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Piloting of Blended Learning: Implementation and Benefits

Abstract

This paper is based on piloting of blended learning as a transformative learning process in order to keep pace with technological innovation. Our redesign of the course was the intention of the use of blended learning as a tool for high-quality, meaningful and longer lasting knowledge, improvements in learning outcomes and greater engagement of students in learning. We chose Moodle platform as a highly sophisticated learning management system with many modules and its possibilities of application in the learning context to develop the online component as a supplement to classroom lessons. After conducting an analysis of the course and a questionnaire, we concluded that students use all the segments of the online component and they become more engaged, their assignments end on time and at the end they would express their satisfaction with the course redesign. Using the T-test for large independent samples there is statistically significantly better performance in the final test ($p<0.01$) for students who have used Moodle compared to students from the previous generation attending traditional classes, while in the theoretical part of the exam there are higher grades instead of middle, but without statistical significance ($p>0.05$), which leads us to the view that blended learning helps, above all, average students to upgrade and advance their knowledge. Considering that many of our student are athletes, blended learning is a good choice for them as they are professionally engaged in sports and they can follow the course and complete their assignments in addition to sports commitments. This piloting will serve as a parameter for future use of blended learning to be more adapted to the needs and objectives of students and eliminate any disadvantages.

Keywords: *blended learning, Moodle, higher education, sports science*

Introduction

In order to achieve high standards of student perceptions of effective and quality education, the concept of teaching and learning has to go through many changes and experiment with different approaches. The objective is very clear, i.e., high-quality and long-term knowledge appropriate to the needs of a dynamic, knowledge driven society. Considering the constant progress of the computerization of our environment and significantly increased access to information, the traditional structured learning was a necessary supplement that would allow a more complete study focused on concrete and specific goals. Or, as formulated by Desmarais (2010), to use the interface of a computerized environment, not only as a tool for the job, but as a tool for increasing our skills and learning. As a result of the evolution and transformation of learning environments, blended learning emerged, mainly from the idea that learning is not just a one- time event, but a continuous process.

In a survey of literature, there are many interpretations of the meaning of blended learning. Garrison and Vaughan (2008) define blended learning as "the thoughtful fusion of face-to-face and online learning experiences for better reflection and discourse". Littlejohn and Pegler (2007) state that blended learning is a useful approach because it changes the focus of the learning design by shifting the emphasis from simply considering the face-to-face and online environments to the design of issues, such as considering the process and synergy of blending between online and face-to-face environments. Mayadas and Picciano (2007) point out that blended learning comes in many shapes, flavors and colors and discuss it as the mix of different didactic methods and delivery formats which are independent. Laster at al. (2005) claim that activities are integrated in a planned, pedagogically valuable manner. One of the latest and most comprehensive definitions has been created by Horn and Staker (2012); it is as student-centric definition where blended learning is a "formal education program in which the student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home". They all realize the idea of "integration" as a pedagogically significant and important component of the blended learning definition, which will enforce re-examination of the existing approaches and subsequent adoption of new or enriched strategies, figuratively as a bridge between the old and the new. But, as Garrison and Kanuka (2004) comment, in addition to the simplicity, there is also considerable complexity in its implementation with the challenge of virtually limitless design

possibilities and applicability to so many contexts. There is no singular best model, there is no "one-size-fits-all" approach that is guaranteed to succeed, but it is rather achieved through continuous effort and has to be tuned to the matter dynamics (Moskal, et al. 2013).

What are the benefits of blended learning?

Blended learning has transformative potential and supports active and meaningful learning. Numerous research studies have demonstrated that it facilitates improved learning outcomes, is characterized by access flexibility, the effective use of resorces and student satisfaction (Poon, 2013). Add to this the sense of engagement, community and belonging for achieving a higher cognitive and social level of learning. Blended learning promotes a kind of "deep learning", which is featured with "taking [new] knowledge, understanding it and checking that it fits in with one's existing knowledge and incorporating it into one's present framework of knowledge". It involves a process of "digestion" and is reffered to as problem-solving learning, while the other is "shallow learning" which is characterized with memorizing and involves "recall of information," which is a less effective way of learning (Fong et al, 2008). Blended learning, undoubtedly, offers possibilities to create transformative environments that can effectively facilitate critical, creative and complex thinking skills.

