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YOUNG PROFESSIONAL ORIENTATION TO IT SPECIALTIES: LOCAL IMPLEMENTATION EXPERIENCE

Ostroha M. M.

INTRODUCTION

In the current era, the IT industry has emerged as a strategically vital sector for economic progress in Ukraine. Projections indicate that by 2030, one-third of global job openings will be in the IT industry. This sector is intricately woven into all facets of the worldwide economy and significantly bolsters the world's economies[1]. The IT industry holds immense promise for Ukraine as it continues to demonstrate robust growth despite adverse economic and political conditions. By investing in technology and augmenting human capital, the IT industry is fostering a unique environment propelling the development of Ukrainian society.

However, a pressing global issue is the annual worsening of the IT industry's staffing problem. This topic is extensively debated by domestic and foreign IT industry stakeholders, educators, and the scientific community. Experts warn that the inadequate efficiency of training IT specialists in Ukraine hinders the utilization of the potentially abundant pool of qualified IT personnel as a significant competitive advantage and a catalyst for the country's economic growth[2].

One of the ways to solve these problems can be the purposeful and systematic preparation of school graduates for a conscious choice of professions in the IT industry, which should be a priority area of work for a computer science teacher[3].

The scientific researches of V. Zinchenko, I. Chorna, G. Shlikhta, and others present detailed characteristics of the components of professional orientation and considers various aspects of career guidance work with students by teachers. This forms the theoretical and methodological basis for constructing career guidance work in a modern school.

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[1] Vynnychuk R.O., Sklyaruk T.V. Osoblyvosti rozvytku IT-rynku v Ukraini: stan ta tendentsii [Peculiarities of IT market development in Ukraine: state and trends]. *Bulletin of Lviv Polytechnic National University. Series: Logistics*. Lviv, 2015. № 833. Pp. 3–8.

[2] *Ukrainian IT in Figures: Industry Established as Key for the Economy of Ukraine*. URL: http://chp.com.ua/all-news/item/36857-ukrainskoe-it-v-tsifrah-industriya-sostoyalas-kak-klyuchevaya-dlya-ekonomiki-ukrainyi.

[3] Ponomareva N.O. Readiness of a computer science teacher for career guidance work in the IT specialty as a pedagogical problem. *Information Technologies and Learning Tools*. 2017. № 59 (3). P. 168-178

It should be taken into account that in the modern world, it is relevant to carry out the professional orientation of graduates not so much to certain types of professions or specialties as to certain areas of professional activity, which are determined by subject areas and include groups of related specialties in which professional activity is carried out, and professional training takes place. For instance, these areas could consist of software development, cybersecurity, data analysis, and network administration.

This approach is considered especially appropriate for professions related to the IT industry, a rapidly evolving sector with immense potential worldwide. However, several studies reveal an acute problem of low schoolchildren's awareness of IT specialties, indicating a need for comprehensive professional orientation.

To date, the problem of familiarizing students of general secondary education institutions with the world of IT professions has not been deeply covered in career guidance literature. According to experts, there is currently a lack of a full-scale analysis of the current situation and scientifically based forecasts regarding the prospects for developing the world of professions. Thus, only a limited number of professional graphic directories (comprehensive guides to professions) and collections of professionals (detailed descriptions of occupations) with descriptions of exclusively more or less established IT specialties have been published. As a result, in practice, it is tough, and sometimes impossible, to point out to a school graduate those professions that will appear on the labor market and will be in demand in society after completing vocational training. The lack of professional information makes it impossible to carry out high-quality and practical career guidance work with schoolchildren in IT specialties.

The **purpose** is to characterize the professional orientation of young people in IT specialties and describe its local implementation.

The set goal necessitated the solution of the **tasks**:

1) clarify the terms "professional orientation," "IT specialties," and "professional orientation to IT specialties";

2) analyze the market of professions in the IT industry;

3) to conduct a quantitative analysis of the survey students' results.

Methods:

– theoretical – terminological analysis and analysis of scientific, methodological, and psychological sources to clarify the thesaurus of the study; structural analysis to describe the market of IT professions;

– empirical – surveys and conversations to process and interpret the results of professional diagnostics in the IT specialty. We used the quantitative analysis to determine the connection between the competition participants and entrants to the IT specialties of Sumy State Pedagogical University named after A.S. Makarenko.

1. Description of Key Research Definitions

Disclosure of the problem of young people's professional orientation to IT specialties requires clarification of the study's scientific apparatus so that we will dwell in more detail on the interpretation of the concepts of "professional orientation," "IT specialties," and "professional orientation to IT specialties."

According to researchers, professional orientation is a complex and multifaceted phenomenon that can be considered in psychological, pedagogical, medical, biological, and socio-economic aspects. So, career guidance work has an educational impact on the professional interests of people, contributes to the formation of positive motives for choosing a profession, and ensures the coordination of the interests of the individual and society. On the other hand, a properly organized and competent choice of profession involves considering the health requirements and individual physical qualities necessary for a particular activity. In addition, the developed system of career guidance work makes it possible to effectively use the primary national resources of any country for economic development – its human resources.

The implementation of professional orientation of pupils of secondary schools in Ukraine is regulated by several state normative documents, including the Constitution of Ukraine, the Laws of Ukraine "On Education"[4], "On General Secondary Education"[5], "On Out-of-School Education," "On Vocational Education," "On Higher Education"[6], the National Doctrine for the Development of Education in Ukraine in the XXI Century[7], the National Program "Children of Ukraine", the Concept of General Secondary Education (12-year School), the Concept of Specialized Education in High School, the Concept of General Secondary Education for the Creation of Organizational and Methodological Prerequisites for the Transition of High School to Specialized Education, the Concept of the State System of Vocational Orientation of the Population and others[8].

As noted, professional orientation in Ukraine is normatively defined as a scientifically based system of interrelated economic, social, medical, psychological, and pedagogical measures aimed at activating the process of professional self-determination and realization of a person's ability to work,

[4] *Law of Ukraine "On Education"* URL: http://zakon2.rada.gov.ua/laws/show/1060-1.

[5] *Law of Ukraine "On General Secondary Education"* URL: http://zakon3.rada.gov.ua/laws/show/651-14.

[6] *Law of Ukraine "On Higher Education"* URL: http://zakon4.rada.gov.ua/laws/show/1556-18.

[7] On the National Doctrine of Education Development: Decree of the President of Ukraine of April 17. 2002 No. 347/2002. *Education of Ukraine*. 2002. 23 apr. (№ 33). C. 4-6

[8] *Regulations on the professional orientation of young people*. URL: http://zakon3.rada.gov.ua/laws/show/z0198-95.

identifying their abilities, interests, opportunities and other factors that affect the choice of profession or changing the type of labor activity[9].

The problems of young people's professional orientation are widely considered in the scientific works of Ukrainian and foreign scientists.

The term professional orientation comes from the Latin professional – occupation and the French orientation – attitude.

In the scientific literature of the post-Soviet countries, different approaches to determining the essence of professional orientation have been proposed, and there has been a general trend towards evolutionary changes in the interpretation of this concept due to objective social development factors.

