligns with networks based on primary ties where resources are obtained through solidarity and shared identity. This type is often associated with cohesion, trust, and mutual obligations among group members, reinforcing group solidarity. 2. *Bridging Social Capital (Inter-group)*: Involves connections that bridge different groups, enabling access to resources, information, or opportunities outside one's immediate circle. This type relates more to leveraging relationships with acquaintances or members of other groups, often for strategic purposes like career advancement or political influence. 3. *Linking Social Capital*: Specifically refers to ties between communities/individuals and formal power structures, and more broadly to interpersonal connections and groups occupying different positions within the power hierarchy (Petrić & Tomić-Koludrović, 2021; Julien, 2014).

In general, although social capital can be considered at individual, group, and inter-group levels, focusing on the virtual classroom as the unit of measurement places greater emphasis on bonding (intra-group) social capital. Therefore, the hypothesis regarding the direct relationship between bonding social capital and academic vitality pertains to the quality of social interactions among class members and refers to network-based social capital. In this regard, previous empirical studies consistently show that strong social capital correlates with dimensions of academic vitality such as adjustment to the educational environment (Moschetti & Hudley, 2015), academic self-efficacy (Brouwer et al., 2016; Hemmati, 2018),

student life satisfaction (Sanatkhah & Dadkhahfar, 2016), and educational success (Mishra, 2020; Brouwer et al., 2016).

In summary, the theoretical framework of this research is based on the perspectives of Ruut Veenhoven (regarding happiness and vitality) and Martin Seligman (regarding positive education and vitality). Additionally, it conceptualizes other variables: "access to virtual education resources and facilities," "satisfaction with the e-learning system," and "student lived experience in virtual space" (based on empirical literature); "educational quality" (based on Birnbaum's perspective); "student rights" (based on Nordal's definition and typology); and social capital (based on Bourdieu's definition). Based on this, the main hypotheses of the research are as follows: 1. There is a direct relationship between "access to educational resources and facilities" and "student academic vitality." 2. There is a direct relationship between "satisfaction with the e-learning system" and "student academic vitality." 3. There is a direct relationship between "student lived experience in the virtual space" and "student academic vitality." 4. There is a direct relationship between "educational quality" and "student academic vitality." 5. There is a direct relationship between "Respecting student rights" and "student academic vitality." 6. There is a direct relationship between "bonding social capital" (intra-group social capital) and "student academic vitality."

Research Methodology

This study employs a broad-scoping (survey) methodology in terms of depth and is cross-sectional in terms of time frame. The empirical approach of this research is survey-based, and statistical analyses were performed at two levels: descriptive and inferential. In the descriptive statistics section, mean and standard deviation were calculated to describe the status of the main research variables. In the inferential statistics section, bivariate analyses (t-test, Analysis of Variance [ANOVA], and Pearson correlation) and multivariate analysis (using variance-based structural equation modeling) were reported.

The statistical population included all students at the University of Kashan in the academic year 1399-1400 (N = 8,628) (University of Kashan, 2021). From this population, a sample size of 489 participants was determined using Sample Power software (at an alpha level of 0.05 and power of 95%). The sampling method used in this study was probability sampling, conducted via online access to all virtual student groups. It should be noted that due to the non-in-person status of universities (based on COVID-19 restrictions) during this research, an online questionnaire tool was used. The questionnaire items were researcher-developed, designed by the current researchers in 1400 (2021) based on the relevant theoretical literature for each variable. SPSS software was used for analyzing the findings and testing hypotheses, while SmartPLS software was used for multivariate analysis and variance-based structural equation modeling.

To estimate the questionnaire's validity, the face validity method was employed. For this purpose, a draft of the questionnaire was first provided to experts and researchers in the fields of virtual education and sociology of education. Based on their suggested feedback, questions that were cumbersome, unclear, ambiguous, or irrelevant to the topic were removed through several stages, and some questions and items were rephrased more clearly and effectively. Additionally, to assess model validity at the level of latent variables (independent variables), discriminant validity was evaluated using the HTMT (Heterotrait-Monotrait ratio) criterion.

