UDK 371.
SCSTI 20.01.45

DATA PROCESSING AT INFORMATIONAL AND COMMUNICATION TECHNOLOGIES PRACTICAL LESSONS

Y.A. Klishina[1]
[1]NKSU named after M. Kozybaev, Petropavlovsk, KR

ОБРАБОТКА ДАННЫХ НА ЛАБОРАТОРНЫХ РАБОТАХ ПО ИНФОРМАЦИОННО–КОММУНИКАЦИОННЫМ ТЕХНОЛОГИЯМ

Клишина Е.А.[1]
[1]СКГУ им. М. Козыбаева, г. Петропавловск, РК

АҚПАРАТТЫҚ–КОММУНИКАЦИЯЛЫҚ ТЕХНОЛОГИЯЛАР БОЙЫНША ЗЕРТХАНАЛЫҚ ЖҰМЫСТАРДА ДЕРЕКТЕРДІ ӨҢДЕУ

Е.А. Клишина[1]
[1]М. Қозыбаев атындағы СҚМУ, Петропавл қ., ҚР

Annotation

This article is based on an author's experience on teaching Information and Communication Technologies to the students of all specialties and the directions of preparation of a bachelor degree. Focusing on Database Systems, the article reports about the main concepts of practical lessons in accordance with the curriculum. For improving IT skills in database design, Data integrity constraint, and Technologies of work with a database, students are suggested three kinds of assignments. Firstly they should work with a pre– built database, secondly use a pre–built flat–file database, and at last create their own database in DBMS. Most authors of practical courses propose immediately starting with the independent creation of the simplest database in a DBMS. However, students now have very vague ideas about such objects, so it makes sense to first show them the finished database and teach them the simplest skills to use it. The ICT course is delivered in English. Therefore CLIL is used at the practical lessons.

Key words: Information and Communication Technologies, database, database systems, pre– built relational database, curriculum, and design view.

Аннотация

Эта статья основана на опыте автора по обучению информационным и коммуникационным технологиям студентов всех специальностей бакалавриата. Сосредоточив внимание на системах баз данных, в статье сообщается об основных концепциях практических занятий в соответствии с учебной программой по дисциплине ИКТ. Для улучшения IT–навыков в области проектирования баз данных, ограничения целостности данных и технологий работы с базой данных учащимся предлагается три вида заданий. Во–первых, они должны работать с предварительно созданной базой данных, во–вторых, использовать готовую базу данных, созданную с использованием математических таблиц, и, наконец, создавать свою собственную базу данных в СУБД. Большинство авторов практических курсов предлагают сразу начинать с самостоятельного создания простейшей базы данных в СУБД. Однако студенты сейчас имеют весьма смутные представления о таких объектах, поэтому имеет смысл сначала показать им готовую базу данных и обучить их простейшим навыкам её использования. Курс ИКТ преподаётся на английском языке, поэтому на практических занятиях используется методика CLIL.

Ключевые слова: Информационные и коммуникационные технологии, базы данных, системы баз данных, предварительно созданная реляционная база данных, учебная программа и конструктор.

Аңдатпа

Бұл мақала барлық бакалавриат мамандықтарының студенттеріне ақпараттық– коммуникациялық технологияларды оқытудағы авторлық тәжірибеге негізделген. Дерекқор жүйелеріне назар аудара отырып, мақалада «Ақпараттық коммуникациялық технологиялар» пәні бойынша оқу жоспарына сәйкес практикалық жаттығулардың негізгі түсініктері туралы баяндалады. Деректер базасын жасау,

деректердің тұтастығы және деректер базасы технологиясы саласында IT–дағдыларын жетілдіру үшін студенттерге үш тапсырма түрі ұсынылады. Біріншіден, олар бұрын құрылған дерекқормен жұмыс істеуі керек, екіншіден, математикалық кестелерді пайдалана отырып дайындалған дайын дерекқорды пайдаланып, ақырында өздерінің дерекқорын ДББЖ–да жасаңыз. Тәжірибелік курстың авторларының көбі ДББЖ– да қарапайым дерекқорды дербес жасаудан басталады. Алайда, студенттер қазірдің өзінде осындай объектілер туралы өте түсініксіз идеяларға ие, сондықтан бастапқы деректер базасын көрсетіп, оларды пайдаланудың ең қарапайым дағдыларын үйрету керек. Ақпараттық коммуникациялық технологиялар курсы ағылшын тілінде оқытылады, сол себептен CLIL әдісі тәжірибелік сабақтарда жиі қолданылады.

