

VERIFICATION OF PRACTICAL SKILLS IN AN E-COURSE

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ABSTRACT

eLearning has become quite popular among students, educational institutions and official authorities. Many institutions have decided to employ this study tool in their programs. The eLearning environment enables knowledge transfer. The question is if it facilitates the training of practical skills. The paper presents experience from the e-course where both knowledge and practical skills are verified. Experiences from ICT literacy subjects were monitored and results of students' tests are illustrated by the descriptive statistics tools.

KEYWORDS

Information and communication technology (ICT), e-course, eLearning, practical skills, course evaluation, information literacy

INTRODUCTION

It is not possible to cover an increased number of students of both distance (or combined) and full-time study by increasing the number of face-to-face lectures due to staff, time and space capacities. Therefore, implementation of eLearning tools is one of the significant approaches of how to solve the problem.

We focused our interest on eLearning courses or in short e-courses. In the paper, authors share their experience from e-courses where computer skills were trained and evaluated. The courses are determined for students joining university in their first study year.

First we need to specify conceptions of information literacy and computer literacy.

We understand them in a similar way as they are defined by Dombrovská (Dombrovská et al., 2004):

information literacy = functional literacy + ICT literacy

functional literacy = literary literacy + document literacy + numerical literacy + language literacy

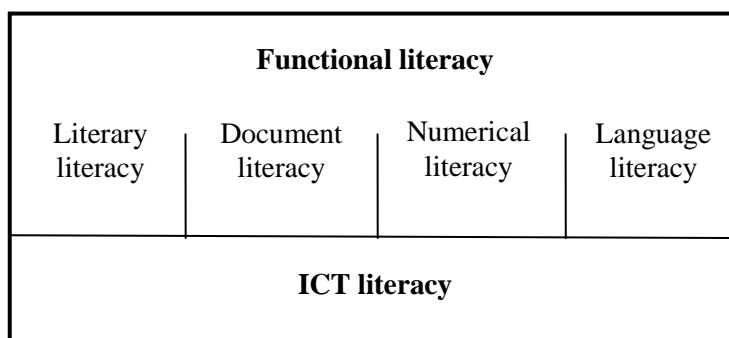


Figure 1. Information literacy

Based on the requirement to obtain information competencies, the following courses were designed, implemented and evaluated:

1. **Information and computer literacy course**

We can find requirements of computer literacy in national curriculum documents for schools of all levels. They are also integrated in standard courses preparing learners of ECDL modules (European Computer Driving License), see <http://www.ecdl.cz>.

The course is determined for all students joining the first year at the Pedagogical Faculty of the University of Ostrava. The aim is to teach knowledge and skills regarding basic operations with ICT, meaning computer literacy. Moreover, students can get familiar with the method of computer registration into databases of subjects and exams, with operation in the university network and browsing in library catalogues and electronic databases, including scientific information.

2. **Basic course of text processing**

Computer processing of the text ranks among basic skills required from graduates at all school levels, in the job market and they can be applied in private life as well. It seems like everything has been written and told about the courses in which people are taught to process the text via computer. Despite that, pedagogues who try to instil basics skills of typography (typography is a discipline dealing with nice composition) sadly state that students are not able to write the text nicely. Adherence to typographic rules should be of the same importance as adherence to the grammar rules. Unfortunately, we cannot expect the support of correct writing even from software developers. New versions of office packages offer new options of basic styles for text editing, which often do not correspond with basic principles of typography.

INFORMATION AND COMPUTER LITERACY COURSE

All students entering in the first year of study attend the course of Information and Computer Literacy (INPOG), which strives to contribute to balancing the level of the basic computer literacy of students. The graduate from the course should be able to:

- operate the MS Windows operation system, i.e. work with files, file retrieval, determination of the type and size of file, opening the file and program initialization;
- work with the internet – searching information on the internet while using it during document development, to write an e-mail, etc.;
- develop a simple document in the text editor MS Word – to set up letter type, check spelling, retrieve parts of the text;
- create a simple table and graph in an MS Excel spreadsheet.

The course is implemented in Learning Management System (LMS) Moodle. Students attend tutorials as well, but mostly they work “at home”. They prepare their tasks and they send them to their tutors via LMS Moodle.

The number of successful graduates from the course is slightly increasing every year. According to assumption, it is higher in full-type students, usually younger people and new graduates from secondary schools.

