INTEGRATION CHALLENGES OF UNIVERSITY AND INFORMATION MANAGEMENT SYSTEM (UIMS) TO MOODLE

J. J. Jakshylykov*, N. A. Nurmatov
International Ataturk Ala-Too University, Bishkek, Kyrgyzstan,
*jyldyzbek.jakshylykov@iaau.edu.kg

Introduction: in 2006 an International Ataturk Ala-Too University (IAAU) began to adopt internationally recognised Bologna system, which was initiated by the Ministry of Science and Education of Kyrgyz Republic because of problems of managerial and educational problems at universities in Kyrgyzstan. Consequently, IAAU had to improve its information and grading system and created University Information and Management System (UIMS), which was developed by the university professional team including the author. At the same time, the university began to apply a Moodle software, which delivers open source management system programs, in order to appropriately manage teaching processes and manage courses online.
Materials and Methods: the methodological basis of the research are descriptive method, analysis, and comparison.
Results: however, the IAAU faced some challenged issues in the application of the two innovation, which was the integration challenges of those Moodle and UIMS. Hence, the main purpose of this study is to demonstrate benefits of Moodle and UIMS linking challenges.
at first, this paper informs Moodle functions, features, advantages and disadvantages in a shortly manner and UIMS management features and primary functions, which included six fundamentally crucial processes with some graphical representations. In addition, the analysis and methodologies of two systems through identifying advantages and disadvantages for the possible integration.
Discussion and Conclusions: at the end, some challenged issues were identified from analysis results, also Moodle and UIMS benefits were demonstrated in the International Ataturk Ala-Too University.

Keywords: education management; university information and management system; Moodle; Bologna system; virtual learning environment; online management systems

ПРОБЛЕМЫ ИНТЕГРАЦИИ СИСТЕМЫ УПРАВЛЕНИЯ ИНФОРМАЦИЕЙ УНИВЕРСИТЕТА (UIMS) И MOODLE

Ж. Ж. Жакшылыков*, Н. А. Нурматов
Международный университет «Ататюрк Ала-Тоо»,
г. Бишкек, Кыргызстан,
*jyldyzbek.jakshylykov@iaau.edu.kg

Введение: в связи с возникновением управленческих и образовательных проблем в университетах страны в 2006 г. Международный университет Ататюрк Ала-Тоо (МУАА) начал работу по переходу на Болонскую систему. Для этого университету необходимо было улучшить свою информационную и оценочную системы. Решением стало создание единой системы управления информацией университета (UIMS), разработанной университетской профессиональной командой совместно с авторами статьи. В то же время для своевременного управления процессами обучения и онлайн курсами возникла необходимость в применении программного обеспечения Moodle. МУАА столкнулся с некоторыми вопросами в применении двух инноваций: проблемы интеграции систем Moodle и Uims. Таким образом, основной целью данного исследования является демонстрация преимущества соединения Moodle и Uims.
Материалы и методы: методологическую основу исследования сотавили такие методы, как описательный, анализ, сравнение.
Результаты исследования: рассмотрены функции, особенности, преимущества и недостатки системы Moodle, а также основные функции Uims, содержащие шесть принципиально важных процессов с некоторыми графическими представлениями. Кроме того, проанализирована методология двух систем путем выявления преимуществ и недостатков для возможной интеграции.
Обсуждение и заключения: продемонстрированы выгоды и преимущества Moodle и Uims в Международном университете Ататюрк Ала-Тоо.

