First Achievements of the Adaptation of the ILIAS Learning Management System at the University of Debrecen, Faculty of Health

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Abstract

One of the most exciting issue in our higher education is the student-teacher relationship. Nowadays the students' demands are quite changeable so we always have to alter our approaches and educational methods to be suited for those demands. Ambition and innovation play an important role in the educational world. A good example is the initiation of e-learning solutions in certain schools. Usually these solutions are integrated in a so called Learning Management System (LMS). A few years ago we initiated the ILIAS LMS in our department at the University of Debrecen, Faculty of Health, Health Care Management BSc. In this article we tried to find the answers for the following questions:

– Has the implementation of the ILIAS LMS enhanced the quality of our education?

If the answer is yes, the next question is:

– How significant was it?

During our examination we monitored only those grades of our students which are connected to the determinative courses of our department.

1. Introduction

It has become quite obvious in every field of education that students' demands concern the content of the subject as well as the way of acquiring the knowledge. Taken all these into consideration we have tried to find solutions to enhance the efficiency of education. In 2008, the University of Debrecen Faculty of Health, Health Care Management BSc. implemented ILIAS Learning Management System, therefore our research aimed to study its impact on the students' school achievement.

Before implementing ILIAS we considered it important to carry out a needs' analysis in order to adjust the learning management system to the needs of students learning full-time or part-time, in their first or last year.

Concerning all these we articulated the following expectations towards our lecturers. (1) The subject description and syllabus shall be unambiguous and contain all the requirements. (2) The sketch belonging to the lecture or seminar shall be electronically accessible. (3) There shall be supplementary materials, sample examples or a collection of exercises provided for the students to help them in preparation. (4) An opportunity for students to get information about the results of written tests shall be also given.

We paid special attention to ensure standard conditions when these conditions were not given or changed, subjects were excluded from the study. We have analysed all our core subjects except for one.

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2. Summary of the institute and our education

The University of Debrecen is one of the most famous and well-known higher education institutions with a great historic past. With its 15 faculties and 21 doctoral schools it offers the widest choice of research and educational training for its students.

The 15 faculties of the University of Debrecen form 3 centres – those of medical sciences, agricultural sciences, and arts and natural sciences. The centres also comprise research institutes, research groups and other auxiliary units aiding education.

The Medical and Health Science centre consist of five faculties. These faculties are the following ones: Faculty of Medicine, Faculty of Dentistry, Faculty of Health, Faculty of Public Health, Faculty of Pharmacy.

The training at the Faculty of Health started in 1990 with its centre functioning at Nyíregyháza. There were 2 faculties and 60 students. At present there are 4 Basic faculties (BSc) with 7 specializations and 1 Bachelor's training (BA) with more than 2200 students altogether.

The institution became Health College Faculty in 1996 and since 2000 it has been a faculty of the integrated University of Debrecen.

Our faculty has been training professionals with academic qulifications for health and social spheres. These professionals are very much needed in the labour market.

The Credit based training and Neptun Registering System were introduced in 2002. In 2007 we changed to the application of Integrated Educational System. Since the summer of 2008 we have been using a new Neptun Registering System.

The aim of the Health Care Management is that those experts was finish college would be an equal partner for doctors or other health workers in health systems in connection with solving problems. Our students' wide qualification is shown by that the graduated ones hold their qwn well at other workplaces outside the health system. Some examples: pharmaceutical, informatics companies, insurance companies, banks, public administration and civil service. There is a wide range of fields of jobs they fill in: informatics expert, management organizer, office manager, system administrator, manager, controller, marketing manager, quality assurance and economic fields of work.

The Health Care Management as a basic faculty carries out the educational duties of 3 specializations. The students study together in the first 3 semesters, where they study mainly some basic knowledge and also the professional corpus of the course. In the fourth semester the training (education) divides into parts, the curriculum of specializations contain mainly profession-specific subject-matter. The training is practice-oriented. The seventh semester is a so called "on the job training" which helps finishing the job training parts of education.