Students are best in handling work with the operation system (work with folders and files) and the internet. Regarding the text editor, they have problems with the language and spelling. Many students experience work with spreadsheets at the course for the first time. However, they usually master basic work with spreadsheets very quickly.

According to results of questionnaire investigation conducted at the beginning of the school year 2008/09, students themselves evaluated their computer literacy level as being average (55 % full-time and 53 % students of distance form of study). Only 3 % of full-time students and 7 % of those studying the distance program stated that work with a computer is giving them considerable difficulties.

The majority of students (full-time – 78 %, distance – 70 %) use a computer on a daily basis in their work. Only 1 % of students have no computer. The same applies to the level of home connection to the internet – only 4 % of students have no home internet connection. The majority of students (91 %) know their type of connection to the internet.

Data is published in the paper (Nagyová, 2009).

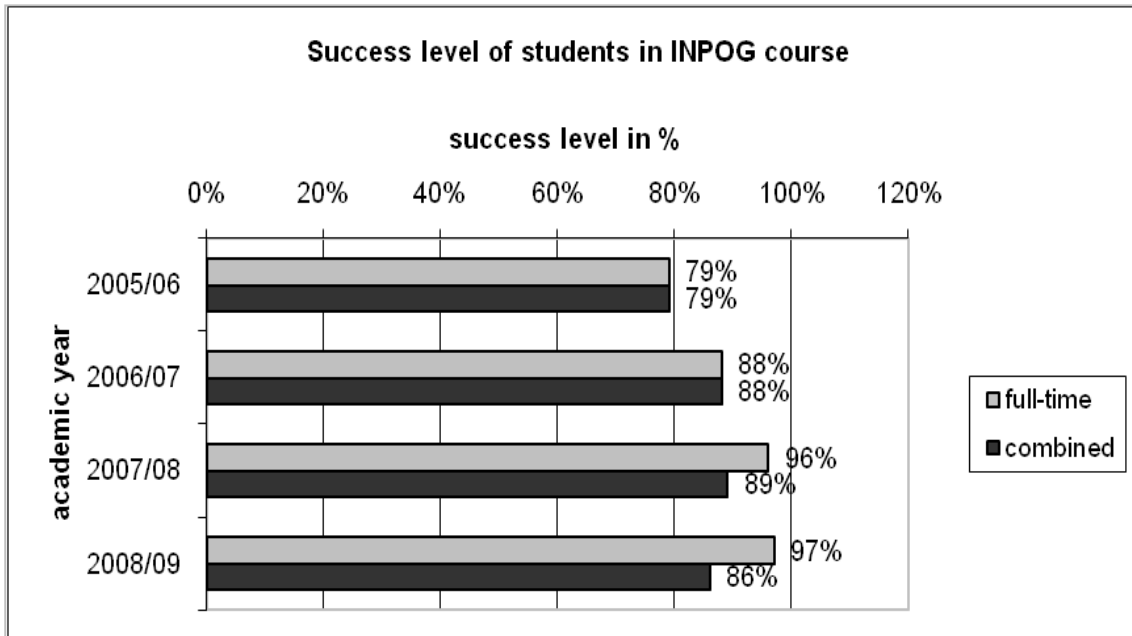


Figure 2. Success level of students in INPOG course

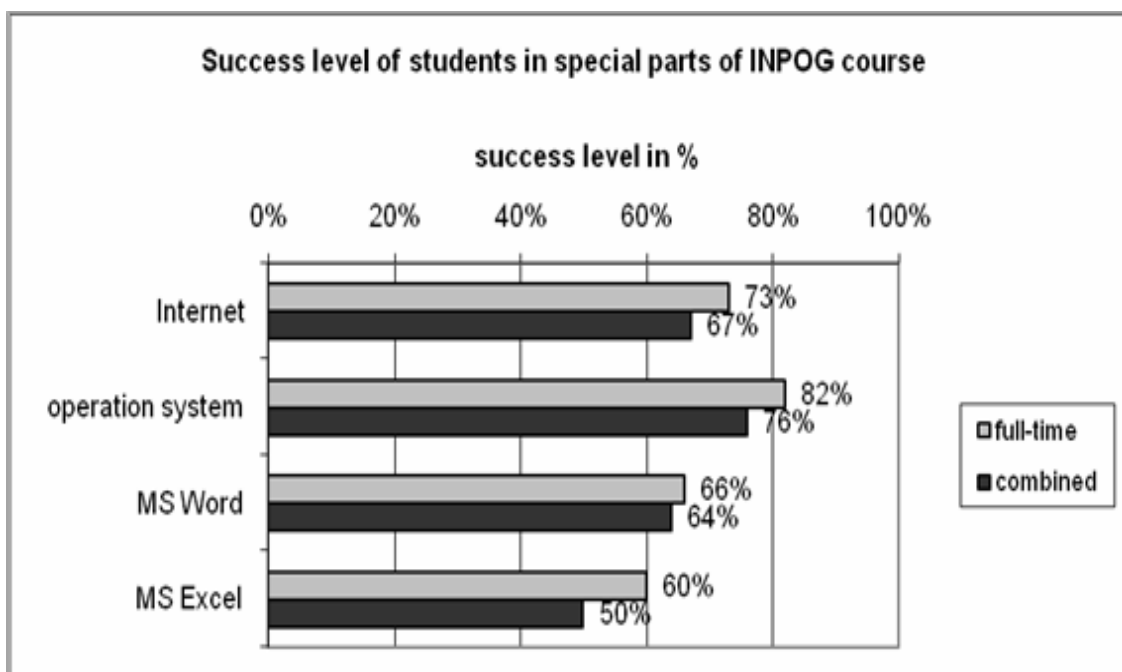


Figure 3. Success level of students in special parts of INPOG course

TEXT PROCESSING COURSE

The main target group involved students, who study the Fundament at the University of West Bohemia in Plzen.

Note: The Fundament is composed of common basic courses for students studying the subject of Science in Education: biology, geography, physics, chemistry, informatics and mathematic studies. Input knowledge of students is of different level. When lecturers started the course, they have no awareness about the computer literacy of enrolled students. The practical concept of the subject has been prioritized so that students could immediately use the acquired skills.

The course runs in the mixed learning form. The distance part of the course offers instructional study materials; students can try their knowledge and communication with tutors and other students. During contact seminars the acquired knowledge is practiced, deepened and tested.

The eLearning part of the course is accessible on the internet and includes texts, animations, exercises and tasks. The course is formally split into study chapters, within which individual study activities are running, involving:

- study text (for comment);
- exercise (for individual student work);
- assignment (possibility of practicing, preparing for tasks, testing, etc.).

