Study of the impact of special educational programmes on the psycho-emotional well-being of students

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ABSTRACT

The purpose of the study is to investigate the impact of special educational programmes on the psychological and emotional development of higher education students. To achieve this goal, survey methods were used (200 participants). The method of content analysis was used to study the scientific literature on this issue. The results show that the use of modern programmes has led to a number of organisational challenges related to ensuring a stable Internet connection and limited opportunities to acquire practical skills that are important for many specialities. This situation caused particular anxiety among students. The study showed that students generally have a positive perception of the use of modern technologies and methods. However, there are also negative aspects of constant interaction with the digital environment, such as atomisation, problems with soft skills development, the risk of emotional burnout, etc. Overcoming these challenges is possible through the evolution of the organisation of the educational process. The creation of smaller academic groups of students provides opportunities for deeper interaction and the development of relevant communication skills. The conclusions emphasise that the development and implementation of new methods that can quickly adapt to modern educational environments is a promising area for further research.

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1. Introduction

The impact of modern education on the psycho-emotional well-being of students has always been a relevant object of scientific research and reflection at the intersection of the fields of education and psychology. Over time, especially in recent decades, the structure and content of education have undergone significant changes, including the development of special educational programs aimed at meeting the different needs of students. This is a consequence of total digitalization, which has begun to integrate into all areas of public life, and after the global COVID-19 pandemic, it has particularly affected educational processes. The programs under study are designed not only to provide knowledge and skills but also to support students' mental and emotional states. Researching the impact of special education programs on students' psycho-emotional well-being is becoming a valuable field, as these aspects can affect various elements of student life and learning-related crises, primarily stress, difficulties with emotional resilience, mental health, and general difficulties in quality of life. This article aims to explore this issue and examine important aspects related to the impact of special education programmers on students' psycho-emotional well-being. For this purpose, it is important to analyze different approaches and research methods that will allow us to better understand this important aspect of higher education and its impact on the student environment.

For this reason, there is a need to analyze in detail the impact of using special education programmers on the emotional and psychological state of students. Many researchers have generally noted that this has proved to be a great challenge for many, primarily due to feelings of complete isolation and significant academic workloads. The transition to online learning and the evolution of special digital learning environments have brought about significant changes in the lifestyles of students: the length of time spent in front of screens has increased, sedentary activity has increased, and the number of hours of sleep and physical activity, including opportunities for outdoor walks, has decreased. All of these factors represent a potential risk factor for the development of neuroses, depression, autonomic disorders, sleep disorders, and anxiety among students. Insufficient awareness and underestimation of these problems can lead to the development of serious mental illnesses and psychosomatic disorders, and ultimately to significant health threats. The issue of students' mental health is critical and requires immediate attention from society and parents.

Scientists have repeatedly drawn attention to certain challenges related to the impact of modern educational programmes on the psychological and emotional impact of students. Particular attention is paid to the future development of higher education. For example, G. Rani, P. Kaur, and T. Sharma identified the psychological factor as one of the possible challenges to the further development of the digitalization of education [1]. The study by G. Bucăța, F. Popescu, and C. Tileagă attempted to analyze the potential risks of digitalization of education in general, which is extremely important for determining the future of modern programmers [2]. At the same time, the regional concept of the use of modern educational programmers and the corresponding online environment was presented in current research [3]-[7]. The findings are important for forming a comparison in the use of modern teaching methods in combination with the capabilities of technology to understand their impact on the psychological and emotional state. This will make it possible to use the acquired theoretical framework with maximum efficiency and compare it with the results obtained from empirical measurements.

The works of researchers on the socio-psychological aspects of the introduction of modern software technologies in education have also become important. In particular, N. Afanasieva established the importance of the digital environment for the formation of relevant research and professional competencies [8]. Similarly, L. Krymets emphasized the relevance of deepening digital knowledge in the future, which will become a distinctive feature of education in general [9].