3. The ILIAS Learning Management System and its features

The ILIAS Learning Management System is an open source software which is flexible and multifunctional. It integrates tools for learning, teaching, collaboration, communication, assessment and evaluation in one environment. The software was developed to reduce the costs of using new media in education and further training and to ensure the maximum level of customer influence in the implementation of the software. ILIAS offers a lot of features and services that can be used to support learning, teaching and content creation scenarios. We present the most important features in alphabetical order. [1][2]

Course Management: ILIAS allows efficient creation of courses and course materials. It offers standardized tools and templates for the learning and working process including integrated navigation and administration.

Groups and Collaboration: Groups in ILIAS allow cooperative learning and working on the platform without additional tools. Learning groups, working groups or groups for certain fields of interest could be created.

Learning Content: ILIAS offers multiple ways to deliver learning content. All types of document files can be uploaded, SCORM 2004, SCORM 1.2 and AICC are supported.

Online Surveys: In ILIAS you can use surveys to easily collect information from a large number of users, for example to evaluate courses or other events. ILIAS surveys are easy to create and administer, even for non-experienced users.

Personal Desktop: Every user in ILIAS has his or her own Personal Desktop. It collects all resources, that are needed by the learning to fulfill the daily learning tasks.

4. Statistical analysis

The examined population in the statistical analysis was formed by health care management students of the University of Debrecen Faculty of Health. The aim of the research was to examine whether the implementation of the ILIAS Learning Management System had influence on school achievements. That is why the examined data were taken from Neptun Comprehensive Registry System from the pre-implementation year 2007 as well as from the real implementation years 2008 and 2009. The data of 40 students, on average, from each year and subject were involved. We analysed the subjects belonging to the professional core material in details. [3]

We put an emphasis on non-variable requirements such as the lecturers, number of lessons, study requirements, content of subjects in the examined terms. However, one subject was excluded due to the change of the person of the lecturer.

The analysis was started with calculating descriptive statistical index (mean and variance). During the analysing statistics we applied normality examination (Kolmogorov-Smirnov (KS), Shapiro-Wilk (SW) Test, variation analysis (Anova, Post-Hoc tests: Tamhane Test, Scheffe Test, non-parametric examination (equality of mean values: Kruskal-Wallis (KW) Probe, Median Test (MT) and Mann-Whitney (MW) Probe). [4][5]

The analysis placed a massive emphasis on the examination of the inner structure besides of the statistical inspections above. We categorized the 10 examined subjects into 3 large groups. Our detailed results are the following ones.

4.1. Subjects showing upswing

The first group involves subjects showing upswing. (Anova, KW <0.05: Post hoc test, MW). This group involves Mathematics 1 and Biometrics 1.

	Normality		N	Mean	Variance
	KS	SW			
E	0,000	0,000	48	2,188	0,836
U1	0,000	0,000	40	2,250	0,244
U2	0,000	0,000	39	2,615	0,453

* The mean difference is significant at the 0,05 level

KW	Anova	
0,023	0,018	
MT	Post Hoc	MW
0,093	EU1	0,631
	EU2 *	0,019
	U1E	-
	U1U2 *	0,014
	U2E *	-
	U2U1 *	-

Table 1: The results of statistics analysis of the subject Mathematics 1

	Normality		N	Mean	Variance
	KS	SW			
E	0,001	0,001	41	2,683	1,522
U1	0,000	0,000	46	2,891	0,810
U2	0,000	0,000	41	3,439	0,902

KW	Anova	
0,008	0,004	
MT	**Post Hoc**	**MW**
0,134	EU1		0,525
	EU2	*	0,008
	U1E		-
	U1U2	*	0,007
	U2E	*	-
	U2U1	*	-

