BUILDING CUSTOMIZED DISTANCE-LEARNING MODULES IN UNIVERSITY DIGITAL ENVIRONMENT: FOCUS ON REFORMATTING STUDENT EDUCATIONAL TRAJECTORIES

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Abstract

The relevance of the study is due to the trends of new strategies for university students distance learning, the key idea of which is to customize the training of a future specialist who does not need practical retraining after graduation. In this regard, the construction of customized distance learning modules as a didactic basis for reformatting students' educational trajectories in the digital environment of the university is justified in this article as an independent scientific direction. Pedagogical design of theoretical and practical bases for reformatting customized distance learning modules is the leading research method. Taking into account the established trends of reformatting, the article revealed the pedagogical prerequisites for the customization of distance learning of students in the digital environment of the university. The structure and content of distribution packages of customized distance learning modules for students are determined. Based on the results of the research, the authors of the article substantiate the customized content of reformatting the educational trajectories of distance learning of students in the digital environment of the university. The effectiveness of the reformatted trajectories of students is confirmed by the results of their application in distance learning. The materials of the article are aimed at teachers, students and tutors of the university.

Keywords: university student, distance learning, digital educational environment, student's educational trajectories, customization of distance learning, customized modules, customized constructs, reformatting of educational trajectories, pedagogical design.

INTRODUCTION

The research results of many scientific schools have proved that distance learning in a modern university is an innovative educational environment, in the space of which the logic of the educational process is subordinated to the goals of adapting the content and learning process to the needs of students, and not vice versa, as it was previously (Fedorov et al., 2020; Kolesnikova, 2019; Kvon et al., 2019; Bayanova et al., 2019a; Frolova, Aleshchanova & Zheltukhina, 2019). In this regard, special attention in the educational activities of students is paid to the issues of personal development, activation of individual cognitive interest, transformations of general cultural and professional competencies (Mironova et al., 2017; Galazhinsky, 2020; Gnutova, 2020). Research results conducted by V.V. Grachev (2005), T.S. Komarova (2020), I.O. Leushin and I.V. Leushina (2020), N.V. Trifonova, A.S. Korolev and E.S. Khutieva (2020), confirm that these trends intensify the processes of replacing the educational technologies focused on the student – teacher - employer interaction with a variety of innovative directions that change the nature of training, customize (adjust) the existing structures of educational trajectories to the needs of students, taking into account the advanced development of their individual capabilities and characteristics. The authors of this article prove that customized modules in the conditions of the current level of development of distance learning represent a distributive form of the layout of educational content in the information and educational environments of the university. These trends are also noted in the studies of O.I. Vapnyarskaya (2014), E.V. Ovchinnikova, S.V. Chiskidova and E.N. Pavlicheva (2014). In connection with the established trends, the construction of customized distance learning modules aimed at reformatting the educational trajectories of students in the digital environment of the university is justified in this article as an independent scientific direction. The leading method of implementing the theoretical and practical foundations for reformatting customized distance learning modules is pedagogical design. The article, taking into account the existing traditional and innovative university experience of distance learning before the pandemic, pandemic and post pandemic periods, reveals the pedagogical prerequisites for customization (adaptation to the needs of students) of distance learning in the digital environment of the university (Zaitseva et al., 2017). The structure and content of distribution packages of customized distance learning modules for students are determined. Based on the results of the research, the authors of the article substantiate the customized content of reformatting the educational trajectories of students distance learning in the digital environment of the university. The effectiveness of the reformatted trajectories of students is confirmed by the results of their implementation in distance learning.

Methodological Framework

The work of O.I. Vapnyarskaya (2014) proves that the genesis of customization scientific discourse dates back to the 80s of the twentieth century and is largely justified by the emergence of business technologies focused on the needs of specific consumers. In the education system, customization is a new phenomenon, denoting the process of adapting the product of the educational system, which in the digital environment of distance learning many authors designate the student, to the wishes of the employer (Grishin, Domashchenko & Konstantinova, 2020; Bayanova et al., 2020; DesLauriers, Sehelew & Wieman, 2011; Dik & Urintsov, 2014; Dokukina & Shtykhno, 2020; Eagle & Brennan, 2007; Kolesnikova, 2019; Vapnyarskaya, 2014). The research results of V.V. Grachev (2005), A.A. Fedorov et al. (2020), T.S. Komarova (2020), I.O. Leushin, I.V. Leushina (2020), N.V. Trifonova, A.S. Korolev and E.S. Khutieva (2020); served as the basis for solving the problems of this study - determining educational priorities for building customized distance learning modules aimed at reformatting students' educational trajectories, taking into account the individual capabilities and personality characteristics of a modern student. The research of many other authors has proved that the digital environment of distance learning changes the nature of students' interaction in the educational process of the university and determines the trends of designing new standards, programs and learning outcomes, intensifies the directions of implementing an individual approach to advanced personal development (Galazhinsky, 2020; Bayanova et al., 2019b; Grachev, 2005;

Kolesnikova, 2019; Shabalina et al., 2019; Komarova, 2020; Lage, Platt & Treglia, 2000; Ovchinnikova, Chiskidov & Pavlicheva, 2014). The results of this study indicate that despite the positive public response to the issues of customization of distance learning, there is still a shortage of customized trajectories of students in the digital environment of distance learning. The issues of customization of specialists retraining process after graduation continue to be discussed (Antonenkoet al., 2020; Leushin & Leushina, 2020; Senashenko, 2018). There are a number of other methodologically significant and related problems that require prompt solution. Therefore, the construction of specific, practice-oriented, customized distance learning modules aimed at reformatting students' educational trajectories seems to be justified and timely.

