The paper focuses on the evolution of students’ learning in a basic IT course, taught in the first year of the BA level, and the impact of the educational ‘bonuses’ we have introduced. The course covers basic IT and Internet services characteristics and principles, as well as the most important moments in IT evolution. The course combines classical teaching methods with interactive methods and e-learning tools. The educational bonuses were introduced in the academic year 2018-2019 and involved supplemental requests within one of the practical assignments. The evaluation is performed along the academic years 2016-2017, 2017-2018 and 2018-2019. We study the involvement of the students in solving the supplemental requests and the impact on their grades within the academic year 2018-2019 compared to previous ones, as well as feed-back issues.

We briefly overview the course characteristics, which have been described in a previous paper. For the student feedback analysis, we used the data provided by the official UBB teacher evaluation tool, which is included in our university’s academic information system AcademicInfo. The results obtained in the academic year 2018-2019 are compared with the ones obtained in the previous two academic years (which have been analyzed within a previous paper), both for the course and the seminar (the practical activity).

Within the academic year 2018-2019, the educational material that had been previously available on UBBonline e-learning platform was copied on the faculty’s moodle system because the integrated platform is no longer provided with maintenance support. We emphasize, in this respect, the utility of developing learning components interchange tools, which is one of our research areas. We briefly present the e-learning tools that we have used and added on the faculty’s moodle e-learning system and the exam requirements.

During the academic year 2018-2019, around half of the enrolled students involved themselves in solving a supplemental practical requirement (for the blog assignment), which was graded as a bonus (1 supplemental point to the corresponding grade) for one of the practical assignments. We noticed a genuine emulation among the students involved in solving the supplemental requirement and an increased interest towards completing it. Based in the results we have obtained, we consider that the supplemental task may be taken into account as a potential solution to an increased student involvement in the educational process, since it proved to have a good educational and psychological impact.

We analyze the results obtained by the students in the academic year 2018-2019 and we compare them with the ones obtained along the previous 2 academic years, discussing the impact of the supplemental task. Solving the supplemental requirement had a beneficial impact on the students’ grades. The course feedback results were similar to the ones obtained in the previous academic year, slightly higher.

Using UBB’s teacher evaluation tool, students have graded the course with an average around 4-4.1, on a scale 1-5, where 1 is very poor and 5 is very good. The results obtained in the academic year 2018-2019 are comparable with the ones obtained in the previous years, yet slightly higher. Students express a general positive feedback towards the course content, the acquired knowledge and blended learning teaching methods, leading to an overall good to very good rating of the course.

Keywords: basic IT course, student feedback, teaching IT concepts, blended learning, interactive educational resources, educational bonuses, educational impact.

1 INTRODUCTION

E-learning systems ensure proficient means for “distance” education [13] by providing, for the learning partners, teachers or trainers and students, means of creating and sharing an interactive and explorative learning environment, using multiple learning and communication resources. Students who use e-learning systems [11] become more responsible of their learning path, results and schedule, therefore
we can state that e-learning systems support the evolution and development of the student centered learning model [1].

E-learning systems may provide more flexible facilities [16], [18] or fairly standardized ones [17], [19].

During 2012-2018, our university adopted an integrated e-learning solution based on SharePoint technology [16], the e-learning portal being integrated with the academic, research and management information systems. Since 2018, the portal has no longer been supported for production purposes, the faculties and departments installing their own e-learning systems based on moodle technology [18]. These systems use their own databases, with no automatic providing of student, teachers and curricula information from the global academic information systems, therefore system engineers apply individual solutions of partially importing and entering this information.

The former e-learning architecture was an integrated one, using UBBonline portal [2], [3], [4]. In [5] we discuss the e-learning facilities that were provided [5] within this global architecture. In [6], we address strategies for teaching IT management, using interactive methods and e-learning tools. In [7] we compare BA and MA student feedback on the e-Learning facilities that were provided on the same infrastructure, while in [8] we present the e-learning tools that we have developed for teaching database concepts. In [9] we compare the results obtained in the official student evaluation survey of the IT Basics course and the results obtained by the students in the same academic years.

