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**COMPUTER-BASED TESTING COMPLEX “PROFVYBIR”:
OCCUPATIONAL GUIDANCE DIAGNOSTICS**

Abstract. The importance of occupational guidance for individuals has been highlighted in the article. Modern tasks and challenges of occupational guidance have been presented and conditions of a personality’s successful self-realization have also been analysed. The article deals with the application of modern methods and forms of occupational guidance for students. The main directions, forms, methods and structure of work on this issue have been paid attention to. The authors present the results of approbation of the computer-based testing complex “Profvybir”, performed during 2015-2019 for the diagnostics of occupational interests and inclinations. It is used as a separate information service for students of 8-11 grades. The complex was created in Centre of Psychological Diagnostics and Training Technologies “Insight” of Pavlo Tychyna Uman State Pedagogical University. During the mentioned period 780 students took part in occupational diagnostics. The following algorithm of work with the computer-based testing complex consisting of three blocks is presented: “Professional interests” (the methodology of DDQ of Ye. Klimov, methodology of professional self-determination of J. Holland, “Map of interests” methodology), “Personal qualities” (Cattell’s test (16 RF questionnaire), “Intelligence” (Eysenck’s IQ test). The analysis of interests, abilities and personal qualities of students gives them the opportunity to make a more conscious choice of the future profession. This method of occupational guidance can be used to implement the policy of the Ministry of Education and Science in the development of occupational guidance, to improve the approaches to adolescents’ choosing a profession. It can be applied by a career advisor at school and be helpful to high school students in their choice of future profession. The computer-based testing complex may also be an additional component of the occupational training program.

Key words: occupational guidance, diagnostics; computer-based testing; adolescence; high school students; computer-based complex “Profvybir”; interests; abilities; personal qualities.

1. Introduction.

Nowadays the issue of career guidance is very relevant as choosing future profession is a challenge for many high school students. This is due to such factors as a school-leaver's personal uncertainty, the influence of parents on the choice of profession, the impact of social and economic setting. Career guidance can help school-leavers to make the best decision about choosing their future profession.

A person's inclination to a certain professional activity is known to be diagnosed, and the sooner this is done, the easier it is for a person to choose a profession, as well as to determine how well a person can fit a certain position. A person's interests which display cognitive needs and focus on certain activities can also be the factor identifying inclination to a certain professional activity. Identifying these interests contributes to the occupational determination of a personality.

Occupational guidance is a type of consultation that requires professional skills (from a specialist), knowledge of Psychology, and awareness of situation on the modern labour market, the ability to establish contact with people, to conduct a dialogue and to discuss information. One of the key aspects of occupational guidance is the diagnostics, analysis and interpretation of the obtained data and informing the client about the results. The fact that the diagnostics takes into account a huge number of parameters and the data allows better choosing a future specialty or profession in accordance with a person's qualities and preferences makes this method the most advanced one.

The information technologies being widespread and globally used have become an integral part of modern life. Such situation creates the need for their responsible application and, consequently, requires purposeful conveying the right approaches to modern media space, the rules of existence in such environment, the principles of its formation, which are already becoming the basic competencies for the successful functioning and development of people in the society.

Pavlo Tychyna Uman State Pedagogical University is actively implementing modern information technologies to provide occupational guidance, so there was a need to create an information service for applicants. A simple and attractive interface was created and it contained useful information for entrants.

Literature review and theoretical framework.

The work connected with occupational guidance is traditionally important for every school because it, on the one hand, provides a link between the education system and the economic system of the country and, on the other hand, connects students' life with their future plans. Secondary education should not only provide training in school subjects but create favourable conditions for professional self-determination of students.

The research is based on such Laws of Ukraine as "On Education" and "On General Secondary Education", National Strategy for Education Development in Ukraine until 2021, the Decree of the President of Ukraine "On the Strategy of Personnel State Policy for 2012/2020", the Resolution of Cabinet of Ministers of Ukraine "On approval of the State System of Population Occupational Guidance", the Order of the Cabinet of Ministers of Ukraine "On approval of the action plan for implementation of the State System of Population Occupational Guidance", the Framework of School Students' Education [1].

