

VI International Forum on Teacher Education

Psychologists' Information Culture Development during Professional Training at a University

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Abstract

The relevance of information culture development among psychologists is due to the increasing requirements for future specialists in the process of mastering professional activities. Modern society is constantly putting forward new requirements for University graduates in terms of competitiveness as well as social, professional and personal competence. The problem of informatization and digitalization of the education system arouses active interest from the part of the state; the World Wide Web has become the basis for network technologies and expanded the possibilities concerning mass access to information making them almost limitless.

Informatization and digitalization of modern education system not only arouses active interest from the part of the state, but in the context of a global pandemic, a becomes essential for remote interaction with students and professional training in the context of distance learning. The Internet, being the basis of network technologies, makes it possible to expand the scope of mass access to information, and the means and methods of working with the information space are being actively developed.

Informatization of the education system creates opportunities for a timely and flexible response to changes in the social educational order. Working in the information space of an educational institution under a qualified teacher's control makes it possible to shape the student's information culture meaningfully and purposefully. The developed information culture acts as a powerful personal and psychologically prophylactic resource in practical professional activity, contributing to its further professional development and preventing emotional burnout.

Keywords: informatization, digitalization, higher education, student, information space, information culture.

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Published by Kazan federal university and peer-reviewed under responsibility of IFTE-2020 (VI International Forum on Teacher Education)

Introduction

Psychologists' professional activity is aimed at providing psychological assistance and support as well as personal development to a client during crisis periods at various ages, family cycles, professional development, self-development and self-realization. At the same time, it is necessary to take into account the personal and professional preparedness for solving psychologists' professional tasks, since specialist's personal qualities are considered to be the basis of the professional success.

Practical psychologist professional development is associated with continuous personal and professional self-improvement and the need for constant interaction with colleagues and clients through a variety of Information and Communication Technologies (Kalinina, Patrikeeva, 2019). Psychologists are faced with the need to master Information Communication Technologies (ICT) in each of the implemented areas of professional activity. Thus, in the process of psychological prevention and education, psychodiagnostic, correctional, developmental and advisory work, a psychologist is obliged to turn not only to the scientific library either personally-created in the course of professional training or provided by the organization, but constantly engage into the search, analysis, systematization and use of information obtained on the Internet.

Internet information resources speed up preparation for a certain type of activity, significantly expand the possibilities of quick access to various sources, including foreign ones, in the original, thereby contributing to active personal and professional self-development, enrich professional outlook, activate creative approach to solving various professional tasks and intellectual potential of a specialist. Thus, the problem of forming psychologists' information culture during professional training in Higher education at the present stage of development of the higher education system is one of the most urgent, requiring close attention from the teaching staff of the University.

Purpose and objectives of the study

The research is aimed at studying the possibility of future psychologists' information development in the process of professional training at the University.

Literature review

During the last decade, scientists focused on the problems of education informatization and studying the possibilities of purposeful development of an individual's information culture.

Informatization of education refers to involving modern means of informatization in the higher education system during the course of training specialists, aimed at implementing psychological and pedagogic goals concerning training and education, supported by a sound methodology and practice of use.

According To Berman (2017), information culture is understood as a positive interaction of a person with universal experience, effective access to information for solving theoretical and practical questions.

The problems of informatization are obviously of interdisciplinary nature. Antipov (1991), Bordovskaya and Rean (2000), Vagramenko (2011), Gershunsky (1987), Izvozchikov (1991), Kruchinina (2007), Mashbits (1988), Talyzina (1985) and others studied the problems associated with the introducing and using educational space enriched with information and communication technologies.

The problems of using Informatization and digitalization tools in professional education are studied in the works of Gershunsky (1987), Obraztsov (2000) and others.

The specifics of high school informatization processes were widely considered in the works of Bortsov (1997), Fedorov (2001) and others.