The present paper compares the feedback results we obtained from students for our IT basics course, using the official course evaluation survey of our university, in the academic year 2018-2019 with the ones obtained during the academic years 2016-2017 and 2017-2018 [9]. Along these academic years we have used similar e-learning resources and blended-learning tools, including interactive methods; along the academic year 2018-2019 they were developed on the faculty’s moodle system and previously – on UBBonline portal. Section 2 describes the e-learning tools that were developed. In section 3 we address student feedback on the IT basics course content and facilities that we have provided, comparing the results obtained in the academic year 2018-2019 with the two previous one; in this respect, we used the data provided by the official university course evaluation survey [9]. Section 4 is dedicated to comparing and analyzing students' results that were obtained in the academic year 2018-2019 with the two previous ones; we analyze the overall student grades and the grades obtained in the theoretical evaluation test. We discuss the impact of providing a supplemental bonus point for one of the practical assignments and the involvement of the students in this optional task. We conclude that students had a positive feedback towards the course content and facilities, including the e-learning tools that we have provided, the overall course evaluation grade for the academic year 2018-2019 being 4.18, similar to the previous ones 4.1 and 4.11 (for academic years 2016-2017 and 2017-2018), on a scale 1-5.

2 E-LEARNING RESOURCES AND FACILITIES OF THE COURSE

The main course topics are: IT basic concepts, computer types, computer architecture, operating systems, computer networks, Internet evolution and addressing principles, Internet security, Internet services: e-mail, World Wide Web, Web 2.0, audio and video-communication, Internet social impact and e-activities.

During the academic year 2018-2019, the educational content has been transferred from UBBonline portal [5], based on a SharePoint technology [16] which is no longer maintained for production purposes, to the faculty’s moodle system, using a similar structure for the modular e-learning resources, containing educational goals, topic description, resources for the course, seminar and practical tasks for each topic – fig. 1. In developing the educational resources, we used the moodle tools [14] which are available; students also have access to the moodle online communication facilities [14]: forums, discussion lists, chat, etc. Practical assignments included a site and a blog, which were graded during the semester and their grades were included, together with the grade for the theoretical quiz, with equal weights, in the final exam grade.

During the academic year 2018-2019, we added a supplemental requirement graded as a 1 point bonus to the blog grade, for adding certain submenus created as subpages and subcategories.
3 STUDENT FEED-BACK

Regarding the students' feed-back on our IT basics course, we used the results of the official university course evaluation survey, included in AcademicInfo information system, comparing the results obtained in the academic year 2018-2019 with the previous academic years 2016-2017 and 2017-2018 (results given in [9]). In the academic year 2018-2019 there were 24 filled-in surveys, from which 19 were valid, in 2017-2018 there were 30 filled in surveys, from which 27 were valid, while in the academic year 2016-2017 there were 38 filled in surveys, from which 33 were valid. Students were required to grade different aspects of the course on a scale 1-5, where 1 was very poor and 5 very good.

To the question if the teacher clearly formulates student responsibilities, in the academic year 2018-2019, 47.27% graded the item with 5, 31.58% graded the item with 4, 15.79% with 3 and 5.26% graded the item with 2 – fig. 2. Comparatively, in 2017-2018, 48.15% graded the same item with 5, 33.33% graded the item with 4, 11.11% with 3 and 7.41% graded the item with 2. In the academic year 2016-2017, 45.45% graded the item with 5, 27.27% graded the item with 4, 24.24% with 3 and 3.03% graded the item with 2 – see fig 2. We can notice a slight improvement from the previous academic year. The mean of the responses was 4.21 in the academic year 2018-2019, very similar to the previously obtained results: 4.22 in the academic year 2017-2018 and 4.15 in the academic year 2016-2017, very good values on a scale 1-5.

![Fig. 2: Responses to the item 'clearly formulates student responsibilities']
To the question if the teacher clearly explains the course content to the students, in the academic year 2018-2019, 36.84% graded the item with 5, respectively with 4, and 26.32 % with 3 – fig.3. Comparatively, in 2017-2018, 40.74% graded the same item with 5, 37.04% graded the item with 4, 11.11% with 3 and respectively 2. In the academic year 2016-2017, 42.42% graded the item with 5, 39.39% graded the item with 4, 12.12% with 3 and 6.06% graded the item with 2 – see fig 3. We can that in 2018-2019 all grades were greater or equal to 3. The mean of the responses was 4.11 in the academic year 2018-2019, compared to 4.07 in the academic year 2017-2018 and 4.18 in the academic year 2016-2017, also very good values on a scale 1-5