Occupational self-determination is a choice of future profession which allows people to realize their full potential and to be the most useful for the society. M. Yantsur considers occupational guidance as a system of social, economic, legal, psychological, pedagogical, medical, physiological and other actions aimed at ensuring active, mobile, conscious, personality-oriented occupational self-determination and labour development of people in accordance with their capabilities and individual qualities, and conditions of the labour market for full self-realization and self-affirmation in profession [2, p. 52].

According to I. Kaliuzhna's statement, occupational guidance work is aimed at acquaintance with professions and ways to obtain them. It is also students' perception of their needs, inclinations, interests, opportunities, formation of the ability to analyse the obstacles and find the ways to overcome them [3, p. 65]. V. Chebysheva identifies four main components in the structure of career orientation. They are as follows: 1) providing students with knowledge that may interest them; 2) deep and comprehensive analysis of students; 3) career counselling; 4) assistance to students in mastering the chosen profession. Thus, it gives grounds to consider occupational guidance in two aspects: 1) its influence on the formation of interests for a certain profession, first of all, positive motives for choosing a career, which ensure the coordination of the individual's and society's interests; 2) identification of requirements to a definite profession [4].

The scientist V. Yurzhenko points out that the lack of national and institutional career guidance, absence of occupational guidance system, especially such types as vocational information, vocational education, vocational diagnostics, vocational counselling, vocational selection and vocational adaptation, create conditions for complete disregard of working professions by young people. G. Dubrovina states self-identification as the awareness of one's qualities and their evaluation, the idea of one's own desired "Self", the level of high school students' demands in various spheres of life and different activities, evaluation of oneself and others in terms of gender and personal reflection.

The **purpose** of the article is to highlight the results of approbation of computer-based testing complex "Profvybir" for determining professional interests and inclinations of students of 8-11 grades.

2. Methods

To achieve the determined goal during the diagnostics procedure the computer-based system "Profvybir" was used which combines: differential diagnostic questionnaire by Ye. Klimov as it is aimed at studying the professional orientation, interests, inclinations, preferences of students and based on the analysis of different types of activities; methodology of professional self-determination of J. Holland, because it allows to correlate aptitudes, abilities, intelligence with different occupations for the best choice of profession; the methodology "Map of interests" containing issues that reflect interests in 29 areas; Cattell's test (16 RF-questionnaire), aimed at determining a personality's unique qualities; Eysenck's IQ test, designed to assess the overall intellectual abilities using verbal, digital and graphic material.

The approbation of the computer-based diagnostic complex was held in Centre of Psychological Diagnostics and Training Technologies "Insight" of Pavlo Tychyna Uman State Pedagogical University (<http://test.vmk.org.ua/>). In 2015-2019 780 students of 8-11 grades took part in occupational diagnostics. The students living in Uman city, Uman districts, Khrystynivka city, Khrystynivka region, some districts of Vinnytsia and Kropyvnytskyi regions were involved in the procedure.

3. Results

After analyzing the peculiarities of occupational guidance defined by famous scientists in their works, we can summarize that career guidance in present-day conditions still does not achieve its main goal that is the formation of students' occupational self-determination in terms of free choice of profession in accordance with their capabilities, abilities and the requirements of labour market.

Psychological diagnostics allows studying a person's interest in a certain profession by means of indirect questions and special psychological tests that help to identify professional orientation and give the chance to reveal the degree of its intensity.

Adolescents having certain psychological characteristics are known to give not sincere answers when talking to a psychologist. However, when they face the computer they feel more confident as this device is rather familiar for modern youth. Sitting in front of the computer

they have nothing to hide, they tend to give more truthful answers to the proposed questions. The main advantage is that the test results can be shown immediately and will help to self-determine in the future profession.

