

EXPERIENCE OF INTEGRATING WEB 2.0 TECHNOLOGIES INTO COMPUTER ETHICS COURSES

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ABSTRACT

This paper presents the experience of integrating Web 2.0 technologies for the delivery, learning as well as assessment of several computer ethics courses at undergraduate and graduate level at two universities, in Skopje and in Novi Sad. It explains the genesis of the courses and the evolution of traditional e-learning towards collaborative e-learning and social networking. Activity reports of students and teacher are presented together with student impressions. Benefits and problems of e-learning 2.0 into these courses are introduced, together with the intentions of further extension of the approach.

I. INTRODUCTION

Two decades ago, Internet was revolutionised and transformed into World Wide Web, or simply, the Web. It soon became evident that “If it (N.B. someone or something) doesn't exist on the internet, it doesn't exist.” [1]. Nowadays, the motto is slightly different, saying that “If you're not online, you don't exist” [2].

What was the reason to change the slogan? The most obvious answer is that humans are social beings, so they need to be allied. How have these facts affected WWW? This is rather simple. Traditional WWW was steadily renamed into Web 1.0, giving an opportunity to highly dynamic and interactive application called Web 2.0.

Using new trend nowadays ordinary people constantly participate, mutually communicate and collaborate [3]. Web 2.0 is no longer a privilege of those who have an access to their own host. Blogging, tagging, and self-broadcasting together with search engine optimisation, and syndication, all associated through so called “social media” [4] became standard activities of all Web enthusiasts, and they are nowadays a daily routine of hundreds of millions [5]. It is very probable that forthcoming Web 3.0, which includes semantic Web and tagging [6], will soon become equally popular, particularly for those who use the Web for more serious purposes.

In parallel with the 1.0 to 3.0 transformation of the Web, e-learning has been strongly affected by “new ways of thinking about e-learning inspired by the emergence of Web 2.0” [7]. As a consequence, many universities nowadays deploy educational social software. It soon became obvious that social software, on one hand enhances particular aspects of teaching and learning, while on the other it significantly contributes to the creation of new forms of these activities.

It is no longer important to give students an access to their study packs, assignments and assessment, but also to allow them actively collaborate on a social networking basis [8, 9]. On one hand, this is a natural evolution of learning, but also, it is a shift from one traditional way of living to another.

This paper presents the experience of integrating contemporary Web 2.0 technologies into several computer ethics courses. Introductory part addresses the courses, the activities, and their settings in the e-learning environment. In the following part, mutual interaction, collaboration and social networking are presented and thoroughly illustrated. New approach needs an extraordinary effort of both, the students and the teachers. Therefore, particular attention is paid to the quantity of activities and estimated time spent to complete them. Although very demanding, student results, together with their encouraging feedback show that students learn more and more, and at the same time, complain less and less. Concluding part presents the advantages and disadvantages of integrating new technologies in all the courses, together with the intentions of further implementation of additional Web 2.0 components.

II. GENESIS OF COMPUTER ETHICS COURSES

Since 2002, several computer ethics courses have been delivered to undergraduate and postgraduate students in Skopje and Novi Sad. They have shared similar syllabi, related teaching materials, and the same teacher.

First delivery of the course started in October 2002 in Skopje. It had a generic name Philosophy of informatics (PoI), and a very ambiguous syllabus. At the same time, CC2001 suggested syllabi of Social and professional issues courses, and newly appointed teacher decided to adopt them for the new PoI course. Teacher's lack of professional experience in the area, together with critical time to prepare the course was the main reason to distribute part of the topics to students. Number of students attending the course was rather small, and therefore, student projects could be individual. During a fortnight they prepared one subtopic, together with a small presentation. Presentations were oral, and they were followed by small discussion. At the end of the course, first pool of lecture materials was prepared and published on-line on the course site (Fig. 1.). Formal oral examination was public, and it lasted four hours. Second generation was larger, so student essays were either individual, or prepared by two students. They covered all the topics first generation could not execute, and upgraded already covered topics. Public oral examination was a half-day workshop.