ICT should be understood as a variety of software, hardware and software tools and devices operating both on the basis of a microprocessor and computer technology, as well as modern means and systems for transmitting and exchanging information, contributing, collecting, accumulating, storing, processing, reproducing and further transmitting the information and providing access to a variety of information resources, including global ones (Robert, 2003).

The concept of "information culture", from our point of view, is closely related to the concept of "information competence". Zimnyaya (2004) defining the term "competence", describes it as an internal, psychological neoplasm that includes the following aspects: knowledge, ideas, an algorithm of actions, a system of values and relationships of an individual, represented by the person's competence. "Competence"

is interpreted as "an actual, formed personal quality, considered as a knowledge-based, intellectually and personally-determined social and professional characteristic of a person".

Professional competencies reflect the professional individual and typological specifics of the professional's activity in their field; they are divided into subgroups and correspond to the leading types of specialist activities. Professional competence is a complex characteristic that includes both professional, personal and individual typological qualities of a specialist, reflecting the level of theoretical training, personal experience, value-semantic and moral-ethical position of a person as well as skills and abilities necessary and sufficient for implementing a particular professional activity.

Based on this interpretation of professional competence we defined the concept of "psychological and pedagogic competence" of University students. Psychological and pedagogic competence of a student is a component of a future specialist's professional competence being an integral characteristic of personality, represented by the willingness to apply the system of psychological and pedagogic knowledge, skills and experience of creative activity in practice; being aware of personal responsibility for the results of your work; striving for self-development for successful academic and future professional activity.

Psychological and pedagogic competence of a University student includes information culture and information-and-communication competence. The structure of a University student's psychological and pedagogic competence contains motivational-value, cognitive-activity and emotional-volitional components (Kruchinina, 2007).

"Information culture" is understood as a complex multicomponent quality of a student's personality, which determines the ability to function effectively in the modern information environment as well as create, use and store information resources competently, which is the basis of a University graduate's professional culture and a condition for competitiveness and demand for a specialist in the labor market.

The information culture of both students and certified specialists creates opportunities for a timely and flexible response to the informatization in all spheres of life in our country and around the world. Purposeful development of information graduate's information culture is a means of increasing the effectiveness of his practical activities, makes him capable of timely solving various professional tasks and serves as a powerful means of preventing professional and emotional burnout; information culture becomes a personal resource necessary for the constant professional self-development and self-realization.

Methodology

As a theoretical and methodological basis for the information culture development among future psychologists, activity and cultural approaches were identified. Activity-based and culturological approaches towards the education system provide purposeful development of an individual through creating personal purposes, motives and values regulating human behavior and communication based on the most successful examples of universal culture. Within the framework of these approaches, the culture of an individual is to be understood as "a system of value orientations of an individual, a universal characteristic of activity, a criterion for the creative development" (Khoroshilova, 2010).

Results

Interaction with the Internet environment in the process of training future psychologists is carried out starting from their first days at a higher educational institution. Federal Educational Standards of Higher Education for specialties and areas of training in the field of psychology indicate that psychology graduates who have successfully mastered the Specialist's, Bachelor's and Master's degree programs must have a whole range of diverse general cultural, general professional and professional competencies associated with the ability concerning searching, critical thinking, analyzing, systematizing and generalizing necessary scientific information independently.

Graduates are to be able to define and set research goals based on the analysis of modern psychological science and practice achievements, determine the choice of optimal means, methods and technologies aimed at achieving them, put forward and justify scientific hypotheses, develop research programs, prepare the methodological support. Students and graduates must be ready and able to modify, adapt to their goals and objectives existing and create new methods and techniques of research and practice in a particular field of psychology using modern information technologies and also be able to present the results of their own research in various forms (reports, theses, articles) and provide psychological support for their implementation.

The curriculum of undergraduate psychology students includes the following disciplines: "Information Technology in Psychology", "Mathematical Methods in Psychology", "Computer Science and Information Technology in Psychology", "Social and Psychological Research Methods", "Processing, Interpreting and Presenting the Results of Psychological Research", "Information Capabilities of the Internet", etc. Further training in the Master's program involves developing of the "Information and Communication

Technologies in Psychologist's Activity", which makes it possible to expand students' basic skills and contributes to the effective development of the graduates' information culture.

