

dynamics on the example of BSUIR through the features of the process of disciplinary integration within an interdisciplinary approach. There suggested the methodological principles of a realization of interdisciplinary educational programs to expansion a fundamental student training.

Keywords: interdisciplinarity, professionalism, educational and professional standard, professional training, points of increase of professionalism, professional competence.

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SELF-REALIZATION OF STUDENTS IN COOPERATION WITH INDUSTRIAL PARTNERS OF UNIVERSITIES

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Abstract. The quality of training of modern young professionals is determined primarily by the ability for independent activity, professionalism in solving specific problems, the effectiveness of using the knowledge and skills obtained in the university. Cooperation during training in the university with industrial organizations for the development of projects and software products, having real practical significance, helps to adapt more quickly to future work.

Keywords: training, solving practical problems, cooperation with industrial organizations, adaptation to future work, project development.

Any teacher is interested in improving the efficiency of his activities. To achieve this goal, various means are being used: the use of innovative teaching methods, information technologies for representation and control of knowledge, modern means for project development. However, the traditional training organization criticized by Mark Twain: "College is a place where a professor's lecture notes go straight to the students' lecture notes, without passing through the brains of either", does not allow achieving the expected results. And Plutarch understood this: "The mind is not a vessel that needs filling, but wood that needs igniting".

The main means to "ignite wood" is to attract students to research, to implement projects that will really be implemented and used. And to orient students on this option of acquiring knowledge need the first year of their education in the university. With this approach, trainees have the opportunity to prove themselves, to test their strengths in real work, to develop projects for real customers, focusing on the requirements of the market.

Such an approach to education, when teachers not only lecture and conduct classes, but also work in organizations for which cadres are trained, is the most effective and promising. We know what knowledge and skills you need to get a student to be competitive in the labor market.

Proof of the above are the results of the work of the trainees. So, as a result of cooperation with Intellectual processors, various projects were implemented, the initiators of which are students.

Young researchers at the beginning of their activities need knowledge about business analytics, developing requirements for the software product, how to present the results of their research, make them commercially viable. Industrial organizations should help them acquire the necessary knowledge and experience.

A business consultation "Introduction business training" for young researchers at the Faculty of Computer Systems and Networks of the Belarusian State University of Informatics and Radioelectronics was held by the employees "Intellectual Processors" Ltd.

The following issues were considered:

- what abilities (qualities) the IT entrepreneur should possess;
- key issues of professional suitability of the entrepreneur;
- the dependence of risk on the completeness of the "product";

– opportunities for the implementation of start-ups (business incubators, technology parks, competitions, business angels).

Also, young researchers were provided with individual consultations on the development of requirements for the software product, the use of modern methods, technologies and programming languages.

Particular attention should be paid to the fact that the basis for the success of the software product (PP) is the quality of the collected requirements for it, since "errors made at the stage of collection of requirements constitute from 40 to 60% of all projects' defects" [1]. Underestimation of the stage of collection and documentation of requirements leads to numerous modifications of programs, which prevents the development of the necessary functionality software on time and within the budget.

This year we worked with more than 40 young researchers. Consider only some applications developed under the guidance of "Intellectual Processors" Ltd.

The examples of the of young researchers work:

DAILYLABS Service

One of these projects is the DAILYLABS Service, which provides automation of the student's progress monitoring system and a convenient exchange of information in the learning process.

The developed service DailyLabs is a multifunctional system for monitoring progress. This system provides users with the following features:

- Combine and organize items and laboratory lessons in a user-friendly interface.
- Providing information about the teacher, the discipline, the laboratory.
- Calculation of educational progress.
- Communication of students within the specialty stream and the group.
- The publication of the laboratory tasks by the teacher.
- Ability to ask a question to the teacher.
- Advantages of this service:
- Refusal from old-fashioned records on paper and transition to a new technical and modern level.

– User-friendly interface.
– Ability to refine the service for any educational institution.
– Timely delivery of laboratory works by a student when controlling the application deadlines.

- Notifications that help to perform lab work on time.
- Visual planning of the vector of performance of laboratory works.
- The server part is written in such a way that it does not require a lot of resources for work.
- Available versions of the application for iPhone, Android and WEB-version.