Following two generations were even larger, so students were supposed to prepare group projects which addressed case studies concerning the course. Each group had one hour for the presentation. Prior to each student presentation, discussions about the presentation from previous week were held. Therefore, the final grade consisted of student activities during the discussions, student contribution for the preparation of the essays, and finally, the oral examination.



Figure 1: Philosophy of informatics (PoI) course site

The beginning of the course for first postgraduates in Novi Sad corresponded with the beginning of the last generation of undergraduates in Skopje who study according to old curricula. Meanwhile, study pack, consisting of more than 600 slides with detailed explanation of their contents was prepared. Thus, same study pack was used for formal lectures with Skopje undergraduates. Instead of a broad assignment, students were supposed to prepare several smaller essays. Collaborative preparation of joint essays was enforced.

In order to avoid too long oral examinations, teacher prepared an e-test consisting of 200 questions. First group of students, including the best students in the whole generation had moderate results (Fig. 2 left), second was better, while the last group, including students who have already failed the same e-test demonstrated exceptional skills (Fig. 2 right). The reason was clear. Students who had already completed e-test made a collection of all the questions and correct answers. This student fake proved that it was high time to change everything: the delivery of the course, the methods and means of student participation, and thus the grading scheme.

Катерина Здравкова. Одјавете се овде.					Катерина Здравкова. Одјавете се овде.				
Институција на предмети - Филозофија на информатика					Институција на предмети - Филозофија на информатика				
Резултати од тестирање одржано на 8 Март 2007					Резултати од тестирање одржано на 4 Мај 2007				
#	Име и Презиме	Индекс	Поени	Оце	#	Име и Презиме	Индекс	Поени	Оце
1.			73,00	7	1.			100,00	10
2.			72,00	7	2.			100,00	10
3.			71,00	7	3.			100,00	10
4.			67,00	7	4.			100,00	10
5.			63,00	6	5.			98,00	10
6.			60,00	6	6.			97,00	10
7.			58,00	6	7.			96,00	10
8.			54,00	5	8.			95,00	10
9.			53,00	5	9.			94,00	9
10.			52,00	5	10.			91,00	9
11.			52,00	5	11.			90,00	9
12.			51,00	5	12.			90,00	9
13.			51,00	5	13.			87,00	9

Figure 2: Results of two e-tests in Philosophy of informatics

III. COLLABORATIVE E-LEARNING AND SOCIAL NETWORKING

Crucial impact to the evolution of e-learning methodology had upgraded features of Moodle [10]. By academic 06/07 when we started using some of Moodle’s social networking features, the Institute of Informatics in Skopje had approximately 500 users of this LMS, while the number of active Moodle users at the Department of Mathematics and Informatics in Novi Sad was around 150 students.

Moodle was initially used for static presentation of teaching material, aiming to augment face-to-face lectures. It was mostly used as a repository of teaching materials, either as a fixed collection of files, or as an active set of animated e-lessons. Still, the repository was in its essence static. Forums were the only elements of social networks used for publication of announcements of important events, and e-mail correspondence of students with lecturers.

Classical face-to-face discussions, as a valuable social element of learning were intensively used in PoI course. But although they had been announced in advance, student feedback was rather poor. Many students were too shy to participate, while many others were not really prepared for the topic. Discussions were directed by the teacher, usually involving very few participants.

Teacher’s experience in computer supported learning and e-learning was perceptive to the fact that new educational trends were predominantly directed towards cooperative and collaborative learning promoting the usage of social tools to involve all e-learners in building a common knowledge [11]. Iadecola and Piave concluded that different forms of social software were useful for personal and collective knowledge creation, sharing and updating not only as a simple repository, but also as a complete educational platform.

Bearing all above in mind, it was a perfect moment to start researching the implementation of on-line discussion forums. They were first moderately introduced to students in Novi Sad, and students accepted them with pleasure. The most encouraging argument towards more frequent implementation of discussion forums was the fact that students who had been recognized as shy and silent persons during lectures, found themselves very involved in discussions, arguments, and even quarrels with other colleagues. As expected, they were “loud” only whenever topics or questions were important to them. This was expected, since the tendency of introvert students is to reveal their opinion within electronic communication, when they are not literally faced with the rest of colleagues.