To provide solid and consistent blended learning, it is necessary to select an appropriate platform. One of the best platforms of virtual or e-learning is Moodle, defined as an open source learning management system or a free software project designed to help educators all over the world to create on-line courses. It is a highly sophisticated learning management system with many modules and possible applications in the learning context. Due to the advantages of Moodle platform, we have used it in our biology course of exercise to develop the online component as a supplement to the classroom lessons.

The aim of this paper is to present our results of piloting blended learning at the Faculty of Sport and Physical Education with the intent to introduce the beginning of the transformative learning process at our university. Our research questions that we wanted to explore were: Can blended learning increase student engagement? Is there adequate feedback? How does blended learning affect the final scores obtained and knowledge acquired? and What is the opinion of students and did this help them in studying?

Materials and Methods

Participants

The participants were 76 second-year undergraduate students from the Faculty of Sport and Physical Education during the first semester of the 2013/2014 academic year. Biology of Exercise is a compulsory subject at the Department of Medical Items. The aim of the course is to understand the biological processes in the body and their identification of adaptation to physical exercise of various intensities and duration and positive application of acquired knowledge to the training process and in professional competitions of athletes. The participants had no prior experience in the Blended Learning Environment.

Course design

The course was a combination of face to face teaching and web components. During the first class the students were introduced to the concept of blended learning, smart video "the fundamentals of blended learning" from Education Elements, available on You Tube, was presented to them and printed instructions were distributed. The course design was internally consistent, resources were easy to find and opened without additional software. On the home page of the course, the curriculum, course objectives, learning outcomes, exam questions and literature were posted. The course was divided into 10 teaching units (topics). The number of hours in the classroom was 4, the online component of 2 hours per week. Face-to-face teaching was in the form of a theoretical introduction to the topic, which was underpinned with anecdotal sports stories, case studies and other discovery learning procedures that explore higher order thinking about real life issues and situations. The web component served as a supplement that contained everything that could better explain the theory through additional documents, such as Word or Pdf processed documents, Power Point presentations, smart simulations, external media-sharing websites (e.g., You tube). Lessons on the Web were released two days before the face-to-face classes to help the students understand better the topic or issue (as pre-class preparation). For explanation of less familiar words and phrases in the lesson, the students could use web glossary. An online discussion forum helped a lot in order to stay in touch with students after the face-to-face class with the possibility to discuss different topics and issues related to the course. In addition to the forum, a large number of private messages were also sent to the students when they needed consultation or advice not only for the course, but also in relation to sports nutrition, supplements, sports injuries, etc. Chat communication had their regular appointments. The online component also helped in the

completion of course assignments. For the assessment of knowledge, there were the quizzes made on the basis of a questions bank and an essay. The aims of essays were to develop the skills of scientific thinking and problem solving and to find the relevant literature for the research topic. The students wrote essays in groups, sent them online and received feedback on their work. At the end of the course, the students were given a questionnaire on the course to anonymously give their opinion.

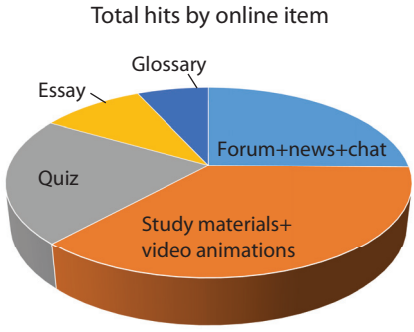
Results and discussion

Applications and practices of blended learning vary widely and are customized to suit the different needs and knowledge of individuals and organizations. It is not the "blend that makes the difference, it is rather the emphasis on the fundamental redesign of content in the light of new knowledge and technologies (Smithe, 2012). Our idea was to use blended learning as a tool for qualitative, meaningful and longer-lasting knowledge, improvements in learning outcomes and greater engagement of students in learning.

The students needed a certain time of 3-4 weeks to enroll in the course, and at first timidly, they gradually relaxed. This is normal and expected behavior with regard to a new experience. Sayed and Baker (2014) claimed that students may be unmotivated or unfamiliar with the role of technology considering the technical management of the Moodle platform, which can be a barrier for students who do not have much experience with computer facilities or the Internet. Fear of changes may be present, but once the individual becomes familiar with the Moodle tools, they understand the enormous advantages and benefits. The study process was based on a tentative integration of the theory and practice (web materials and online work). Pre-class preparation in the form of articles and a series of activities and key points was useful for the students, facilitating the easier adoption of facts in class, and improved the understanding of the material, as evidenced by literature data (Chen, et al., 2010). Time in the classroom had the purpose of transmitting a functional, basic knowledge necessary to understand the core of the matter. With a case study and various interesting stories from the lives of athletes, classes were the hub of information and contact with students. On the other hand, web documents are not just a collection of files and resources, but the trigger that initiates the process of connecting facts, the processes that drive research, questions, discussion and finally answers. Tasks such as expressing opinions and message in line with the topic after seeing a documentary serve for this purpose, to initiate logical thinking,

connect the facts and make a conclusion. This path of information from classroom lectures, through documents on the web, video and simulation rounded up the cycle and resulted in a good understanding of the matter and by assessment (tests, essays) adequately achieved the learning outcomes.

