

DOI: 10.7596/taksad.v7i4.1866

Citation: Akhmetzyanova, G., Pronina, Z., & Bagateeva, A. (2018). Project Approach as a Means of Forming the Availability of Bachelors to Innovate Activity in Information Technologies. *Journal of History Culture and Art Research*, 7(4), 428-434. doi:<http://dx.doi.org/10.7596/taksad.v7i4.1866>

Project Approach as a Means of Forming the Availability of Bachelors to Innovate Activity in Information Technologies

Guliya Akhmetzyanova¹, Zinaida Pronina², Angelina Bagateeva³

Abstract

The article presents the author's interpretation of the structure of availability of bachelors for innovative activity in the field of information technology, reveals the essence of the project approach in its formation. Information technologies have a number of features that affect the innovation policy: the dynamics of the industry; the novelty of the products and services offered, the rapid growth of the information service market; the use of advanced technologies in the field of information technology. One of the main objectives of the educational system in the field of information technology is to ensure the forming of students' special competencies of innovative activity with the help of various modern pedagogical approaches. Thus, the development of methodical, didactic bases of the organization of project activity in the field of information technologies acquires special urgency.

Keywords: Innovative activity, Information technology, Project approach, Availability, Bachelors.

¹ Doctor of sciences, professor, Kazan Federal University - Naberezhnye Chelny Institute. E-mail: agnineka@yandex.ru

² Without degree, Lecturer, Kazan Federal University - Naberezhnye Chelny Institute. E-mail: pronina_zi@mail.ru

³ Assistant, without degree, Kazan Federal University - Naberezhnye Chelny Institute. E-mail: angel803@yandex.ru

Introduction

Innovations in the field of information technologies are aimed at supplying with the latest developments and their implementation in various sectors of the economy. The main features of information technologies in the sphere of innovation policy are the following: the dynamics of the industry; the novelty of the products and services offered, the rapid growth of the information service market; the use of advanced technologies in the field of information technology provides strategic advantages for business. As to the educational system in the field of information technology, one of its main objectives is to guarantee the developing of students' special competencies of innovative activity with the help of various modern pedagogical approaches. The project approach, which is supposed to solve this task, consists of a set of research, search, problem methods, and creative at their essence. Therefore, the development of methodical, didactic bases of the organization of project activity in the field of information technologies in the higher educational system acquires special insistence.

Methods

The following methods were used during the research: *theoretical and methodological analysis*, during which it was revealed that, despite the diverse interpretations of the "innovative activity" concept and its structural composition, it is possible to identify a number of mandatory components that together most accurately characterize the essence of this concept; *induction* as a type of inference from particular facts, provisions to general conclusions allowed to identify the components of bachelors' availability for innovative activity in the field of information technology; *abstraction*, which allowed to mentally distract from the immaterial properties, connections, relations of availability for innovative activity and, at the same time, to identify, fix a few parts of this concept of our interest as researchers.

Results

Availability for innovative activity in the field of information technology (IT) is considered by many researchers as a set of interrelated individual psychological characteristics of the individual, determining the suitability of the student for successful innovation [1].

Characteristics of the structural elements of availability for innovative activity in the field of information technology, presented by different scientists, are diverse. They include motivational, cognitive, operational-activity, reflexive-evaluative components [2], cognitive, operational, emotional-volitional, and informational components [3].

Based on the scientific developments of some scientists [4,5,6,7,8], we consider availability for innovative activity of bachelors in the field of information technologies in our research as a set of intellectual, activity-based, motivational-value, emotional-psychological and creative-productive components.

1. The intellectual component that performs the mental function and is formed by the theoretical knowledge of the fundamental basics of Computer Science, Economics and Management, technical knowledge in the field of IT and special knowledge in the field of IT-innovations, includes:

1.1. the ability to design the database structure and its implementation by means of database management systems, which includes the study of the subject area; development of the logical structure of the database; database development by means of DBMS;

1.2. the ability to reengineer business processes and restructure the IT-infrastructure of the enterprise to ensure fundamental improvements in the performance of its activities, which is achieved by performing the following: the allocation of business processes of the enterprise, the classification of business tasks;

the formation of a normalized organizational structure of the enterprise; the use of the methodology of functional modeling of business processes of the enterprise IDEEF3 and IDEEF0; building a product model of the enterprise;

1.3. the ability to develop new software, which is to design algorithms for solving applied problems; creating user interface and writing code; checking the software; integration of software modules and components and verification of software releases;

1.4. the ability to create new automated information systems or automated enterprise management system, which contains the definition of the initial requirements of the customer to the new IP and the possibility of their implementation; setting goals and objectives for the creation of new IP; formalization and algorithmization of tasks; creation of variants of the architecture of the new system; documenting the selected optimal architecture of the new system; organization of the harmonization of the software, technical, mathematical and information support of the IP; support of functional testing of system modules from the point of view of user convenience; support of acceptance testing and commissioning of new information system and subsystems; development of user documentation of new information system; training users to work with new information system;

1.5. the ability to identify and assess the risks of innovation activities, which is provided by identifying the possible cost, financial, time and other risks, as well as technological risks associated, in particular, with the choice of non-optimal algorithm for solving application problems and options for the architecture of the software, with an increase in the time of writing the code, with the inability to fully integrate new software modules and components with the operating IP, etc.; establishing the maximum level of risk for each critical position; development of risk mitigation strategies for innovation activities; implementation and control of preventive (preventive and protective) measures;

1.6. the ability to use methods of assessing the economic effectiveness of innovation activity, which is determined by the investment budget for innovation activities; provide a return on investment in due time; receipt of additional results (qualitative and temporal indicators) in excess of the planned return on investment, and if it meets the standard indicators of efficiency of innovative activity.