In the Soviet period until the 70s of the twentieth century, professional orientation in full accordance with ideological attitudes was considered a system of measures aimed at preparing a young person to choose a profession or a group of occupations based on taking into account, first of all, the needs of society. Only then were the secondary interests and inclinations of the student, and the main emphasis was placed on state management of the process[10].

The Soviet system defined professional orientation as a system of psychological, pedagogical, methodical, and state measures aimed at helping a person enter life by choosing a profession that considers society's needs and interests. Professional orientation should be the unity of purpose, content, principles, organizational forms, methods, and means that help the student in studying the profession and their own personal qualities, ensuring such a choice of profession, the field of activity of the educational institution, which corresponds to the abilities of students, their health and physical data and at the same time would be consistent with the needs of the national economy in personnel. In the psychological dictionary, professional orientation was defined as a set of psychological, pedagogical, and medical measures aimed at optimizing the employment process of young people based on their desires, inclinations, and abilities, taking into account the need for specialists in the national economy and society as a whole.

Then, after the 1980th, some researchers began to consider professional orientation differently – to prepare an individual for professional self-determination. At the same time, the needs of society remained dominant over the needs of the individual.

[9] *The concept of the state system of professional orientation of the population*. URL: http://zakon1.rada.gov.ua/laws/show/842–2008–%D0%BF.

[10] Zakatnov D.O. *Technologies of Preparing Student Youth for Professional Self-Determination*. Kyiv: Pedagogical Thought, 2012. 160 p.

Klimov considered professional orientation a guide to building professional life plans for students and their career path choice[11]. He developed the theoretical and methodological foundations of professional biography, and the classification of professions by the subject of work ("man," "technology," "sign system," "artistic image," "nature") is still widely used in domestic and foreign science.

A unique contribution to the development of the concept of professional orientation was made by B. Fedoryshyn, under whose leadership a new concept of professional orientation was developed, which, for the first time in Soviet science, considered the individual as a subject of career guidance[12]. There defines professional orientation as a kind of social assistance to a person, which provides for an adequate correlation of individual characteristics and abilities of a person with the social needs of society. Its result is self-determination of the individual, a conscious choice of profession, which allows a person to become a highly qualified specialist. A. Golomshtok considered professional orientation a complex, dynamic socio-pedagogical system that addresses complex theoretical and practical problems related to choosing a future profession. The general goal of career guidance work, in his opinion, was the formation of conscious professional self-determination of the individual based on the coordination of personal and public interests in the training of personnel for production, science, and culture, that is, the achievement of a particular optimum of professional self-determination and the need of society for personnel.

Since the 90th of the twentieth century, approaches to the definition of career guidance have changed even more significantly since the needs of the individual began to come first. Professional orientation should be considered a set of interrelated economic, social, medical, psychological, and pedagogical measures aimed at forming a professional vocation to identify abilities, interests, suitability, and other factors influencing the choice of profession or replacement of the field of activity.

According to E. Zeyer, professional orientation is considered a set of pedagogical and psychological measures and various information aimed at helping a person decide to acquire a particular profession (specialty) and choose the optimal way of further professional education to achieve this goal. In the dictionary of social pedagogy, professional orientation is defined as a scientifically based system of socio-economic, psychological-pedagogical, medical-biological, industrial, and technical measures to provide young people with personality-oriented assistance in identifying and

[11] Klimov E. A. *Psikhologiya professional'nogo samoopredeleniya [Psychology of professional self-determination]*. Rostov-on-Don, 1996. 512 p.

[12] Fedoryshyn B.O. *Psychological and Pedagogical Foundations of Professional Orientation*: Diss... Dr. Ped. Sciences: 13.00.04 "Theory and Methods of Professional Osiit". Kyiv, 1996. 383 p.

developing abilities and inclinations, professional and cognitive interests in choosing a profession, as well as forming the need and readiness for work in market conditions. In the dictionary-reference book on pedagogy, professional orientation is interpreted as a generalized concept of one of the components of universal culture, which manifests itself in the form of society's concern for the professional formation of the younger generation, support, and development of natural gifts, as well as a set of special measures to assist a person in his professional self-determination and choice of the optimal type of employment, taking into account his needs – opportunities and socio-economic situation in the labor market".

In the Ukrainian Encyclopedia of Education (2008, editor-in-chief V. Kremin), professional orientation is defined as "... a comprehensive scientifically grounded system of practical methods and means of influencing the individual to ensure an independent and conscious choice of profession, its development and implementation of professional activity based on the individual psychological characteristics of a person and the needs of the labor market in personnel"[13].

Leading Ukrainian scientists consider ensuring the individual's professional self-determination as the primary goal of professional orientation.

At the same time, as experts recognize, professional orientation performs social, economic, psychological, pedagogical, medical, and physiological functions. From the point of view of scientific research, professional orientation appears as a particular branch of knowledge, which is formed at the intersection of pedagogy, psychology, sociology, economics, philosophy, medicine, law, and other sciences.

Thus, according to modern scientific and pedagogical views, professional orientation in a comprehensive school is understood as a purposeful activity, the purpose of which is to prepare students for an independent choice of profession by their inclinations, interests, physical and intellectual abilities, taking into account the needs of the labor market[14].

There are many definitions of "professional orientation" on the Internet. Here are the interpretations of some of them:

– "measures aimed at familiarizing a person with his abilities and opportunities to offer him to choose one of the most suitable professions for him, taking into account the needs of production"[15];

[13] *Encyclopedia of Education* / Acad. Sci. ped. Sci. of Ukraine; heads. Ed. V.G. Kremen. Kyiv: Yurinkom Inter Publ., 2008. 1040 p.

[14] Zakatnov, D.O. *Technologies of Preparing Student Youth for Professional Self-Determination*. Kyiv: Pedagogical Thought, 2012. 160 p.

[15] Career guidance. From *Wikipedia*, the free encyclopedia. URL: https://uk.wikipedia.org/wiki/Professional_orientation

– that is a system of measures aimed at ensuring active, conscious professional self-determination and identification taking into account one's capabilities and individual characteristics and labor market conditions for full self-realization in professional activity"[16];

– "It is a set of interdependent economic, social, medical, psychological and pedagogical measures aimed at forming a professional vocation, identifying abilities, interests, suitability and other factors that affect the choice of profession or change of occupation"[17].

Terminological analysis of the above concepts gives grounds to assert that the generic term for professional orientation is "measures," the characteristic features are the orientation toward the future profession and the personal characteristics of the person concerning whom these measures are carried out. Therefore, professional orientation will be understood as measures aimed at developing professional consciousness and include methods that can reveal a person's qualities, skills, and interests that will help them successfully choose a profession in the future.

An equally important key concept of our research is "IT specialties." However, to interpret this term, let's conduct a terminological analysis of the concepts of "specialty" and "information technology" or "IT."