Figure 1. Display of total hits by online item on the course



(Forum + news + chat- 25.27%, study materials + video animations and simulations 36.56%, quiz-21.49%, essay – 9.84%, glossary – 6.82%)

Display of total hits on the course (Figure1) indicates that, in addition to teaching materials, a large proportion of the students (25.27%) were visiting the forum, which is the benefit of the online component, i.e., discussing various topics related to teaching materials. The debate and the dialogue increase student understanding of the principles on the one hand, and on the other give students a sense of affiliation and importance. But we noticed that the students in the classroom had more questions than they showed in the forum and we realized that as a difficulty that should be paid attention. We noticed that on time and we did our best to solve it so we set a number of interesting current topics on the forum of which we were sure would be of interest to the students and would initiate discussion. Thus, we overcame the problem and stimulated the students. Generally, the student's participation in the forum is more difficult because they have to think about the text, to be better prepared than when they speak verbally. But the goal of the forum is pedagogically important, namely creating interaction, initiation of research and sharing opinions. Here the role of teachers is particularly important; they need to see the weaknesses and intervene to overcome gaps and omissions. In Figure 2, the total number of visits to the online course is shown and the peaks are often related to the deadlines of assignments. Feedback is, according to many authors, certainly

Figure 2. Total activity in the course for three months

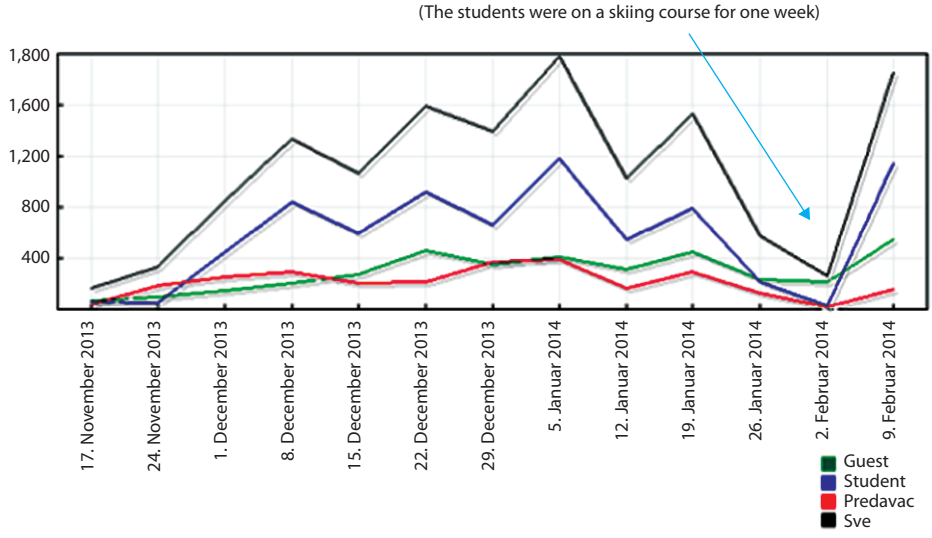
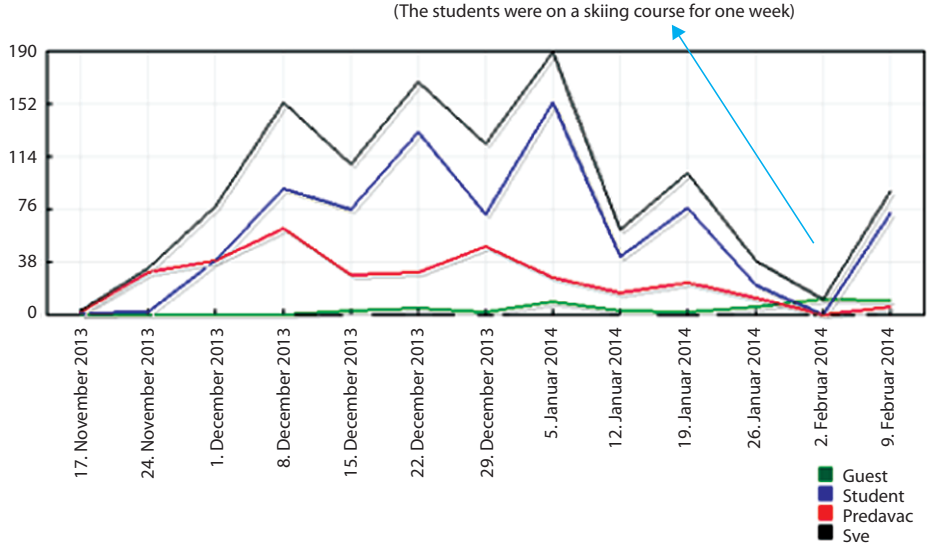


