

Are we ready for quality e-learning: The case of the Faculty of Mathematics and Informatics of Sofia University "St. Kliment Ohridski"

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Abstract: *The paper investigates the quality of the Electronic Distance Learning (EDL) courses, developed for five faculty degree programmes prepared for accreditation for EDL mode of delivery by the Faculty of Mathematics and Informatics of Sofia University "St. Kliment Ohridski". It analyses the results of provided consultations to academic staff on design issues of their EDL courses, and analyses quality of a sample of the developed EDL courses. On that base, conclusions for EDL courses' improvement are drawn, which will serve also the further quality development of faculty's EDL courses and programmes.*

Key words: *e-Learning, Distance Learning, e-forms of Distance Learning, Higher Education.*

INTRODUCTION

In the era of intensive Internet and network communications, the e-learning approaches a global acceptance, especially in higher education (HE). For example, the results of the published in 2014 mapping survey "E-learning in European Higher Education Institutions" [3], conducted by the European University Association with 249 HE institutions from 38 European countries, shows that all HE institutions of the sample use e-learning. 91% of them are using blended learning, 82% of institutions offer online learning courses. The deal of the accredited online degree courses and programmes also increases ([3], p. 7), [2].

The Faculty of Mathematics and Informatics of Sofia University (FMI of SU) has long traditions in the use of e-learning as part of its regular learning process, dated back to 1996. And since 2002 the Moodle learning platform is used to serve the online learning courses [7]. Based on its long traditions and accumulated experience and expertise in e-learning, the project "Development of Programmes for Electronic Forms of Distance Learning in Faculty of Mathematics and Informatics at Sofia University "St. Kliment Ohridski" (BG051PO001-4.3.04-0018), conducted for 2 years from 2012 to 2014, gave the beginning of the accredited electronic distance learning in the FMI [7], [10].

The major results of the project were:

- Development of 5 Master of Science programmes for faculty specialities to be delivered in Electronic Distance Learning (EDL) mode;
- More than 90 Electronic Distance Learning (EDL) courses and modules were developed and put in the Moodle platform¹;
- 78 of these courses were delivered to more than 1990 faculty students;
- 100 academic teachers, 15 administrative, and 10 technology staff of FMI were trained through 10 training courses in EDL for academic staff, 2 courses for 15 administrative staff, and 2 courses for 10 technology support staff;
- The project encompassed a wide variety of training, design, EDL curricula, courses, and materials development, infrastructure and support structures development, EDL implementation, and learning delivery activities;

In the frame of the project a Distance Learning Support Centre (DLSC) was created as a main assisting and support structure for the sustainable continuation of the EDL design and development at the faculty ([10], p 31; [7]). The centre both delivers methodological support, and monitors and analyses the quality of the developed e-learning courses

The main research goals of this paper are to analyse the quality of the e-learning

¹ Available at: <http://moodle.openfmi.net/course/index.php?categoryid=151> . Retrieved on 19.07.2015

courses at FMI, developed for five faculty degree programmes prepared for accreditation for EDL mode of delivery, to identify the opportunities for their improvement, and to draw conclusions about further sustainable preparation of EDL quality courses and programmes at FMI. The paper is structured as follows. First a brief outline of the DLSC is presented, and its functions and activities are outlined with respect to the methodological and quality support in the development of EDL courses. In the next section an analysis of the provided consultations to academic staff with respect to design issues about their courses is presented. After that an analysis of the quality of a random sample of 30 out of the 90 developed EDL courses is provided, with respect to their strong, underdeveloped, and least developed sides. On the basis of the results of the two types of analyses, the last section presents conclusions for improvement of the quality of the developed for accreditation EDL courses, and for further quality preparation of EDL courses.

THE DISTANCE LEARNING SUPPORT CENTRE

General structure of the DLSC

The DLSC was established with a decision and ordinance of the FMI council, and an official Statute of the Centre was approved. It regulates the work and activities of the Centre, in full compliance to the Faculty and University regulations, and the National legislation with respect to the Higher Education.