Fig. 3: Responses to the item ‘clearly explains the course content’

To the question if the teacher uses real life examples, in the academic year 2018-2019, 42.11% graded the item with 5, 36.84% graded the item with 4, 15.79% with 3, 5.26% with 2 – fig. 4. Comparatively, in 2017-2018, 48.15% graded the same item with 5, 25.93% graded the item with 4, 18.52% with 3, 3.7% with 2 and 3.7 with 1. In 2016-2017, 45.45% graded the item with 5, 30.03% graded the item with 4, 18.18% with 3 and 6.06% with 2 – see fig 4. We can notice slightly better results in 2018-2019 compared to the previous year. The mean of the responses was 4.16 in the academic year 2018-2019, compared to 4.11 in 2017-2018 and 4.15 in the academic year 2016-2017, also very good values on a scale 1-5

Fig. 4: Responses to the item ‘uses real life examples’

To the question if the teacher stimulated students’ interest in the subject, in the academic year 2018-2019, 36.8 4% graded the item with 5, 15.79 % with 3, 5.26% with 2 – fig. 5. Comparatively, in 2017-2018, 40.74% graded the same item with 5, 14.81% graded the item with 4, 29.63% with 3, 7.41% with 2 and 7.41% with 1. In 2016-2017, 42.42% graded
the item with 5, 24.24% graded the item with 4, 18.18% with 3 and 12.12% with 2 and 3.03% with 1 – see fig 5. The mean of the responses was the same 3.74 in the academic years 2018-2019 and 2017-2018 and 3.91 in 2016-2017, on a scale 1-5. It is the item we still have to work on.

![Stimulated my interest for this subject](image)

**Fig. 5: Responses to the item ‘stimulated my interest for this subject’**

To the question if the teacher encourages active student participation in the course, in the academic year 2018-2019, 36.84% graded the item with 5, 26.32% graded the item with 4, 31.58% with 3, 5.26% with 2 – fig. 6. Comparatively, in 2017-2018, 44.44% graded the same item with 5, 25.93% graded the item with 4, 18.52% with 3, 3.7% with 2 and 7.41% with 1. In the academic year 2016-2017, 42.42% graded the item with 5, 24.24% graded the item with 4, 15.15% with 3 and 3.03% with 1 – see fig 6. The mean of the responses was 3.95 in the academic year 2018-2019, similar to 3.96 in 2017-2018 and 3.88 in 2016-2017, on a scale 1-5

![Encourages us to actively take part in the course](image)

**Fig. 6: Responses to the item ‘encouraging students to actively participate’**

To the question if the teacher provides useful feedback regarding student involvement in the course, in the academic year 2017-2018, 29.63% graded the item with 5, 40.74% graded the item with 4, 14.18% with 3, and 14.18% with 2. In the academic year 2016-2017, 39.39% graded the item with 5, 27.27% graded the item with 4, 21.21% with 3 and 6.06% with 2 and 6.06% with 1 – see fig 7. The mean of the responses was 4.11 in the academic year 2018-2019, higher than 3.85 in 2017-2018 and 3.88 in 2016-2017, on a scale 1-5
Fig. 7: Responses to ‘providing useful feedback regarding student involvement’

To the question if the teacher treats the students with respect, in the academic year 2018-2019, a great majority of 84.21% graded the item with 5 and 15.79% graded the item with 4 – fig. 8. Comparatively, in 2017-2018, also a majority of 74.07% graded the item with 5, 18.52% graded the item with 4, 3.7% with 3, and 3.7% with 2. In the academic year 2016-2017, a majority of 69.7% graded the item with 5, 24.24% graded the item with 4 and 6.06% with 3 – fig 8. The mean of the responses in the academic year 2018-2019 was very good, 4.84, higher than the ones in 2017-2018 - 4.63 and 2016-2017 - 4.64, also very good values on a scale 1-5.