2. The activity-based component, which performs the practical and applied function and is aimed at the organization and effective implementation of the innovation project, includes:

2.1. business planning of innovation, the purpose of which is to justify and prove to the Board of Directors and the shareholders' meeting, to the third party investor or creditor that the innovation project is economically feasible and should be adopted;

2.2. commercialization of innovations, which is the process of turning an innovative project into a market product for profit;

2.3. legal protection of intellectual property, which is to pass the procedure of state registration of computer programs and databases.

3. The motivational-value component, performing a stimulating function, includes:

3.1. sustainable cognitive interest in the study of innovations in the field of IT, which is supported by systematic search, analysis, generalization, comparison, systematization and classification of innovative products and technologies;

3.2. value attitude to the future profession, in which Business Informatics is recognized as a practical activity that affects the management of business and determines the policy of enterprises of different industry and different forms of ownership;

3.3. the target setting for professional self-improvement and self-development, reflecting the desire of the bachelor to become a high-level expert in the field of Business Informatics and the need for continuous replenishment of knowledge, systematic training throughout life, when the further formation of professional competencies continues in a real professional environment after graduation.

4. The emotional-psychological component, that performs communicative and regulatory functions and is ensuring the development and adherence to necessary behavioral strategies to overcome problems, obstacles and resistance from some participants of the production process during the development, implementation and diffusion of innovations, involves:

4.1. the expression of emotional-psychological culture and communication skills in the interaction with other participants in the production process, when social, ethnic, religious and cultural differences of customers, developers and users of innovations are perceived as tolerant;

4.2. the joy of creativity, a sense of satisfaction from a well-done job, when professional activity is considered not only as a means of earning, but also as a way to bring benefits to others;

4.3. developed ability to reflect, which is replicated in the adequate evaluation of the bachelor of positive and negative aspects of their own personality, activities and behavior regulation;

4.4. the ability to work independently and in a team, which is confirmed by the willingness to be personally responsible for the decisions made, and at the same time to be a part of a team, interacting with colleagues who perform various professional tasks and responsibilities.

5. Creative-productive component, that performs an innovative function and is suggesting creative and constructive ability, which can be implemented when creating new information products and technologies that are significantly different from traditional ones, includes:

5.1. the ability to the production and generation of new ideas and creative solutions, that is the ability to improvise and bring fresh and non-trivial thoughts, which are subsequently transformed into rational and productive solutions;

5.2. the acquisition of practical experience and the formation of individual style of activity to create innovation in the IT sector, which presupposes an archive of innovative projects and analysis of the experience of their implementation, and over time there develops its own style in the form of certain methods and tactics.

Discussion

Under the **project approach** we understand the organized educational process, including a planned sequence of methodical actions of the teacher organizing the project activities of students, and a purposeful sequence of creative actions of the student performing project activities within one or more academic disciplines.

Project activity is one of the types of professional activity and is the ability to solve a number of professional problems:

- the development of projects to improve business processes and its infrastructure of the enterprise;
- the development of project documentation for the improvement and regulation of strategies and goals, business processes and IT infrastructure of the enterprise;

- the performance of work on improvement and regulation of strategies and goals, business processes and its infrastructure of the enterprise;
- the development of the project of architecture of the electronic enterprise.

The project approach [9,10,11], implemented in the study of several subjects, involves the following stages:

1. Organizational-preparatory stage which consists in finding the problem; selecting a topic; defining project tasks; preparation of the preliminary plan; determining the methods, techniques of research.
2. The analytical stage is to clarify the formulation of the tasks; search, collection and processing of information.
3. The stage of generalization contains systematization of the obtained data; building a general logical scheme of conclusions for summarizing.
4. The stage of results presentation includes understanding the data and ways to achieve results; presentation of the results. The main criterion for the success of the project is the joy and satisfaction of all its participants from the realization of their own achievements and acquired skills.

The project approach aimed at the forming the intellectual, activity-based, motivational-value, emotional-psychological and creative-productive components of the availability of bachelors to innovate activity in information technologies is implemented in the process of studying a number of subjects. Completion of the project during the study of "Database" subject forms the ability to produce, generate new ideas and creative solutions, gaining practical experience in the design of database structures for a specific (educational or real) subject area and its implementation by means of one of the database management systems. Project activity within the "Reengineering of business processes" subject forms the ability to reengineer business processes and restructure the IT infrastructure of the enterprise. The design approach, used in the "Design of information systems" subject, is focused on the forming the ability to system analysis of objects, creation and implementation of projects of information systems or one of its subsystems, as well as the organization and management of the design process.

Conclusions

Thus, we consider the project approach as a methodical, didactic means of activation of cognitive activity, development of creativity and at the same time formation of professional and personal qualities. Work on the project is a complex process that requires its organization on the part of the teacher, and conscious, creative approach on the part of the student. The use of the project approach focuses students on the priority of research, search, creative nature, which in the future makes it possible for graduates to have a wide range of subject areas for their activities, be professionally mobile due to the demand in the labor market.

Acknowledgements

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

Footnotes

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