Introduction

Moodle is well-known course management system, also called as a virtual learning environment (VLE). It has become very popular among educators around the world as a tool for creating online learning dynamic web sites as online course or online course database [1]. In this communication time, education can't be placed in a single format any more. The increasing use of computers, mobile phones, and hand-held devices, which are connected to internet, makes education to be available everywhere by making governance and management of this educational process more complicated and difficult. VLE programs such as LAMS and Moodle include main acceptance of the e-learning treatment, through good integration with administrative systems, staff development, recruitment of new staff, changes in assessment practice, and acknowledgement of tools already used by students, and so on [1]. Before automating any kind of a system, it is very important to identify and describe all related business processes. It is also essential to identify all related roles and specify the privileges of these roles bounded to specific business processes. As processes are live and mobile, it is important to manage them efficiently. Because life cycle of particular process will effect life cycle of overall process of education management. So, IAAU installed Moodle and successfully implemented the UIMS project on behalf of this goal. The UIMS contained the combination of some crucial and main processes such as examination for entrants, contract subscriptions, group arrangements [2] submission processes, examination processes and automated timetable scheduling (according to the given inputs) [3].

Moodle

Moodle provides course management for with all features online learning and the acronym stands for Modular Object-Oriented Dynamic Learning Environment [4]. Moreover, it has expanded sphere of acceptance, because it delivers easy use platform and open source program. It has flexible functional perspective and easily configurable characteristics that allow of creation of student assessment approaches such as quizzes, online tests and surveys, as well as managing through timetables, besides offering feedback assessments from students to subject supervisors. Hence, this is free software program and you can share and/or develop it within the terms of the GNU General Public License, which takes account as published by the Free Software Foundation [5]. Moodle is easy to install on any server, which supported by PHP and MySQL [6]. In addition, it is also available in several different languages; some of them are English, Spanish, German, Japanese, Russian, Thai, Turkish, and many more.

Additionally, Moodle has wide usage in many institutions and currently adopted by many universities, colleges, schools, business-enterprises and even individual instructors. Some of the higher education institutions that adopted the Moodle are:

1. The University of Oviedo has been developed a program based on Moodle format as a VLE, which allows students to manage their learning processes in a proficient and autonomous way [7].

2. University of Aveiro (UA) in Portugal analyzed the functionality features and tools of the Moodle platform and the usage by the students. In the analyzing process, 278 students surveyed. The results showed that Moodle mainly used as a repository of materials, nonetheless, students recognize the usage significance of other functionalities of this platform to provide the successful teaching/learning process [8].

3. Also, in 2013 Psycharis et al investigated empirical research of the pedagogical use of Moodle Learning Management System (LMS) to secondary school students to analyze students' attitudes towards LMS by providing conceptual understanding of the Moodle [9].

University Information and Management System (UIMS)

In September 2006, IAAU initiated a project to improve the quality and availability of university information and management system to support the continual improvement of overall processes. The required modules of the project are:

– education planning and control;
– teaching assessment and control;
– registration and entrance;
– examination;
– report analysis;
– accounting.

A business process is an activity or set of activities that will accomplish a specific organizational goal. Automation of business processes means identifying them according to the operations and roles involved in these processes. Workflow Management is supporting and controlling the workflow and it deals with supporting business processes in institutions, moreover, it involves controlling the flows of work through an organization [10]. An important objective in Work flow Management is to automatically route artifacts (documents, messages, e-mails) through a network to actors having predefined roles [11].