The development of the given competencies is impossible without successfully formed competencies in the field of computer technology, confident orientation in the virtual space of the Internet and additional information programs making it possible to increase the efficiency and optimize time spent on preparing the necessary educational materials, processing scientific data, confirming or refuting research hypotheses, etc.

In modern psychological research, measurements of various psychological phenomena, properties, characteristics, traits and factors are widely used, which requires students to master mathematical statistics methods. Using mathematical statistics in psychology helps to justify the correctness of the choice of methods and methodological techniques, confirm experimental plans, analyze and generalize the data obtained, making it possible to find dependencies between facts, determine the presence or absence of significant differences, put forward reasonable hypotheses, thereby providing statistical predictions, prevent the occurrence of logical and meaningful errors, etc.

The technical breakthrough in the field of information technology provides great opportunities for practicing psychologists concerning the experimental data statistical processing in the field of scientific research with the ability to select, define and calculate criteria, use graphs, histograms, tables, various forms of correlation, factor, cluster analysis, multidimensional scaling, etc.

From our point of view, such computer statistical programs as SPSS for Windows, STATISTICA, STADIA, etc. are the most effective for implementing these technologies. These programs make it possible to enter and edit data, present it in the form of visual reports (the programs have the ability to build a large number of different types of charts), contain a large number of statistical analysis procedures, as well as a powerful system of hints for the user.

The research organized by the authors of this article was conducted on the basis of the Lobachevsky State University of Nizhny Novgorod, Arzamas branch. The study was attended by students of the 37.05.02 "Employment Activity Psychology" specialty (2-4 courses) and 37.03.01 and 37.04 01 "Developmental Psychology" (bachelors and masters of 1 and 2 courses). It was suggested that the possibility of effective development of information culture under the conditions of Higher education, can be considered on the example of training technology for statistical processing and analysis of data obtained from the results of an empirical study (Trukhmanov, Trukhmanova, 2006).

During the course of this study, we compared the specific content of the main dynamic substructures of personality, defined as variables, in two samples of subjects. The experimental data from adolescent respondents (100 people) was used.

At the first stage of statistical processing, students were trained to present data in tabular form, digital format. Then the digital results were entered in the spreadsheet of the statistical package working window. Throughout the sample, distribution characteristics were determined for each variable – which was necessary for making a reasonable choice of parametric or non-parametric criteria of differences.

As a result of working with experimental data, a normal and approximately normal distribution of data was detected in 45.4% of cases. In 54% of cases, asymmetry and kurtosis of the frequency distribution were revealed. This fact determined the choice of non-parametric criteria for differences (Wilcoxon-Mann-Whitney U test, Kruskal-Wallis H test, Kolmogorov-Smirnov criterion), based on the fact that these criteria make it possible to identify significant differences in both normal and non-normal distributions of experimental data (Yermolaev, 2003).

The U criterion, Kolmogorov-Smirnov criterion and the H-criterion make it possible to clearly control the presence/absence of significant differences in the studied trait between experimental groups. Data interpretation required identifying significant differences for each variable, taking into account the fact that the differences are considered reliable only when the significance level is less than 0.05 (Yermolaev, 2003).

While performing these tasks as well as in further independent professional activity, students should be ready to check experimental data obtained during psychological diagnostics for the presence of a random choice of answers by the subjects (detected using the χ^2 -criterion), and also be able to take into account the influence of the "social desirability effect" on the choice of respondents, detected using the seriality criterion. It is possible to monitor the presence of distortions, non-randomness and triggering of the "social desirability effect" among the responses of the subjects if the indicators of the χ^2 criterion and the seriality criterion have a significance level less than 0.05 (Kalinin, 2002).

At the second stage of statistical processing, students were trained to construct a correlation matrix and perform qualitative analysis of significant correlations, aimed at studying the relationship of variables. In our example, such variables were characteristics of substructures concerning self-determination, orientation and personality traits of the subjects associated with mental states.