Table 1. Validity matrix of the main variables of the study

Variables	1	2	3	4	5	6	7
1. Educational vitality	1						
2. Lived experience	0/830	1					
3. Access to resources	0/532	0/446	1				
4. Satisfaction with education	0/452	0/397	0/705	1			
5. Respecting student rights	0/616	0/328	0/660	0/541	1		
6. Bonding social capital	0/569	0/372	0/615	0/460	0/698	1	
7. Educational quality	0/697	0/448	0/740	0/616	0/695	0/738	1

Since all values in the matrix in Table 1 were found to be less than one, the constructs examined in the model possess discriminant validity. Additionally, to calculate reliability, two criteria were considered: Cronbach's alpha coefficient and composite reliability (Table 2).

Table 2. Reliability of the main research variables

Variables	Cronbach's alpha	Composite reliability
Respecting student rights	0/909	0/929
Bonding social capital	0/860	0/885
Educational quality	0/813	0/928
Access to resources and facilities	0/817	0/826
Satisfaction with e-learning	0/871	0/895
Student life in cyberspace	0/799	0/858
Educational vitality	0/879	0/892

According to Table 2, the value of this coefficient for all variables is above 0.7, indicating a satisfactory level of reliability for the measurement model. It is worth mentioning that to assess reliability, the factor loadings of each of the items were utilized.

Research Findings

The empirical findings of this research in the descriptive section revealed that: in terms of "gender," there were 335 individuals (68.5%) who identified as female and 154 individuals (31.5%) who identified as male. In terms of "educational level," 285 individuals (58.3%) were undergraduate students, 163 individuals (33.3%) were master's students, and 41 individuals (8.4%) were doctoral students. Regarding "faculty," 169 individuals (34.6%) belonged to the Faculty of Humanities, 91 individuals (18.6%) to the Faculty of Literature and Foreign Languages, 79 individuals (16.2%) to the Faculty of Engineering, 77 individuals (15.7%) to the Faculty of Basic Sciences, 41 individuals (8.4%) to the Faculty of Architecture and Art, and 32 individuals (6.5%) to the Faculty of Natural Resources. The average semester GPA of the students at the time of response was 17.02, and the average cumulative GPA was 17.09. Subsequently, Table 3 describes the main variables of the study.

Table 3. Descriptive statistics of the main variables of the study

Variables	Mean	Standard deviation	T-Value
Respecting student rights	2/54	0/792	-12/740**
Bonding social capital	3/22	0/658	7/381**
Educational quality	2/90	0/508	-4/311**
Access to resources and facilities	2/76	0/686	-7/594**
Satisfaction with the university's e-learning system	2/75	0/680	-8/076**
Student life experience in cyberspace	2/68	0/935	-7/490**
Educational vitality (Cognitive dimension)	3/26	0/753	7/538**
Educational vitality (emotional dimension)	2/94	0/751	-1/680
Educational vitality (behavioral dimension)	2/58	0/723	-12/696**
Educational vitality (total dimensions)	2/88	0/604	-4/364**

** P < 0/001

Min of range: 1 Max of range: 5 Mid of range: 3

Table 3 determines the levels of the research variables based on the median threshold of the Likert scale, which is equal to 3. Accordingly, averages below this level are evaluated as low and weak levels of the variable. Based on this, the averages for the variables "intragroup social capital" and "educational vitality (in the cognitive dimension)" are above the median and therefore are reported at a moderately high level. However, the averages for the variables "respecting of student rights," "educational quality," "access to resources and facilities," "satisfaction with the university's electronic education system," "student life in virtual space," and "educational vitality" are below the median, indicating a moderately low status for these variables. Additionally, this table shows that the T (one-sample) values for all variables (except for the variable of educational vitality in the emotional dimension) are significant at a 99% confidence level. Providing an overview of the relationship between contextual variables and the dependent variable of the study (educational vitality) is the subject of Table 4, which will be discussed next.

Table 4. Testing of contextual variables and hypotheses

Variables type	Variables	Test type	Test Value
Contextual variables	Semester average	R	0/201**
	Overall average	R	0/130**
	Field of Study	F	28/225**
	Residence	F	15/883**
	Faculty	F	8/111**
	Academic Semester	F	6/884**
	Probationary Semester	F	1/660
	Gender	T	-0/669
Main variables	Respecting student rights	R	0/459**
	Bonding social capital	R	0/261**
	Educational quality	R	0/196**
	Access to resources and facilities	R	0/192**
	Satisfaction with the university's e-learning system	R	0/136**
	Student life experience in cyberspace	R	0/123**

