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Level differentiation technology in vocational education

Технология уровневой дифференциации в профессиональном образовании

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Abstract

Differentiated learning technology has been used for a long time. However, with the introduction of innovative educational technologies, it acquires new features and therefore requires additional research. Higher schools are in the process of searching for elements based on a personality-focused approach and introduce the most effective technologies in this process. The purpose of the article is to discuss the implementation of technologies that provide a single differentiation in the process of preparing students. The characteristic of students' work in differentiated educational conditions is presented. Teaching and training students is arranged in groups. As a result, there is a way to prepare competent students, making them highly qualified professionals. The study shows that there are great opportunities in teaching students of a higher educational institution. The formation of competencies with the help of differentiated learning technology becomes more effective, since individual characteristics of each student are taken into account and their interest and motivation to study a particular course increases. Differentiated tasks allow you to monitor dynamics of the development of students' competence, the systematic implementation of a

Аннотация

Технология дифференцированного обучения используется на протяжении длительного времени, однако, с внедрением инновационных образовательных технологий она приобретает новые черты и поэтому требует дополнительных исследований. Современные требования государства и общества к подготовке специалистов обусловили необходимость поиска инструментов, формирующих компетентность студентов с учетом их потребностей и возможностей. Высшие школы, в процессе поиска данных элементов, основываясь на личностно-ориентированном подходе, отбирают наиболее результативные в этом процессе технологии. Цель статьи заключается в рассмотрении вопросов реализации технологии уровневой дифференциации в процессе подготовки студентов высших профессиональных учебных заведений как способа, обеспечивающего активное включение каждого студента в образовательный процесс, в решение проблемных задач, развивающего его самостоятельность и творческую составляющую. Формирование компетенций с помощью технологии дифференцированного обучения становится более результативным, поскольку учитываются индивидуальные особенности каждого студента и их интерес и

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certain type of tasks that are suitable for certain groups of students. The article presents a study of the level of training of students of the University of the 3rd year of study. The study was conducted in 2018 throughout the school year. Our results are based on data obtained from two groups of students with the same number of subjects. The introduction of differentiated learning technology can improve the quality of training of higher education institutions students. With the help of these technologies, each student, building training in accordance with their personal characteristics and professional needs, achieves success in mastering the material, quickly forms professional competence. The results of the study focused on the quality of training showed that differentiated technologies improve students' performance.

Key Words: competencies, educational technologies, level differentiation technology, professional education, students.

Introduction

The modern labor market places high demands on graduates of higher educational institutions. Therefore, the task of higher schools is to prepare competitive specialists who meet these requirements, ensuring guaranteed employment. In order for students to have such a demand, it is necessary that each of them is interested and

мотивация к изучению той или иной дисциплины возрастает. Дифференцированные задания позволяют следить за динамикой развития компетентности студентов, систематической реализацией определённого типа заданий, подходящих для определенных групп студентов. В работе представлена характеристика работы студентов в дифференцированных образовательных условиях. Дифференциация представлена и как способ индивидуализации обучения и как инструмент к обучению студентов в группах. Сочетание индивидуальной и групповой самостоятельной работы выступает как результативный способ формирования компетентности студентов, становления их как высококвалифицированных профессионалов. Проведенное исследование, показало, что технологии дифференцированного обучения предоставляют широкие возможности в обучении студентов высшего учебного заведения.

В статье представлено исследование уровня подготовки студентов университета 3-го курса обучения. Исследование проводилось в 2018 году на протяжении всего учебного года. Результаты основаны на данных, полученных от двух групп студентов с одинаковым количеством студентов.

Внедрение технологии дифференцированного обучения позволяет повысить качество подготовки студентов высшего учебного заведения. С помощью данных технологий, каждый студент, выстраивая обучение в соответствии со своими личностными особенностями и профессиональными потребностями, добивается успехов в освоении материала, оперативнее формирует профессиональную компетентность. Результаты исследования, обращённые к качеству подготовки показали, что дифференцированные технологии улучшают показатели обучающихся.