A student with any mobile device will be able to use our application without any difficulties. WEB-version of the application for computers is available. Applications on all platforms are implemented in a unified style and are intuitively understandable for each user.

Figure shows a variant of communication between students using the application.

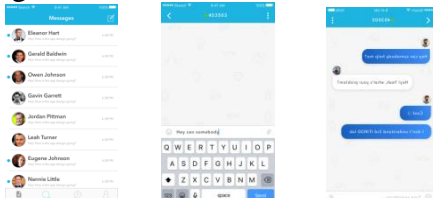


Figure – communication between students
Genetic algorithms and optimization techniques

In order to study the genetic algorithm as an optimization tool, a demonstration program using C++ was developed, the result of which fully confirmed the theoretical assumptions about the effectiveness of the chosen technique.

As a practical implementation for the use of the findings, the task of forecasting purchases in the shop is chosen, which will provide the opportunity to timely update the range and increase profits.

Development of virtual machine for internet of things

Development was carried out in the programming language C ++ without implementing platform-dependent code. This ensures the ability of the developed virtual machine to run on more than one hardware platform. The resulting architecture is compact enough to fit and work on microcontrollers and Systems-on-a-Chip. This allows you to apply it in the field of the Internet of things.

The virtual machine created differs from such well-known analogs as Oracle VM VirtualBox, Microsoft Hyper-V, VMware Workstation. The command set architecture of the virtual machine created is designed specifically for it and has no implementation in existing hardware platforms. In this, this software product is similar to virtual machines of programming languages: Java Virtual Machine, Common Language Runtime, Forth.

Mobile application for tracking nutrition and activity on iOS

When you first times download the application to your phone's screen [2], you must enter your name and individual parameters. Based on the entered data, the program calculates:

- the number of calories recommended for daily use,
- the ratio of proteins, fats and carbohydrates, which is suitable for you personally,
- the basic metabolism (this is the amount of energy that you expend every day without taking into account the activity).

In accordance with the results obtained, you can keep a diary of your nutrition and movement. In the program itself there is a database of products with data on their caloric content and ratio of proteins, fats and carbohydrates, as well as a database with basic activities and sports. These databases are replenishable, that is, at any time the user can add one or another product or dish, sport, etc. This allows you to make the application purely individual, which is an absolute plus. Every day, you add food that you consume throughout the day, as well as activity. The app shows you how many calories you need to consume.

It all depends on your goal. If you want to lose weight, you need to eat less than spend, if you just support the form, then the amount of consumed and consumed calories should be the same, well, respectively, if you need to gain mass, you need to consume more calories. Application will help you in this. You will see how much you ate, how much you spend. And there is an opportunity to separately track how much you spent at the expense of the steps taken, how much through training, how many simply because of the vital activity of your body. And with the help of a convenient calendar you can see the data of the past days, and also correct them as needed.

Professional portal in the field of manufacturing and repairing of floor

This software product is unique and differs from its counterparts in that it is created for a certain circle of users, professionals in their field, provides wide functionality and informative content.

The software will be used by specialists in the field of floor repair who can exchange experience, provide their services, disseminate information about new materials and services, advise people on issues in this area and much more, and potential customers who are interested in this service

IOS-application with voice notes Notevox

The most important of the requirements for modern software products are the convenience of their use, the ability to improve our daily lives. Also, special attention in society is given to persons with disabilities, such as those with visual impairments. The developed mobile application for the iOS operating system [3] saves time by automating the recording of voice messages, voice notes. It is recommended for motorists, poets, people with disabilities, those who are uncomfortable to record and spend a lot of time writing notes manually.

Application for the search of the nearest events of the information technology industry in Belarus

Among a wide variety of events, there arises the problem of finding an event that meets certain criteria. To solve this problem, the EventsClient application was developed. The application allows you to track all activities in the field of information technology, held in Belarus. The server part of the application works in real time, that is, returns the current information at the time the user part accessed.

The server part, on the request of the user, collects from open sources all sorts of activities, brief and more detailed information about them, and converts into JSON array. The application receives a server response and saves it to a local database, after which it processes it. Thus, in the future, work with the application can be carried out offline. At the same time, the application regularly checks for updates in the event stream and notifies the user through system notifications of the computer.