Fig. 8: Responses to the item ‘the teacher treats the students with respect’

To the question if the students acquired new knowledge and skills, in the academic year 2018-2019, 48.15% graded the item with 5, 29.63% graded the item with 4, 14.81% with 3 – fig. 9. Comparatively, in 2017-2018, 48.15% graded the same item with 5, 29.63% graded the item with 4, 14.81% with 3 and 7.41% with 2. In the academic year 2016-2017, 45.45% graded the item with 5, 33.33% graded the item with 4, 9.09% with 3, 6.06% with 2 and 6.06% with 1 – fig 9. The mean of the responses in the academic year 2018-2019 was 4.32, higher than the ones in the academic years 2017-2018 - 4.19 and 2016-2017 - 4.06, also very good values on a scale 1-5.

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Consequent to the teacher's didactic activity we acquired new knowledge and skills

Fig. 9: Responses to the item 'we acquired new knowledge and skills'

To the question regarding the global quality of the course, in the academic year 2018-2019, 26.32% graded the item with 5, 36.84% graded the item with 4, respectively with 3 – fig. 10. Comparatively, in 2017-2018, 37.04% graded the item with 5, respectively with 4, 14.81% with 3 and 11.11% with 2. In the academic year 2016-2017, 42.42% graded the item with 5, 33.33% graded the item with 4, 18.18% with 3 and 6.06% with 2 – see fig 10. The mean of the responses was 3.89 in the academic year 2018-2019, compared to 4.1 in 2017-2018 and 4.12 in 2016-2017, very good values on a scale 1-5

Globally, the course quality was

Fig. 10: Responses to the item regarding 'the global quality of the course'

To the question regarding the global performance of the teacher, in the academic year 2018-2019, a majority of 57.89% graded the item with 5 and 21.05% graded the item with 4, respectively with 3 – fig. 11. Comparatively, in 2017-2018, 40.74% graded the same item with 5, respectively with 4, 14.81% with 3 and 3.7% with 2. In the academic year 2016-2017, 48.48% graded the item with 5, 27.27% graded the item with 4, 15.15% with 3, 6.06% with 2 and 2.03% with 1 – see fig 11. The mean of the responses in the academic year 2018-2019 was 4.37, higher than the values in the academic years 2017-2018 - 4.19 and 2016-2017 - 4.12, also very good values on a scale 1-5
In the academic year 2018-2019, the quality of the course was globally evaluated to 4.18 and the teacher’s general mean to 4.17, compared to the academic years 2017-2018 - with 4.1 and 2016-2017 - with 4.11 for both items, very good values on a scale 1-5. We can state that for some items, in the academic year 2018-2019, the results were slightly better, previous feedback evaluations being taken into account.

We note that the course had globally a very good evaluation, both in the academic year 2018-2019 and in the previous two ones, with an average around and a bit above 4, on a scale 1-5, for all items. In the free answer section, students appreciated student interaction and continuous revision sections in the beginning of each course. Most students stated that the course content was interesting and useful and that the teacher was helpful and patient, all student issues being treated.

4 STUDENT RESULTS

In order to evaluate student knowledge assimilation of course content, we have designed a dedicated quiz, containing 50 questions. The quiz has been implemented as an Access application that we have designed for IT theoretical tests [9]. The grading algorithm that we have implemented adds an amount proportional with the number of correct alternatives per test for each correct answer and finally scales the grades in the interval [3, 10]. Questions are randomly generated, in a number specified as a parameter in the test configuration, from a database of questions, previously entered, together with their correct responses [9].

We further present the statistics of the grades obtained by students in the academic year 2018-2019, compared to the previous academic years 2017-2018 and 2016-2017. We present in fig. 12 the global grade distribution for the academic year 2018-2019: 44% grades in the interval [9.5, 10], 41% grades in the interval [8.5, 9.5], 8% grades in the interval [7, 8.5], 6% grades in the interval [5, 7] and 2% grades <5. The grades for the theoretical quiz are presented in fig. 13: 13 grades in the interval [9.5, 10], 303 grades in the interval [8.5, 9.5], 96 grades in the interval [7, 8.5], 31 grades in the interval [5, 7] and 1 grade <5; we observe a Gauss distribution for the theoretical quiz grade. The practical grades were quite high, revealing students’ interest for practical IT tasks – sites and blogs. We observe that the supplemental 1 point bonus for the practical task has changed the Gauss distribution for the overall grades: see fig 12, 14.
Fig. 14 represents the global grade distribution for the academic year 2017-2018: 29% grades in the interval [9.5, 10], a majority of 57% grades in the interval [8.5, 9.5), 6% grades in the interval [7, 8.5), 6% grades in the interval [7, 8.5) and 2% grades <5. The grades for the theoretical quiz are represented in fig. 15: 15 grades in the interval [9.5, 10), 30 grades in the interval [8.5, 9.5), 110 grades in the interval [7, 8.5), 36 grades in the interval [5, 7) and 2 grades <5; we observe a Gauss distribution both of the global grade and the theoretical quiz grade.