The course is split into 3 levels – basic, intermediate, advanced.

The course consists of the following chapters:

- Start-up (26 study articles, 2 exercises, 1 task);
- Principles of work (5 study articles);
- Styles (13 study articles, 1 exercise, 1 task);
- Mass correspondence (4 study articles, 1 exercise, 1 task);
- Document formatting (20 study articles, 1 task);
- Macros (7 study articles, 1 task).

Outputs of the course

Tasks on which students are tested practically:

1. Creation and storage of template with new styles;
2. Completion of the main document of mass correspondence with various types of fields (synthetical, conditional, serial, date and time, etc.);
3. Document formatting (the scope of the text part corresponds with the scope of the bachelor paper);
4. Recording and manual editing of macros.

Each task is required to be error-free and students are entitled to make corrections.

Authoring system for creation and administration

The University of West Bohemia employs the ProAuthor authoring system. The system is aimed at the creation of content sources of on-line courses and of off-line multi-media textbooks. It enables generating data of author sources in the format corresponding to the SCORM standard (Shareable Content Object Reference Model, see <http://www.scorm.com>).

The basic elements of the course which can be created in ProAuthor involve chapters, articles, exercises, tasks, tests, auto-tests, test questions, enquiries and discussions. Formally, study texts are displayed in two vertical frames in the browser window; Microsoft Internet Explorer is recommended. The right frame includes explanatory, well-arranged formatted text. The left frame includes the subject matter explanation which is demonstrated via visualizations created with Macromedia Flash tools. Animations can be stopped and re-started.

Experience from the course

Students leaving secondary school and joining university have their own experience with various types of education. Moreover, eLearning imposes bigger demands on regular self-study. To prevent the

feeling of being lost in these new conditions, the students are regularly checked at seminars. Four creative tasks are given to them, which they can prepare for in advance, but they must develop them at seminars.

In the first year of the research (2007), 70 % of students enrolled of the total number admitted for study attended the course of text processing. The subject was successfully passed by 30 % of students. The distribution of successful and unsuccessful students according to a particular discipline is of interest; e.g. only 7 % of students of geography passed.

