DESIGNING AND DEVELOPMENT OF THE INFORMATION SYSTEM "UNIVERSITY EDUCATIONAL PROCESS"

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The main task of the higher educational institution is to provide students with the opportunity to obtain a higher education at the bachelor's or master's level. The educational process is the core of the university, and all other activities are impossible without the existence of this process. When creating an information system of the university, first of all, it is necessary to include the educational process in it.

The purpose of the existence of higher educational institutions is to provide students with the opportunity to receive education. Thus, the main subject of the learning process is a student who wants to receive this education. The possibility of getting an education is provided to the student through communication with the teacher, who is the second main subject of the educational process. Education student acquires with classroom activities and independent work.

The quality of the education received is checked through various monitoring activities. The work program for the discipline specifies the subjects of the classes, the number and type of monitoring activities. The work program on discipline is developed by the leading teacher on the basis of the curriculum, according to which students of the relevant specialty are trained, as well as normative documents of the university.

Curricula for specialties are developed by authorized commissions, specified by the deans of faculties and approved by the methodological department of the university. The basis of the curriculum is an educational and professional program for training specialists. For the possibility of conducting classroom studies, the University's educational department makes a schedule for each current semester.

The basis for scheduling classes are the curricula, the contingent of students, and the planned classroom workload of teachers. Disciplines are distributed among the departments of the university. At the department, a leading teacher is assigned to each discipline, which is responsible for the results of the students' training in this discipline, the development of a work program and other methodological literature. The distribution of classes and supervisory activities between teachers of

the department is the instructor's workload. The teacher's workload is the main component for preparing the schedule of studies at the university.

The IDEF0 diagram is a general description of the system and its interaction with the external environment. The context diagram consists of one block describing the function of the upper level, its inputs, outputs, controls and mechanisms, together with the formulations of the model purpose and the viewpoint with which the model is built. The main function of the simulated system is to provide the educational process at the university. List of data: educational and professional program, normative documents of the Ministry of Education of Ukraine and the University, student, teacher, curriculum, work program for discipline, schedule, control measures, student's progress. The list of functions: the development of curricula, the development of work programs for the disciplines, the distribution of classes and other training load between teachers, scheduling classes, conducting classroom activities, conducting supervisory activities in the semester, conducting final control measures - examinations or credits. The purpose of creating an information system is to organize the educational process at the university. The context diagram of the IDEF0 educational process is shown in Fig. 1.
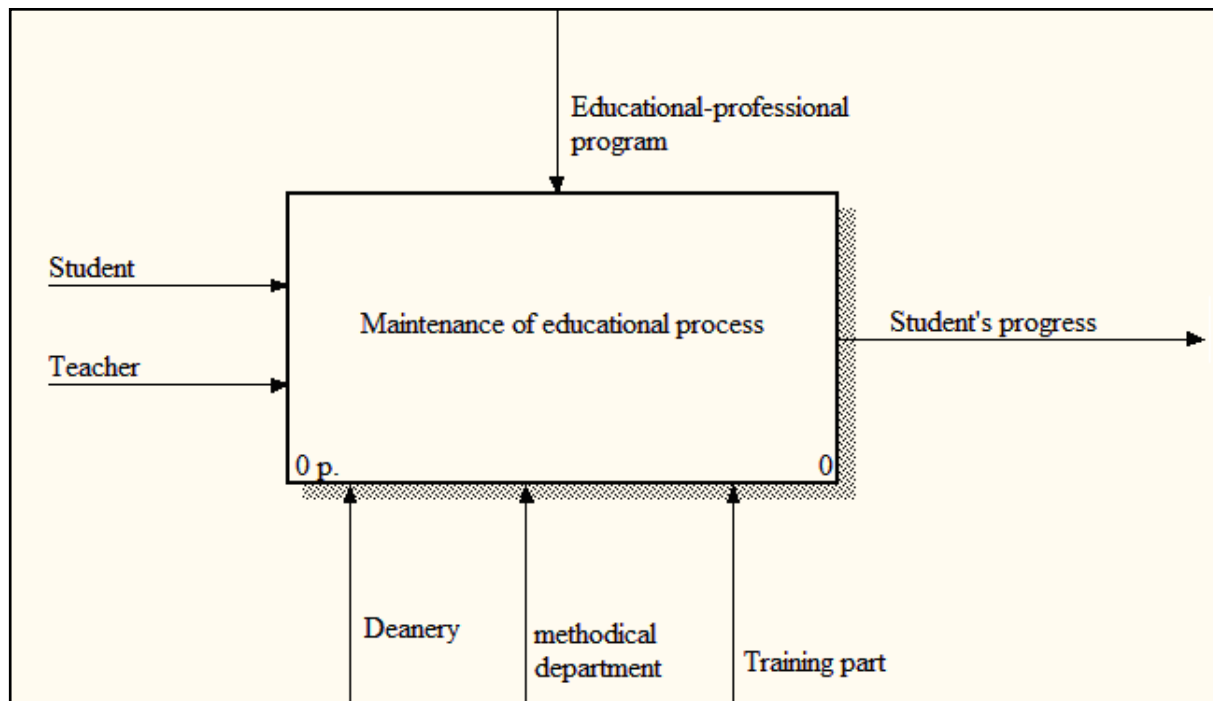
Figure 1 – IDEF0 context diagram