Ключевые слова: компетентность, компетенции, образовательные технологии, профессиональное образование, технология уровневой дифференциации.

motivated (Vaganova et al., 2018). Therefore, in modern higher schools, individually-oriented education is gaining popularity. It takes into account characteristics and needs of each student, allowing individualizing educational process (Andrienko et al., 2019a). In this regard, there is a need for an individual approach to each student

(Andrienko et al., 2019b). Thus, each student is involved in the decision-making process and at the same time, his individual needs are taken into account (Denisenko et al., 2018). Modern education process provides many opportunities for the implementation of these technologies (Vaskovskaya et al., 2018). We would like to draw attention to direct educational technologies. The initial requirement is a change in the process of preparing students, which allows them to put their knowledge into practice in real professional conditions. Students are focused on achieving the only true answers to their tasks. Despite the fact that this approach requires professional training, it should impede the development of students' creative thinking, the development of their independence and the acquisition of self-confidence. That is why modern educational process in its elements prepares and implements innovative solutions (Myalkina et al., 2018). In order to learn, you need to remove mental blocks and rethink the ambiguous problem with different answer options. In the context of level differentiation technologies implementation, these opportunities are provided to each student. The implementation of differentiated learning is based on the principle of individualization. Differentiation allows you to build training in such a way as to create favorable conditions for the preparation of each student, in accordance with its capabilities and features. Methods, means are selected taking into account the educational needs of students. Differentiated technologies allow you to adapt the educational process to the characteristics of specific groups of students. They help to reveal their potential opportunities through effective interaction in cooperation. The advantages of differentiated learning technology include: increasing the level of motivation to study professional courses, increasing interest taking into account individual characteristics of the individual. Only in the process of creative activity students can maximize their professional abilities and build competence. The indicated capabilities of the technology of level differentiation make it possible to increase the level of training of students. In the article, in our study, we reveal high, medium and low levels of training.

Theoretical framework

Differentiated learning technology has been used for a long time. However, with the introduction of innovative educational technologies, it acquires new features and therefore requires additional research (Ivanova et al., 2019). The questions of personality development within the framework of the continuous educational

process, taking into account personality-oriented approach, were developed by V. V. Serikov, A. N. Leontiev, A. A. Rean, N. F. Talyzina. The formation of competencies with the help of differentiated learning technology becomes more effective, since individual characteristics of each student are taken into account and their interest and motivation to study a particular course increases (Bartkiv et al., 2018). Differentiated tasks allow you to monitor dynamics of the development of students' competence, the systematic implementation of a certain type of tasks that are suitable for certain groups of students. They also contribute to the active involvement of each student in the learning process, quick orientation of students in a large amount of information, concentration on the main idea and generalization of the results obtained (Kamenez et al., 2019). The technology of differentiated learning involves individualization of educational process aimed at meeting the needs and corresponding to the capabilities of each individual student (Garnevska et al., 2018). One of the best ways to implement this technology is through collaborative learning (Markova, et al 2019). Only in interaction can one student's experience be transferred to another (Nikonova et al., 2019a). In interaction, they can distribute their powers and responsibilities among themselves, showing independence and developing their creative component (Koshechko et al., 2018). The concept of differentiation is interpreted by scientists as the division of one whole into parts (Makhometa et al., 2018). The essence of differentiated learning is to organize educational process based on the needs and characteristics of the student's personality (Abramova et al., 2018). Differentiated learning technology is closely related to personality-oriented approach that is actively developing in modern higher education (Vaganova et al., 2019a). With regard to vocational education, differentiation is defined as the construction of an educational process in which a teacher works with a specific group of students to ensure their academic performance (Rakhimbayeva et al., 2019). However, in modern educational conditions, differentiation involves the work of all with all, that is, training in cooperation, where the teacher acts as an adviser, and does not transfer ready-made knowledge to the student, but only directs it in the right direction. It "immerses" the student in the conditions of the problem that needs to be solved. In this case, there may be more than one solution (Chirva et al., 2018). Thus, the teacher activates cognitive activity, motivating students to study materials to find answers to the question (Smirnova et al., 2019). In this process, they form