To evaluate the knowledge of students in each subject the exams must be held. System is configured for three main exams: midterm, final and make up. In the middle of semester, the students have the midterm examination in each subject they are registered to [12]. Teachers prepare examination questions and measure the results to 100 (one hundred) mark system. The overall education planning and control processes precisely were demonstrated in Figure 1, through adopted university information management systems (UIMS). Hence in this figure, there are 5 essential consecutive processes such as formulation of Academic plans, formulation of work plans, course schedule preparation, instructor course load preparation and control of course schedule. Subsequently, in the Figure 2 general scheme of the examination process can be seen.
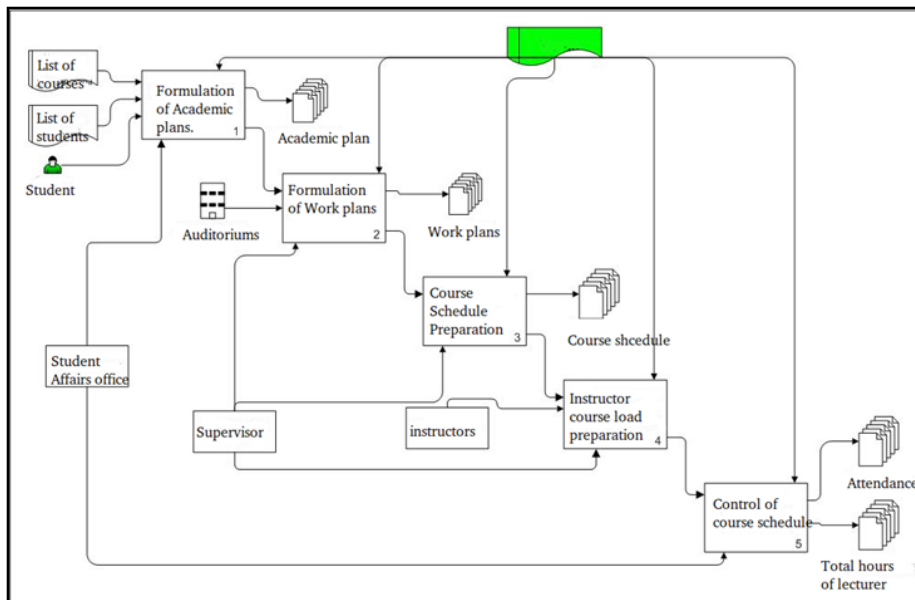

F i g. 1. Education planning and control process
Р и с. 1. Процесс планирования образования и управления

Before each exam secretaries or teachers by themselves print out the signature lists of students formed by the system for each group, subject and teacher separately. This procedure is formed with in-coordination of accounting department. Students who has not paid the same amount of contract fee until midterm exams, results will be marked as

WBI (Will Be Ignored) status. This means that if this student will not pay the money until deadline specified by accounting administration, his results of all subjects, which he has gained during current midterm will be ignored and saved in database as 0 (zero) mark.
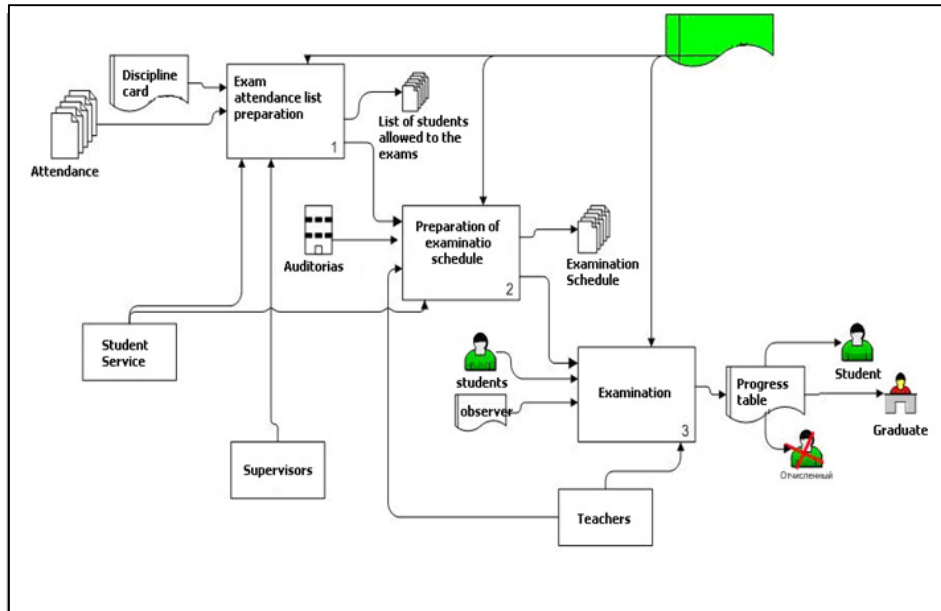

F i g. 2. Examination process
Р и с. 2. Экзаменационный процесс

INTERNATIONAL ATATURK ALATOO UNIVERSITY
EXAMINATION AVERAGE LIST

Department:	Computer Engineering			Subject:	Probability and Statistics II		
Academic Year:	2012-2013			Semester:	spring		

