BLENDED LEARNING AS A FOREIGN LANGUAGE LEARNING ENVIRONMENT

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Abstract

The aims of this study are to determine the meaning of the term blended learning in three different domains, in corporate sector, higher education sector, and in the field of foreign language learning and teaching, and to explore the potential effects of blended learning on the university students' levels of foreign language reading comprehension. Blended learning is a combination of classroom instruction and information and communication technologies which can improve learning outcomes and save the costs. The reasons for applying blended learning approach in all three domains are presented. The efficient implementation of blended language learning means the optimal use of the learning opportunities and available tools to achieve the optimal language learning environment. The necessary conditions for efficient foreign language learning and the issues that may limit its realization are explored; the factors of efficient blended foreign language learning are presented. The teachers' and learners' roles in blended language learning as well as the pathway template for efficient blended language learning are illustrated. The obtained results indicate that blended learning may increase the students' levels of foreign language reading comprehension more than face-to-face language instruction.

Key words: blended learning, foreign language, learner, teacher.

МЕШОВИТО УЧЕЊЕ КАО ОКРУЖЕЊЕ ЗА УЧЕЊЕ СТРАНОГ ЈЕЗИКА

Апстракт

Циљеви овог рада су да се одреди појам мешовито учење у контексту професионалног усавршавања у пословном окружењу, високог образовања и посебно наставе страног језика, те да се испитају потенцијални ефекти мешовитог учења у настави страног језика на разумевање прочитаног текста на енглеском језику као страном у високошколском образовном контексту. Мешовито учење представља комбиновање традиционалне наставе у учионици лицем у лице и информационо-комуникационих технологија како би се унапредили исходи учења и смањили трошкови наставе. Представљени су разлози за увођење мешовитог учења у сва три претходно поменута домена. Ефикасна примена мешови-

тог учења страног језика претпоставља стварање могућности и обезбеђивање алата за учење како би се постигли оптимални услови за учење језика. Објашње-ни су оптимални услови за учење страног језика, чиниоци који могу да ограни-че њихово остваривање и фактори ефикасне наставе страног језика у мешови-том окружењу. Истакнуте су професионалне улоге наставника и улоге ученика у мешовитом учењу страног језика, те и смернице за организовање ефикасне ме-шовите наставе. Резултати истраживања указују на то да мешовито учење може да повећа способност разумевања прочитаног текста на страном језику у већој мери него што то може настава страног језика лицем у лице.

Кључне речи: мешовито учење, страни језик, ученик, наставник.

INTRODUCTION

The development of the information technology gave rise to new opportunities for learning and challenged the established practices referring to how teaching and learning should be organized. Since the beginning of the 21st century, higher education institutions use the Internet and other digital technologies to develop and distribute education. The development of the Internet emphasized the need for new forms of learning and teaching which enable students' personal development and help them become successful in today knowledge-based society.

Many forms of learning and teaching practices still have been carried out in a school or classroom. In today's networked world driven by information and communication technologies (ICTs) learning environment may also be virtual - students and teachers do not have physically direct communication in the same classroom, they are far away in space or time. Nowadays distance education is most frequently realized through e-learning as interactive learning in which the learning content is available online and provides automatic feedback to the students' learning activities (Paulsen, 2003, cited in Devedžić, 2006, p. 2). Another form of learning and teaching which differs from traditional face-to-face (F2F) learning/teaching in the classroom is blended learning.

The study is focused on defining the term *blended learning*, analyzing the advantages and reasons for introducing such an environment in foreign language learning/teaching, exploring professional roles of students and teachers in blended learning context, giving synthesis of the results of theoretical and empirical studies in this field, and examining the effects of blended foreign language instruction on reading comprehension in English as a foreign language in higher education setting.

BLENDED LEARNING: DEFINING THE TERM

The term *blended learning* originated from the business world in connection with corporate training; then it was employed in higher

education, and lastly it appeared in language teaching and learning (Whittaker, 2013, p. 11). The term *blended learning* first appeared around 2000 and was often associated with supplementing traditional classroom learning with self-study e-learning activities (Marsh, 2012, p. 3). Recently providing blended learning environment has become important in education setting contributing to the development of the term itself. Today *blended learning* refers to any combination of different methods of learning, different learning environments, and different learning styles.

Although the term is widespread used in corporate training, higher education, and the field of foreign language learning/teaching, it is not easy to define the term *blended learning* since consensus has not been reached on one definite definition (Oliver & Trigwell, 2005; Sharma & Barrett, 2007).