Occupational guidance should be a means of activating the self-determination of young people in their future profession, updating their internal reserves and opportunities, forming their ability to make independent and conscious decisions about choosing a profession, realization of future professional activities.

The diagnostics is carried out in order to identify personal and professional characteristics of individuals, stylistic characteristics of their professional activity and organizational behaviour, to determine potential opportunities and the most acceptable areas of their application. The proposed personal and professional diagnostics includes a series of test procedures that contain traditional diagnostic techniques, combined into a specialized computer-based psychological and diagnostic complex. The complex “Profvybir” was developed by M. Mishchenko and I. Ilchenko in 2015 to diagnose the inclinations of 8-11 grade students as well as school graduates to professions (Computer-based testing complex “Profvybir”: computer program (Certificate of authorship № 60313, 30.06.2015)

The complex combines the analysis of motives, personal qualities and intellectual abilities in order to diagnose professional inclinations. The recommendations on the choice of professions are provided within the range of specialties that reflect the most common profiles of training of modern specialists within higher or vocational education. The complex “Profvybir” is focused on adolescents (13-18 years) who are interested in further education and in choosing a future profession.

The structure of psychodiagnostic complex “Profvybir” combines 3 units:

1. Unit “PROFESSIONAL INTERESTS” contains 165 questions and analyzes the area of interest:

Subtest 1 (questionnaire by Ye. Klimov);

Subtest 2 (J. Holland’s methodology);

Subtest 3 (methodology “Map of interests”).

2. Unit “PERSONAL QUALITIES” includes 36 questions and diagnoses personal qualities.

Subtest 1 (Cattell’s test).

3. Unit “INTELLIGENCE” combines 48 questions and identifies the levels of different abilities development i.e. factors of mental activity.

Subtest 1 (Eysenck’s test).

The first and second test units are to be done without time limit, and the third one is to be completed within 50 minutes.

Tests are presented in the Ukrainian language (UA).

There is an algorithm for testing procedure:

1st stage. The start of the testing procedure.

The test starts with the tab “TESTING” on the website of Centre of Psychological Diagnostics and Training Technologies of Pavlo Tychyna Uman State Pedagogical University (<http://test.vmk.org.ua/>) (Figure 1):

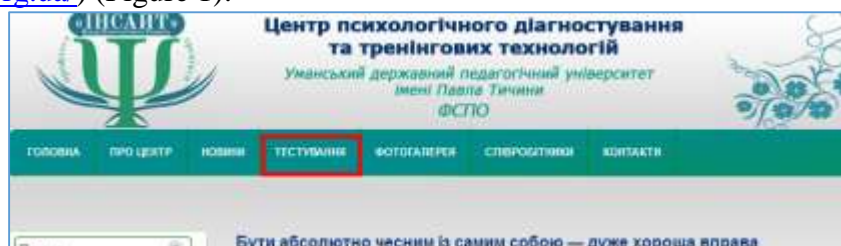
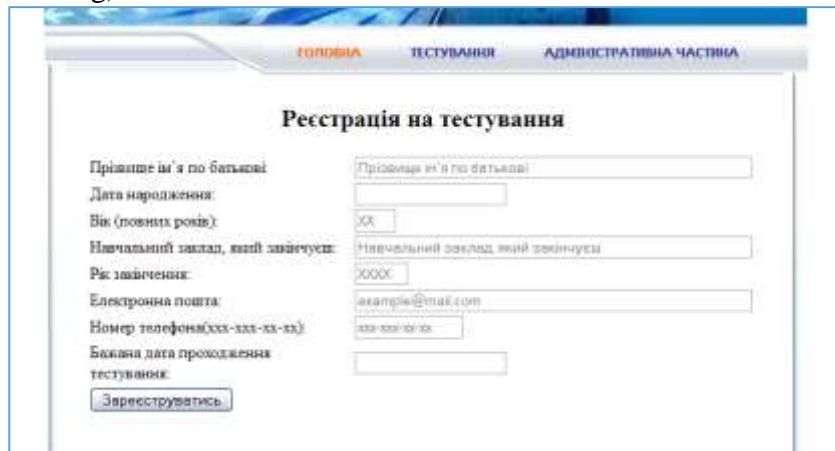


Figure 1. Tab “Testing”

2nd stage. Registration.