Figure 3. Messages in the course for three months



the most important support mechanism in a variety of educational contexts (Hummel, 2006). Well-oriented, both critical and stimulating, carefully tailored to the cognitive needs of students, should facilitate the students learning. Feedback means more interactions than just comments on learners' written work, it means a mutual connection and mutual respect. In our case, the feedback was satisfactory and it played a major role in the learning process and involvement of the students in the course. Figure 3 shows the total number of messages in the course, and does not contain private messages which the students, in a large number, sent for a variety of private consultations on sports nutrition problems or sports injuries. The Forum Guest was a sports physician who expertly answered all the students' questions in the field of sports medicine.

To get the students' opinions on the implementation of blended learning and how it affected their learning, we had created a questionnaire. The questionnaire was divided into three groups of questions: Course quality, E-learning platform (Moodle) and Your experience. The students' responses to most of these items were overwhelmingly positive and they generally had a positive experience with blended learning and according to them the Moodle platform was not difficult to handle. The results are shown in the charts below.

Chart 1. Students' responses to course quality

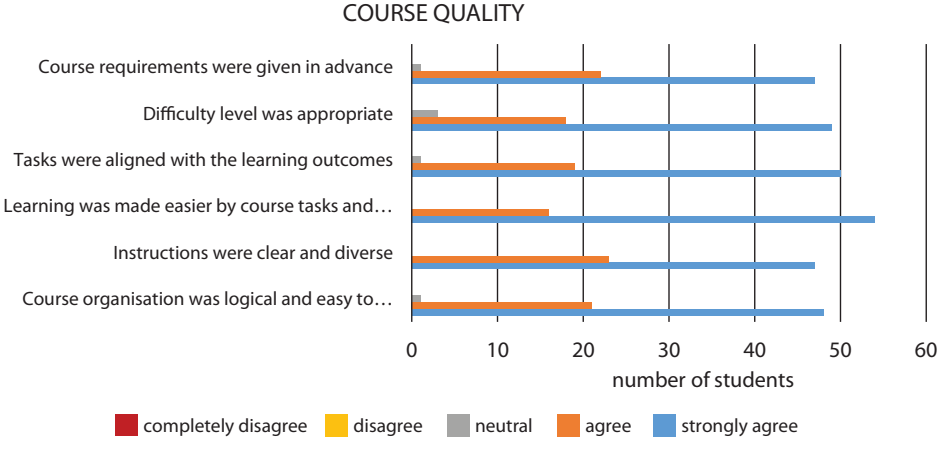


Chart 2. Students' responses to questions on the use of Moodle platform

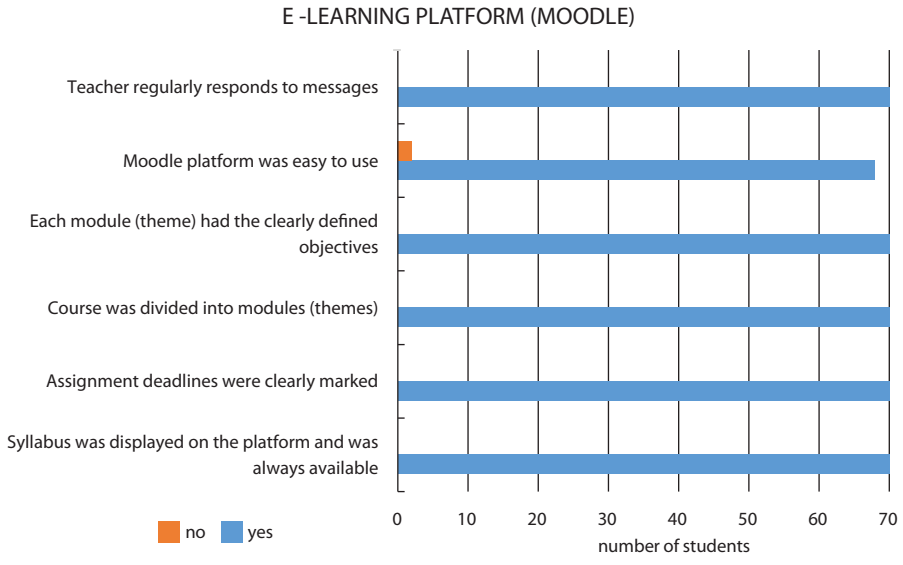
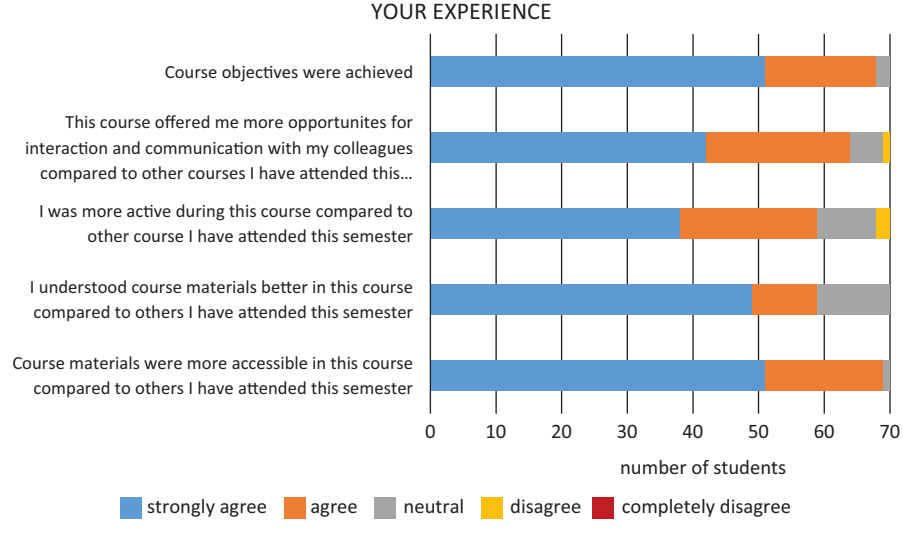
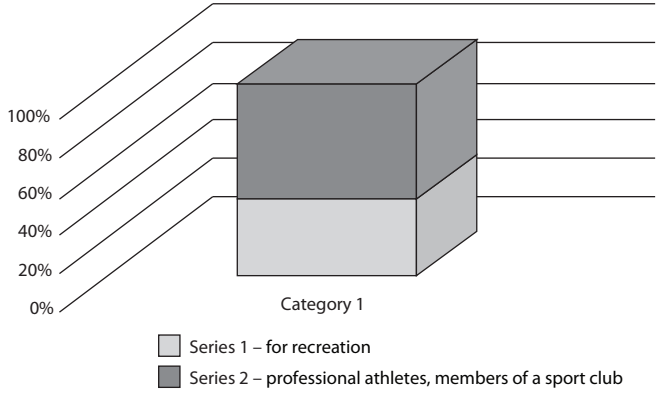


Chart 3. Students' responses to questions relating to their experience with the course