Results and Discussion

3.1. Pedagogical Prerequisites for the Customization of Student Distance Learning

Based on the features of distance learning of students that have developed under the influence of global pandemic transformations, the authors of the article have identified new types of formed innovations in the activities of universities, the appearance of which has caused the growth of large-scale changes in the educational process, which relate not so much to its content and the processes of remote communication of students, but to changes in their ways of thinking and behavior in the changed educational environment. This is clearly confirmed by the transition of students from a linear representation of ideas and learning outcomes to their flexible individualized reinterpretation, which corresponds to the dynamics of a particular didactic situation. Together, these strategies have changed the architecture of distance learning in general, confirmed the possibilities of digital interaction in distance learning and formed a new attitude of students to the organization of educational activities: awareness of their own responsibility for the educational result, the inability to rely on the same learning paths for all students and, in this regard, rethinking their needs when choosing them. Identical processes occur in the areas of building an individual learning trajectory, which is interpreted both as an individual development route and as a personal educational trajectory (Grachev, 2005; Komarova, 2020). The essence of the concepts used, as evidenced by the results of this study, is mistakenly identified with the definition of the personal path of the student's development of the educational program. At the same time, research in the field of theoretical and practical aspects of building an individual educational trajectory of students' learning indicates the presence of identity in determining their semantic content. Similar trends are cited in their research by V.V. Grachev, (2005), V.V. Dik and A.I. Urintsov (2014), L. Eagle and R. Brennan (2007), T.S. Komarova (2020), I.A. Kolesnikova (2019), M.J. Lage, G.J. Platt and M. Treglia (2000), V.S. Senashenko (2018), A.A. Fedorov et al. (2020). The authors of this study found that the unifying link of these processes was the process of customization, in which, through the use of mass types of tasks offered by the university, developed taking into account the individual needs of students, each of them was provided with the achievement of personal learning results. The customized educational trajectory of the student in the current situation provides for the adjustment of the content, forms, methods and technologies of training to his/her needs and capabilities, taking into account the advanced development carried out on the basis of interaction with the digital environment of distance learning. In the course of the study, it is determined that each student's educational trajectory in the digital environment of distance learning determines the need to use a set of competencies, on the one hand, reflecting the essence of the chosen subject area of professional activity (social and humanitarian, natural science, engineering and technological, economic and managerial, professional knowledge), on the other - individual competencies (soft skills) necessary for the development of the individual and its adaptation to society. In such a situation, competence becomes the main criterion for the transition of a student as a subject of implementing their own educational trajectory to a new state of educational activity and becomes an indicator of the demand for their customized educational trajectory in the areas of professional activity. Solving these problems, as the results of the study show, is becoming a priority strategy of universities in the coming future.

3.2. Structure and Content of Distribution Packages of Student Customized Distance-Learning Modules

The course of the study finds that the prototype of customized modules based on the key ideas of students' distance learning is individual didactic constructs of distribution packages for the layout and storage of aggregate educational subject and electronic content intended for its delivery to students in the digital educational environment of the university. The creation of a distribution package is based on the principle of differentiation of the total content of the studied disciplines into autonomous units of thematic components of customized distance learning modules. The content specification for each individual discipline is made in accordance with the goals of the Federal State Educational Standard for Higher Education++, university curricula, and programs of academic disciplines that take into account the individual interests of students. Each content is autonomous and represents a logically completed intra-subject unit of distance learning (topic, multiple topics, or sections). The filling of the content is focused on the consistent implementation of the didactic algorithm: the study of theoretical material, the implementation of webinars, laboratory and practical works, the frequency of control measures. The practical result, confirming the importance of customization of the established content, is the systematization of individual distribution packages of the layout into a single whole of educational-subject and electronic didactic modules at the levels of information, practical and controlling nature:

☐ Distribution package of the information module. The package presents a theoretical and methodological justification for the customization of distance learning for university students, reveals the discursive content of the concept, defines the principles, purpose of the distribution package in the digital environment of the university, and directions for the development of autonomous units of thematic components of customized distance learning modules;

☐ Distribution package of the practical module. The package contains the structure and content of software tools: text and image editors, animators, audio/video digitization programs, programming tools, materials for multimedia implementation (videos, sound, graphic images);

☐ Distribution package of controlling software modules for general and special purposes. The structure and content of this package are presented in two sections.