In the Law Encyclopedia[18], the Term "Specialty" is presented as "a set of knowledge and practical skills acquired by a person, which allows him to engage in a certain kind of occupation in some field of activity." It should be noted that the concepts of "profession" and "specialty" differ, but the first concept is broader than the second. In particular, according to the resource[19], a profession is presented as a type of activity that arose due to the social division of labor and requires particular abilities, theoretical knowledge, and practical skills for performance. The profession is characterized by the type of product that is created and the tools that are used. At the same time, the specialty should be perceived as a subtype of the profession, which is determined by the further division of labor within the profession, for example:

– profession – teacher, specialties – computer science teacher, correctional teacher, primary school teacher, etc.;

– profession – military, specialties – border guard, paratrooper, pilot, etc.;

[16] *Career guidance*. URL: http://tpal.com.ua/spase/osnnapr/vihrob/profor.html

[17] Balabanova L.V., Sardak O.V. *Professional orientation in the personnel management system. Personnel Management*: Textbook. Kyiv: Center for Educational Literature, 2011. URL: https://pidruchniki.com/15410104/menedzhment/profesiyna_oriyentatsiya_sistemi_upravlinnya_personalom

[18] *Legal Encyclopedia*: [in 6 vols.] / ed. Count. Y. Shemshuchenko (res. ed.) [etc.]. Kyiv: Ukrainian Encyclopedia. M. P. Bazhana, 2003. Vol. 5. 736 p

[19] *What is the difference between a profession and a specialty*. URL: https://chk.dcz.gov.ua/publikaciya/chym-vidriznyayetsya-profesiya-vid-specialnosti

– Profession – economist, specialties – accountant, planner, financier, analyst etc.

Professional activity is understood as the activity of a person within a particular profession in a specific field of production[20] or human activity based on a certain set of professional tasks and responsibilities (works) performed by a specialist[21]. Therefore, when choosing a future profession, it is worth considering the professional activity and the direction of its specialization.

Consider the term IT (Information Technology):

– "a wide class of disciplines and fields of activity related to the technology of management, accumulation, processing, and transmission of information"[22];

– "This is a set of methods of production processes and software and hardware combined into a technological chain, ensuring the collection, processing, storage, distribution, and display of information to reduce the labor intensity of the processes of using the information resource, as well as to increase their reliability and efficiency"[23];

– "technological process, the subject of processing and the result of which is information"[24];

– "information processing technologies, which consist of a set of technological elements: collection, accumulation, search, transfer of information to users based on modern technical means"[25];

– "It is a system of methods, processes, and ways of using computer technology and communication systems to create, collect, transmit, search, process and disseminate information to organize human activities effectively"[26];

 "It is a set of methods and procedures by which the functions of collecting, transmitting, processing, storing and bringing information to the

[20] *Professional activity and professional self-determination*. URL: https://subject.com.ua/textbook/technology/11klas/15.html.

[21] Professional activity. From *Wikipedia*, the free encyclopedia. URL: https://uk.wikipedia.org/wiki/Професійна_діяльність.

[22] Androschuk O.V., Kondratenko Yu.V., Golovchenko O.V., Vorona T.O., Petrushen M.V. Information technologies and their influence on the development of society. *Collection of scientific papers of the Center for Military and Strategic Studies of the National Defense University of Ukraine named after Ivan Chernyakhovskyi*. 2014. № 1. P. 42-47.

[23] *The concepts of "information technology" and "information systems"*. URL: https://stud.com.ua/21184/informatika/ponyattya_informatsiyni_tehnologiyi_informatsiyni_sistemi.

[24] DSTU 2226-93. *Automated systems. Terms and definitions*. URL: https://drive.google.com/file/d/0B-ia0FldzikiSU5lcGZmTkFXVEk/view

[25] *Information Technology: Concept and Classification*. URL: https://works.doklad.ru/view/UpFm5ytNbh8.htm

[26] Pleskach V.L., Zatonatska T.G. Information Technology. *Information Systems and Technologies at Enterprises* : Textbook / Pleskach V.L., Zatonatska T.G. Kyiv: Znannia, 2011. URL: https://pidruchniki.com/1497110247709/informatika/informatsiyni_tehnologiyi.

user in organizational and managerial systems are implemented using a selected set of technical means"[27].

The terminological analysis of the above definitions gives grounds to characterize "information technology" as technologies associated with information processes and their processing (analysis, processing, accumulation, transmission, storage, search, transfer, distribution, etc.). At its core, information technology involves the mandatory use of modern technical means.

So, having clarified the essence of the concepts of "specialty" and "information technology," we can say that an IT specialty is a set of knowledge and practical skills acquired by a person in the field of information technology, which allows him to engage in a certain kind of occupation in this area, in particular data processing, accumulation, transmission, storage, search, transfer and distribution of data using modern technical means or information systems.

Thanks to the synthesis of the concepts of "professional orientation" and "IT specialties," we will define the idea of "professional orientation of young people to IT specialties" – this is a set of measures aimed at motivating a young person to engage in a certain kind of occupation in the field of IT (analysis, processing, accumulation, transfer, transfer, storage, search, transfer, distribution, etc.) taking into account his personal preferences, qualities, and interests.

2. The market of IT specialties and its analysis

Today, information technology is one of the leading sectors of the world economy. It actively influences the development of other industries, which is a determining factor influencing the place of IT specialties in the labor market.

According to the analysis of the International Personnel Portal Head Hunter Ukraine's database of vacancies and resumes, the leading positions are occupied by such areas as "Sales," "IT, Internet, Telecom," and "Marketing." We have analyzed the IT specialties market in Ukraine. Below is a list of the most famous and sought-after of them.

A programmer is "a specialist who develops software (in simpler cases, individual programs) for programmable devices, which usually contain one processor or more. Such devices include desktop personal computers, mobile phones, smartphones, communicators, game consoles, servers,

[27] *The concept of information technology*. URL: https://litr.at.ua/publ/komp_juterni_tekhnologiji_v_juridichnij_dijalnosti/tema_1/1_6_ponjattja_informacijnoji_tekhnologiji/8-1-0-124.

supercomputers, microcontrollers, and industrial computers. A programmer writes codes and creates software products"[28].

An ERP programmer is a key player in a larger project where multiple programmers collaborate on different aspects of the work. Their responsibilities include writing code, ensuring program stability, and adapting parts of a ready-made program to the specific conditions of the enterprise. This role requires a deep understanding of the technical design and customization of user interfaces[29].

An ERP system consultant is "a specialist who examines the company's business processes that involve or require automation, finds out the requirements for the system to be installed, develops technical specifications, sets up and tests the system, and trains the customer's employees to work with it"[30].

Database Administrator is "responsible for the design, implementation, practical use and maintenance of a database, including managing user accounts and protecting against unauthorized access. An equally important function of a database administrator is to maintain the integrity of the database[31].

A system administrator is "an employee whose job duties involve ensuring the operation of computer equipment, computer network and software in the organization. Another name is sysadmin, sysadmin (came from computer slang). Depending on the organization's size, a system administrator may be either an employee of the information technology department or a separate staff unit[32].

Site Administrator – "a specialist who monitors the server's performance (server hardware and programs) on which the website is located. A website administrator is responsible for network security. In some cases, he can promote websites, keep traffic statistics, perform the duty of a content manager, monitoring the timely recovery of information"[33].