** P < 0/001

According to Table 4, there is a significant and direct relationship between the variables of semester average and Overall average with educational vitality at a 99% confidence level. Additionally, significant differences at the 99% level were observed between the variables of educational level (averages: PhD with 89, Master's with 86.58, and Bachelor's with 76.08), place of residence (averages: residing in other provinces with 87.44, residing in Kashan city and its suburbs

with 78.23, and residing in Isfahan province with 77.88), faculty (averages: Faculty of Natural Resources with 95.09, Faculty of Architecture with 83.10, Faculty of Humanities with 82.07, Faculty of Literature and Foreign Languages with 79.26, Faculty of Basic Sciences with 78.16, and Faculty of Engineering with 74.58), and academic semester (averages: first semester with 89.21, second semester with 85.27, third semester with 82.38, fourth semester with 79.37, fifth semester with 75.82, eighth semester with 75.69, sixth semester with 73.66, ninth semester with 72.25, and seventh semester with 71) in relation to the variable "educational vitality."

The results of the Pearson correlation coefficient test (hypothesis testing) indicate that there is a significant and direct relationship between the variables of respecting student rights, bonding social capital, educational quality, access to resources and facilities, satisfaction with the university's e-learning system, and student life experience in the virtual space with the variable of educational vitality at a 99% confidence level.

Structural Equation Modeling: After testing the outer model (evaluating the validity and reliability of the variables), it is necessary to present the inner model that represents the relationships between the latent variables of the research (Figure 1). In this model, the variable educational vitality includes 12 items, the variable satisfaction with the e-learning system includes 12 items, the variable student life experience in virtual space includes 5 items, the variable educational quality includes 15 items, the variable access to e-learning resources and facilities includes 7 items, the variable intra-group social capital includes 12 items, and the variable respecting student rights includes 10 items. The factor loadings for most items were above 0.5.

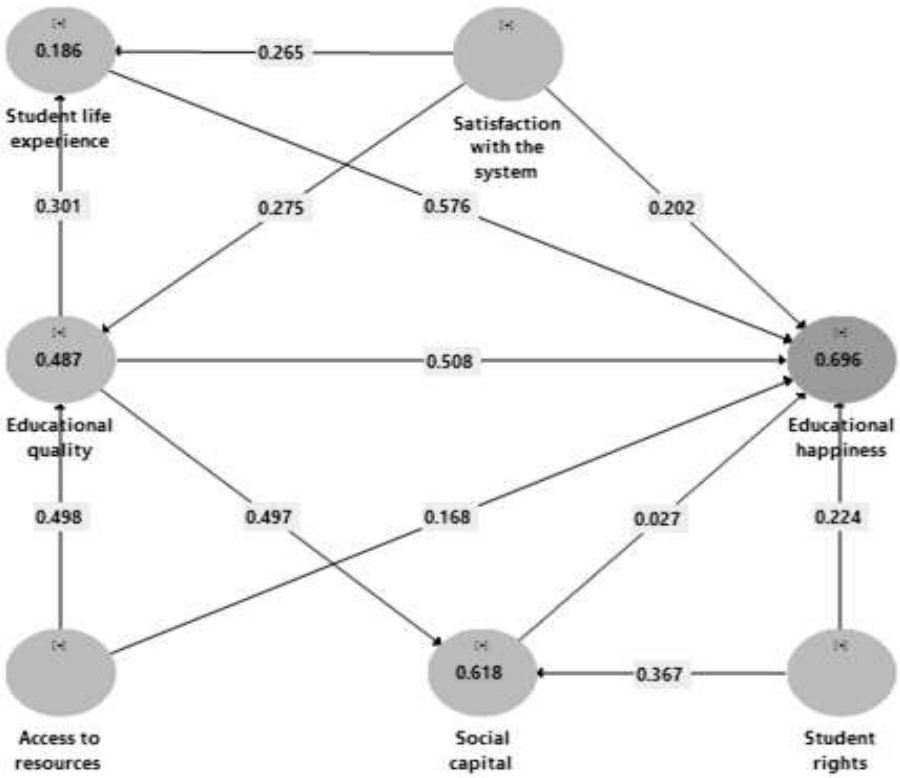

Figure 1. Structural Model of Students' Educational vitality in Virtual Space and Related Factors

In Figure 1, the numbers indicated on each arrow represent the beta or path coefficients obtained from the regression equations among the variables. The numbers inside each circle also indicate the coefficient of determination (R^2) for each of the endogenous variables. Furthermore, to examine the significance of the estimated path coefficients for each variable in the model, bootstrapping operations were utilized (Table 5).