* The mean difference is significant at the 0,05 level

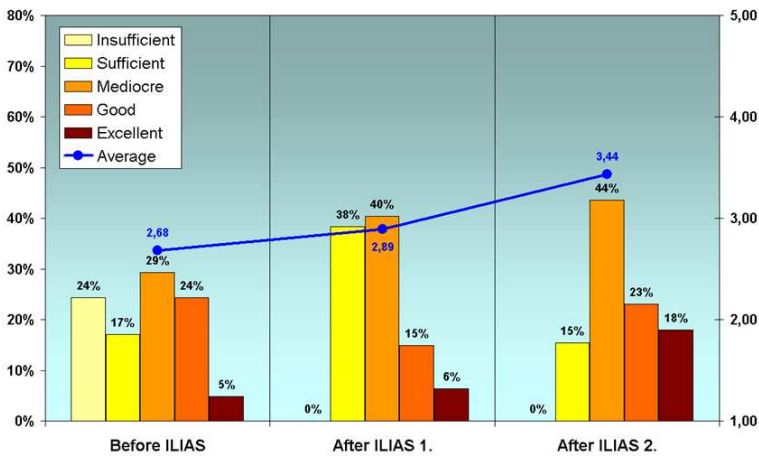Table 2: The results of statistics analysis of the subject Biometrics 1

Figure 1: Biometrics 1

4.2. Non-variable subjects

The second main group involves subjects showing no significant statistical changes (Anova KW, MT >0.05). The detailed results are the following.

	Normality		N	Mean	Variance
	KS	SW			
E	0,004	0,002	18	2,889	1,046
U1	0,000	0,000	49	2,857	0,750
U2	0,000	0,007	31	2,839	0,940

KW	Anova	
0,944	0,984	
MT	**Post Hoc**	**MW**
0,561	EU1	0,857
	EU2	0,782
	U1E	-
	U1U2	0,792
	U2E	-
	U2U1	-

* The mean difference is significant at the 0,05 level

Table 3: The results of statistics analysis of the subject Economics 2

	Normality		N	Mean	Variance
	KS	SW			
E	0,000	0,003	20	3,400	0,779
U1	0,000	0,000	46	3,587	0,826
U2	0,014	0,007	16	3,875	1,050

KW	Anova	
0,315	0,314	
MT	Post Hoc	MW
0,129	EU1	0,335
	EU2	0,189
	U1E	-
	U1U2	0,341
	U2E	-
	U2U1	-

* The mean difference is significant at the 0,05 level

Table 4: The results of statistics analysis of the subject Economics 3
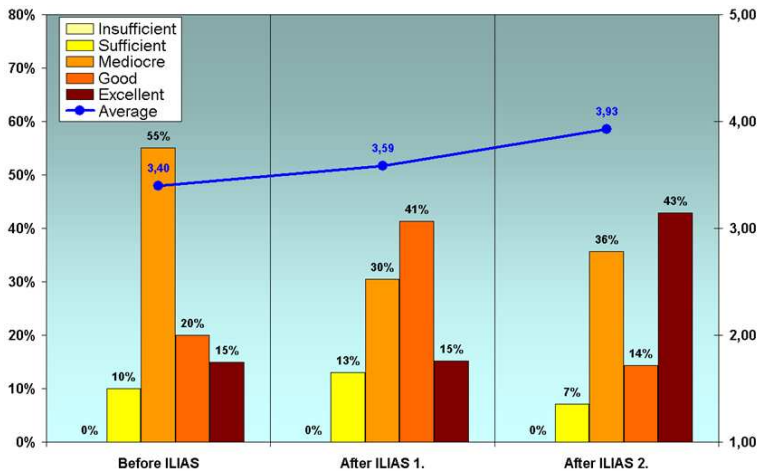

Figure 2: Economics 3

In this group the mean of marks has shown a rising tendency in the examined period, although the improvement cannot be shown statistically. At the same time in the first cycle the value of the mean has risen continuously due to the upswing of the 'good' marks and then the upswing of the 'excellent' marks.