The main goal of the Centre, according to its Statute, is to serve the provision of ongoing education-methodological and technological assistance and support to the academic staff and students of FMI in the process of application of electronic forms of distance education at the faculty.

According to its Statute, the DLSC has a governing body consisting of a Head and Council of the Centre, and includes the following four units, namely, Methodological Assurance unit (MA-EDL), Procedural Assurance unit (PA-EDL), Technology Assurance unit (TA-EDL), and Ongoing Assistance unit (OA-EDL). The Structure diagram of the DLSC is presented on Fig. 1 below.

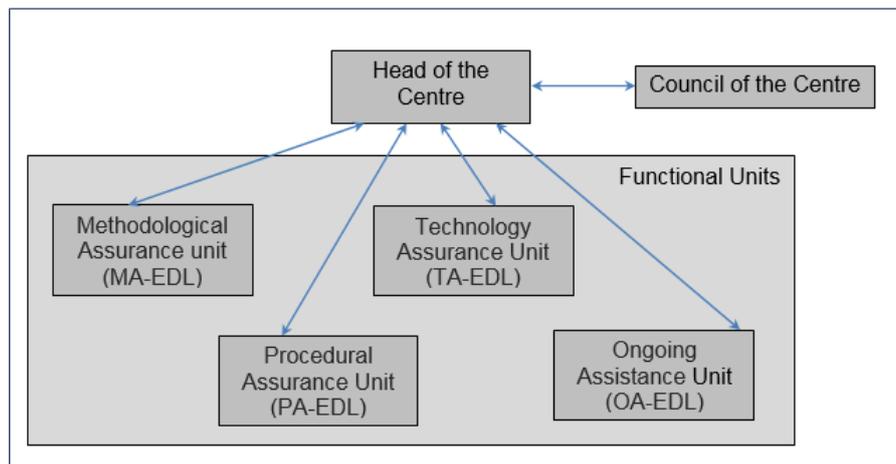


Figure 1. Structure of the Distance Learning Support Centre (DLSC)

Further in our paper we will focus our attention specifically to the structure and work of the Methodological Assurance Unit (MA-EDL), and the results of the first analyses of the unit with respect to the developed courses and modules within the project.

Functions and services of the Methodological Assurance Unit

The Methodological Assurance Unit (MA-EDL) assures assistive and consultative services in the processes of creation of Learning Plans (Curricula) and Study Programmes for specialties and study disciplines delivered in EDL mode (blended and/or distance). It creates methodological guidelines for planning, design, development, and delivery of EDL,

in accordance with the best world practices, the regulatory documents, and the requirements and criteria of the Bulgarian National Evaluation and Accreditation Agency (NEAA) [1]. The MA-EDL unit offers a system and procedures for monitoring and quality assessment of the EDL at the Faculty. It analyses the results of the monitoring, and offers measures for quality improvement.

Main activities of the Methodical Assurance Unit²

In order to assure the quality of EDL, the MA unit created the following materials and organised the listed events below:

- Created “Methodology for development of an EDL course at FMI of SU”. The characteristics of a good methodology for e-learning courses development is discussed in many research books and papers (e.g. [4], [5], [6], [8], [9]), and relevant research publications and FMI experience with e-learning were used;
- Developed Documents package about EDL for FMI, SU, which includes Templates for Learning Plan and for Study, and a Template for review of the main elements of an EDL course according to the NEAA Criteria - for monitoring and self-evaluation purposes;
- Created an Exemplary EDL course, which illustrates the main components and elements that an EDL course should include.

In order to support the quality development of EDL courses the MA unit conducted consultations with academic staff on various issues of learning methodology, technology, and content preparation in the design and development of EDL courses and their curricula.