Түйінді сөздер: Ақпараттық–коммуникациялық технологиялар, дерекқорлар, деректер базасы жүйесі, бұрын құрылған реляциялық деректер базасы, оқу жоспары және конструктор

Introduction

Information and Communication Technologies (ICT) curriculum approved by the University Educational and Methodological Council was developed on the basis of the bachelor's qualification and competence level requirements of all specialties, Standard Training Program of the discipline and educational plans.[1, p. 2–3] Standard Training Program of the ICT was created by scientists of Al–Farabi Kazakh National University.

One of the themes is Database Systems. As a result of study of this discipline students are supposed to be capable to work with databases. According to the curriculum the topics are:

- Fundamentals of database management systems: concept, characteristic, architecture;
- Data models;
- Normalization;
- Data integrity constraint;
- Basics of SQL;
- Database design;
- Distributed, parallel and heterogeneous databases;
- Technologies of work with a database;
- Directions of development of the DBMS.

Number of hours: 1h for Lecture Classes, 2h for Student's Self–Work with a Teacher; 2h for Practice Classes; 3h for Student's Self–Work. [1, p. 5]

So the curriculum sets strict time limits. Firstly, our students were supposed to have experience on working with databases at schools. Secondly, the course is delivered in English. Students' approximate English level should be B1. But our reality is different. The most of them never studied Databases before. Their English level is far from B1. And one more thing: they have never passed their English or ICT exams at schools.

Therefore we concentrate on technologies of work with a database and database design during our labs. Main concepts of such lessons are presented further.

Students have three kinds of assignments:

- Using a pre–built relational database for search and retrieval and database modification queries;
- Creating a relational database structure with using a pre–built flat–file database;
- Designing, populating, and running queries, forms, and reports against their own personal database.

Types of database project are individual for the first assignment and group for the second and third respectively.

Students are supplied with appropriate resources like laboratory manuals with step–by–step procedures during their first two assignments and education video. In the end of their work they have to defend it in accordance with the task and questionnaires.

Besides, we apply some of the techniques used in the CLIL and link the classroom activities with Bloom's Taxonomy of Thinking Skills (remember, understand, apply, analyze, evaluate, and create). [2, p. 215] For example, students have to make notes with the main collocations, terms, keywords. [3, p. 39] Defending their works they develop oral skills through quizzes, role plays, discussions and problem solving activities. The reading activity includes lectures, video, conversations. The reading texts are mostly authentic or adapted from original sources. Also students have writing tasks on their Student Self Work.

For better understanding the purpose of the database system we suggest our students to start their labs with using a pre–built relational database. They should follow the procedure that describes how to create queries, to use forms and reports. Simple and active queries are created by means of Design view. Thus appears applying.

The next group of tasks includes working out with a pre–built flat–file database. Such databases can be created using a spreadsheet program. The practical task is about creating three tables of relational database using the data from flat–file database, setting up primary keys, and linking the tables. Students apply different data types, explore field properties. Very important tasks in this part are locating, opening and importing data from an existing file. There are more than ten different types of sources of external data that can be linked or imported into a database. Besides 'Design View' students should try to create objects using the 'Form Wizard' or 'Label Wizard'. Reports can take various formats, such as product labels or mailing labels. The last activity in the second assignment is exporting data to a variety of applications.

Conclusion

The most difficult and creative assignment is the third. Students have no procedure for their tasks. They are suggested just approximate examples for databases.

When students have completed three assignments, they should be able to:

- Design, use and create an appropriate database record structure;
- Design, use and create a data entry from considering purpose and audience;
- Sort data appropriately in a database;
- Search a database to select subsets of data;
- Produce reports to display data appropriately.

We are positive it to be the best way out of this situation. Students have the opportunity to improve their linguistic and IT skills.

Literature:

1. http://is.nkzu.edu/e– library/getf.asp?fid=36159.
2. David R. Krathwohl A Revision of Bloom's Taxonomy: an Overview// Theory Into Practice, Volume 41, Number 4, Autumn 2002.– p.211–218.
3. Jeffrey A. Hoffer, Mary B. Prescott and Fred R. McFadden. Modern Database Management (Tenth Edition). Prentice Hall (Pearson Educational): Upper Saddle River, NJ, 2002. ISBN 0–13–061183–2
4. https://sites.google.com/site/clil4umaincourse/module–10.
5. https://www.languages.dk/archive/clil4u/book/CLIL%20Book%20En.pdf.