The first section. General-purpose software modules. The section presents the structure and content of a set of programs-Power Point, Adobe Acrobat, accompanied by methodological and software developments for their use in the preparation of interactive individual self-control technologies and training. Options for developing modules for an individual task system are presented.

The second section. Special-purpose software modules (author's systems). The modules represent the structure and filling of the content relevant for teachers and students in the creation of electronic resources for academic disciplines. This module discloses the methods of interactive self-control exercises and training in individual trajectories of students, developed based on the eAuthor program.

3.3. Customized Content of Student Educational Trajectories

The works of specialists on the discursive content of students' educational trajectories combine the ideas of customization, which ensure the adjustment of the content of forms, methods and technologies of teaching to the needs and capabilities of students, taking into account their advanced development based on interaction with the digital environment of the university. Customized distance learning trajectories are a priority component of the organization of students' personal orientation towards education. This approach reflects the features of the process of realizing the personal potential of students; the use of personal abilities as the dominant motive; the focus of training on the activation of subject-subject relations; compliance with the freedom of student's choice of his/her educational trajectories. In addition, the level of competence formation has a priority influence on the customization of students' educational trajectories. Based on the established trends, the authors of the article determine the content of the discursive content of distance learning educational trajectories' customization, as an individual orientation of the student's independent movement towards the

intended educational goal, organized with the direct participation of tutors, subject teachers, and curators in the digital environment of the university. Within the framework of the existing didactic, methodological and electronic space, for the development of customized educational trajectories of students, it is necessary not only to change the approaches to technologies and forms of their implementation, but also to select the content and semantic professional core of future professional activity. The university program, based on the characteristics of a particular student acting as a subject of activity in various types of environments - social, professional, socio-cultural, and labor becomes the semantic concept of the customized approach to reformatting the student's educational trajectories. Customized educational trajectories in the current conditions ensure the adjustment of the content, forms, methods and technologies of training to the needs and capabilities of students, taking into account their advanced development, which is carried out based on interaction with the digital environment of the university. In this regard, the authors of this article, in the course of a pedagogical experiment, set priority directions for the customization of the content of the student's educational trajectories in distance learning:

1. Implementation of students' personal needs and interests in the educational environment of distance learning. In the course of the conducted research, it is proved that the presence of correctly formulated individual trajectories of the student confirms the recognition of him / her to be a subject of the educational process, which has priority for the realization of personal needs and interests in distance learning. In the educational process, customized trajectories determine the opportunities and conditions for distance learning of students according to individual curricula and educational programs.

2. Implementation of competencies that reflect the essence of the chosen subject area of professional activity and individual competencies (soft skills) necessary for the development of the individual and its adaptation to society.

The authors of the article find that each student's educational trajectory determines the need to use a set of competencies, on the one hand, reflecting the essence of the chosen subject area of professional activity (social and humanitarian, natural science, engineering and technological, economic and managerial, professional knowledge), on the other - necessary for the development of the individual and its adaptation to society, individual competencies (soft skills). In these conditions, competence becomes the main result of the student's transition as a subject of the implementation of his/her own educational trajectory to a new state of educational activity and becomes a criterion for the demand for his/her customized educational trajectory in the areas of professional activity.

In this situation, a new attitude of students to the organization of educational activities is formed: awareness of their own responsibility for the educational result, the inability to rely on the same learning paths for all students and the need to rethink their needs when choosing them.

3. Implementation of a set of methods and techniques of students' subject activity for mastering the knowledge system and ways of their application, disclosed in the content of distribution packages of customized modules. It is established that with the support of this package, a number of tasks of information, training and monitoring content with focusing on supporting customized educational trajectories of students are carried out, which are important for the educational process.

Conclusion

The conducted research confirms the theoretical and practical significance of building customized distance learning modules aimed at reformatting the educational trajectories of students in the digital environment of the university, as an independent scientific direction. Based on the results of designing distribution packages of customized distance learning modules for students, the study identifies trends that intensify the processes of replacing educational technologies focused on student – teacher - employer interaction with various innovative directions that change the nature of training, customize (adjust) the existing structures of educational trajectories to the needs of students, taking into account the advanced development of their individual capabilities and characteristics. In the course of this study, it is proved that in the conditions of

distance learning, the rethinking of the essence of students' educational trajectories and the development of conceptual provisions for their reformatting are largely determined by the provision of the educational process with customized distance learning modules. In the article, taking into account the existing traditional and innovative university experience of distance learning before the pandemic, pandemic and post pandemic periods, the following is established:

1) Pedagogical prerequisites for customization (adjustment to the needs of students) of distance learning in the digital environment of the university;

2) Structure and content of distribution packages of customized distance learning modules for students;

3) Customized content for reformatting the educational trajectories of distance learning of students in the digital environment of the university.

The effectiveness of the reformatted trajectories of students is confirmed by the results of their implementation in distance learning.

This problem as an independent scientific direction does not exhaust itself by solving the tasks set. The results obtained determine the need to continue research in the field of new educational approaches to the design of customized master's models of university students' network training.

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