This influence is felt in the modern school, but in the future, it will become much more relevant [10]-[13]. As established by current scholars these trends are also relevant for the teaching environment, both in schools and higher education institutions [14]-[16]. The inevitability of using digital technologies and modern programmes is undeniable. A certain problem is to integrate them into the educational process with the least harm and highest efficiency. Among these problems M. Li identified psychological risks [17]. L. Vijayashree and S. Srinivasa noted the destructive impact of the COVID-19 pandemic on learning environments and emphasise the increase in anxious expectations in the process of education [18]. On the other hand, Y. Wang, A. Derakhshan and L. Zhang tended to see positive aspects in the overall digitalization of education, as the achievements of modern technologies can be used to improve skills in many other sciences [19]. A certain synthesis of the negative and positive aspects of digitalization of learning can be found in H. Zhang, although the researchers also note the need for further elaboration of the material.

Therefore, the aim of the study is to analyze the impact of special educational programmers on the psychological and emotional development of higher education students. The realization of this goal determines the disclosure of several important tasks: 1. to conduct a survey among 200 students. 2. To determine the impact of digital technologies on the psychological and emotional state of students. 2. To establish the relationship between the impact of special training programs and the positive psycho-emotional state of students in the context of using digital technologies. Thus, the novelty of this study will be to highlight the importance of digital solutions in the development of special training programs to improve students' psychological and emotional state. While previous studies have documented the ambiguous and sometimes negative impact of digitalization on psychological well-being, this study aims to prove the positive relationship of innovative special educational programs based on digital technologies with student outcomes.

2. Method

2.1. Research design

The proposed article uses a mixed-methods approach in order to implement a systematic and comprehensive study of the impact of special educational programmers on the emotional and psychological state of higher

education students. The research plan will combine quantitative and qualitative methods of data collection and further processing to obtain a holistic picture. Using such a research design, it will be possible to characterize the importance of modern digital learning environments in general and their impact on students' psychological awareness.

2.2. Participants

Volunteers were recruited from among bachelor's and master's students with different levels of prior knowledge and academic performance. A total of 200 participants took part in the survey. To make the survey process as comprehensive as possible, it was proposed to involve students from different higher education institutions. During the survey, the respondents explained what they meant by the specifics of using modern technologies in the educational process and what psychological challenges they faced as a result.

2.3. Instruments

2.3.1. Interviews

Semi-structured interviews were conducted with students who use the information environment to understand psychological and emotional problems in the course of using modern software. These interviews concerned both the main modern programmers and the problems they generate in psychological perception.

2.3.2. Questionnaire

To fulfil the task of the article, a structured questionnaire was created to select quantitative indicators in the perception of students' use of the latest software in the organisation of the educational process. The questionnaire was created based on using the main items of the Likert scale and questions with possible answers and assessment of the following factors that affect the psychological and emotional state of the respondents. The instructions for using the questionnaire included an assessment of attitudes towards the use of interactive and other digital technologies, as well as their impact on the emergence of negative psychological states, using a Likert scale, where 1 – "Strongly disagree", 2 – "Partially disagree", 3 – "Neutral position", 4 – "Partially agree", 5 – "Strongly agree". When using the scale, a person evaluates his/her degree of agreement or disagreement with each statement, from "strongly agree" to "strongly disagree." The sum of the scores for each individual statement makes it possible to establish the person's particular position on a particular issue. The method assumes that the attitude towards the object of study is expressed through simple and non-contradictory judgments, covering the spectrum from one extreme pole through a neutral position to the opposite pole. Participants in the experiment had to choose one of the numbers that best reflected their position (see Table 1).

Table 1. Survey template

Part 1: Identifying the peculiarities of using modern programmers in the educational process	1.1. The use of modern educational programmers contributes to my activity and interest during classes. 1.2. Modern technologies allow for better learning of the material. 1.3. Modern software facilitates access to education. 1.4. Modern digital tools make it easier to manage your time. 1.5. Modern technologies in education develop soft skills.
Part 2. The psychological and emotional impact of the modern digital educational environment on students	2.1. The use of modern technologies has a positive effect on the psychological and emotional state. 2.2. Modern technologies cause emotional burnout 2.3. Modern programmers lead to the atomization of the student body 2.4. The use of modern applications increases the time spent in front of the monitor. 2.5. What is the level of satisfaction with the digital learning environment?

