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DEVELOPMENT OF THE PROCEDURE OF TESTING WITH THE APPLICATION OF THE EXPERT EVALUATION METHOD IN PSYCHOPHYSIOLOGY

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Abstract

Purpose: This article provides a detailed description of the stages of development of an information system of personalized psychophysiological testing using expert evaluation. The process of the information system design is presented, the developed functional models, database and algorithm of testing by students-experts are demonstrated.

Methodology: As a result of the analysis, the features of commercial educational institutions in the field of practical psychology, as the main influencing factor can be identified as the amount of practical training in the direction of «Psychology», which is very different from the standard curriculum.

Result: In the learning process, students, who acts experts, face following problems: absence of a clear structured hierarchy of indicators (test questions) in the evaluation of tests; lack of a procedure for formalization and evaluation of various qualitative and quantitative indicators (certain types of tests; lack of an effective tool that provides support for decision-making on the selection of personality type. The proposed system will solve these problems.

Applications: This research can be used for universities, teachers, and students.

Novelty/Originality: In this research, the model of Development of the Procedure of Testing with the Application of the Expert Evaluation Method in Psychophysiology is presented in a comprehensive and complete manner.

Keywords*: Information Technology, Information System Design, Functional Models, Testing, Expert Evaluation*.

INTRODUCTION

Computer technologies are used to automate existing processes in traditional forms of education and to implement new teaching methods. Modern information technologies play a major role in psychological research that can be conducted in educational institutions involved in the preparation of psychologists (Munoz, et al. 2018).

However, there is no unified approach to the problem of complex evaluation of the procedure of psychological testing of users, which allows collecting a bank of answers through the joint use of testing methods and expert assessments (Loewenthal and Lewis, 2018). The methods used today are paid insufficient attention to the interaction of subject and object of testing, the student and the teacher, to ensure a high level of psychology students.

In such conditions, there is an objective need to develop information provision, which will enable taking into account both the features of testing and the specifics of the testing process.

The aim of the work is to improve the learning process of students-psychologists as a result of the use of information support for personalized testing using expert evaluation.

METHODS

As a result of the analysis, the features of commercial educational institutions in the field of practical psychology, as the main influencing factor can be identified as the amount of practical training in the direction of «Psychology», which is very different from the standard curriculum.

In the studied educational institution in a systematic form and in a significant amount, methodologies are offered and skills of individual psychological counseling and management consulting are practically carried out. The number of practical classes in such institutions is 1.5 times higher than at a state university (Tarabayeva, 2016).

Analysis of existing testing systems (Vagramenko and Yalamov, 2015) revealed significant shortcomings: firstly, the result of the user's psychological testing is a general assessment of the psychological state and recommendations to the subject, the testing procedure can give the user the impression that the psychologist has little interest in his personality, in his problems and difficulties; secondly, there is no connection between ordinary users of the site and psychology students; thirdly, in the course of testing, each question is usually not analyzed, its influence on the overall test result (Wagman, 2018).

RESULTS AND ITS DISCUSSION

For the development of functional models in this paper, we used the modeling tool AllFusion Process Modeler r7. The

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input information in the developed system is the registration personal data entered by the user during registration, and the answers chosen by him during the testing, as well as the data for authorization in the subsystem and user requests, consisting in obtaining the advice of a student psychologist. The output information is the results of testing and counseling psychologists on user requests. Process control (top arrow) is carried out using the user guide and access control algorithm. Performers (bottom arrow) are automated systems, web site, students of the field of study «Counselling psychologist», the administrator, the user. The details of the context diagram based on the IDEF0 methodology are shown in figure 1.