From a corporate perspective, blended learning is defined as a learning program where more than one delivery mode is being used with the objective of optimizing the learning outcome and cost of program delivery (Singh & Reed, 2001, p. 1). These delivery modes may include face-to-face (F2F) classrooms, live e-learning and self-paced learning (Valiathan, 2002, p. 1) as well as mentoring arrangements or the support of a subject matter expert (Reid-Young, n.d.).

In higher education blended learning is defined as a combination of technology and classroom instruction in flexible approach to learning that recognizes the benefits of delivering of some training and assessment online but also uses other modes to make up a complete training program which can improve learning outcomes and/or save costs (Banados, 2006, p. 534).

The definitions of blended learning in the context of language teaching/learning seem rather precise considering the mode of delivery. Blended learning is defined a combination of face-to-face (F2F) and computer-assisted language learning (CALL) (Neumeier, 2005, p. 164; Stracke, 2007, p. 57). The term *computer-assisted language learning* was substituted with the term *technology* (Sharma & Barrett, 2007, p. 7) which covers a wide range of technologies such as Internet, CD ROMs, and interactive boards or with the term online delivery (Dudeney & Hockly, 2007, p. 137), emphasizing that teaching/learning is being carried out offline using, for example, CD ROMs.

WHY EMPLOY BLENDED LEARNING?

The differences have been identified as to why the corporate sector and academic sector introduced blended learning (Dewar & Whittington, 2004).

As for the corporate sector the results from one online survey (Sparrow, 2003, cited in Dewar & Whittington, 2004, p. 5) list the

following reasons for developing blended learning solutions: ability to match learning styles, individually tailored solutions, improve the learning rate, exploit the investments they have already made re-usable training resources, shortage of time to use purely classroom activities. However, the survey does not provide evidence that any of these reasons given are valid. A couple of years before the previously mentioned survey Singh and Reed (2001) identified benefits of blended learning approach:

- improved learning effectiveness; resent studies at the University of Tennessee and University of Stanford in the USA give evidence that blended learning improves learning outcomes by providing a better match between the learning program that is offered and the students' knowledge and skills they want to acquire;
- extending the reach; a single delivery mode limits the reach of a learning program and knowledge transfer both in a physical classroom where the access is limited to only those who can participate at a fixed time and location and in a virtual classroom which is an event inclusive of remote audience; when knowledge objects are digitalized with the ability to playback a recorded live event, it can extend the reach to those who could not attend at a specific time;
- optimizing program development costs and time; web-based training content may be too expensive to produce since it requires multiple skills and resources; on the other hand, combining virtual collaborative learning sessions or recorded live e-learning events with text assignments may be as just as effective or more effective; and
- optimizing results; learning objectives can be obtained in much less class time than traditional strategies.

With regard to the academic sector the reasons for introducing blended learning include (Osguthorp, 2003, cited in Dewar & Wittington, 2004, p. 5): pedagogical richness, access to knowledge, social interaction, personal agency (i.e. learner control and choice), cost effectiveness, and ease of revision. What is meant by the term *pedagogical richness* is the variety of different pedagogical approaches that can be incorporated in a blend rather than if they are effective or not. These six reasons can be condensed down to three main ones (Graham, Allen & Ur, 2003, cited in Graham, 2006, p. 8):

- improved pedagogy; blended learning approaches increase the level of active learning strategies and peer-to-peer learning strategies; learners going through three phases - online self-paced learning to acquire background information, face-to-face learning focused on active learning and application experiences instead of lecture, and online learning and support for transferring the learning to the workplace environment;
- increased access and flexibility; blended learning provides a balance between flexible learning options characteristic for online

learning and the high-touch human interaction characteristic for some traditional face-to-face contact; and

- increased cost-effectiveness; blended learning systems provide an opportunity for reaching a large, globally dispersed audience in a short period of time with consistent semi-personal content delivery (both in virtual and classroom environment).

Improved pedagogy, cost effectiveness, the convenience of blended learning courses as students can study when they want and at the speed they want are also the reasons for introducing blended learning solutions in foreign language learning/teaching (Sharma & Barrett, 2007). Cost effectiveness as a valid reason for employing blended learning in foreign language learning/teaching may be questioned because the initial financial outlay for hardware and software is expensive, without counting the ongoing maintenance, replacements and upgrading costs. These costs depend on the design of the blend and context – if learners are expected to use their own computers, these costs are then considerably decreased.