2.3.3. Content analysis

Other general scientific research methods are also involved in the study: analysis, synthesis, deduction, and induction. We would like to emphasize the use of content analysis, which made it possible to study the professional scientific literature on the subject and comprehensively cover its research. Thanks to the results obtained here, the opinions established in the scientific literature were compared with the results of the survey.

2.4. Data analysis

2.4.1. Analyzing quantitative data

The data obtained from the questionnaires were analysed using statistical software. Descriptive statistics were used to summaries the participants' responses.

2.4.2. Analyzing qualitative data

The interview transcripts were analysed thematically using a content analysis approach. Themes related to the formation of psychological discomfort were identified and investigated in the described manner in order to draw unbiased conclusions based on the information received.

2.5. Ethical Considerations

All survey participants provided written consent prior to the survey. Confidentiality and anonymity were ensured during the survey. Any possible personal information that could identify respondents is stored on secure servers. The study was organized based on the ethical principles of zero tolerance for discrimination or any manifestation of gender inequality.

3. Results and discussion

3.1. Survey results

The survey became a significant additional tool to supplement the theoretical material on the impact of modern programmers on the psychological and emotional state of students. In general, the respondents identified this impact against the background of determining the overall effectiveness of digital technologies in education (see Table 2).

Table 2. Results of the survey on the Likert scale

Question	Answer, %				
	1	2	3	4	5
The first set of questions					
The use of modern educational programmers contributes to my activity and interest during classes	10	16	28	30	16
Modern technologies allow you to learn the material in the best possible way	8	12	32	20	28
Modern software facilitates access to education	11	13	25	25	26
It's easier to manage your time with modern digital tools	5	12	21	42	20
Modern technologies in education develop soft skills	38	16	26	10	10
The second set of questions					

Question	Answer, %				
	1	**2**	**3**	**4**	**5**
The use of modern technologies has a positive effect on the psychological and emotional state	26	27	20	17	10
Modern technologies cause emotional burnout	13	20	30	20	17
Modern programmers lead to the atomization of the student body	15	23	20	25	27
Using modern apps increases the time spent in front of the monitor	4	8	20	28	40
Digital learning environment meets learning needs	16	18	19	27	20

Thus, the survey revealed a certain general picture of the impact of modern educational programs on the psychological and emotional state of higher education students. Based on the measurements, it was found that, in general, the use of digitalization achievements contributes to motivation to acquire new knowledge, as noted by a total of 92 respondents (60 with a grade of "4" and 32 with a grade of "5"), while another 56 respondents were neutral. At the same time, when assessing the positive impact on the learning of bulk material, the scores were generally moderate: 128 out of 200 respondents gave their scores in the range of "2" to "4". On the other hand, only 16 respondents completely denied this usefulness. In general, respondents agreed that modern digital learning opportunities facilitate access to education: 102 people rated this level at "4" and "5" points (with another 50 people who were neutral about this possibility). The vast majority noted that modern software technologies make it easier to organize their time for studying: 124 people with grades of "4" and "5" (+42 respondents with a neutral attitude). On the other hand, 76 respondents noted the negative impact of modern programmers on the development of social skills (another 32 identified this impact as "Partially disagree"). In general, the impact of modern programmers on the educational process was described, which was an important transitional stage for determining the impact on the psychological and emotional state.

The second set of questions made it possible to determine the impact of digitalization of education on students' psychological and emotional states. The overwhelming majority of respondents said that the use of modern programmers rather has a negative impact on their psychological state. At least 106 respondents identified the prevalence of a negative impact. The opposite was true for 54 respondents who denied this statement. Instead, the relevance of emotional burnout for students when using digital learning technologies is more neutral (60 people have not decided on the impact, while another 40 people equally expressed their opinion as "Partially disagree" and "Partially agree". Atomization as a negative phenomenon of influence on the student environment was recognized by a total of 118 people, with 40 of those who rated this possibility as "3". Similarly, the surveyed students acknowledged that the time spent in front of the monitor during classes has increased significantly: 56 people partially acknowledged this, and 80 people definitely acknowledged it. However, these negative consequences do not negate the fact that students generally have a positive attitude towards working in the digital learning environment: 94 people clearly spoke in favor of the effectiveness of this format, although 68 were more critical. Such results can be explained by the fact that the active use of modern programmers does not meet all the challenges, including psychological ones.