Applications for psychological testing

A program complex consisting of three questionnaires:

– The personal multifactorial questionnaire of Cattell (16-PF),

– A test for the diagnosis of rigidity

– Test for the diagnosis of the type of behavioral activity Wasserman and N.V.

Gumenyuk.

All test results are stored in the database and interpreted in text, graphical and digital form

As a result of cooperation between young researchers and "Intellectual Processors" Ltd. , students received practical skills in requirements formation for the software product and developing software using modern methods and programming tools. The results of their work presented at conferences, are marked with certificates of honor and gratitudes, monetary bonuses and successfully used by customers.

Participation in projects that solve specific problems, are introduced and in demand, increase the interest of young researchers in a successful outcome, allow them to show creativity and initiative, develop the ability to independently think and timely solve the tasks assigned.

This helps to improve the quality of training of specialists and, as a result, makes their successful professional activity and competitiveness in the labor market.

In the future, it is planned to continue work on most projects and ensure the expansion of the functionality of software products and their implementation.

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САМОРЕАЛИЗАЦИЯ СТУДЕНТОВ В СОТРУДНИЧЕСТВЕ С ПРОМЫШЛЕННЫМИ ПАРТНЕРАМИ УНИВЕРСИТЕТОВ

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Аннотация. Качество подготовки современных молодых специалистов определяется прежде всего способностью к самостоятельной деятельности, профессионализмом в решении конкретных проблем, эффективностью использования знаний и навыков, полученных в университете. Сотрудничество во время обучения в университете с промышленными организациями для разработки

проектов и программных продуктов, имеющих реальное практическое значение, помогает быстрее адаптироваться к будущей работе. Ключевые слова: обучение, решение практических задач, сотрудничество с промышленными организациями, адаптация к будущей работе, разработка проекта.

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ОЦЕНКА ЭФФЕКТИВНОСТИ ДЕЯТЕЛЬНОСТИ ВУЗА В УСЛОВИЯХ ТРАНСФОРМАЦИИ ЗНАНИЙ

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Аннотация. Описываются направления и критерии оценки эффективности деятельности вуза. Определена роль университета, как ключевого звена в цепочке преобразования знаний в продукт/услугу, в условиях реализации концепции модели «Университет 3.0».

Ключевые слова: оценка эффективности деятельности университета, критерии оценки эффективности деятельности университета, экономика знаний, модель «Университет 3.0».

Цифровая трансформация экономики Республики Беларусь оказывает существенное влияние на тенденции роста и развития страны. Экономическое доминирование сектора промышленного производства уступает место экономике знаний, цифровой экономике. В этих условиях конкурентоспособность экономики определяется качеством человеческого капитала. Важным показателем роста становится способность экономики эффективно управлять интеллектуальным капиталом. Учреждения образования, как основные поставщики интеллектуального капитала, выполняют ключевую роль в экономике знаний.

Эффективность образовательной деятельности определяется формированием способности у выпускников мыслить инновационно, создавать, осваивать, распространять новые технологии и продукты.

Современные вызовы, связанные со стремительным развитием ИКТ и цифровых технологий, переходом на цифровую экономику определяют необходимость ускорения процесса трансформации знаний, усиления взаимодействия науки – образования – производства, ускорения сроков по внедрению инноваций в производство и коммерциализацию полученных результатов, необходимость использования, развития модели «Университет 3.0».

Модель «Университет 3.0» строится на базе университетской предпринимательской среды, в которой генерируются высоко конкурентные инновации.

Выделяют следующие модели университетов [1]:

Университет 1.0 – университет, осуществляющий только образовательную деятельность;

Университет 2.0 (модель Гумбольдта) – совмещает образовательную деятельность с наукой;

Университет 3.0 – образовательная деятельность, наука и коммерциализация знаний.

Концепция «Университета 3.0» пришла из западноевропейских стран и США, где университеты стимулируют создание своими профессорами и выпускниками бизнес-компаний, а также становятся их соучредителями, что приносит дополнительное финансирование, происходит развитие сетевых ресурсов. Данная модель широко используется ведущими вузами мира.