A website editor is "a specialist who searches and publishes information, interacts with authors, corrects journalists' texts, places ads and monitors

[28] Programmer. From *Wikipedia*, the free encyclopedia. URL: https://uk.wikipedia.org/wiki/Programmer.

[29] *ERP Programmer – Catalog of Professions*. URL: https://www.education.ua/ua/professions/erp.

[30] *ERP Systems Consultant – Catalog of professions*. URL: https://www.education.ua/ua/professions/erp-consultant.

[31] Database administrator. From *Wikipedia*, the free encyclopedia. URL: https://uk.wikipedia.org/wiki/Database_Administrator

[32] System administrator. From *Wikipedia*, the free encyclopedia. URL: https://uk.wikipedia.org/wiki/System_Admin.

[33] *Site Administrator – Catalog of Professions*. URL: https://www.education.ua/ua/professions/admin/

their effectiveness, works with photos, and communicates on forums with site visitors"[34].

An IT propagandist is "a specialist who is professionally engaged in propaganda in information technology. As a rule, this person accumulates a certain mass of people around him to create a target audience for promoting the product on the market and approving it as a technological standard, with the possibility of a network effect. Companies use the work of professional IT propagandists to promote their own technology or product and then fix it on the market as a standard or brand. Most often, IT propagandists promote something based on their own interest or altruism (participation in developing of open standards)"[35].

An HTML layout designer is "a specialist who implements a project in the form of HTML code, taking into account all the features of style and graphic design. The generated code should be equally adequately displayed in all popular browsers, with different monitor resolutions and the number of colors[36].

An analyst is "a specialist who develops terms of reference for software development, designs documentation of the system and software architectures of an IT system, and sets tasks for development and testing. At the end of the project, he explains the rules of work to users and solves problems of functioning at all stages of the information system's life cycle"[37].

A system analyst is "in a broad sense a specialist in solving complex organizational and technical problems that have an interdisciplinary nature, uses the principles of general systems theory and methods of system analysis. In a narrow sense, in the field of information technology, this term is used to denote the professional role and profession responsible for analyzing stakeholders' interests in the created IT system for the possibility of their satisfaction with its technical properties. The main product of such a system analyst is organizational and technical solutions, which are drawn up as terms of reference for the system, terms of reference for software"[38].

A business analyst is "a specialist who develops a set of applications that allows you to create a single automated management system for an enterprise or its key business processes. He either modernizes the system

[34] *Website Editor – Professions Directory*. URL: https://www.education.ua/ua/professions/editor-sites

[35] IT Propagandist. From *Wikipedia*, the free encyclopedia. URL: https://uk.wikipedia.org/wiki/ITPropagandist.

[36] *HTML Layout Designer – Catalog of Professions*. URL: https://www.education.ua/ua/professions/html/

[37] *Analyst – Catalog of professions.* URL: https://www.education.ua/ua/professions/analitik/

[38] System Analyst. From *Wikipedia*, the free encyclopedia. URL: https://uk.wikipedia.org/wiki/System_analyst

that already exists at the enterprise or simulates a new one. His responsibilities include collecting product creation requirements through questionnaires and user interviews. A system analyst develops terms of reference for creating software, designs documentation of the system and software architecture of the IT system, and sets tasks for development and testing. And at the end of the project, he explains the rules of work to users and solves problems of functioning at all stages of the information system's life cycle"[39].

A team leader is "an IT specialist who manages his development team, knows the technical side, participates in the work on the architecture of the project, is engaged in code review, as well as the development of some particularly complex tasks on the project"[40].

An SEO specialist is "a specialist who performs internal and external optimization of a site to increase the site's position in the list of pages found by search engines for specific queries. It is divided into the following specializations: SEO Optimizer, SEO Copywriter, and SEO Rewriter." (An SEO optimizer is a specialist who optimizes the site's code and content to search engines' requirements. The result of the optimizer's work is the acceleration of page loading, the correct writing of headings and service marks, the optimal structuring of the text for the search engine, and logical internal linking of site pages. SEO copywriter specializes in writing unique and active texts for sites based on the semantic core using the correct HTML formatting. An SEO rewriter is a specialist in processing existing (foreign) texts for sites for their semantic cores using the correct HTML formatting"[41].

A database architect is "a multi-level technical specialist responsible for the correct and secure choice of data storage technologies, as well as the creation and optimization of all database-related queries". A system architect is "a specialist in software architecture who plays a major role in software development, as well as in the selection of execution tools, and develops technical scenarios for the interactions of all components"[42].

A Web engineer is "a specialist who develops websites or web applications"[43].

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[39] *Business Analyst – Catalog of Professions*. URL: https://www.education.ua/ua/professions/business-analyst/

[40] Tyshchuk, T.A., Pavlova, A.M. *Regarding the potential and prospects for the development of IT outsourcing in Ukraine*. Policy Brief. URL: https://niss.gov.ua/doslidzhennya/ekonomika/schodo-potencialu-i-perspektiv-rozvitku-it-autsordingu-v-ukraini.

[41] SEO specialist. From *Wikipedia*, the free encyclopedia. URL: specialist https://uk.wikipedia.org/wiki/SEO

[42] *TOP 8 selected professions in the field of IT*: according to COSMONOVA|NET. URL: https://cosmonova.net/ua/page/top_eight_it

[43] Log in to IT. *Top 10 most in-demand IT specialties in Ukraine*. URL: https://nv.ua/ukr/it-industry/vvijti-v-it-top-10-najpotribnishih-it-spetsialnostej-v-ukrajini-2242280.html

A Web programmer is "a specialist who creates programs that can function within the Internet, create dynamic pages, write interfaces to databases, and draw up technical specifications for projects"[44].

A web designer is "a type of designer engaged in designing information that will be posted on the site. In addition to websites, web designers develop banners, Internet postcards, and electronic presentations. In a word, everything that in one way or another relates to graphic display on the pages of the Internet"[45].

A web developer is "a specialist whose main task is to effectively disclose the customer's products and solutions to a mass audience through the creation and support of multifunctional web resources"[42].

An information security (cybersecurity) specialist is "a specialist who creates protection systems for specific enterprises, protects local computer networks from virus attacks or hacking by hackers, prevents the leakage of important information, data forgery and incompetence of their employees. Or it develops systems to protect strategic information on the country's defense capability, forms secret databases"[46].

A software tester is "engaged in the study of programs and the search for errors (bugs) in the program"[47].

A network technology specialist is "a specialist who combines computers and other equipment into a single network and maintains the operation of the system at the proper level"[48].

CRM Systems Specialist – "Manages customer relationships (including the collection, storage, and analysis of data on customers, suppliers, partners, and relationship information)"[48].

Representatives of the IT services segment provide services for effectively using IT products in enterprises, organizations, institutions, etc. There is a growing need for such services because the introduction of information and communication technologies is the basis for improving efficiency and the key to the success and competitiveness of modern business.