The large number of unsuccessful students caused some changes in the course management.

In the following year (2008), the elements of blended learning saw improvement, and possibilities to discuss unclear issues with tutors or school mates expanded both in face-to-face contact and via electronic mail, chat and conferences. The teachers could refer to frequent mistakes which occurred in the previous year. The subject was successfully passed by 68 % of enrolled students. During next year the percentage of unsuccessful students decreased.

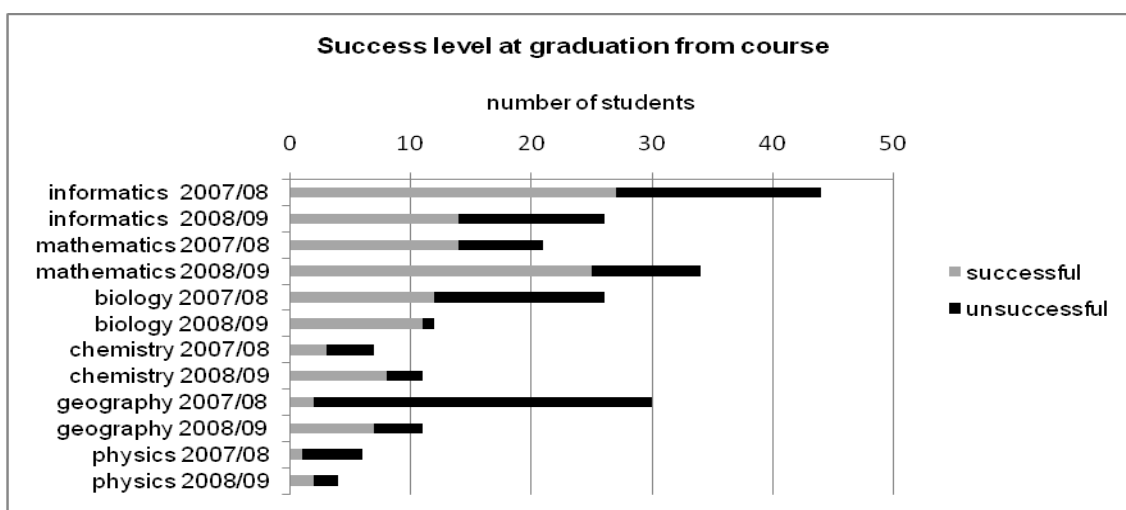


Figure 4. Overall success level at graduation from the course – obtaining credits for the subject

Additionally, we will refer to decreased number of those interested in fulfilling all tasks – the biggest drop occurred between the second and third tasks.

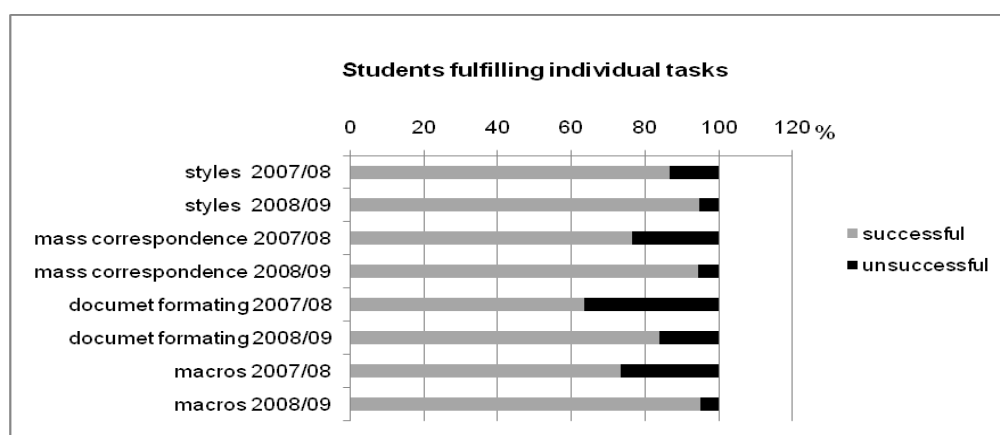


Figure 5. Results in fulfilling of individual tasks

Results in fulfilling of individual tasks show an increase in of number of successful developers following run 2, i.e. after enabling corrections to be made in the primary solution. Students improved best after corrections in the task of document formatting.