their own opinions and learn to interact to achieve a common result. In the process of interactions (Vaganova et al., 2019c) there is mutual learning, which is based on the exchange of experience (Smirnova et al., 2018). More "strong" students tend to take on leadership roles and define common tasks in a subgroup, while more "weak" students join this process, actively helping in selecting information and solving the problem (Pometunet et al., 2018). In the process of implementation of differentiated learning technologies, each student becomes an active subject of the educational process based on their characteristics and needs (Denysenko et al., 2018). The advantages of differentiated learning technology include: increasing the level of motivation to study professional courses, increasing interest (Vaganova et al., 2019b) taking into account individual characteristics of the individual; more rapid assimilation of basic knowledge by all students; improving the quality of training of students (Bulaeva et al., 2018). The main goals of differentiated learning technology are: to train each student in accordance with their needs, capabilities and interests (Klinkov et al., 2018); to adapt educational process to training in cooperation aimed at developing the personal qualities and professional competence of each student. Implementation of differentiated learning technologies implies: diagnostic goals, differentiation of students' independent work, openness of evaluation criteria (Ihnatenko et al., 2018). The technology of differentiated learning in the preparation of higher education students has several functions: compensatory (thanks to the individualization of the learning process, the teacher helps the student to identify gaps in education and suggest a direction for their elimination while the teacher does not give accurate answers to the student's questions, he gives him tools to fill in the gaps) (Vaganova et al., 2019f); developing (each student has the opportunity to develop the necessary qualities in the process of interaction, to master important skills for the implementation of professional activities) (Vaganova et al., 2019d); adapting (this function is especially important for first-year students who are just beginning to get used to the learning process in higher education (Ilyashenko, et al 2019a). In these conditions, the teacher helps each student to adapt to the pace of learning, to the types of tasks, gives the necessary recommendations and tips) (Sedykh et al., 2019); corrective (formation of the student's competences in accordance with the requirements of the Federal state educational standards of higher education); educational (formation of the student's personality in accordance with social norms) (Nikonova et al.,

2019b). The essence of the technology of differentiated learning is reduced to the selection by the teacher of such methods and means of organizing the interaction of students, which would meet the personal-oriented approach, allowing taking into account features, opportunities and interests of students (Ilyashenko et al., 2019b).

Methodology

In 2018, we conducted a study among students of higher education institutions, which was attended by 2 groups of students of 25 people (control and experimental group) 3 courses of study. According to the following criteria, we determined the level of students training before and after the introduction of differentiated learning technology: independence of tasks; the ability to set and achieve specific goals, the manifestation of creativity in the performance of tasks; the ability to take responsibility for the actions performed (Vaganova et al., 2019e). The students were divided into levels: high, middle, low. A high level is characterized by a high degree of student independence. Possessing a high level of training, students show leadership qualities, take responsibility for their activities and are creative in completing assignments. Having a medium level of training, students independently perform tasks, the desire to achieve positive results, however, they need the support of a teacher. The low level of training is characterized by a lack of students' desire to achieve goals. Most tasks are performed under the supervision of a teacher. The level was determined by statistical processing of indicators. The technology of level differentiation allows to increase the level of training of students.

Results and discussion

We conducted a study of the level of training of students of the University of the 3rd year of study. The level of preparation of students was evaluated according to the following criteria: independence of tasks; ability to set and achieve specific goals, creativity in the performance of tasks; ability to take responsibility for the actions performed.

The study was conducted in 2018 throughout the school year. Our results are based on data obtained from two groups of students with the same number of subjects (25 people).

Table 1 shows the levels of students' training.

Table 1. Characteristics of students ' training levels (authoring)

Level	Level characteristic
High	The student independently performs tasks, only occasionally turning to the teacher for help and for advice, shows leadership qualities, knows how to conduct an effective dialogue, knows how to set and achieve specific goals, shows creative abilities when completing tasks, offers various non-standard ways; assumes responsibility for the actions taken (their own and, if necessary, the working group). The student mainly shows independence in completing assignments, but needs the support of a teacher in discussing key issues and making basic decisions. The student has leadership qualities, which he manifests when necessary. He has the skills of conducting a constructive dialogue, striving to achieve positive results through it. Able to determine specific goals, the achievement of which is ensured through hard work and periodic consultations with the teacher. In the process of completing a task and he can offer a creative solution. He takes responsibility for his work.
Average	The student needs constant supervision from the teacher to complete the assignment. Does not show leadership qualities and does not seek to build a dialogue. Able to set goals, the achievement of which is ensured only through the teacher's participation in this process. She does not want to take an active part in the process of completing the assignment and take responsibility for its results.
Low	

Figure 1 shows the results of the control and experimental groups.

Training in the experimental group was conducted using the technology of differentiated training throughout the year. The study of professional courses was carried out using tasks aimed at individualization of the educational process. During the training, students performed group projects, took a systematic part in various discussions, which allowed them to more deeply master the topics, independently analyze a large amount of information and highlight the necessary ones. During the training process, they had the opportunity to show their creative abilities with the support and guidance of the

teacher, who adjusted their activities and gave necessary advice for each individual student. In the process of implementing group projects, methods and tools were used to individualize the process. Teachers performed the role of a consultant and ensured that each student was involved in the activity. Teachers built the educational process based on the individual characteristics of students. At the same time, students shared their own experience, developing a large number of possible solutions to the problem. In the process of implementation of differentiated learning technologies, each student becomes an active subject of the educational process based on their characteristics and needs. Fig. 1. Results of the study of the control and experimental groups.