Table 5. Evaluation of the internal model of the research

Paths	Path coefficients	T-statistics
Student life experience ---> Educational vitality	0/576	18/738**
Educational quality ---> Educational vitality	0/508	6/637**
Respecting student rights ---> Educational vitality	0/224	5/426**
Access to resources ---> Educational vitality	0/168	2/017*
Satisfaction with the system ---> Educational vitality	0/202	1/186
Social capital ---> Educational vitality	0/027	0/541
Access to resources ---> Educational quality	0/498	10/835**
Satisfaction with the system ---> Educational quality	0/275	5/445**
Educational quality ---> Social capital	0/497	12/953**
Respecting student rights ---> Social capital	0/367	9/206**
Educational quality ---> Student life experience	0/301	4/776**
Satisfaction with the system ---> Student life experience	0/265	3/264**

** P < 0/001 * P < 0/01

The results indicate that the path coefficients for all relationships, except for the relationship between satisfaction with the system and educational vitality, as well as the relationship between social capital and educational happiness, are significant. Specifically, the T-statistic is greater than 1.96, and the significance level is less than 0.05. Table 7 presents the direct, indirect, and total effects for each of the model variables.

Table 6. Examination of direct, indirect and total effects of variables

Variables	Direct effects	Indirect effects	Total effects
Educational quality	0/508	0/186	0/694
Student life experience in cyberspace	0/576	-	0/576
Satisfaction with the university's e-learning system	0/202	0/245	0/447
Access to resources and facilities	0/168	0/253	0/421
Respecting student rights	0/224	0/010	0/234
Bonding social capital	0/027	-	0/027

According to Table 6, two variables have only a direct effect, while four variables, in addition to their direct effects, also have an indirect effect on the dependent variable. Furthermore, in terms of the importance and impact of the variables in the model, the most significant variables are, in order: 1. Educational quality, 2. Student living experience in virtual space, 3. Satisfaction with the e-learning system, 4. Access to virtual education resources and facilities, and 5. Respecting student rights. Additionally, to assess the effect size and predictive power of the structural model, the f-square value is utilized. In essence, effect size

refers to the contribution of each independent variable to the coefficient of determination (R^2). Moreover, the Q^2 value is examined to assess the predictive capability of the model for the dependent variable (educational vitality).

Table 7. Evaluation of effect size and predictive power of the model

Variables	f Square	Q^2
Student life experience in cyberspace	0/878	0/281
Educational quality	0/116	
Respecting student rights	0/069	
Access to resources and facilities	0/011	
Satisfaction with the university's e-learning system	0/003	

The results presented in Table 7 show that the effect size of the variable "student living experience in virtual space" is high, the effect size of "educational quality" is moderate to low, and the other variables have a low effect size. Additionally, a Q^2 value of 0.281 has been obtained, which evaluates the predictive capability of the model at a moderately high level. Finally, to assess the overall fit of the model, the SRMR (Standardized Root Mean Square Residual) index is used. Since this index is found to be 0.077, which is below its cutoff point of 0.080, it can be concluded that the model has a good fit.

Discussion and Conclusion

This research was conducted to examine the status of academic vitality among University of Kashan students during the forced transition to virtual education caused by the COVID-19 pandemic and to identify its determining factors. Descriptive results of this study indicated that the overall mean for academic vitality and most of its predictor variables—including educational quality, access to virtual education resources and facilities, and satisfaction with the e-learning system—were below average. This finding suggests that the virtual education experience failed to meet student expectations and faced challenges in creating a dynamic learning environment. Structural equation modeling analysis revealed deeper layers of these relationships, interpretation of which requires reference to theoretical frameworks and research literature.

The key and central finding of the research was the very strong and direct impact of the variable "student lived experience in the virtual space" on academic vitality. This variable, considered the strongest predictor in the model, indicates that a student's subjective and holistic evaluation of their academic life quality in the online environment plays a role exceeding the evaluation of separate technical components. This finding aligns perfectly with Martin Seligman's theory of Positive Education. Seligman defines well-being and flourishing through the PERMA model (Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment). The lived experience in this research effectively reflects the fulfillment or non-fulfillment of these five components in the virtual space. In an environment where face-to-face interactions are eliminated, creating "Positive Emotion" through engaging teaching methods, enhancing "Engagement" via interactive activities, maintaining positive "Relationships" among classmates, finding

"Meaning" in courses during a crisis, and fostering a sense of "Accomplishment" despite technical barriers, all crystallize into a positive lived experience. This result, while supporting previous research findings (Abdolmaleki et al., 2022; Pourshalchi et al., 2022), shows that investing solely in infrastructure, without attention to the social and psychological aspects of the user experience, will not be sufficient to enhance vitality and highlights the importance of the human dimensions of virtual education.