Turning to distance learning along with the use of appropriate digital curricula at the beginning of the COVID-19 pandemic came as a surprise not only to the student body but also to many teachers who had to suddenly adapt lectures and practical classes to the online format [21]. Researchers rightly point out that the adaptation process has caused numerous organizational difficulties related to stable access to the Internet and limited opportunities for acquiring practical skills, which is critical for many specialties [2], [20], [22]. As a result, higher education students were most concerned about the uncertainty of the procedure for conducting online exams, as well as the criteria for assessing and making up missed classes, working with information resources,

etc. On the other hand, the use of the digital environment for many students has generally lost some seriousness [5]. They avoided answering questions and did not complete assignments on time. These patterns of psychological behavior are defined by researchers as a strategy of problem avoidance [24], which, combined with high levels of anxiety, indicates a disorder of adaptation to situations of uncertainty [4]. Thus, this situation indicates the insufficient development of the relevant learning competence, which is important for students.

Special educational programmers can have a significant impact on students' psycho-emotional well-being, and this impact can be both positive and cause certain challenges [20], [25]. Below, we will consider the key aspects of the impact of special education programmers on students' psycho-emotional well-being in comparison with the results of the study (see Table 3).

Table 3. The impact of special programs on the psychological state of modern students

Definition	Characteristics
Learning satisfaction	Specialized education programmers can provide students with the opportunity to study what interests them and matches their career ambitions [1]. This can have a positive impact on their learning satisfaction and contribute to their mental well-being [16]. In the present study, this conclusion is confirmed - the majority of respondents noted the motivation factor for acquiring new knowledge, a positive impact on the assimilation of bulk material. In general, the respondents confirmed that modern digital learning opportunities facilitate access to education.
Independence and self-realization	Special programs can stimulate students to research and develop their own interests independently [6]. [11]. This contributes to their self-realization and can improve self-esteem and self-respect [26]. The vast majority of students noted that modern software technologies make it possible to organize their study time more conveniently, thus leaving more opportunities for self-development. Additional non-formal education has also become possible. This factor is still not very popular among students in Kazakhstan, but in the future, global trends will change this process.
Stress and pressure	The unusual or high demands that accompany special programmers can create stress and psychological pressure for students [23]. Students may feel overwhelmed by the weight of responsibility and the need for high performance, which can lead to stress and anxiety [17]. The interviewed students confirm this element, emphasizing the negative impact on their psychological state. The trend towards emotional burnout when working with digital technologies is particularly relevant. This trend is fully correlated with the results obtained.
Atomization	The study identified the negative impact of modern programmers on the development of social skills. Students also identified negative atomization and a lack of proper communication with others. Researchers propose to monitor the size and structure of student groups, which in special programmers can affect psycho-emotional well-being [27]-[29]. Large groups can lead to a sense of anonymity, while smaller groups can foster closer relationships and support.
Support and resources	The availability of appropriate support and resources for students enrolled in special programmers can be critical [30]. Psychological counseling, academic support, and the opportunity to communicate with fellow students can contribute to psycho-emotional well-being [3], [7], [10]. The survey found that, in general, students have a positive assessment of working in the digital learning environment. Obviously, further integration into a specialized software environment will involve additional support tools.

Thus, this study demonstrated that there is a correlation between the impact of digital innovation solutions and the development of special curricula based on them and student learning outcomes. We found a positive relationship and positive student attitudes. In the research of G. Rani, P. Kaur, and T. Sharma and V. Prylypko also found that specialized educational programs provide students with the opportunity to study subjects that