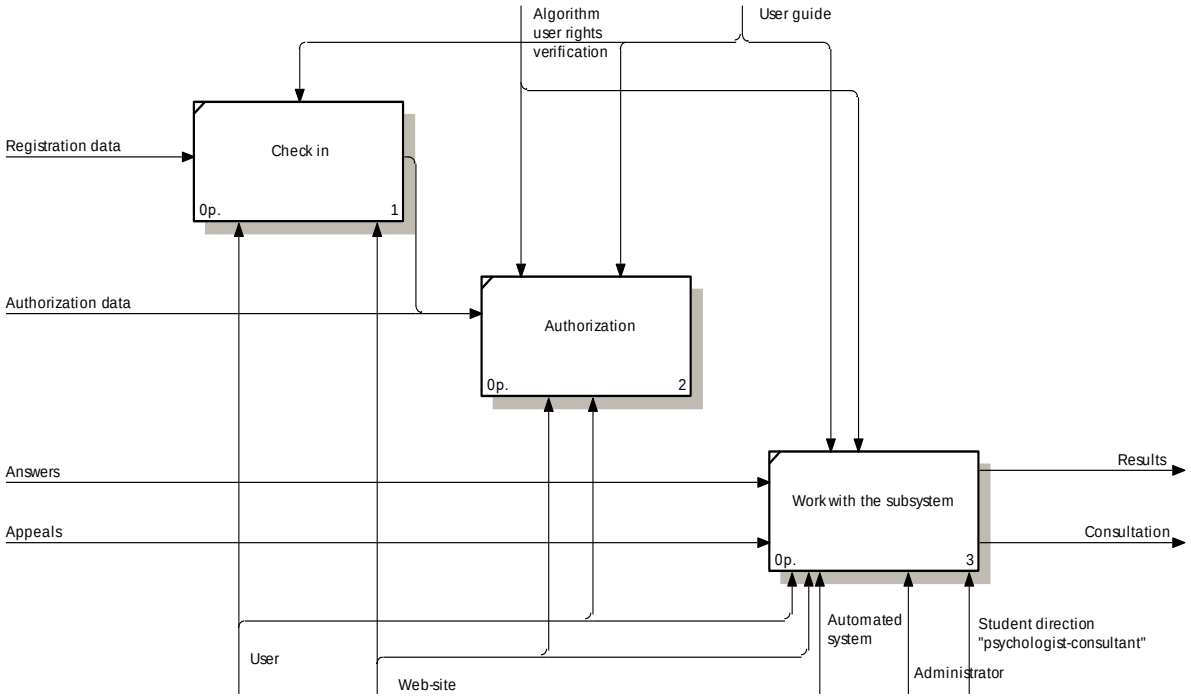

Figure 1: Decomposition of the context diagram

The decomposition diagram of the process "Support of educational activities at the university" is a more detailed description of it. At this stage, three processes are defined: "Registration", "Authorization" and "Work with the subsystem". Registration information is input for the block "Registration" (Putivtseva, et al. 2017).

Figure 2 shows the details of the “Registration” process, carried out using the IDEF3 methodology.