	Normality		N	Mean	Variance
	KS	SW			
E	0,000	0,003	35	2,629	0,887
U1	0,000	0,000	45	2,889	0,828
U2	0,014	0,007	39	2,897	0,568

KW	Anova	
0,237	0,325	
MT	Post Hoc	MW
0,616	EU1	0,194
	EU2	0,108
	U1E	-
	U1U2	0,678
	U2E	-
	U2U1	-

* The mean difference is significant at the 0,05 level

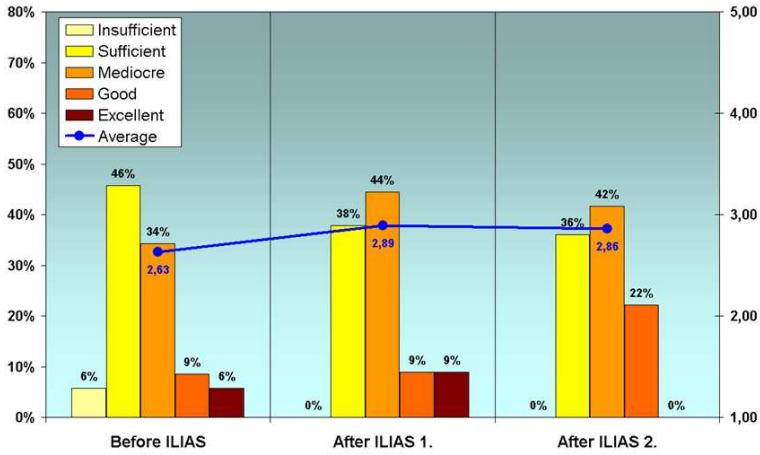Table 5: The results of statistics analysis of the subject Mathematics 2

Figure 3: Mathematics 2

The table shows that at first the 'insufficients' disappeared then the 'excellents', too. The students' school achievement concentrated around the 'satisfactory'.

4.3. Subjects first showing upswing then downswing

The third group involves subjects which first showed upswing then downswing. (Anova, KW, MT<0.05) The results are the following.

	Normality		N	Mean	Variance
	KS	SW			
E	0,000	0,000	42	3,310	0,756
U1	0,000	0,000	43	4,047	0,617
U2	0,000	0,000	41	3,390	0,644

KW	Anova	
0,000	0,000	
MT	Post Hoc	MW
0,001	EU1 *	0,194
	EU2	0,857
	U1E *	-
	U1U2 *	0,001
	U2E	-
	U2U1 *	-

* The mean difference is significant at the 0,05 level

Table 6: The results of statistics analysis of the subject Health science studies 2

Right after the implementation of ILIAS the increasing number of 'excellents' and the disappearance of 'insufficients' resulted in a significant improvement, while later due to the restoration of the same merit it resulted in decrease. Similar changes were observed in the case of the following subjects.
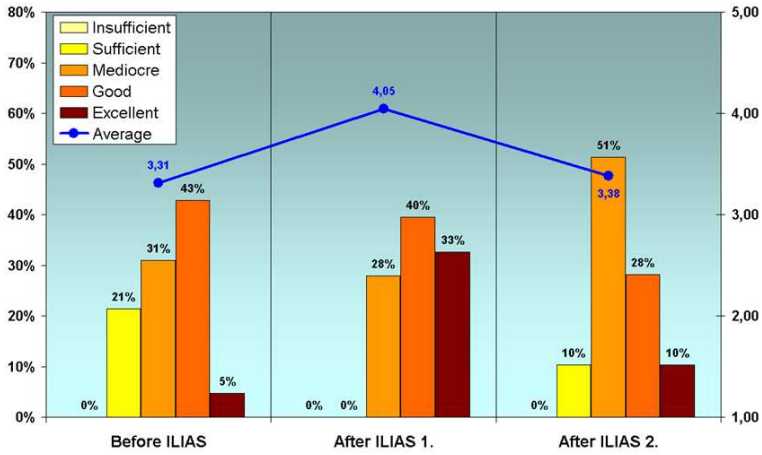
Figure 4: Health science studies 2

	Normality		N	Mean	Variance
	KS	SW			
E	0,000	0,002	40	3,000	1,128
U1	0,000	0,000	41	3,561	0,602
U2	0,000	0,000	40	2,850	0,695