The student questionnaire also showed that a large number of our students were athletes (Chart 4) and blended learning was a good choice for those who professionally engaged in sports as they could follow the course and complete their assignments in addition to sports commitments.

Chart 4. Students who participate in sports:



Estimating the impact of blended learning on students performance in examinations, we compared the test results and grades in the theoretical part of the exam of the last year students who had had a traditional face-to-face classes with the test scores and grades of the students who had used Moodle. In the T-test for large independent samples, the obtained value ($p < 0.01$) showed statistically significantly better performance in the the final test, while in the theoretical part of the exam, although the mean value increased by 0.31, there was no statistical significance ($p > 0.05$). In the literature, there is lots of evidence of the positive effects of blended learning on the performance of students (Makhdoom et al., 2013, Leser, et al., 2011, Martin-Blas & Serrano-Fernandez, 2009, Groben & Prohl, 2012, Owston,York & Murtha, 2013) and it confirms the claim that blended learning contributes to the acquisition of knowledge, which is a big advantage as the information comes from different sources in different forms. Even though for the theoretical part of the exam there is no statistically significant change, it is evident that there are higher grades instead of middle ones, although the overall score does not amount to a much better average. This means that average students became more motivated by this tool, because the blended learning helped them to upgrade their knowledge and to improve their understanding of key concepts. Without a doubt, blended

