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INTERDISCIPLINARY INTEGRATION IN HIGHER EDUCATION - CONDITION OF EFFECTIVENESS EDUCATIONAL SYSTEM

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Abstract

Specific problems of real world have subject borders infrequently. Social Studies have complex nature because of combination different knowledge. On the background of the trend mutual influence discipline on each other Russian universities get traits characteristic of the universities of 3-d generation. Adaptation to new conditions necessitates transformation of university's structure. However Russian universities in regions need to adapt to inflicted changes and dotted innovation. Teaching staff is trying to fulfil multidirectional goals at the same time. As a result, none of the tasks has a high quality of execution. The combination of specialists from different fields to achieve new tasks is seen as a way to achieve high results. The result of the authors' analysis of interdisciplinary processes, relevant topics for research and the challenges facing modern society, university practices is the proposal to change the structure of domestic universities – the creation of interdisciplinary units. The considered expansion of interactions and the complication of the university's activity system are an important source of development (a complex system develops faster than its parts). The theoretical results of the study – identified relationships and patterns that should become the results of long-term significance and increase the effectiveness of the modern education system. Suggestions which are discussed in the article enlarge repertoire of organizational activities in universities. Incentives, changes in structure and new models for recruiting and rating teachers create organizational conditions that are expected to contribute to practical interdisciplinary research.

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Keywords: Integration, interdisciplinarity, structure of the university, university departments, university,



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1. Introduction

The relevance of this study is to analyze the possibility of changing the structure of modern universities by creating interdisciplinary units, adapting the achievements of world university thought to the specific educational conditions that have developed in Russia.

Universities are called upon to change themselves to break down the structural barriers that prevent researchers from engaging in interdisciplinary collaboration. It is assumed that a reformed university will make it possible to make qualitative leaps in scientific progress and increase economic and social benefits for society.

2. Problem Statement

The whole world is currently undergoing an academic revolution. A number of trends have been identified (which, however, are not characteristic of Russian universities): the integration of industry-specific universities into post-disciplinary universities, and the strengthening of the stratification of the university system. In general, there is a crisis of universities. The essence of the current crisis is that the university is losing its mission (Hammershøj, 2019). The crisis is the result of a managerial orientation on administrative goals. In addition, the trend towards digitalization and liberalization reduces the barrier to entry into the higher education market. Strengthening these trends may lead to a devastating future scenario for the university as an organization.

Studies of the last 10–20 years indicate the widespread dissemination of interdisciplinarity as an institutional goal or strategy for research universities (Brint, 2005).

Interdisciplinarity has become a goal for federal agencies, academic associations, industry, and academic leaders in the United States. Proponents of interdisciplinarity argue that academic institutions are at great risk in maintaining traditional organizational forms and ways of working related to disciplinary specialization (Rhoten, 2004). Two influential academic associations – the National Academy of Sciences and the Association of American Universities – have analyzed and made some conclusions about how universities can foster interdisciplinary research.

Contribution to the development of problems of interdisciplinary integration and changes in the structure of universities in connection with this phenomenon was made by domestic researchers of various fields of knowledge, including Bashta (2015), Strongin (2017). Highly appreciating the works of these authors, it should be recognized that the problems of interdisciplinary integration have not yet found their modern solution. It seems that the given points of view require additional research, at present a new basis is needed to measure interdisciplinary, approaches for analysing trends and effects.

3. Research Questions

Higher educational institutions of the country require a systemic transformation. It is necessary to outline the directions of these changes, evaluate their possible effects, analyze other people's (for example, American) solutions, which, however, cannot be adopted without analyzing their application on Russian soil.

4. Purpose of the Study

The purpose of the work is to study the dynamics of interdisciplinary evolution, analyze the inevitability of interdisciplinary integration in domestic education, and the productivity of creating interdisciplinary units at universities. The tasks of the work were the study of institutional features, innovative practices of higher education in foreign countries, the feasibility of creating interdisciplinary units in Russian universities.

5. Research Methods

The object of the study is the relationship associated with the introduction / penetration of interdisciplinary into education in general and higher education in particular. In accordance with the object chosen and research methods. The general dialectical method of cognition, as well as such general scientific methods as analysis and synthesis, were chosen as the methodological basis. In the work, private scientific methods are used: historical-logical, formal-logical methods. The dialectical method made it possible to consider interdisciplinary nature in education from the point of view of various approaches to its development, the advantages and disadvantages of these approaches, and the influence of external and internal factors on the corresponding processes. The historical-logical method allowed us to describe the shortcomings in the system of higher education and their causes that have developed historically. Using the formal logical method, the necessity of introducing interdisciplinarity in all spheres of educational activity is substantiated, the reasons are described. In this study, the comparison method is used. The description of the key areas of conceptual change is based on the experience of foreign countries. Examples of the experience of universities (mainly the USA) regarding the introduction of interdisciplinarity both in the structure of the university and in the curricula and teaching methods of individual disciplines are given.

6. Findings

The following interrelated phenomena have become the trends of recent years that have been characteristic of domestic universities: the massization of higher education, the low average level of students, and the low level of scientific and pedagogical workers (CPD). These and other trends demonstrate the need for changes in universities, which in many respects have remained the same.

Research activities at the university are difficult to manage because the research process is difficult to formalize. In addition, the links between education and research must be recognized as weak in type. The consequences of the prevalence of weak ties at the university are the ease of point innovation and resistance to crises.

Undergraduate programs at Russian universities are changing slowly, this is due to the fact that CPDs do not have significant incentives to change their courses, the current system limits the possibility of transforming individual courses. The formats of master's and postgraduate education are inorganic for Russian universities, which often leads to their imitation implementation. Russian studies in the field of exact and natural sciences have a better world reputation than Russian socio-humanitarian studies, this is

due to the fact that the specificity of exact and natural sciences allows to more effectively maintain the level of significance and relevance.