The next tab “Registration for testing” (Figure 2) requires students to enter their personal information (name, date of birth, age, school, year of leaving school, e-mail, telephone number, the desired date of testing).



The screenshot shows a web page titled "Реєстрація на тестування" (Registration for testing). At the top, there are navigation tabs: "ГОЛОВНА" (Home), "ТЕСТУВАННЯ" (Testing), and "АДМІНІСТРАТИВНА ЧАСТИНА" (Administrative part). The main content area contains a registration form with the following fields and labels:

- Прізвище ім'я по батькові (Surname, first name, patronymic): Input field
- Дата народження: (Date of birth): Input field
- Вік (повних років): (Age in full years): Input field with "XX" as a placeholder
- Навчальний заклад, який закінчує: (Educational institution, which you are finishing): Input field
- Рік закінчення: (Year of completion): Input field with "XXXX" as a placeholder
- Електронна пошта: (Email): Input field with "example@ua.com" as a placeholder
- Номер телефону(xxx-xxx-xx-xx): (Phone number): Input field with "xxx-xxx-xx-xx" as a placeholder
- Бажана дата проходження тестування: (Desired date of testing): Input field

At the bottom of the form is a button labeled "Зареєструватись" (Register).

Figure 2. Tab “Registration for testing”

The administrator gives access to the test to an entrant. By clicking on the icon “Administration staff” the administrator has the opportunity to view the registered details by date, to open access to the test, as well as to find the test results by phone number (Figure 3).

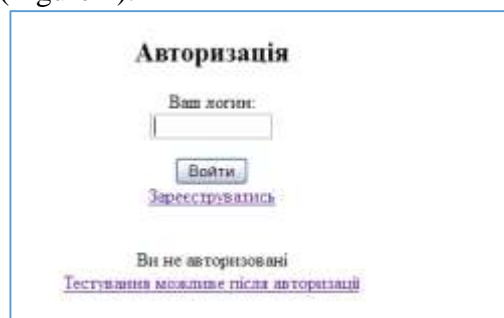


The screenshot shows the "АДМІНІСТРАТИВНА ЧАСТИНА" (Administrative part) of the website. It features a navigation bar with "ГОЛОВНА" (Home), "ТЕСТУВАННЯ" (Testing), and "АДМІНІСТРАТИВНА ЧАСТИНА" (Administrative part). The main content area lists several administrative actions:

- [Переглянути зареєстрованих за датою](#) (View registered users by date)
- [Отримання результатів](#) (View results)
- [Пошук результатів за № телефону](#) (Search results by phone number)
- [Допуск до тестування](#) (Grant access to testing)
- [За № телефону](#) (By phone number)

Figure 3. Tab “Administration staff”

The login for each entrant is provided automatically during the registration procedure (the login is a phone number) (Figure 4).



The screenshot shows the "Авторизація" (Authorization) page. It has a title "Авторизація" and a form with the following elements:

- Ваш логін: (Your login): Input field
- Войти (Login): Button
- [Зареєструватись](#) (Register): Link
- Ви не авторизовані (You are not authorized): Text
- [Тестування можливе після авторизації](#) (Testing is possible after authorization): Link

Figure 4. Authorization

3rd stage. The testing procedure.

The next step is the test itself that consists of 3 units: professional interests, personal qualities and intelligence. Every time the participant has to choose one of the proposed options in the questions and statements (Figure 5).