Since new directions for working in IT are constantly emerging with the development of technology, it is possible to distinguish only essential areas and "primary" IT professions, the ideas of which are already quite clearly structured in the professions. Such general areas of professional IT activity

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[44] *Web Programmer – Professions Directory*. URL: https://www.education.ua/ua/professions/web-programmer

[45] *Web Designer – Catalog of professions*. URL: https://www.education.ua/ua/professions/web-designer/

[46] *Information Security Specialist – Catalog of Professions*. URL: https://www.education.ua/ua/professions/specialist-information-security/

[47] *IT professions*. URL: https://brainbasket.org/ru/it-professii/

[48] Log in to IT. *Top 10 most in-demand IT specialties in Ukraine*. URL: https://nv.ua/ukr/it-industry/vvijti-v-it-top-10-najpotribnishih-it-spetsialnostej-v-ukrajini-2242280.html

include development, design, content management, management, marketing, support, and analytics of IT products.

The variability of professional activity content, the growing uncertainty of professional prospects, and high professional mobility are specific features of all professions in the IT sphere. Therefore, the readiness for professional self-improvement, lifelong learning, and the ability to rapidly change the professional trajectory are indispensable requirements for all employees in the IT industry.

Based on the analysis of various resources, we have identified the most popular specialties in IT: SEO analytics, SMM, web design, cyber security, and Mobile applications.

Our research has underscored the undeniable popularity and demand for IT specialties, a demand that the labor market is struggling to meet. We've delved into the human resources shortage in the face of this overwhelming demand for IT specialties, a challenge exacerbated by significant competition in higher education institutions. Our findings are as follows.

1. Information technology is a field that garners significant interest among applicants. However, not all who embark on IT studies can fully realize their potential in IT. This often stems from an initial misalignment between their chosen specialty and their true professional orientation. When an applicant's skills, preferences, and abilities align with the IT specialty, the potential for success is immense. However, when this alignment is lacking, it's crucial to guide them towards more suitable paths.

2. Information technology is developing rapidly, and an IT specialist needs to constantly improve their knowledge since their knowledge today may not be enough to solve the tasks, they are assigned in six months. At the same time, due to the rapid development of information technology, new IT professions are constantly appearing in the labor market, and there is a shortage of specialists in these professions. At the same time, not all IT professionals are willing to retrain or do not have time due to their existing employment.

3. Information technology in Ukraine as an industry is lagging far behind in development compared to countries such as Japan and the United States, causing a shortage of specialists in this field and staff at universities that could train such specialists. The reason for the low quality of IT specialists' training is that teachers provide fundamental knowledge of computer mathematics and algorithms but cannot provide a sufficiently high level of practical skills in programming, analytics, data processing, etc. The curricula for training specialists are outdated, or higher education institutions do not have or lack competent personnel. In turn, this problem arises from the fact that the teaching profession is not prestigious and well-paid today, and a person who is a high-level IT specialist is unlikely to work as a

teacher/lecturer but instead find a more prestigious and better-paid job in the IT field.

3. Professional diagnostics

Informing students about the world of professions aims to familiarize them with the most relevant professions for society today and in the coming years and the opportunities and benefits of mastering a particular profession. Professional information enables students to acquire knowledge about the socio-economic and psychophysiological characteristics of various professions and the conditions for making the right choice of one of them. It also helps to foster a positive attitude towards multiple types of professional and social activities and the formation of motivated professional intentions.

Numerous surveys show that students' orientation in the world of professions is minimal: they name only about 20 professions in their answers, while there are more than 50,000 of them; according to some estimates, more than 50% of the professions and specialties available today were unknown 30 years ago[49]. The emergence of new occupations is associated with mechanization and other areas of the scientific and technological process and with new industries, including the IT industry.

Therefore, career guidance work should be based on a comparison of knowledge about the specifics of certain types of work and the individual qualities of the person who is the subject of career guidance. This understanding, facilitated by vocational studies as a science that describes professions and specialties in terms of their requirements for a person who is mastering them or plans to master them and by a vocational program as a comprehensive description of a specific type of work activity, empowers individuals to make informed career choices. The occupational therapy tasks include the study of professions or specialties, the basic requirements they place on a person, their psychophysiological and physical qualities, and the identification of factors that determine the success or failure, satisfaction, or dissatisfaction of a person with their professional activity. Occupational profiles familiarize job seekers with various professions in the process of professional information, counseling, etc.

The occupational chart contains the following components:

– General information about the profession, specialty (name of the profession, the need for specialists in this profession, positions that can be held after acquiring the profession, prospects for professional growth, etc. ;)

[49] Ponomareva N.O. Readiness of a computer science teacher for career guidance work in the IT specialty as a pedagogical problem. *Information Technologies and Learning Tools*. 2017. № 59 (3). P. 168-178.

– Production characteristics of the profession (content and working conditions, materials used, working tools, work process and its results, level of mechanization and automation, etc. ;)

– sanitary and hygienic working conditions with the allocation of occupational hazards and a list of physiological conditions and medical contraindications;

– list of knowledge and skills necessary for successful professional activity, with an emphasis on those that determine professional skills;

– description of possible forms of vocational training, opportunities for advanced training;

– psychodrama of the profession (a description of the psychological requirements of the profession for a person, highlighting the essential and desirable mental characteristics and psychophysiological contraindications).

Vocational information for young people serves a crucial purpose. It provides them with the multidimensional details necessary to make a conscious and informed choice about their career. This information equips them to make a decision and implement a specific career plan and personal, educational trajectory. A high-quality occupational profile is a valuable tool in this process, providing the necessary guidance and information.

As part of the professional orientation to IT specialties, young people should be offered an infographic of modern IT specialties, which can be used as a reference for professional information about IT professions and developed based on industry profiles (Fig. 1–3).

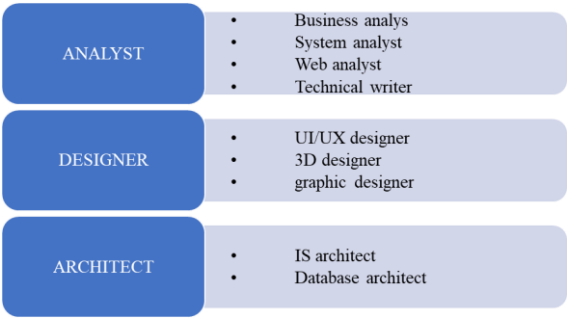

Fig. 1. Modern IT market by profession and specialty. Software development

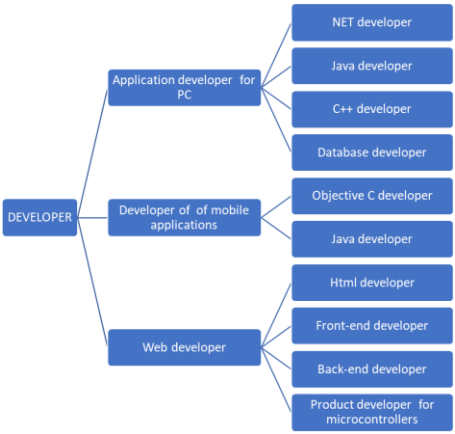

Fig. 2. Modern IT-profession market. Software development

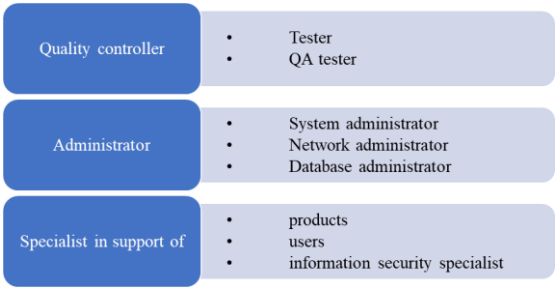

Fig. 3. Modern IT market by profession and specialty. Software support

The career guidance methods among young people include (Fig. 4): Information, advertising and campaigning, excursions to enterprises, reference books and informative lectures, and using mass media and social networks.