The above characteristics of university education in Russia indicate the relevance of the development of interdisciplinary research. The latter are more related to real-world problems. Such studies can be effectively developed by changing the organizational structure of the university.

In addition to scientific benefits, updating curricula, attracting new stakeholders, the development of multidisciplinary institutions will help to concentrate power in the hands of the university administration. Therefore, the leadership of individual universities is obvious benefit to develop interdisciplinary research.

For the development of interdisciplinarity it is required: to eliminate the so-called “Educational pipes” (Shcherbenok, 2018), create interdisciplinary centers, develop networking with other universities. Obviously, it is necessary to reach the world level of research, not limited to local studies, which can also be facilitated by the increase in the academic mobility of the faculty.

Foreign authors talk about the so-called the “muse” of globalization (Douglass, King, & Feller, 2009), through which individual universities have become “widely recognized and respected for full participation in the knowledge society”. These authors show that globalization works as an equalizer of politics and a barometer of success in the ever-growing race for the future.

In this process, interdisciplinary departments become “best practices”. Many universities have created large multidisciplinary research centers to solve social problems and attract the attention of private philanthropists and state grants. However, European and American multidisciplinary centers are still associated with a rather narrow range of results, such as publications and grants. Attention should be shifted to broader research, providing external financing, and the creation of multidisciplinary structural units.

Using data from Stanford University from 1993 to 2014, researchers studied the results of multidisciplinary centers in several areas and concluded that multidisciplinary centers are usually chosen by productive teachers and further expand their activities and give a wide range of results (Biancani, Dahlander, McFarland, & Smith, 2018).

In the context of expanding support for multidisciplinary research methods, many in the political, scientific, and academic communities are proposing that universities change structurally in order to reduce research barriers involving researchers from several disciplinary fields.

In the United States, it is planned to use incentive grants to initiate new interdisciplinary units, eventually creating educational institutions that direct campus investments in interdisciplinary areas, and new ways of hiring teachers (Sá, 2008).

Creating adequate conditions for the practice of interdisciplinary research is often seen as a managerial problem requiring academic leadership. If there is no lack of external support for participation in interdisciplinary research, then it should be said that often there is no motivation on the part of faculty, as well as systematic implementation of measures for this work by universities.

In order for the “interdisciplinary culture” to penetrate the educational institution of the central administration, actions are necessary to educate the heads of departments. In this context, the promotion

of interdisciplinarity is seen as an organizational problem - ensuring joint research among teachers from different disciplines.

Most leading universities have interdisciplinary commitments on their campuses; some institutions seek to position themselves as favorable places for interdisciplinary activities. Feller (2002) suggested that these institutions, which are more prone to effective adaptation, may gain an advantage in the research market while maintaining current central funding. Political and financial support and the stated interest of academic leaders in interdisciplinarity suggest the potential for collaboration between institutional aspirations and traditional academic structures (Brint, 2005). Many universities have included interdisciplinarity in their strategic planning.

Interdisciplinary research and institutions at universities is an organizational problem. The association between the structure of disciplines and the organizational structure of the academic faculty has become traditional for universities in the early stages of history.

At the organizational level, institutional elements (for example, actions, roles, structures) are resistant to change, there are invariably long periods of time and are easily transferred to new members of the organization. Change is possible, but requires a violation of traditional norms and is opposed to deep-rooted ways of thinking, habits and traditions.

Solving the problem of interdisciplinarity and institutions of the same name, it should be borne in mind that several opposing organizational subcultures coexist at the university. Not all of them are equally productive and useful to the development of the university. In this regard, several universities have changed policies and practices in key areas such as teacher selection and evaluation. Changing personnel policies is always a difficult and delicate task.

Carnegie Mellon University is successful, but unique as perhaps the only major university in the United States organized at non-traditional faculties. You can add to the list Rockefeller University, a specialized institution that has historically taken on interdisciplinary forms of organization (Hollingsworth & Hollingsworth, 2000).

The experience of Duke University and the University of Southern California is interesting, where faculties were reformed in accordance with the policy of promoting, evaluating and recognizing faculty, taking into account multidisciplinary interests. The University of Wisconsin-Madison introduced in the late 1990s the so-called Cluster Hiring.

An understanding of interdisciplinary research requires an assessment system that can cover not only the variety of interdisciplinary outcomes resulting from the implementation of a program or project, but can also relate them to their driving processes (Carr, Loucks, & Blöschl, 2017).

7. Conclusion

The convergence of the above and some other trends can lead to a devastating scenario for domestic universities. Research into strategies for analyzing the future is needed. The rhetoric of interdisciplinary interaction demonstrates optimism in his favor. Changing disciplinary barriers for closer communication allows educational institutions to provide a unique educational opportunity for students. The university community replaces disciplines, teachers interact with each other and their students in

various educational formats, and scientists choose the best knowledge of various disciplines, using them to deal with widespread social problems. These are promises of interdisciplinarity.

But since the university's curriculum is usually structured into academic disciplines and teachers are socialized according to their disciplines, interdisciplinarity remains a challenge for colleges and universities (Holley, 2017). The development of interdisciplinary courses, the support of interdisciplinary initiatives and the financing of interdisciplinary programs are needed. Responding to external challenges and problems does not reduce the role of a separate special discipline in education, but rather recognizes that knowledge is not limited, and potential discoveries lie outside of disparate structures. For the formation of interdisciplinary faculties, the introduction of cross-disciplines in the curriculum, "interdisciplinary teachers" are also needed (see, for example, Smith, Elias, & Baernholdta, 2019). It is assumed that a team with diverse scientific experience and perspectives will effectively and efficiently solve the problems of the education system.

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