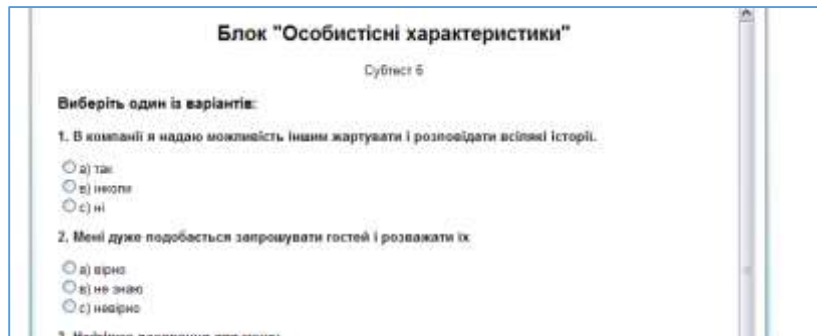


Figure 5. The sample of the suggested options in the questions

4th stage. The results of psychological diagnostics.

The test results are displayed in the following ways:

- as text messages - interpretations of factor values;
- as data in tables, which include raw scores, as well as percentiles.

The example of the test results are presented below.

Unit "Professional interests" (Figures 6-8):

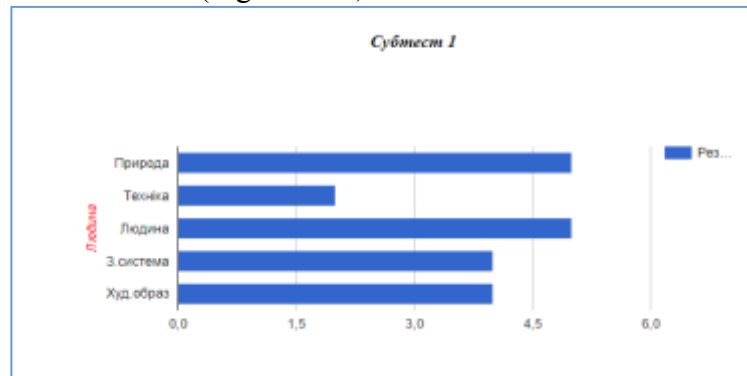


Figure 6. The example of the results according to Subtest 1

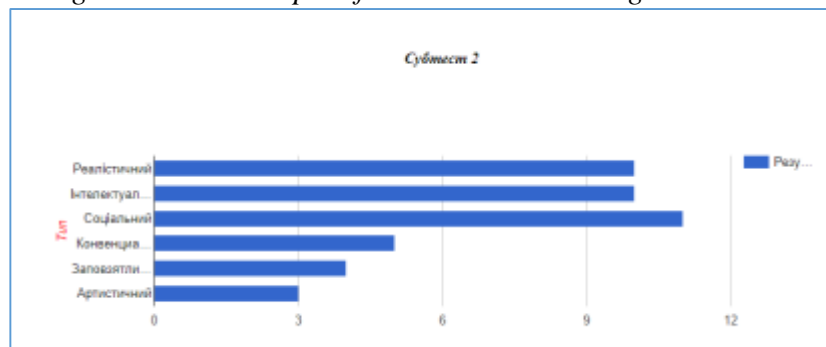


Figure 7. The example of the results according to Subtest 2

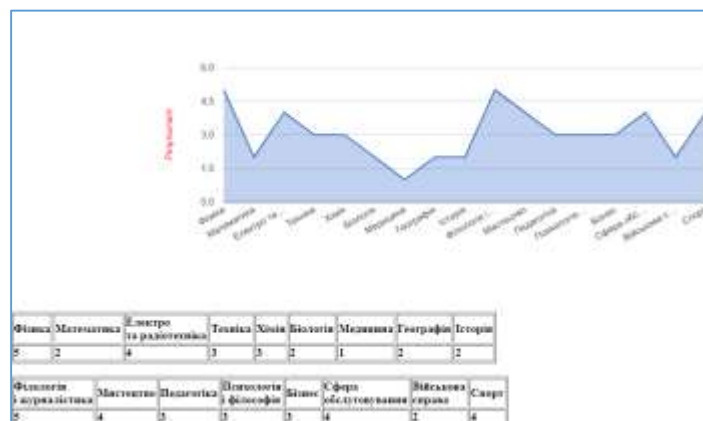


Figure 8. The example of the results according to Subtest 3
Unit “Personal qualities” (Figure 9)