learning helped them to better understand the biological processes during exercise and the subtle mechanisms of adaptation of the body to exercise. The students expressed their satisfaction with the course, for them it was something new, innovative and better compared to traditional classes. And that is what they wrote in the questionnaire in the comments section. That means that, although it is a small shift, heavier weight on the scale is that blended learning enhances the development of higher order thinking skills, connecting facts, understanding, and produces higher long-term learning effects. It encourages student-led learning, makes learning more flexible and creates a more engaging environment. It is a common assertion that the use of information and communication technologies can alienate students, however, it does not replace actual interaction between teachers and students, but also facilitates learning and achievement of learning outcomes. Implementation of blended learning is not easier for teachers. On the contrary, it is a more difficult and responsible job, which requires full engagement from teachers, carefully designed course, the identification of needs and objectives, the effective use of resources and continuous support of students. But the reward is worth the effort, and it is durable, higher quality and comprehensive knowledge.

Table 1. Statistics of the results of the final test

min	10	10
max	20	20
X bar	17.57	**18.91**
SD	3.23	2.38
SE	0.37	0.27
CV%	18.41	12.56
	2012/13	**2013/14**
N	**76**	**76**

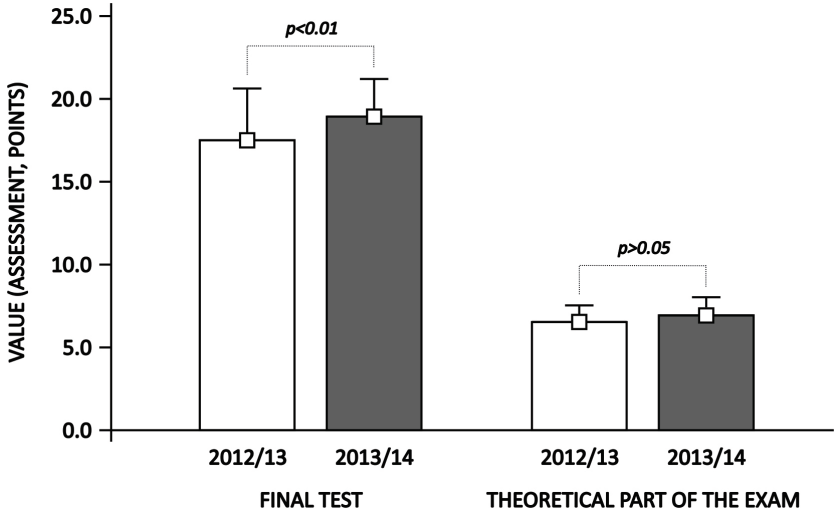
T =	**2.91**
S.S.	**150**
Verovatn.	**p<0.01**
Xbar I–Xbar II	**1.34**

Table 2. Statistics of the theoretical part of the exam

min	5	6
max	10	10
X bar	**6.62**	**6.93**
SD	**1.03**	**1.20**
SE	0.12	0.14
CV%	15.50	17.24
	2012/13	**2013/14**
N	**76**	**76**

T =	**1.74**
S.S.	**150**
Verovatn.	**p>0.05**
Xbar I–Xbar II_	**0.32**

Figure 4. Assessment and comparison of performance



Conclusion

The paper examines the piloting project at the Faculty of Sport and Physical Education at the University of Kosovska Mitrovica that redesigned the traditional lecture format course into a blended learning course, in order to assess the results of implementation and determine its further transformative potential. Pilot implementation of blended learning has given good and promising results, especially in the satisfaction and engagement of the students. The students saw an online component as an academic place where they can not only learn a lot of new things, but also interact and explore new topics with teachers and peers, and hence clarify many doubts related to the subject matter. Moodle platform did not represent a great difficulty to them although they did not have any previous experience, which confirms the quality and advantages of Moodle, which by its diverse tools can easily lead students through the course. Such a course designed with the online course modules is especially useful for students who are professionally engaged in sports and who are not always able to come to face-to-face classes. All of their assignments and course materials can be found on the website of the course, but at the same time they can have contact with the teacher, ask about the unclear issues and communicate with peers. Since blended learning is flexible and adapts to the

needs and objectives of the students, the piloting will serve as a parameter of what needs to be fixed, what should be added and possibly eliminate disadvantages in the future. We have found the benefits of blended learning, and we believe that this is the beginning of the transformative learning process at our university.

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