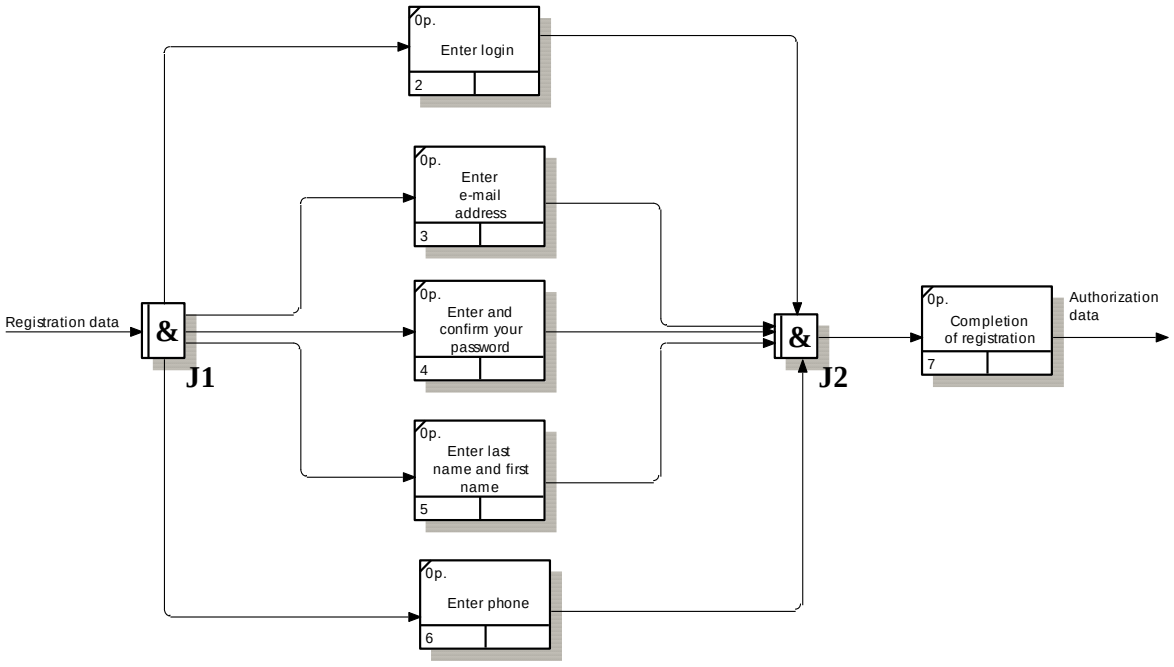

Figure 2: Registration process decomposition Diagram»

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To register in the system, the user must specify the following information: login; email address; password and confirmation; last name and first name; phone. For successful registration in the system, all of the above data is required to enter.

In Figure 3 are shown the steps, which are proposed to carry out the expert evaluation procedure.

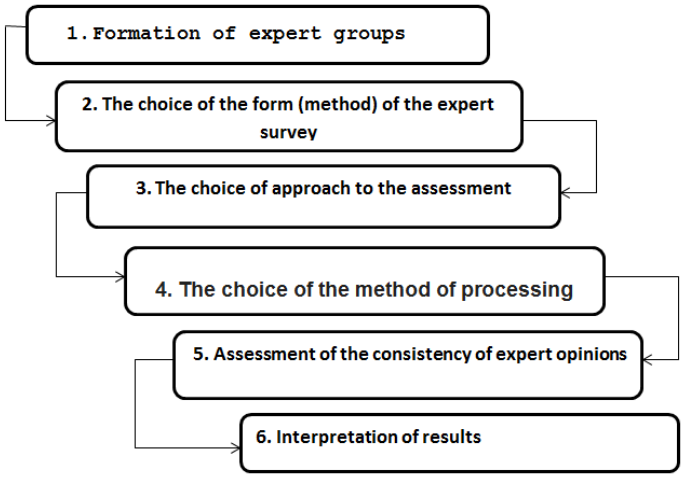

Figure 3: Stages of the expert evaluation procedure

The essence of the method of personalized testing with expert evaluation is to conduct an intuitive-logical analysis of the problem by experts with the quantitative evaluation of judgments and formal processing of the results (Igrunova, et al. 2018). In some cases, it is necessary to take into account the sensitivity of assessments to possible changes in expert judgments (Dmitriev and Lomazov, 2014). The received generalized opinion of experts as a result of processing is accepted as the solution to a problem.