It is clear from the description of the learning process of the ZVO that the decomposition of the contextual diagram of IDEF0 should include blocks for the development of curricula, the distribution of the teaching load between teachers, scheduling of classes, the conduct of the current educational process.

In Fig. 2 shows how the system "University's educational process" works in general.

Diagrams of data flows are a hierarchy of functional processes that are connected by data streams. The purpose of such a presentation is to demonstrate how each process converts its input data into a weekend, as well as to identify the relationship between these processes.
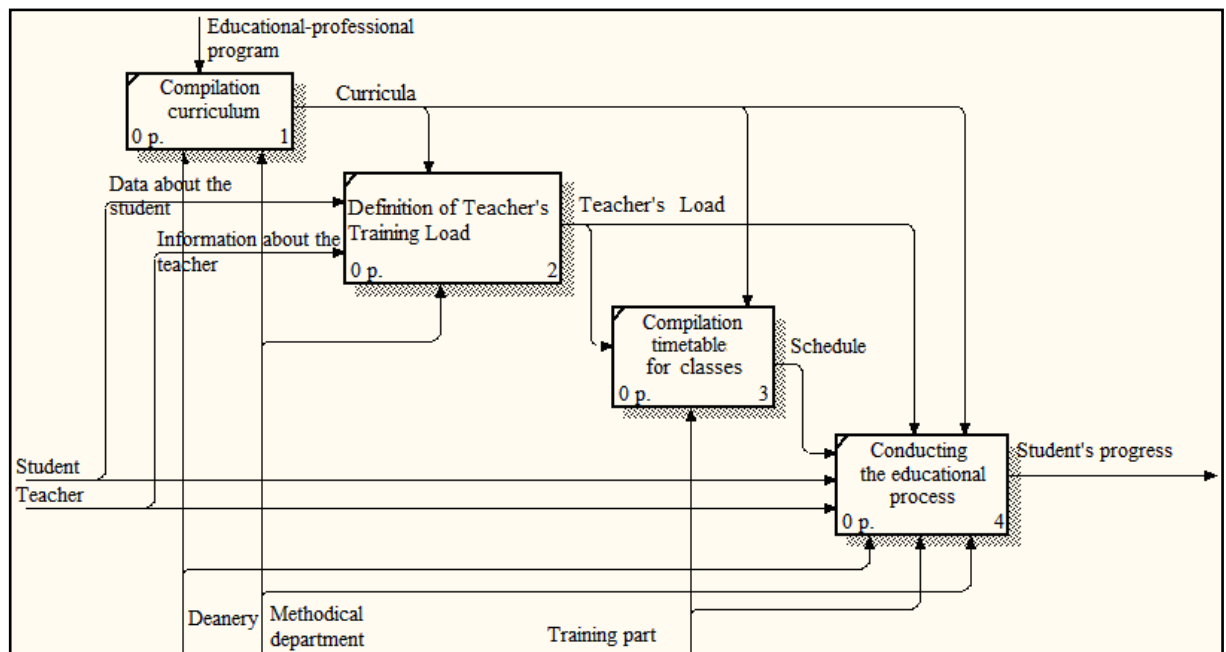