KW	Anova	
0,002	0,001	
MT	Post Hoc	MW
0,030	EU1 *	0,017
	EU2	0,468
	U1E *	-
	U1U2 *	0,000
	U2E	-
	U2U1 *	-

* The mean difference is significant at the 0,05 level

Table 7: The results of statistics analysis of the subject Data services and documentation in health care

	Normality		N	Mean	Variance
	KS	SW			
E	0,000	0,000	41	4,342	0,639
U1	0,000	0,000	44	4,523	0,441
U2	0,000	0,000	41	4,000	0,350

KW	Anova	
0,000	0,003	
MT	Post Hoc	MW
0,000	EU1	0,283
	EU2	0,006
	U1E	-
	U1U2 *	0,000
	U2E	-
	U2U1 *	-

* The mean difference is significant at the 0,05 level

Table 8: The results of statistics analysis of the subject Informatics networks

	Normality		N	Mean	Variance
	KS	SW			
E	0,002	0,001	50	3,200	1,592
U1	0,000	0,001	47	3,085	1,210
U2	0,000	0,000	43	2,512	0,827

KW	Anova	
0,006	0,008	
MT	**Post Hoc**	**MW**
0,012	EU1	0,603
	EU2 *	0,003
	U1E	-
	U1U2	0,008
	U2E *	-
	U2U1	-

* The mean difference is significant at the 0,05 level

Table 9: The results of statistics analysis of the subject Data structures and algorithms
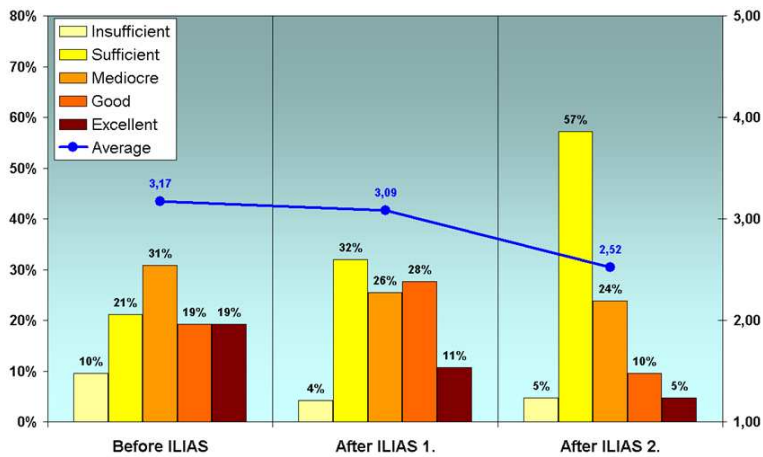

Figure 5: Data structures and algorithms

In the case of this subject a specific rearrangement lies behind the decrease of the mean value. The number of 'insufficients' at first has increased by one and a half, later it has doubled. In line with it the number of 'excellents' has halved twice in a row. Therefore the aim of the students might be to improve their school achievement as well as to fulfill the requirements of a subject with the least necessary effort invested. The least necessary effort can be accurately planned if both the study requirements and the evaluation criteria are well articulated in advance, let alone the access to the facilities needed for the preparation. However, as figures of this subject show it does not necessarily involve improvement it rather involves rationalising both the learning activity and energy spent on preparation.

5. Summary

On the ground of these results further researches are needed to carry out in order to verify the merit of impact of ILIAS on the whole process.

Finally, we can say that after implementing the ILIAS learning management system the statistical analysis of the examined subjects has produced the expected results. A group of subjects has shown upswing tendency, while another group has shown a slight fall-back in the second period after the implementation. In order to create a more reliable model it is necessary to carry out further researches and thoroughly examine the pre-implementation period, which has already started. On the other hand it is interesting that the inner structure of certain subjects implicates that students have other aims besides improving their school achievement. To examine these aims is also part of our future plans. Moreover, the improvement of students' satisfaction is really important. According to our lecturers, the more transparent study background provided by ILIAS might have led to this improvement enhancing the students' motivation at the same time.

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