ANALYSIS OF THE CONSULTATIONS REQUESTS OF THE ACADEMIC STAFF

During consultations conducted by the members of the Methodical Assurance Unit with academic staff and administrative staff on various issues about learning methodology, technology, and support/content some common issues were noted. The main observations about the nature and topics of the consultation requests could be grouped as follows.

Main topics in the consultations with the academic staff concerned mainly technical problems with the e-learning platform (Moodle) – “How to?”-problems, EDL curriculum documents consultations, and pedagogical EDL-consultations (the least asked).

Most of the academic colleagues coming for consultations put accent in the design of their EDL courses upon the following matters (listed by priority):

1. The study content;
2. Assignments and tasks (incl. homework) in their courses;
3. Usability of the course interface (well-arranged and easy to navigate and use);
4. Group activities;
5. Communication with the students (on the last place).

The following analysis of the developed EDL courses showed that the courses' parts that were most asked about in the consultations, were then best developed in the courses, while the courses' parts that attracted least attention were underdeveloped.

ANALYSIS OF A SAMPLE OF 30 OUT OF THE 90 DEVELOPED COURSES

A detail review and analysis of a random sample of 30 out of the 90 developed EDL courses within the project was performed after the completion of the project by the MA unit. The analysis was performed on the base of Faculty of Mathematics and Informatics expert panel reviews, following the template for review of the main elements of an EDL course according to the NEAA Criteria, developed as part of the methodology support work of the unit. The results of the analysis are grouped in the sub-sections below.

The goal of the review was to check the readiness of the developed courses and the

² All listed materials in this sub-section are available at: <http://moodle.openfmi.net/course/index.php?categoryid=175> , Retrieved on 17.07.2015

demonstrated staff understanding for the accreditation and following delivery, as well as to detect strong points of the courses and also these points that call for improvement.

The methodological assistant unit is satisfied that the most well developed parts, elements, and features of the courses are:

- The Study programmes and the schedule of the courses;
- The Learning resources – study materials (basic and additional), including multimedia or video resources – own and external – presented in over 70% of the sampled courses;
- The Evaluation and Assessment criteria and procedures are clearly defined and explained;
- The course assignments and quizzes (mostly individual assignments);
- Certain basic communication features and information: e-mail and Moodle messaging pointed out as a means of communication;
- Easy to use and understandable course interface.

Underdeveloped parts, elements, and features of the courses, which exist but could be improved, are:

- Group work / collaboration activities and assignments – available only in 30% of the sampled courses:
 - all of the e-learning pedagogy and methodology type of courses have it;
 - none of the courses in computer networks, programming, mathematics, and mathematics education have it (might be related to the nature of these courses).
- Short course annotation is available in only 70% of the courses sample:- 37% before entering the course; 20% explicitly at the beginning of the course (on the main course page); 57% in a separate file (there are duplications in the forms of presenting the annotations).
- Tools/forms provided by the course teachers for course evaluation by students at the end of instruction exist in only 33% of the sampled courses (now it is an administrative compulsory part of each e-course, provided centrally by FMI);
- Explicit technology support information for the students (e.g. how to communicate electronically in the course, what technology tools are available in the course and how to use them) – is provided in only 57% of the courses;
- Explicitly formulated course learning goals exist in 70% of the sampled courses, and expected learning outcomes exist in 67% of the courses;
- Tools (e.g. forums) for students' Q&A and comments on the course material are available in 70% of the sampled courses;
- Clear assignment and assessment time schedule exist in 77% of the courses;
- Online class sessions – video and webinars exist in 30% of the sampled courses – in all computer network courses;
- Recorded live class sessions exist in 35% of the sampled courses – in all computer network courses and in three of the sampled programming courses;
 - There is a special YouTube channel where the recorded sessions and other multimedia presentations are published by the project³

Unfortunately, there are some lacking or least developed parts, elements, and features of the courses, namely:

- Functionalities for students with special educational needs (SEN) – totally missing in all of the courses;
- Parts/elements of the courses explicitly dedicated to work with underachieving students – missing;

³ Available at http://www.youtube.com/channel/UC859EwI0h4MKOWJJnO_EKAw, Retrieved on 17.07.2015

- Deficiency of more interactive or collaborative forms of communication:
 - Blogs (missing), social networks (3%), wikis (6%), web conferences (6%); chat (27%) in the sampled courses;
- Purposeful course activities for acquaintance of the students with each other and presenting themselves, as well as tools for informal collaboration between the students are provided in only 20% of the sampled courses;
- Although existing in all cases, the individual consultation time for the students is explicitly shown only in 30% of the courses;
- Certain form of explicit presentation of the teaching team exist in only 43% of the courses (incl. contact details & short personal info); with photo – 37%; with short video – in 23% of the sample (and 11 teachers in all the 90 courses);
- Explicit contact details of the teaching team – in only 43% of the courses;
- Entrance tests – in 13% of the sampled courses, preliminary study of students' needs and preferences – in 20% of the sampled courses;
- Explicit copyright and anti-plagiarism information and tools – in only 20% of the sampled 30 courses.

The above analysis shows that the most important components of a well-developed EDL course, according to the NEAA quality criteria for EDL, exist and are of a good quality in the courses. Most of the underdeveloped courses' parts are easy to be improved. The MA unit will take them as a basis in its plans of forthcoming quality improvement.

CONCLUSIONS AND FUTURE WORK

The conclusions below were made on the basis of performed analysis of conducted methodology consultations with the academic teachers, preparing e-learning courses, and from the analysis of the random sample of 30 out of 90 developed e-learning courses.

Conclusion 1: Still the academic teachers' thinking and actions are shaped by the thus far conducted blended mode of EDL. The specificity of the (almost) complete isolation of the entirely distance learners is not taken into consideration. This can be considered as a more or less "normal" situation at the beginning of this transfer towards complete distance forms of learning. Thus, various forms and methods of communication with the learners are highly needed, aiming at:

- an early detection and diagnosing of "lagers" and possible dropouts;
- stimulation of a regular course participation and learning achievements.

The communication should be sufficiently technology-diverse to meet the availability of quite varied technologies and net connectivity at disposal of the different distance students.

Administrative-organisational information about the course should also be seriously taken into consideration, and specifically the introduction of the teaching team.

Conclusion 2: When an EDL course is designed and developed, quite more study activities are needed in the course, not only resources and study materials for passive learning and watching/listening. The activities should be aimed at:

- activation of learning ("active learning");
- the assimilation and mastery of the learning material;
- group assignments, with the purpose of activation of the (formal and informal) communication between the learners;
- increased interactivity of the learning process.

All these activities should aim to overcome the isolation and to draw benefits from the induced cooperative learning processes.

Conclusion 3: The availability of feedback to the students is very important. It should be regular and timely with respect to activities, and delivered assignments, in order to orient the learners about their accomplishments, eventual mistakes, and pace of learning.

Conclusion 4: Special attention should be paid wherever possible and applicable to the opportunities for group work throughout the EDL courses (e.g. in course activities and assignments), as a means of better learning (social learning theories), and as a vehicle of teamwork training, highly demanded by the business, contemporary economy and society.

Conclusion 5: Specially dedicated policy and coordinated efforts at faculty level are necessary to address the needs of the SEN learners in the EDL courses. A purposeful policy and measures at FMI level will greatly help the individual EDL designers and teachers to cope with this problematic, which requires adequate expertise and support.

The conducted research shows that in most of the identified “deficiency” situations, mainly minimal, and ease to apply improvements are needed to the developed e-learning courses at FMI (except for the issues related to SEN learners), in order to comply successfully with accreditation criteria of the NEAA for delivery of electronic forms of distance learning, and with the leading world practices in e-learning.

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The paper has been reviewed.