"Correlation is a coordinated change in two characteristics, reflecting the fact that the variability of one characteristic is in accordance with the variability of the other" (Kalinin, 2002). The students had to be able to choose the necessary coefficients in accordance with the peculiarities of data distribution. In our example, for scales with normal and close-to-normal distribution, the Pearson linear correlation coefficient was applied, and as for scales with a different form of normal distribution, the Kendall rank correlation coefficient was applied; the Pearson correlation coefficient is close to 1, which reflects the presence of a strong linear relationship between the features; the Kendall correlation coefficient is based on calculating the sum of inversions and matches of feature values (Yermolaev, 2003).

At the same time, the data processing time was saved by visual representation of the correlation matrix in a computer format, while simultaneously highlighting significant correlations. Then students were introduced to multidimensional statistical analysis technologies, such as factor analysis, multidimensional scaling, etc.

Here is an example of training technology for factor analysis of the intercorrelation matrix aimed at studying the structure of relationships of variables, as well as identifying factors (latent variables) that determine the joint variability of these characteristics. While processing the results of psychological research, the principal component method is most often used to isolate factors from the intercorrelation matrix (factorization).

A necessary element of factor analysis facilitating the interpretation of a combination of factors is rotation, or rotation of factors according to the varimax principle. Factorising the correlation matrix results in factorial matrix, which is analyzed to assess the contribution of each factor to the total variance. In our study, in particular, 9 factors having an eigenvalue higher than 1 and collectively describing 69.8% of the data variance were identified.

Based on the obtained data, students were trained to conduct not only quantitative, but also qualitative interpretation of cause-and-effect relationships which allowed students to acquire not only skills in processing statistical data, but also contributed to information culture development in working with experimental material, the competent application of research results in professional activities, the correctness and accuracy of the actual data presented to the scientific community.

It should be noted that a future psychologist must be able to perceive, analyze and transmit information (re-framing and interpretation) adequately, minimizing distortion and speculation. It is emphasized that the information culture, the development of which should be implemented, consolidated and expanded throughout the course of training, including during research work implementation, is an integral part of the

process of preparing students for independent professional activity, ensuring correct scientific citation, competent use of information borrowings, without plagiarism and copyright violations.

Discussions

The given materials do not cover all the available opportunities for developing future psychologists' information culture while studying at the University. A significant component of their professional training - information culture development, on the example of mastering the technology of computer processing of the results obtained during research, namely, "raw" psychodiagnostic data.

The results of training in this case can be considered the formed competence in the field of systematization, analyzing and generalization of data, the ability to formulate hypotheses, reasonably choose the necessary methods for evaluating the correctness of indicators calculating as well as structurizing, visual presenting the results of the analysis and carry out their quantitative and qualitative interpretation. During the training, students can create a library, maintain scientific and practice-oriented databases, personal repositories of training materials, psychodiagnostic techniques archives and other proprietary information resources.

Conclusion

The results of the research show that the purposeful information culture development concerning specialists in the field of psychology is a powerful means of increasing the effectiveness of practical professional activities. Information culture of a student is one of the most important qualities of a University graduate's personality, which is represented in the professional training level, has a huge personal and value-semantic potential as well as a great motivational stimulating value.

Competence in information technologies makes it possible for a practicing psychologist not only to popularize psychological knowledge, the own scientific and professional experience, but also serves as a powerful resource for preventing emotional burnout and professional deformations, contributing to the preservation of psychological health, supporting personal resources, providing a high level of professional growth, self-development and professional self-realization. In addition, a competent psychologist with a high level of information culture becomes more competitive in his professional field, as he is able to navigate the information space and solve a variety of professional tasks quickly, timely and effectively.

Acknowledgements

The work is performed according to the Russian Government Program of Competitive Growth of National Research Lobachevsky State University of Nizhni Novgorod, Arzamas branch.

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