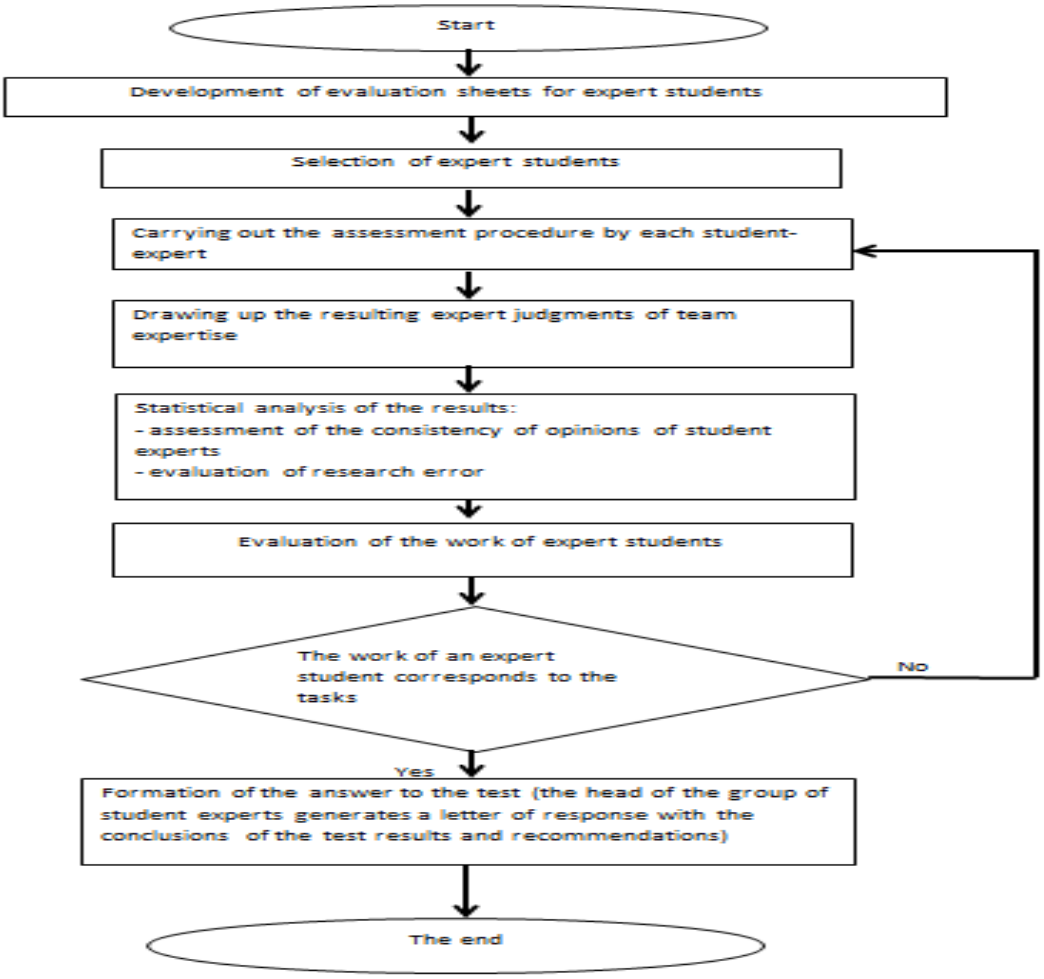

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Figure 4: The algorithm of testing by students-experts

The proposed approach to the expert evaluation of the testing process, which provides for a comprehensive study of the procedure of psychological testing of users, will allow collecting a bank of answers, through the joint use of testing methods and expert assessments.

As a tool for the software implementation of the developed system, a content management system (CMS) is required.CMS will allow managing the content of the Internet resource if necessary. At present time, there are three main leading content management systems of the website: WordPress, Drupal, and Joomla. As a result of the comparative analysis selected WordPress software that best meets the conditions.

At the first stage of building a conceptual model of the system, general ideas about the domain are formed, the main entities and relationships are highlighted. Further, the ideas about the properties of entities and relationships are detailed, and foreign keys are defined. In the third stage, the detailed elaboration of ideas about the characteristics of the domain objects is performed and the final composition of entity attributes is determined.

Figure 5 shows the developed database model. The Users entity represents all persons registered in the system. The essence of "Student" is all registered students of the Voronezh Institute of Practical Psychology and Business Psychology.