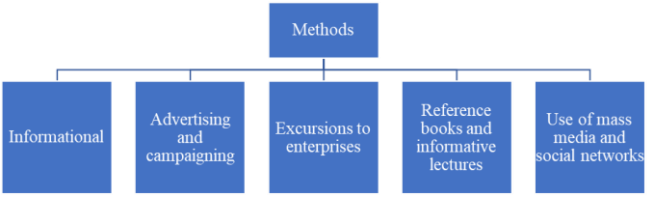

Fig. 4. Methods of career guidance work

Informational. This method includes a vocational program, which briefly describes different professions. Modern schoolchildren are active users of the Internet. According to experts, Internet resources for schoolchildren are among the most popular and accessible sources of career guidance and other information[50]. There are different approaches to classifying educational portals, particularly career guidance in the psycho-pedagogical, methodological, and specialized literature. For example, they distinguish between websites that provide information and services in employment, projects that provide professional counseling services, websites of state employment agencies, and projects that combine providing services and information in jobs and professions with professional counseling[51].

First, it should be noted that, according to the national concept of the state vocational guidance system, several employment centers have been established in all regions of Ukraine and have started online activities with young people. The information posted on these sites is mainly aimed at helping solve various job search problems. At the same time, there are websites on the Internet for various career guidance projects. Despite the absence of a direct focus on the professional orientation of schoolchildren to IT specialties, such resources are handy, as they provide an opportunity to get acquainted with the whole variety of specialties, assess their demand, and spread the idea of the world of professions.

Higher education institutions are taking an active role in career guidance for potential students. They are diligently developing specialized pages on their websites, ensuring that students have access to comprehensive and reliable information about various career paths.

Courses, clubs, circles, and IT schools are not just passive entities, but they are highly active in their online interactions with schoolchildren. Their primary goal may be to attract students, but they are also making significant contributions to the professional orientation toward IT specialties. This active involvement should inspire and motivate schoolchildren considering a career in IT.

Advertising and campaigning. This method can be successful if the advertisement is attractive enough for students and the information provided is reliable. Advertising can be used to demonstrate the real relevance of the

[50] Pasichna T.S. Internet Resources as Sources of Career Guidance Information. *Actual Problems of Professional Orientation and Professional Training of the Population in the Context of Socio-Economic Instability* : Materials of the VII International Scientific and Practical Conference (m. Kyiv, 28 October 2014) : in 2 parts – Ch. 1 / compiled by L.M. Kapchenko, S.O. Tarasyuk, L.G. Avdeev and others. Kyiv: IPK DSZU, 2014. P. 162-169.

[51] Osadchyi V. Use of Internet technologies for professional counseling of youth: [classification of Ukrainian and foreign resources]. *Continuous, prof. Education: Theory and Practice*. 2004. Vyp. 3/4, pp. 221-225.

profession and to motivate students to engage in self-analysis and self-development to master it.

Among the Internet resources, special sites for career guidance in IT specialties can be singled out. These sites contain vocational information about IT professions, promotional materials, recommendations for obtaining education in IT, useful links, etc.

There are also portals on the Internet dedicated to vocational testing of young people, including for IT specialties. In addition to access to popular diagnostic methods, they contain recommendations on vocational guidance for young people and ways to obtain a profession.

Thus, schoolchildren can independently receive various career guidance assistance in choosing IT specialties due to the availability of such information resources on the Internet as

– websites of career guidance centers and employment centers;
– thematic pages on the websites of educational institutions;
– websites of clubs, courses, circles, schools, etc;
– websites of professional communities of specialists;
– particular career guidance websites;
– sites for career guidance diagnostics, etc.

Individual, group, or collective communication with schoolchildren on career guidance issues can occur not only in direct contact with them but also remotely – thanks to the capabilities of computer networks. Career guidance for IT specialties in computer networks is a promising, underutilized way to prepare school leavers for successful professional self-determination.

First of all, it should be noted that Internet resources for young people are indeed the most popular and accessible source of career guidance and other information[52]. Online career guidance resources include websites of higher and vocational education institutions; career guidance pages on the websites of general secondary education institutions; websites of employment and career guidance centers; specialized career guidance portals; online career guidance testing sites; websites of professional and in particular, IT communities; groups of educational institutions on social media, etc. Studying such resources and engaging in work with them activates the student's subjective experience, allows it to be used in the process of career guidance, helps create situations of dialogue and exchange of thoughts and ideas, and enables the student to take the initiative in communication, creates conditions for students' self-expression; broadens

[52] Pasichna T.S. Internet Resources as Sources of Career Guidance Information. *Actual Problems of Professional Orientation and Professional Training of the Population in the Context of Socio-Economic Instability* : Materials of the VII International Scientific and Practical Conference (m. Kyiv, 28 October 2014) : in 2 parts – Ch. 1 / compiled by L.M. Kapchenko, S.O. Tarasyuk, L.G. Avdeev and others. Kyiv: IPK DSZU, 2014. P. 162-169

their horizons and forms interest in the future profession, shows the application of the chosen profession in human life. In this work area, the computer science teacher performs an essential function of orienting students in the media space. It is they who introduce students to the variety of online career guidance resources and, at the same time, teach them effective methods of searching for relevant information on the global network, skills of critical evaluation of Internet content, and safe work on the Internet, which is especially relevant in today's social realities.

Excursions to enterprises. That is the most visual way to familiarize children with their future profession. However, excursions can be practical only if you select a qualified guide or master who can explain to children all the details of production and the nuances of the profession.

In recent years, leading Ukrainian IT companies have shown great interest in developing IT education in Ukraine. For example, the industry association Information Technologies of Ukraine has been actively involved in solving urgent issues of training IT specialists, and regional IT clusters have been created, which have launched several thematic educational career guidance projects for schoolchildren. Although such activities are only marginally practical for an IT company, their encouragement of the best school graduates to pursue IT professions creates a solid foundation for strengthening human resources potential and further development of the IT industry.

Representatives of IT companies have the most up-to-date information on labor market requirements for IT specialists, their working conditions, and the specifics of professional adaptation. They can also explain to students the specifics of employment and career prospects using personal examples.