Figure 9. The example of the results according to Unit “Personal qualities”
Unit “Intelligence”(Figure 10):

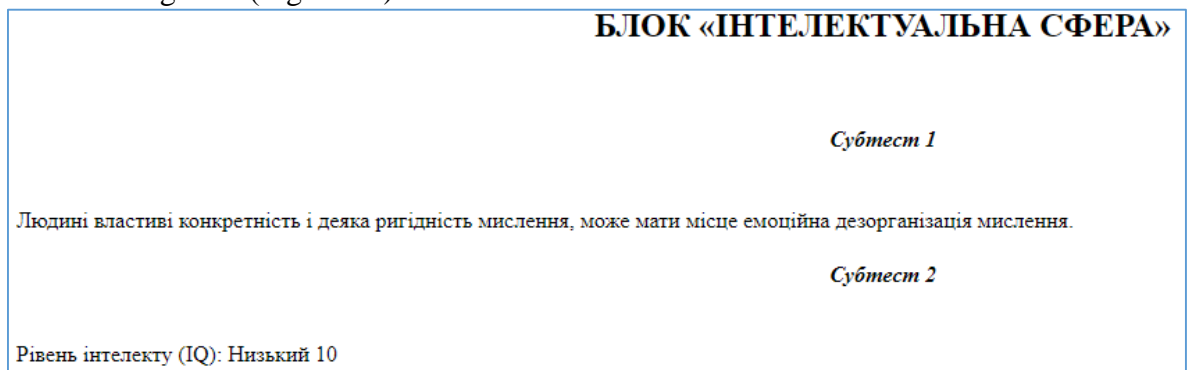


Figure 10. The example of the results according to Unit “Intelligence”

Peculiarities of the psychological diagnostic complex application:

The complex “Profvybir” is primarily helpful in working with school leavers as well as high school students (students of 8-11grades) who are choosing future profession, considering studying profile or the relevant institution of higher education. It has been mentioned that the connection between a person’s psychological abilities and certain profession characteristics can be rather important. The computer-based complex "Profvybir" allows choosing a relevant future professional activity by analysing and making diagnostics of students’ interests, abilities, personal qualities as well as their professional inclinations.

Besides, the type of projected professional activity must coincide with a personality type of character. For example, sociable people are more suited to professions involving multiple contacts, and emotionally unstable ones will be more satisfied with routine activities requiring concentration during a long period of time.

As a result, the concept “professional aptitude” should be interpreted as an interest, supported by relevant personal qualities and the development of relevant abilities, in other words, as the coincidence of interests, abilities and character of a person necessary for a particular profession (group of professions). Consequently, the test material is focused on the interests and abilities that are important for education in the relevant professional area.

4. Discussion and conclusions.

For the profession to be chosen consciously, students should take into account their abilities, skills and the needs of the labour market. It is important for them:

- to consider their own interests, abilities, inclinations;
- to determine the range of activities and the list of professions;
- to have a clear idea of the chosen profession;
- to assess their abilities, capabilities, health, necessary to work in the chosen area;
- to choose an educational institution where they can get the chosen profession.

The computer-based testing complex “Profvybir” can be effective for implementing the policy of the Ministry of Education and Science aimed at development of occupational guidance at school, reforming the approach to choosing a profession by adolescents and high school students or can be included in the program of “introduction to the profession” as an additional component.

Approbation of this program during 2015-2019 made it possible to identify the interests, abilities and personal qualities of 780 students, which gave them the opportunity to make a more conscious choice of future profession.

The research does not cover all the issues connected with influence of forms and methods of occupational guidance on the choice of profession by high school students. Among the topics identified for further study there are the application of career guidance forms and methods in accordance with the cultural dynamics of the information society.