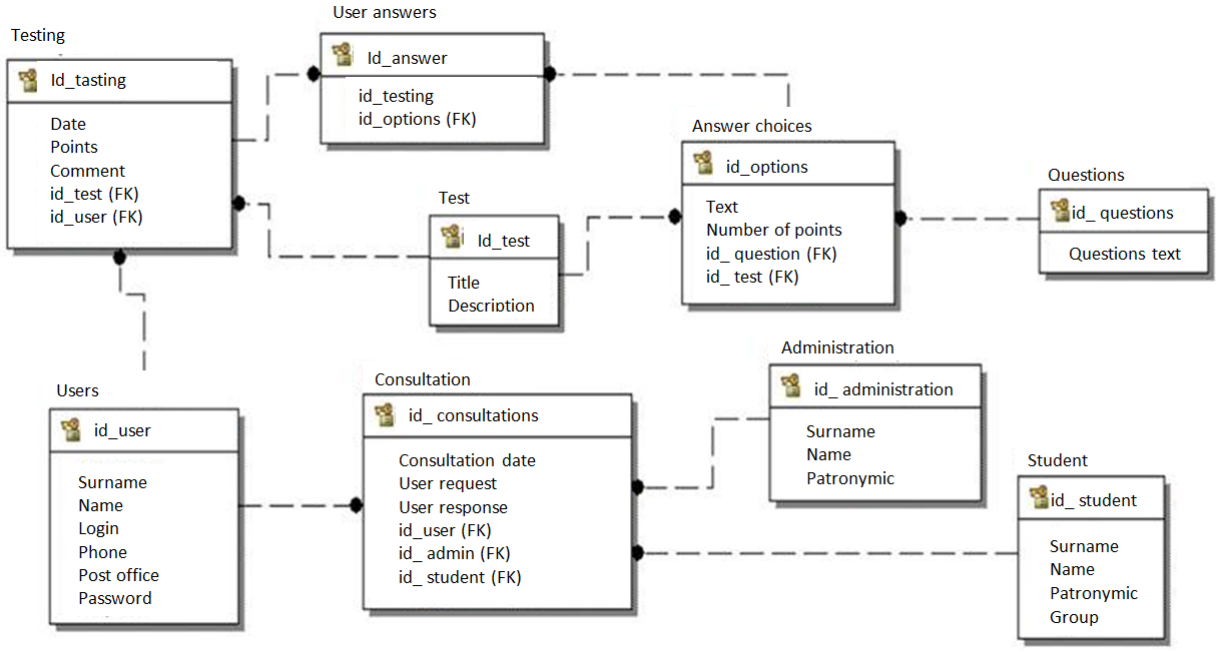

Figure 5: Database model

The entity «Administrator» is all persons responsible for processing and providing psychological counseling to users. In the context of this subject area, a qualified psychologist acts as an administrator, under the guidance and control of which students carry out work on providing consulting support to users. The essence of the «Test» - all psychological tests available for passage in the system. The essence of «Consultation» is a consultation provided to users of the system by students under the guidance of the administrator. The essence of "Testing" - all testing recorded after users pass the tests in the system. Entity «Answer Options»– the answer options used in questions. The essence of «Questions» - questions that make up the tests. The essence of «User Responses» - the answers of users selected during the test.

CONCLUSION

In the learning process, students, who act experts, face following problems: absence of a clear structured hierarchy of indicators (test questions) in the evaluation of tests; lack of a procedure for formalization and evaluation of various qualitative and quantitative indicators (certain types of tests; lack of an effective tool that provides support for decision-making on the selection of personality type. The proposed system will solve these problems.

The practical significance of the results of this work consists in the possibility of using the developed information support of personalized testing using expert assessment in the educational process of psychology students to improve the efficiency of the learning process. The analysis was conducted on the baseline data of the Voronezh Institute of Practical Psychology and Business Psychology.

One of the possible directions of further research aimed at the development of the proposed approach can be connected with the intellectual support of the questionnaire synthesis, for which evolutionary methods can be used (Petrosov, et al. 2015).

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