In recent years, IT companies have been inclined to replenish their staff not so much with graduates of higher education institutions but rather with their students, who undergo additional training and practical education directly at companies or various courses. In such circumstances, the preliminary selection of future applicants for the talent pool of IT companies is a perfectly justified approach, as it allows one to get motivated and properly trained specialists. For the applicants, it will enable them to get acquainted with the IT industry from the inside, compare their expectations with the actual state of affairs, and ultimately make a successful professional choice.

Reference books, informative lectures, etc.

An important means of influencing students' professional self-determination is to involve them in group career guidance activities organized by teachers (lectures, workshops, trainings, clubs, etc.). Individual career guidance work is driven by the need to provide more specific

information about the specifics of IT specialties, their types, and prospects, considering the student's personal interests and level of readiness.

In this sense, a means of individualizing career guidance may involve interested students in competitions, contests, tournaments, and competitions in computer science and information technology, which are most often held at higher education institutions. Preparing for such events will be of the most outstanding value in stimulating self-education, self-assessment, self-knowledge, and self-improvement of students in matters of professional self-determination in the IT sphere.

Use of media and social networks. This method can be effective, but only if their specifics are considered.

Society's positive attitude towards the IT industry as a field of professional orientation is supported by the professional promotion of IT specialties in the media. That is why ordinary parents and relatives of schoolchildren actively encourage their children to choose IT professions as, in their opinion, the most promising and in-demand.

Thus, stakeholders are trying to influence school leavers' choice of IT-related professions from different angles and based on various considerations, and the question arises of reconciling such diverse factors of influence on students' professional self-determination in the IT industry (fig. 5).

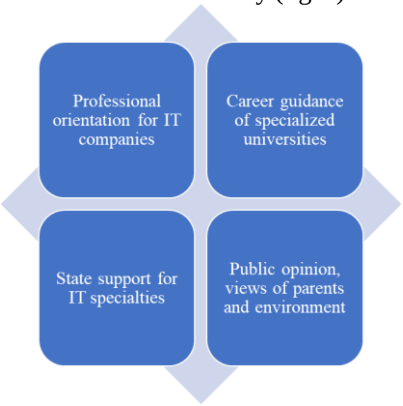

Fig. 5. Active subjects of influence on the choice of IT profession

Studying the possibilities of such resources and taking into account the interest of students in working with them, according to scientists, will help to activate the subjective experience of students, allow them to use them in the process of career guidance, help create situations of dialogue, exchange of thoughts and ideas; will enable them to take the initiative in communication, create conditions for students' self-expression; broaden their horizons and

form an interest in the future profession, show the application of the chosen profession in human life[53].

According to scientists, professional diagnostics is an important component of career guidance. The purpose of this is to study the characteristics of the individual that are essential in terms of professional self-determination: interests, needs, inclinations, abilities, professional intentions, professional orientation, character traits, temperament, health, etc.

In the specialized literature, a distinction is made between professional diagnostics to provide professional advice and carry out professional selection. According to psychological and pedagogical research, it is possible to determine a person's ability in a particular profession only by comparing the individual psychological properties and qualities of the individual with the requirements necessary and sufficient for its development. Such requirements describe a set of professionally important qualities of a person that ensure the successful performance of their professional activity. A person's predisposition to a particular profession is determined by their psychological characteristics, temperament, character traits, abilities, intelligence, etc.

Professional diagnostics is a comprehensive study of an individual's personality. It focuses on two main components: the motivational component, which includes interests, inclinations, abilities, value orientations, and professional intentions; and the operational component, which encompasses individual mental characteristics, properties of the nervous system, knowledge, and skills. That in-depth analysis, by A. Markova, forms the basis of professional diagnostics in career guidance.

Depending on the tasks to be solved, there are such types of professional diagnostics as:

– preliminary – carried out in early adolescence for the early identification and development of the child's personality traits necessary for mastering a particular profession, requires a comprehensive study;

– ascertaining – conducted for young people and older persons to help or confirm their choice of profession or for professional selection or selection.

To date, a relatively large number of career guidance diagnostic methods have been developed, among which we note the works of E. Klimov, which have become the basis for many methods of career guidance diagnostics. He proposed a classification of types of professions into five large groups based on the subject of work: "Human– Human," "Human-technique," "Human-Sign System," "Human -nature," and " Human -art image." With the help of this technique, it is possible to determine a person's sphere of interest so that

[53] Petrytsyn I., Leskiv V. Career guidance work in the information society. *Labor. training in class. education*. 2007. № 3. P. 32-35.

in the future, it will be possible to choose the specialty in which a person will study successfully.

1. "Human-Nature." Representatives of these professions are united by their love for all living things and nature. That person is passionate about the natural, geographical, biological, and chemical sciences—a person who likes animals and working with them. For example, "Human-Nature" prefers professions such as veterinarians, biologists, physicists, geologists, etc.

2. "Human-technique." People in this category are fond of technical objects and working with them. As a rule, these are people with a more practical and so-called "technical" mindset and those who work more often physically rather than mentally. For example, we can mention the professions engineer, electrician, mechanic, designer, and others.

3. "Human-Human". That is an amiable person whose field of activity is closely related to other people and involves social interaction. This person prefers interacting with people rather than technology in his work. Such work includes teachers, salespeople, doctors, lawyers, and others.

4. "Human—Sign System." People in this category work with signs, numbers, codes, languages, schemes, tables, formulas, etc. They prefer not people but technology and work with it physically and mentally. IT professions belong to this type. We note examples of such occupations: programmer, linguist, proofreader, topographer, etc.

5. "Human—Art Image". People in this category are fond of art—artistic, musical, theatrical, dance, and others. They have a creative imagination and are fond of innovative activities. Some examples of such professions are writer, actor, musician, artist, designer, and others.

Klimov's method helps a person to determine which of these types he belongs to. According to this method, the test provides twenty answers (choice of two options) to one question – "What kind of job would you prefer?". Twenty times, a person chooses one of two different answers. The questions are divided into two groups to process the questionnaire and get the result; you can mark them in various ways, for example, with other colors, different letters, images, etc. (we used two colors – red and blue). Then, according to the scheme developed by Klimov, the answers belong to one of the specified types, respectively; for each type, you can calculate the sum of the answers and use it to determine how much a person is prone to one or another type.

A comprehensive online survey was conducted involving 226 individuals. The participants were students from the 1st and 2nd courses of Sumy State Pedagogical University named after A.S. Makarenko. This inclusive approach ensures a broad representation of perspectives and enhances the validity of the research findings.

The age of the respondents ranged from up to 18 years (31%), up to 23 years (64%), after 23 years (5%).

According to the results obtained, it was found that out of 226 respondents:

– at least 18.6% is inherent in the first type, "Human-Nature." Therefore, if they were interested in information technology, we would advise them majors related to geographic information systems, bioinformatics, neurosciences, etc.;

– at least 13.7% is inherent in the second type, "Human-Technique" Therefore, if they were interested in information technology, we would advise them on specialties related to networks and their administration, microcontroller programming, information systems maintenance, etc.;

– at least 35.4% is characterized by the third type, "Human-Human." Therefore, if they were interested in information technology, we would advise them majors related to IT management, consulting, teaching, etc.;

– at least 21.7% is characterized by the fourth type, "Human-sign system." Therefore, if they were interested in information technology, we would advise them on specialties related to programming, analytics, etc.;

– at least 52.2% are characterized by the fifth type, "Human-art image." Therefore, if they were interested in information technology, we would advise them to specialties related to developing graphic objects, website design, and processing of digital multimedia objects.