"Educational quality" was identified as the second most influential direct factor and the strongest factor in terms of total effect (direct and indirect). This variable not only directly impacts vitality but also acts as a fundamental prerequisite for shaping a positive lived experience and social capital. This finding supports Robert Birnbaum's Quality Cube framework, which emphasizes the multidimensional nature of quality (including inputs, processes, and outcomes). During the virtual education period, the importance of educational processes (such as instructional methods, clarity of communication, quality of feedback) in students' perception of overall quality seems to have increased compared to in-person education (such as physical classroom facilities). Students who felt that instructors made greater efforts in online teaching and provided high-standard educational content reported higher satisfaction and progress. This result aligns with previous studies (Boonlue, 2014; Nesenbergs et al., 2020; Nieuwoudt, 2020; Fabriz et al., 2021; Daniel et al., 2024) that demonstrated a direct link between educational quality and educational happiness or satisfaction. In fact, during the period of uncertainty caused by the pandemic, educational quality acted as a symbol of institutional accountability and stability, directly impacting students' subjective well-being and vitality.

One significant finding of this research was the analysis of the role of "satisfaction with the university's e-learning system." Path analysis results showed that this variable, despite a positive simple correlation, did not have a significant direct effect on academic vitality. However, satisfaction with the system significantly impacted educational quality and lived experience. This finding creates an important distinction between the tool and the goal. Satisfaction with the technical aspects of a platform (like loading speed, user-friendly interface, or connection stability) does not solely lead to educational happiness and vitality. The e-learning system is a tool; happiness results when this tool effectively serves a high-quality educational process (pedagogy) and creates a positive interactive experience. In other words, an advanced system with poor teaching will not be vitalizing. This result challenges techno-centric views that seek the success of virtual education solely in the technical capabilities of the platform.

The variable "observance of student rights" also had a direct and significant effect on academic vitality. This variable refers to dimensions beyond welfare issues and, based on Nordal's framework, includes academic, social, and capability rights. In the virtual space, observance of student rights manifests in aspects such as transparency in online examination rules, fairness in grading, respect for privacy in recorded classes, and the right to express critical opinions. When students feel they are part of a fair system, institutional trust increases, and anxiety decreases. This feeling of psychological safety is essential for active engagement and, consequently, academic vitality. Furthermore, the variable "access to virtual education resources and facilities" was identified as an important infrastructural factor. Unequal access to stable internet and appropriate hardware,

noted as a challenge in descriptive findings, can exacerbate the digital divide and directly impact stress and reduce learning opportunities. This finding shows that educational equity in virtual spaces begins with equity in access to infrastructure.

Finally, the analysis of the "bonding social capital" variable yielded complex results. Similar to the satisfaction with the e-learning system variable, social capital also lacked a significant direct effect on academic vitality in the final model, although a significant initial correlation was observed between them. At first glance, this finding contradicts a significant portion of previous literature emphasizing the positive role of social capital in academic success and student life satisfaction (Boonlue, 2014; Moschetti & Hudley, 2015; Sanatkhah & Dadkhahfar, 2016; Brouwer et al., 2016; Fathi & Jamalabadi, 2017; Hemmati, 2018; Mishra, 2020; Barkhoda & Karami, 2023). However, a more detailed interpretation of the model within Bourdieu's framework suggests that social capital (bonding ties) may act as a potential resource whose effectiveness is contingent upon other factors. In the current model, the positive effects of social capital (such as emotional and informational support from peers) are likely subsumed within the more comprehensive variable "student lived experience." Furthermore, results indicated that social capital itself is strongly influenced by educational quality and the observance of student rights. This implies that in a low-quality, unjust educational environment, even strong friendships cannot independently lead to academic vitality. Students might turn to interaction with each other to cope with stress from system inefficiency, but this does not necessarily translate into academic vitality and flourishing.

In summary, the findings of this research emphasize that achieving vitality-oriented education in the digital age requires shifting focus from technical infrastructure to the humanistic, pedagogical, and ethical dimensions of education. Academic vitality is the product of a complex ecosystem where quality of teaching, sense of social belonging, and respect for individual rights are the cornerstones.

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