Figure 2 – IDEF0 decomposition diagram

Data flows correspond to documents, queries or messages that external entities exchange with the organization. When decomposing the DFD context diagram, the zero process is divided into composite systems and subprocesses, which usually correspond to the decomposition units of the IDEF0 diagram. In Fig. 3 shows the diagram of the DFD decomposition of the learning process.
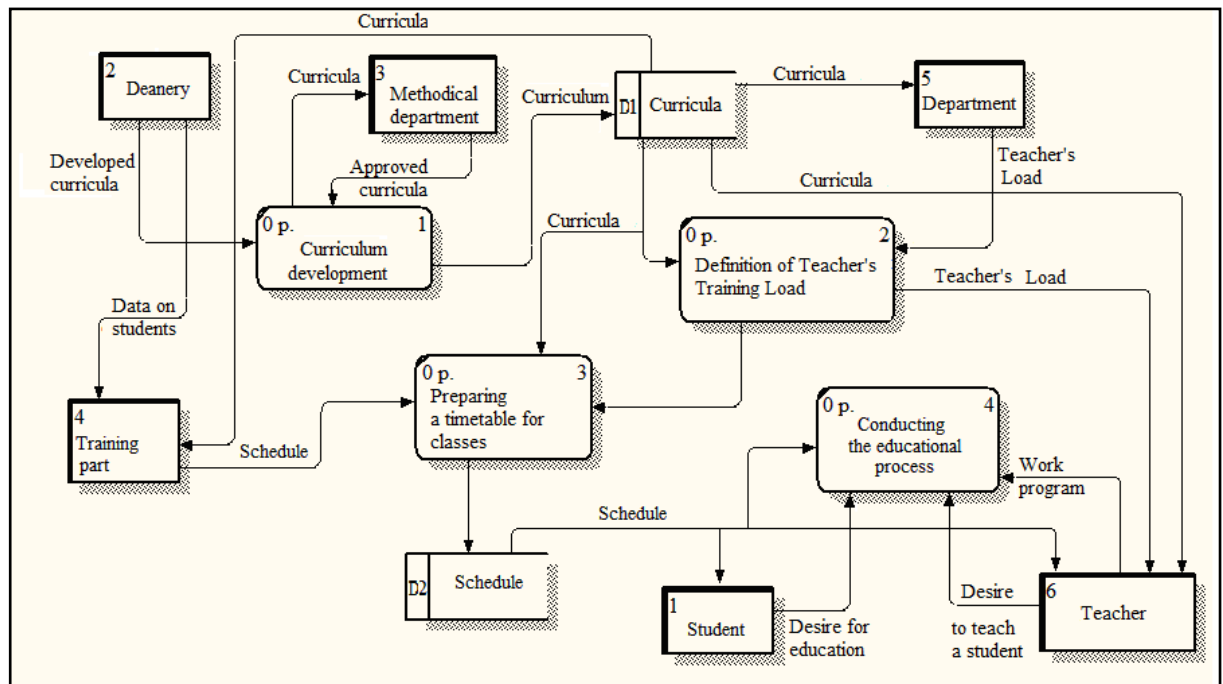
Figure 3 – Diagram of the DFD decomposition of the university's teaching process

The information system should be based on a database running under the control of the DBMS. This will provide the ability to work with the system at the same time to different groups of users and will allow these groups of users to enjoy the rights and privileges they need to work.

From the description of the domain and the diagram of decomposition of DFD, it is possible to identify the main groups of users of the IS "University learning process" and their transactions.

Group of users:

  – employee of the dean's office;
  – employee of the methodical department;
  – employee of the department;
  – the dispatcher of the educational department;
  – teacher
  – student.

Transactions of a group of users "Teacher":

1. Get a training load for the next academic year.

2. Get a schedule for the next semester.

3. Develop a working program of their disciplines.

4. Draw up a schedule of monitoring activities for their disciplines.

5. Develop monitoring activities of the results of training in disciplines.

6. Conduct monitoring activities and assess students.

For each group of users, you need to create a software application with the appropriate functionality that will allow users to perform all the transactions they need. These applications can be developed in the form of office applications, web applications and mobile applications.

The use of different types of applications in one information system presents increased requirements for the DBMS. For office applications, it is desirable to use a database that is located on the server in the local network of the university. For web applications and mobile applications, it is desirable to host a database on the Internet. In addition, MySQL is often used to develop web applications, which is not very suitable for the development of office applications. Therefore, the information system "University learning process" is desirable to develop on the basis of a distributed heterogeneous database, running under several DBMS.

The introduction of the information system "University educational process" will allow to reduce the flow of documents between the university departments, simplify the process of obtaining various statistical data on the educational process, will allow various groups of users to easily obtain a variety of information: student contingents, faculty curriculum lists, instructors' workload, classes of academic groups and university professors, and the loading of the university's academic classes.