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КОМП'ЮТЕРНИЙ КОМПЛЕКС ТЕСТУВАННЯ «ПРОФВИБІР»: ПРОФОРІЄНТАЦІЙНА ДІАГНОСТИКА

Анотація. У статті автори аналізують роль і значення профорієнтаційної роботи, визначають її роль у формуванні професійної спрямованості особистості. Також проаналізовано сучасні завдання та виклики професійної орієнтації, умови успішної самореалізації особистості. В статті розглядаються питання застосування сучасних методів і форм профорієнтаційної роботи з учнями. Звертається увага на основні напрямки, форми, методи та структуру роботи з даної проблематики. Представлено результати апробації комп'ютерного комплексу тестування «Профвибір» протягом 2015-2019 рр. для діагностики професійних інтересів та нахилів, що використовується як окремий інформаційний сервіс для учнів 8-11 класів на базі Центру психологічного діагностування та тренінгових технологій «Інсайт» Уманського державного педагогічного університету імені Павла Тичини. Протягом зазначеного періоду участь у професійній діагностиці взяли 780 учнів. Наведено алгоритм роботи з комп'ютерним комплексом тестування, що складається з трьох блоків: «Професійні інтереси» (за допомогою методики ДДО Є.О. Клімова, методики професійного самовизначення Дж. Голланда, методики «Карта інтересів»), «Особистісні характеристики» (тест Кеттелла (16 RF-опитувальник), «Інтелектуальна сфера» (тест Айзенка на рівень інтелекту IQ). Врахування результатів аналізу інтересів, здібностей та особистісних якостей учнів дає можливість більш свідомого вибору майбутньої професії. Даний метод профорієнтаційної роботи може бути використаний для реалізації політики Міністерства освіти і науки в напрямку розвитку профорієнтаційної роботи, реформування підходу до вибору професії підлітками, може бути використаний «кар'єрним радником» у школі, що допомагатиме старшокласникам у виборі майбутньої професії. Також, запропонований в роботі комп'ютерний комплекс тестування, може бути допоміжним компонентом програми «введення в професію».

Ключові слова: профорієнтаційна робота; діагностика; комп'ютерне тестування; підлітки; старшокласники; комп'ютерний комплекс «Профвибір»; інтереси; здібності; особистісні якості.

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КОМПЬЮТЕРНЫЙ КОМПЛЕКС ТЕСТИРОВАНИЯ «ПРОФВЫБОР»: ПРОФОРИЕНТАЦИОННАЯ ДИАГНОСТИКА

Аннотация. В статье авторы анализируют роль и значение профориентационной работы, определяют ее роль в формировании профессиональной направленности личности. Также проанализированы современные задачи и вызовы профессиональной ориентации, условия успешной самореализации личности. В статье рассматриваются вопросы применения современных методов и форм профориентационной работы с учащимися. Обращается внимание на основные направления, формы, методы и структуру работы по данной проблематике. Представлены результаты апробации компьютерного комплекса тестирования «Профвибир» в течение 2015-2019 гг. Для диагностики профессиональных интересов и склонностей, используемый как отдельный информационный сервис для учащихся 8-11 классов на базе Центра психологического диагностирования и тренинговых технологий «Инсайт» Уманского государственного педагогического университета имени Павла Тычины. . В течение указанного периода участие в профессиональной диагностике приняли 780 учащихся. Приведен алгоритм работы с компьютерным комплексом тестирования, состоит из трех блоков: «Профессиональные интересы», «Личностные характеристики», «Интеллектуальная сфера». Учет результатов анализа интересов, способностей и личностных качеств учащихся дает возможность более сознательного выбора будущей профессии. Данный метод профориентационной работы может быть использован для реализации политики Министерства образования и науки в направлении развития профориентационной работы, реформирования подхода к выбору профессии подростками и как вспомогательный компонент программы «введение в профессию».

Ключевые слова: профориентационная работа; диагностика; компьютерное тестирование; подростки; старшеклассники; компьютерный комплекс «Профвибир»; интересы; способности; личностные качества.