match their interests and career goals, which can positively affect their satisfaction with learning and mental well-being [1], [16]. Our study confirms this conclusion, with the majority of respondents indicating an increase in motivation to acquire new knowledge and a positive impact on learning. In addition, it was noted that modern digital learning opportunities facilitate access to education. The findings are also consistent with existing research that emphasizes the benefits of aligned educational interests and digital learning environments for learning satisfaction [1], [16]. However, there is also some inconsistency, in particular, current research suggests possible disadvantages of excessive screen time on learning satisfaction that were not addressed in our study. Future research should further explore these aspects to provide a better understanding of the issue [2], [19]. The current literature also emphasizes that special programs encourage students to explore and develop their interests independently [6], [11]. Our findings also show that most students value flexibility. Thus, these findings are consistent with the literature that suggests that flexibility and the ability to continue non-formal education increase students' independence and self-realization [6], [11], [26]. However, the popularity of such programs in Kazakhstan is still growing, indicating potential cultural differences. There are also some discrepancies in the research. In particular, some scholars identify an ambiguous impact of digitalization on learning, sometimes negative [21], [23], [17]. This study, on the contrary, demonstrated a positive impact: the majority of students surveyed are satisfied with their digital learning and emphasize its important advantages. However, our respondents also confirmed that they may experience a negative impact of digital technologies on their psychological state. However, it has been found that if curricula are not overloaded with mobile applications, but rather use truly useful learning tools such as digital whiteboards, learning platforms, and simulation technologies, students become more interested in learning.

However, current research emphasizes that modern apps can have a negative impact on the development of social skills, leading to atomization and lack of proper communication [27]-[29]. This study also found that students faced these problems, which emphasized the need to monitor the size and structure of student groups. The findings are consistent with the literature, which suggests that large groups can lead to anonymity, while smaller groups foster closer relationships and support [27]-[29]. There is a need for further research on strategies to improve social interactions in large groups, which is not sufficiently, covered in the current literature [12], [23], [28], [29]. In summary, the impact of special education programmers on students' psycho-emotional well-being is complex and can depend on a variety of factors, including the organizational aspects of the programmers and the support students receive. It is important to provide students with the necessary resources and psychological support to promote their psycho-emotional well-being in the context of special education programmers. Thus, the novelty of this work is a comprehensive approach to covering the problem, demonstrating the importance of digital technologies on the one hand, and their impact on the mental and social state on the other. Therefore, the authors of the article believe that modern teachers should choose useful educational resources that are verified by ministries of education and involve them in teaching. Also, less attention should be paid to mobile phone apps, and interactive whiteboards, virtual reality technologies, and simulation technologies should be used.

The limitations of this study included its conduct at only one educational institution and in a limited time period. It is likely that in other educational institutions, among senior medical students, or at a different time since the beginning of the pandemic, the results of a similar study may be slightly different. In addition, it should be borne in mind that there is a divergence of opinion among scholars about the impact of using special programmers on students' mental state. For these reasons, our research should be considered as a pilot study, and its results can only be valid for the specific conditions of a given educational institution. However, future similar studies on other groups of students will help us to get more convincing answers to the questions we have raised. The imperfection of the Likert scale also contributed to the limitations of the results. In particular, respondents often show such tendencies as deliberately avoiding extreme answers or, on the contrary, expressing polarized views or emotionally inclined choices. Agreeing with statements without deeper consideration to make the answers more positive or more negative is not a sincere answer to the question. These factors can affect the accuracy and objectivity of respondents' answers, so this fact should be considered.

4. Conclusions

Therefore, as demonstrated in the study, the use of modern programs in the context of digitalization has a significant impact on the psychological and emotional state of students. The process of adaptation has caused a number of organizational challenges related to ensuring stable access to the Internet and limited opportunities for acquiring practical skills that are important for many specialties. This situation has led to particular anxiety

among higher education students. They were most worried about the uncertainty associated with the procedure for conducting online exams, as well as the assessment criteria and opportunities to catch up on missed classes, as well as working with information resources, etc. It is demonstrated that, in general, the use of modern technologies and methods is positively perceived by students. Besides, there are negative manifestations of constant work with the digital environment, such as atomization, problems of soft skill development, emotional burnout, etc. Overcoming these challenges is possible through the evolution of the educational process. The formation of smaller academic groups of students creates opportunities for closer interaction and the development of relevant communication skills. At the same time, the development of new methods that would be able to quickly adapt to modern educational environments is a promising area for further study. Due to the rapid development of the technological environment, new opportunities and ways of conducting classes will also appear. This progress will require analysis and detailed research.

Declaration of competing interest

Funding information

Author Contributions

Mira Iskakova: Conceptualization, Methodology, Supervision, Project administration.
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All authors have read and agreed to the published version of the manuscript.

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