New undergraduate course in Professional ethics in Skopje was mounted on newly installed Moodle platform offering enhanced stability, higher scalability, better response time, with two words, superior performance. Student activities leading towards direct passing of the exam were divided into three equally weighted types of activities:

a) Individual research project in a form of very short essays and based on few sources submitted as assignments with fixed deadline

b) Discussion forums aimed to cover a particular case study connected with one topic from different aspects, or as a tool for preparing group projects.

c) Individual news logs in which students individually kept records of all the crucial and emergent news connected with the topics from course syllabus.

The last 10% of total points for full-time students were obtained as a percentage of attendance at all lectures.

Postgraduates got less than a half of all the points from news logs (25%) and individual essays (20%). Discussion forums were supplemented by moderator reports. Particular attention was paid to broad case studies realised as group projects, and supported by discussion forums.



Figure 4: Restricted number of topics leads to lots of posts

As a natural improvement, in later discussions all the topics were defined by the teacher in advance (Fig. 4). Although topics remained distinctive, due to enormous amount of posts many students were repeating the same discussion, whilst some were explaining the same information without taking into account that it had already been covered.

It took some time for students to start communicating and sharing opinions, but each year, it eventually came to this point. Probably because of gained experience with previous generations, discussions are smoother every semester.

Postgraduates used forums to apply well-known technique of role-playing games. They were given certain roles and were invited to participate in a scenario connected with some ethical and moral issues, discussing and defending opinions represented by their roles. Roles reflected different viewpoints of the same ethical problem.

Postgraduates are in general employed, and they have less time to access Moodle. Therefore they discussed less, but their discussions were based on serious research, and they were well documented, or they were expressing personal experience or attitude. In any case, teacher was always pleased to follow their discussions, and to sometimes participate as an equal contributor.

C. News logs

In order to be in line with the hottest news connected with the course, teacher started preparing own news log. Fresh and state-of-the-art information attracted student attention and increased their interest for the course. In an informal conversation with students, they expressed their willingness to keep their own logs as well. First news logs were introduced in the autumn of 2006 in Skopje, and soon after in Novi Sad.

The logs are in fact collections of the most important news related to course topics. News summary consisting of one phrase only, sufficient to evoke it is presented together with the source where the news appears, and its date of publication. Number of news should be at least 15. The most important five according to student’s impression are further explained more thoroughly with in average 50 words, and supported with several sources.

News logs are becoming better and better every year. Surprisingly, expected plagiarism (from previous generations, other colleagues, discussion forums, specialised ICT sites) is rather low.

A small survey of student individual impression from where they gained the most knowledge during the course showed that news log was on the top, together with face-to-face lectures.

IV. ACTIVITY REPORTS

Table 1 presents all the activities in academic 2008/09 at both courses, the undergraduate PE in Skopje, attended by 158 students, and the postgraduate course PESR in Novi Sad, attended by 15 students. According to student workload, 4 ECTS credits are allocated for PE, and 7.5 ECTS credits for PESR. Teacher activities are also listed in the table, to show how much effort had to be done to maintain an ambitious social network intended for educational purposes.

Undergraduate students, who were supposed to attend the lectures, paid attention only to those resources that accompany the lectures. However, they were very much concerned with the assignments, the standard methodology to assess their knowledge and skills. Rather low interest in the forums was partly due to optional status of the forums, meaning that students could choose between two or three discussion topics. Another important element was quite low attendance to discussions at the beginning of the course, when students still had not been accustomed to this new form of assessment. With the time, they became more active, and more willing to debate.

Table 1: Activity report in 08/09

PE Skopje	Resources	Assignments	Forums
Total views	3604	10592	10910
Student views	3532	9105	10576
Views per activity	82.14	1821.00	961.45
Views per student	22.35	57.63	66.94
Views per activity and per student	0.52	11.53	6.09
Teacher views	72	1487	334
PESR Novi Sad	Resources	Assignments	Forums
Total views	1082	2260	14510
Student views	994	1924	13826
Views per activity	124.25	384.8	1728.25
Views per student	66.27	128.27	921.73
Views per activity and per student	8.28	9.87	70.90
Teacher views	88	336	684

Postgraduates were much more concerned with the contents of all the resources, and they accessed to them several times. Very high active involvement in the discussion forums was obvious from the very beginning. Subjective reason was their maturity, meaning that they had already learned how to debate, when and how to make a judgment, how to defend and how to provide evidences for their opinion. Furthermore, professional experience enabled them to easily find arguments in support of and against the arguments of the others. The objective reason for the intensive contribution into forums was the preparation of group projects. They turned out to be a convenient assistive tool for exchange of results between participants at distance.