#	Roll Number	Group	Midterm	Final	Make Up	Average	Status
1	11010103223	COM-11	10.0	25.0		4.0	Failed
2	11010103351	RE 100	5.0	15.0		2.0	Failed
3	09010100044	COM-09	2.0	10.0		0.8	Failed
4	11010102901	COM-11	10.0	10.0		4.0	Failed
5	09010101218	COM-09	1.0	1.0		0.4	Failed
6	11020403086	COM-11	10.0	10.0		4.0	Failed
7	11010103360	COM-11	10.0	5.0		4.0	Failed
8	09010102241	COM-09	2.0	WBI		WBI	Failed
9	10010102636	COM-11	22.0	20.0		8.8	Failed

Fig. 3. Examination results report
Рис. 3. Сводный экзаменационный лист

In some amount of days (can be configured on system) after examination the lecturer must enter the results of students to the system, they have easy interface for this procedure. All they have to is just enter the marks, if by human factor, lecturer makes the mistake and writes the result incorrectly, for example negative number or string value, the system checks it automatically and informs the users immediately, because this marks are later used in evaluating process, and if they stored in database wrongly all process would come wrong. We must decrease such kind of risks. In the end the user just saves all entered marks in one click, and they will be saved directly in database.

Students examination average of each subject are evaluated by formula (40 % of

Midterm and 60 % of Final), result gained by 100-mark system. After all, if the student's average point in every end of semester is greater than 49,5; student passes the examination of the subject, otherwise student fails the subject [13], which the failed subject automatically will be added to the same semester of next academic year.

In Figure 3, there were demonstrated examination results report, as an example. Besides, it shows the academic year, semester, department and the subject information, also, the students' ID card numbers, group numbers and estimated points from examination. Moreover, in the last column, Status column, the Failed of Passed statuses appears automatically according to the students' average point from midterm and final examination scores.

Moodle and main problems in IAAU

Moodle is provided freely as an online learning management system that lets you share course documents, publish, grade assignments, organize quizzes, provide online discussion and forums, prepare online lesson with an easy to learn and use interface and get detailed statistics. Moodle is completely free to use.

Starting from 2010, IAAU has started using Moodle as its online version of the courses on New Technologies faculty. Nowadays, there about 150 courses that already available through the system. The system (ocs.iaau.edu.kg) is developed by Computer Science department's staff regularly.

Here is list of some functions and features that IAAU really benefits: Integration with student; ability to create branded installations; convert current LMS courses; fully maintain installation; load-balanced infrastructure; fail-safe data backup; Moodle expertise to resolve issues; permanent record of interactions; give structure and system to any course; initialize the storage of course data; provides 100 % free online access to course materials; provides assignment, project submission at any time until deadline or later; allows instructors to create a complete annual plan; easy and com-fortable file exchange with students; get course or student detailed statistics; easy tracking of discussions; e-mail updates for discussions; increases performance of any subject; distance mode; providing constant access to course materials; making students more informative; making grades and exams transparent; taking exams, quizzes, lessons repeatedly.

• Lack of computer resources and infrastructures.
• Lack of experts in an integration area.
• No proper training on Moodle.
• Low awareness level of e-learning.

All above listed challenges are can be considered as main problems. Some students still prefer traditional learning method in teaching process.

Discussion and Conclusions

Students of IAAU meet their lecturer at any time at any place. Particularly some prefer this to contact their lecturer even for counselling. Lack of computer resources as well as experts in the field, infrastructure, no proper training on Moodle, and low awareness level of e-learning can be considered as main problems. Hence e-learning with traditional face to face method or known as blended method can be used to access the larger number of students in distance mode.

Why use and harmonize UIMS with Moodle? Because they match each other in some essential cases like registration process, attendance process, and examination process. UIMS has been designed to minimize the clicks to go from one point of the interface to another. The sidebar helps as a central navigation or search point throughout the system. The use of Vaadin technology minimizes the need to transfer data between the server and the client improving the system response time and the users' experience. UIMS has been built from scratch to attract and retain the users. Its interface is well structured, with vivid icons and colours and with a minimum amount of popups. It just needs integration of these two platforms.