Fig. 16 presents the global grade distribution for the academic year 2016-2017: 16% grades in the interval [9.5, 10], a majority of 65% grades in the interval [8.5, 9.5), 11% grades in the interval [7, 8.5), 5% grades in the interval [7, 8.5) and 3% grades <5. The grades for the theoretical quiz 2016-2017 are represented in fig. 17: 4 grades in the interval [9.5, 10), 19 grades in the interval [8.5, 9.5), a majority of 112 grades in the interval [7, 8.5), 55 grades in the interval [5, 7] and 29 grades <5; we note a Gauss distribution both of the global grade and the theoretical quiz grade.
We present in fig. 18 the comparative evolution of the course global grades in the studied academic years. In fig. 19 we present the comparative evolution of the course theoretical grades. We can observe a genuine Gauss distribution in both graphs, except the distribution in the interval \([8.5, 10]\) within the current academic year, slightly changed by the supplemental task – fig 18. The total number of enrolled students was 198 in the academic year 2018-2019, 192 in 2017-2018 and 190 in 2016-2017.

![Comparative grade distribution: 2017-2018, 2016-2017, 2018-2019](image1)

![Comparative theoretical grade distribution: 2017-2018, 2016-2017, 2018-2019](image2)

Fig. 18: Comparative grade distribution: 2017-18, 2016-17, 2018-19

Fig. 19: Comparative theoretical grade distribution: 2016 - 2019

We note that highest grades, in the interval \([8.5, 10]\) and the ‘good’ and medium grades \([7,8.5)\) comprise the majority of grades: 85% in 2018-2019, 86% in 2017-2018, respectively 81% in 2016-2017. We therefore positively appreciate the student results.

We notice the ‘enthusiasm’ of the students involved in solving the supplemental task – more than half of the graded students – 54.91%, which lead to increasing their grades, especially in the interval \([8.5, 10]\), even leading to a change of the initial Gauss grade distribution, mainly in this interval. We can conclude that supplemental tasks may be successfully used for increasing student motivation and results. Comparing the students’ responses in the course evaluation quiz and their results, we can notice a certain consistency, most students obtaining good or satisfactory results and also understanding the relevance of the course.

5 CONCLUSION

The paper focuses on students’ learning, educational bonuses and feed-back to our IT basics course, using face-to-face interaction, blended learning, interactive methods and e-learning tools. The results were obtained using the official university course evaluation survey course evaluation quiz, included in
AcademicInfo information system; in this respect, we compared the results obtained in the academic year 2018-2019 with the previous two years 2017-2018 and 2016-2017.

We reveal the advantages that the provided resources and tools have in the learning process, based on the case study of the analyzed course. Analyzing the results of the official course evaluation surveys during the studied academic years, we can state that students positively evaluated the content and outcomes of the course, the global course grade for the whole studied period, being around 4.1 on a scale 1-5. Students express a positive perception on the course content and impact, an important advantage being the accessibility of the e-learning resources, which are available at any time; supplementary, the e-learning systems also provide guidance and communication tools.

We analyze the students’ grades obtained along the academic year 2018-2019 and compare them with the ones previously studied for 2017-2018 and 2016-2017. The analysis of the grades for the studied course generally reveals a Gauss distribution, slightly changed by the supplemental practical task, the majority of the students obtaining good and satisfactory results. We discuss the outcomes of our experience to propose a supplemental practical task, supplementally graded: we noticed a genuine emulation among the students solving it – around 55% of the graded students, which also resulted in increasing their grades. We conclude that supplemental tasks may be successfully used for increasing student motivation and results.

Comparing the course evaluation and the student results, we notice a certain consistency, most students obtaining good or satisfactory results and also understanding the importance and impact of the IT tools presented and practically applied within the course.

REFERENCES