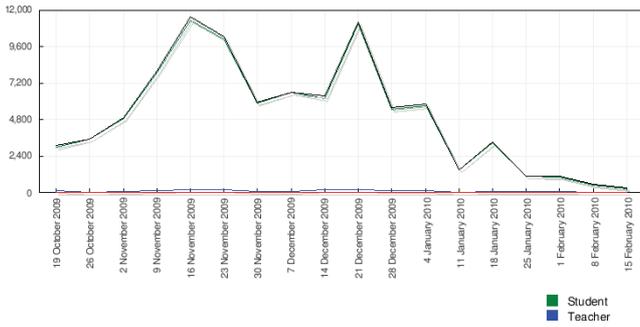


Figure 5: Log statistics for students and teachers this year

General student impressions at both universities were very favourable, independently on their age and status [9]. Their impression was the course was highly necessary (75 in Skopje and 88% in Novi Sad), and that it influenced their ethical and professional norms (69% in Skopje and 100% in Novi Sad). Although topics are familiar, their personal feeling was that they have learned many new things in an “extraordinary way”

This year number of students attending the course exceeded 200. During active period (from mid October until the end of December), number of logs per weeks was never below 2500, i.e. more than 10 per student (Fig. 5). In peak periods, near deadlines, it approached 12000, i.e. more than 50 times per student weekly.

It was impossible to get precise activity report this year broken up to resources, assignments and forums. Therefore, the analysis is made on global basis comparing total views only (Table 2.).

It turned out that students increased total views almost three times (2,898), and at the same they almost equally decreased views per individual activity (3,054). The reason is simple, their activities were more concentrated to those activities they selected, and didn’t pay attention to others.

Teacher total views increased (1,124) less than number of students (1,424). View to resources increased from 72 to 608, to assignments decreased from 1487 to only 853, while forum view increased exactly twice, from 334 to 667. Grading of assignments and log news was probably as time consuming as previously, while grading of the forums was much easier due to new Moodle grading facilities. In total, effort was higher, but less than the enlargement of students.

Table 2: Comparative analysis of two generations

PE Skopje 08/09	Total	Per credit
Total views	25106	6276,50
Student views	23213	5803,25
Views per activity	2864,59	716,15
Views per student	146,92	36,73
Views per activity per student	18,14	4,54
Teacher views	1893	
PE Skopje 09/10	Total	Per credit
Total views	97930	24482,50
Student views	95802	23950,50
Views per activity	1330,58	332,65
Views per student	425,79	106,45
Views per activity per student	5,94	1,49
Teacher views	2128	

V. CONCLUSION AND FURTHER WORK

Although restricted to blogging and collaborative creation of corporate assignments both supported by discussion forums, integration of e-learning 2.0 in computer ethics courses proved to be very effective and very successful.

Obvious benefits to classical e-learning 1.0 were: socialisation, where students were motivated, stimulated and sometimes provoked to reveal their own ideas; impossibility to cheat and to fake personal outcomes; relaxed and efficient group collaboration; student and teacher awareness of all the newest events related to the course; student satisfaction with new learning methodology which is similar to with their ordinary activities; grading facilities enabling immediate overview of student current grade.

However, new approach needed constant availability of the server, impeccable Internet connection, and a permanently high scalability. It was exhausting both for the students and for the teacher, who had to daily check all the activities, and to permanently actively contribute in the course evolution. Another serious problem was that social software in education is a treat to student privacy, particularly when they can’t withdraw their posts.

To conclude, e-learning 2.0 was very exhaustive for every one and sometimes too transparent, but at the same time contemporary, and appreciated by students. New Moodle 2.0 is “ante portas” [10]. It will probably enable blogging inside a course, and collaborative creation of contents using slightly better wikis than current. Time will show whether exhaustive usage of social components in education is useful or not.

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