REFERENCES

1. Weller M. VLE 2.0 and future directions in learning environments. In: Proceedings of the first LAMS Conference. Sydney; 2006. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.495.5004&rep=rep1&type=pdf.

2. Mirlan I, Yuliya M. Automation and management system to control the education system of university. IKECCO. 2008; 5(5):146-155.

3. Bondarev A, Boukar MM. Timetable organizer for university in formation and management system. IKECCO. 2011; 8(1):146-155.

4. Brandl K. Are you ready to "Moodle". Language Learning & Technology. 2005; 9(2):16-23. Available from: http://llt.msu.edu/vol9num2/review1/default.html.

5. Moodle License. Available from: http://docs.moodle.org/en/License.

6. Kaminski J. Moodle – a User-Friendly. Open Source Course Management System. Online Journal of Nursing Informatics. 2005; 9(1). Available from: (http://www.nursing-informatics.com/moodle_article.pdf)

7. Núñez JC, Cerezo R, Bernardo A, Rosário P, Valle A, Fernández E, Suárez N. Implementation of training programs in self-regulated learning strategies in Moodle format: Results of a experience in higher education. Psicothema. 2011; 23(2):274-281. Available from: http://www.unioviedo.net/reunido/index.php/PST/article/view/9034.

8. Costa C, Alvelos H, Teixeira L. The use of Moodle e-learning platform: a study in a Portuguese University. Procedia Technology. 2012; 5:334-343. Available from: http://www.sciencedirect.com/science/article/pii/S2212017312004689.

9. Psycharis S, Chalatzoglidis G, Kalogiannakis M. Moodle as a learning environment in promoting conceptual understanding for secondary school students. Eurasia Journal of Mathematics, Science & Technology Education. 2013; 9(1):11-21. Available from: http://www.ejmste.com/Makale.aspx?kimlik=2116.

10. Aalst van der WMP. The application of petri nets to workflow management. The Journal of Circuits, Systems and Computers. 1998; 8(1):21-66. Available from: http://www.worldscientific.com/doi/abs/10.1142/S0218126698000043.

11. Stoilov T, Stoilova K. Automation in business processes. 2006. Available from: http://hsi.iccs.bas.bg/Staff/T.Stoilov/papers/Stoilov_SAER.pdf.

12. Ipasov M. Report engine for information and management system. IKECCO. 2010; 7(1):74-77.

13. Ipasov M. Education Management and Business Process Automation. Journal of Technical Science and Technologies. 2012; 1(2):47-52.

About the authors:

Jyldyzbek J. Jakshylykov, head of Quality Management Chair, International Ataturk Ala-Too University (1/8, Ankara St., Bishkek, Kyrgyzstan), **ORCID: http://orcid.org/0000-0001-5925-3588**, jyldyzbek.jakshylykov@iaau.edu.kg

Nursultan A. Nurmatov, assistant at Industrial Engineering Department International Ataturk Ala-Too University (1/8, Ankara St., Bishkek, Kyrgyzstan), **ORCID: http://orcid.org/0000-0003-3795-0985**, nursultan.nurmatov@iaau.edu.kg

Об авторах:

Жакшылыков Жылдызбек Жакшылыкович, заведующий кафедрой управления качеством Международного университета «Ататюрк Ала-Тоо» (Кыргызстан, г. Бишкек, ул. Анкара, д. 1/8), **ORCID: http://orcid.org/0000-0001-5925-3588**, jyldyzbek.jakshylykov@iaau.edu.kg

Нурматов Нурсултан Алишерович, ассистент кафедры промышленного инжиниринга Международного университета «Ататюрк Ала-Тоо» (Кыргызстан, г. Бишкек, ул. Анкара, д. 1/8), **ORCID: http://orcid.org/0000-0003-3795-0985**, nursultan.nurmatov@iaau.edu.kg