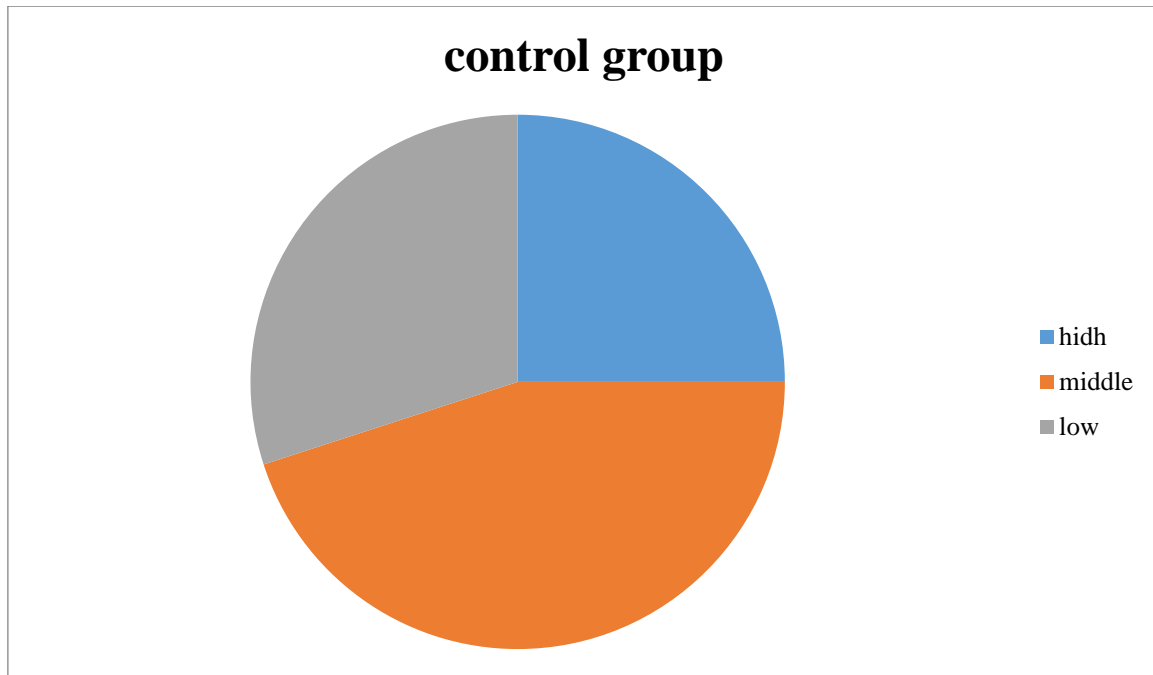


Figure 1. Formation of the activity component (as part of our study)

As the results of the study show, due to the introduction of differentiated learning technology, it was possible to reduce by 50% the number of students with a low level of training. 355 students began to have a high level of

Conclusions

We conducted a study of the level of training of students of the University of the 3rd year of study. Technology of level differentiation make it possible to increase the level of training of students. In the article, in our study, we reveal high, middle and low levels of training. The level of preparation of students was evaluated according to the following criteria: independence of tasks; ability to set and achieve specific goals, creativity in the performance of tasks; ability to take responsibility for the actions performed. In the process of work, questions of the implementation of level differentiation technology in the process of preparing students of higher professional educational institutions as a way to ensure the active inclusion of each student in the educational process, in solving problem problems, developing its independence and creative component, were considered. The introduction of differentiated learning technology can improve the quality of training of higher education institutions students. With the help of these technologies, each student, building training in accordance with their personal characteristics and professional needs, achieves

training. The average level of training belongs to 50% of students in the experimental group, where differentiated learning technologies were introduced.

success in mastering the material, quickly forms professional competence. The results of the study focused on the quality of training showed that differentiated technologies improve students' performance. As the results of the study show, due to the introduction of differentiated learning technology, it was possible to reduce by 50% the number of students with a low level of training. The formation of competencies with the help of differentiated learning technology becomes more effective, since individual characteristics of each student are taken into account and their interest and motivation to study a particular course increases.

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