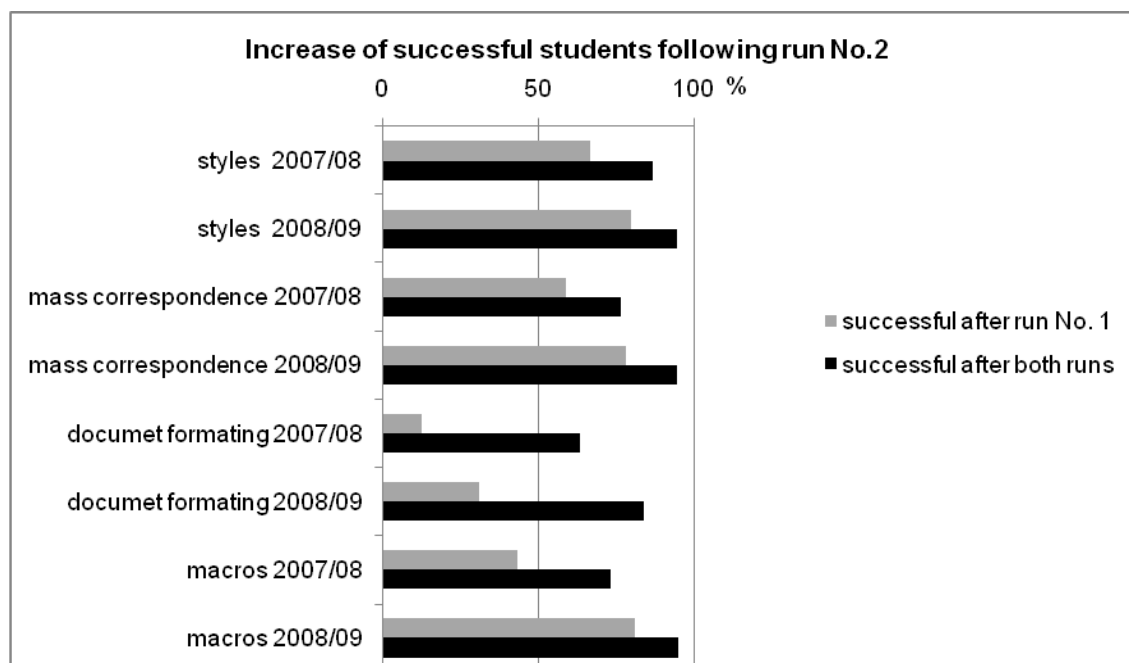


Figure 6. Increase in the number of successful students following run 2 (after making corrections)

Summary of issues of individual tasks:

1. Styles in template – students do not differentiate between the document and template.
 2. Mass correspondence – problems are encountered with the correct choice of fields instead of the main document.
 3. Document formatting – modification of a long document (cca 50 or more pages), the task consists of partial tasks for which very good skills must be acquired.
 4. Macros – problems in understanding the difference between absolute and relative links to files used.
- It has been shown that text editing, one of the basic components of computer literacy, is a problem for students joining university. Coming modifications of the course content will take into consideration their input level of computer skills.

CONCLUSION

The subject Information technology is integrated in curriculum documents for school of all levels in the Czech Republic. It means that all students joining the university should have ICT competencies. Results of entrance tests show that their ICT knowledge and skills are very different. That was the reason why ICT literacy courses were launched. In the paper we described 2 courses:

- information and computer literacy course;
- text processing course.

They are eLearning courses working on LMS Moodle. Students gained both knowledge and the ability to master information technology.

A research question was: is it possible also to train practical skills in e-courses?

The success levels of students in the courses were surveyed: The percentage of unsuccessful students decreased in successive years. Acquired experience brought new elements into course management. Possibilities to discuss unclear issues both in face-to-face contact and via the internet were improved.

Our conclusion: Practical skills can be successfully trained in e-courses enhanced with mixed learning elements. Moreover, students positively appreciate blended learning, mainly at the beginnings of their university studies.

We are preparing another solution in e-courses as well. It is just the eLearning environment which opens possibilities to offer students such study environment options that are most convenient for them. The way through the e-course could be modified for individual students. At the beginning of the course, the study characteristics of each student are verified: including study style, level of his/her entrance knowledge, etc. And a virtual teacher (a proper algorithm) prepares a “tailored” course for each learner. But this is the matter of a follow-up survey (Kostolányová, et. al., 2009).

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