According to individual questionnaires, we additionally found that 28% of the respondents unsuccessfully chose a specialty since the teaching profession involves the third psycho type, characterized by the desire to communicate with people and interact in the social environment. The first psycho types, "Human-nature" and "Human-art image," were also found in the respondents. The majority of respondents (77%) consider their chosen profession to be successful.

If we calculate the average number of percentages for each type, we have the following distribution:

Human-nature – 42.6%

Human-technique – 34.5%

Human-Human – 64.7%

Human-sign system – 37%

Human-art image – 71%

We calculate the percentage of respondents belonging to one type or another: 28.4% are human-art image, 26% are human-human, 17% are human-nature, 14.8% are human-sign systems, and 13.8% are human-technique.

At the same time, it should be noted that the survey was conducted at all faculties/institutes of Sumy State Pedagogical University.

In terms of percentage, 23.9% of students of the Institute of History and Philosophy, 23.5% of students of the Institute of Culture and Arts, 22.1% of students of the Faculty of Natural Geography, 10.2% of students of the Institute of Psychology and Pedagogy, 9.7% of students of the Institute of Physical Education, 6.2% of students of the Faculty of Foreign and Slavic Philology and 4.4% of students of the Faculty of Physics and Mathematics passed our survey.

We divide faculties and institutes into psycho types according to E. Klimov:

Human-Nature: Faculty of Natural Sciences and Geography, Institute of History and Philosophy;

Human-Technique: Faculty of Physics and Mathematics;

Human-Human: Institute of Physical Culture, Institute of Psychology and Pedagogy, Faculty of Foreign and Slavic Philology, Institute of History and Philosophy;

Human-Sign System: Faculty of Physics and Mathematics, Faculty of Foreign and Slavic Philology;

Human-Artistic Image: Institute of Culture and Arts.

If we translate these data into percentages, it turns out that 34.9% of respondents are human-human, 34% of respondents are human-nature, 23.5% of respondents are human-art imaging, 7.5% of respondents are human-sign system, and 4.4% of respondents are human-technique.

We compare the results if they are broken down by places from the first to the last, where the first place is the highest percentage, and the fifth place is the lowest.

Types of people identified by the survey:

1 – Human-art image

2 – Human-Human

3 – Human-Nature

4 – Human-sign system

5 – Human-technique

Types of people based on the faculties/institutes they study at:

1 – Human-Human

2 – Human-Nature

3 – Human-art image

4 – Human-sign system

5 – Human-technique

So, the results are partially converged. Complete correspondence between the specialties in which students study and the specialties that are determined for them by the method of E. Klimov, namely the types " Human --Sign System" and "Human -technique." Partial correspondence according

to the types "Human-Human" and "Human -Nature." And the difference between the two positions is the kind of "Human -art image."

We believe the inconsistency arises because of the question, "Are you satisfied with your chosen specialty?" 18.1% of students answered "difficult to decide," and 4.9% said they were unsatisfied with their chosen major. Also, the difference in the results arises because the survey was conducted for students of the pedagogical university. Respectively, their future profession will be teaching, which E. Klimov refers to as the "Human-Human" type.

CONCLUSIONS

1. Terminological analysis of the concepts of "professional orientation," "specialty," and "information technology" gives grounds to give the following definitions/

Professional orientation is understood as measures aimed at the development of professional consciousness and includes methods that can identify those qualities, skills, and interests of a person that will help them successfully choose a profession in the future/

IT specialty is a set of knowledge and practical skills acquired by a person in the field of information technology that allows him to engage in a certain kind of occupation in this field, in particular, data processing, accumulation, transmission, storage, search, transfer, and distribution using modern technical means or information systems.

Professional orientation of young people to IT specialties is a set of measures aimed at motivating them to engage in a certain kind of occupation in the field of IT (analysis, processing, accumulation, transfer, storage, search, transfer, distribution, etc.), taking into account their personal preferences, qualities, and interests.

2. According to statistics, information technology is one of the most popular areas in the labor market in Ukraine. The IT industry includes a large number of professions. The IT market has four key segments: hardware, the creation of IT products, IT services, and IT outsourcing of business processes. The dynamism of IT development makes it impossible to create a clear list of IT professions and complicates their professional description. There are general areas of professional IT activity: development, design, content management, marketing, support, and analytics of IT products. The most in-demand today are SEO specialists, SMM specialists, Web designers, mobile application developers, and cyber security specialists.

Among the IT specialties that are not yet in demand in Ukraine but already occupy leading positions in the United States are machine learning

engineers, Internet of Things architects, virtual reality architects, neural interface designers, avatar designers, and new technology testers.

3. The carried out professional diagnostics, which is generally focused on a comprehensive study of the personality, its motivational (interests, inclinations, abilities, value orientations, professional intentions) and operational (individual mental characteristics, particular properties of the nervous system, available knowledge, skills, abilities) components, was based on the E. Klimov' approach, who identified five large groups of professions, based on the subject of work: "Human-human," "Human-technique," "Human-sign system," "Man is nature," "Man is an artistic image." According to the results of the survey of students of 1-2 courses of Sumy State Pedagogical University named after A.S. Makarenko, it was established: up to 28.4% of respondents – "man-artistic image," 26% of respondents – "man-person," 17% of respondents – "human-nature," 14.8% of respondents – "man-sign system" and 13.8% of respondents – "man-technique." Complete correspondence between the chosen specialties and psycho types can be traced for the "man-sign system" and "man-technique" types. These are students of the Faculty of Physics and Mathematics and the Faculty of Foreign and Slavic Philology. Partial correspondence by the types "human-human" and "human-nature" are students of the Faculty of Natural Sciences and Geography and the Institute of History and Philosophy.

SUMMARY

Familiarizing students' problems with IT professions has yet to be deeply covered in the career guidance literature. Several occupational guides and collections of occupational programs describe exclusively established IT specialties. As a result, in practice, it is tough, and sometimes impossible, to point out to a school graduate the professions that will appear on the labor market and be in demand in society after they complete their educational training. Given the relevance of this problem, we have attempted to characterize the professional orientation of young people to IT specialties and describe the methods of its implementation. We have clarified the terms "professional orientation," "IT specialties," and "professional orientation to IT specialties." We have presented the results of the analysis of the IT profession market. We described the most common methods of vocational guidance for young people. We conducted a professional diagnosis of young people studying at Sumy State Pedagogical University with its detailed qualitative analysis.

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Information about the author:
Ostroha Mariia Mykhailivna,
PhD (Professional education. Digital technology),
Lecturer at the Computer Sciences Department
Makarenko Sumy State Pedagogical University
87, Romenska St, Sumy, Ukraine, 40002