The additional reasons for employing blended learning in foreign language learning/teaching are provided (Hockly, 2011, cited in Whittaker, 2013, p. 15):

- learners' expectations – learners expect technology to be integrated into their language classes;
- flexibility – learners expect to be able to fit learning into their busy lives, especially employed university students;
- Ministry of Education (or similar institutions) directives – teachers are expected to offer blended learning courses in some contexts.

The practice of blending different language learning approaches is not new – the effective learning/teaching involves the use of different methods, approaches, and strategies to maximize language knowledge acquisition and skill development. Good programs of language study combine more than one method or approach in their teaching such as lectures, seminars, pair work, group projects, and so on to offer students a variety of language learning opportunities. Distance learning courses have long provided blended learning through a combination of self-access content (print, video, TV, radio and face-to-face/telephone teacher support). The effective implementation of blended learning is all about making learning opportunities and tools available to achieve optimal conditions for language learning.

OPTIMAL CONDITIONS FOR FOREIGN LANGUAGE LEARNING

Foreign language learning may be challenging for different students in different education contexts. Optimal language learning environment, regardless of the tools used, should be supported by the following conditions (Egbert, Chao, & Hanson-Smith, 1999, pp. 1-6):

- learners interact in the target language with an authentic audience, i.e. with those individuals with expertise in, or closely related to, the subject of the student's product; during initial language experiences, negotiation with other language learners in the target language may be at the right level for the struggling student; in more advanced stages of foreign language learning, students should have access to fluent speakers who are willing to adjust their language to the students' ability;

- learners are involved in authentic language tasks; authentic tasks are ones that learners perceive they will use outside of class in the real world (business, industry, science, education, arts) or that parallels or replicates real functions beyond the classroom;

- learners are exposed to and encouraged to produce varied and creative language; in order to achieve this condition learners need multiple forms of input in educational setting and even a new way of approaching knowledge and the learning process;

- learners have opportunities to interact socially; more effective learning takes place when learners can use language actively and creatively with people they come to understand – with teachers, other students and peers, native speakers;

- learners have enough activity time and feedback (from teachers and peers); we should bear in mind that some students work slower than others, while some need more help and guidance; this condition, which is very important for language acquisition, is very difficult to meet since the institutionalized forms of learning/ teaching are time-limited;

- learners are guided to attend mindfully to the language learning process; students are often told what to learn but not how to learn it; although students tend to rely on their own habits and learning styles, they can also learn new ones; students who perceive a task's how and why are more attentive and more motivated to learn a foreign language, and potentially more efficient in foreign language learning;

- learners work in an atmosphere with an ideal stress/anxiety level; the amount of stress or pressure which is facilitative (helps and motivates students to learn) is different for each student; learners should feel comfortable enough to take risk with the target language where the particular target language is simultaneously means of communication (oral and written); educators can create optimal stress (facilitative anxiety) by matching the degree of difficulty, or challenge, to the students' skills (Csikszentmihalyi, 1990), giving them enough difficulty to keep their attention while providing them with tasks that are possible to complete;

- learners autonomy is supported; many language syllabuses in school/higher education context are often with a rigid schedule requiring a certain number of classes for acquiring and developing language skills; such a teacher-directed syllabus may be effective for some students, but it may ignore the needs of others; allowing students to control some segments of their language learning can help the teacher to provide for different foreign language levels, learning styles, and interests (learners can choose which books to read or choose what kind of tasks they will do and when); in this way teachers assist students in defining their learning goals and in assessing their own progress (Averill, Chambers, & Dantas-Whitney, 2000).

Achieving optimal conditions for foreign language learning is a significant challenge for both foreign language teachers and learners. Several factors may limit the realization of optimal conditions for foreign language learning (Marsh, 2012, pp. 1-2). Students rarely have opportunities to actively engage in using the target language since foreign language learning is usually in face-to-face learning environment; in education context learners are usually surrounded by the speakers of their native language so they rarely have the opportunity to communicate with the native speakers of their target language (authentic audience). It is important to emphasize that even in such education context the teacher has the opportunity to introduce communicative and authentic language tasks in the classroom. In any classroom foreign language teachers can be faced with students who come from different backgrounds, who have different priorities, reasons, and preferences for learning a foreign language. Under such conditions it is not easy for teachers to adjust language activities considering both the difficulty of the language tasks and students' interests. If a language level in a task is too difficult, some students may give up; if, on the other hand, language tasks are too easy, some students are unlikely to improve. Tasks that do not address the students' interests or learning styles may fail to motivate, which is vital to language learning. Also, teachers are aware of the need to provide their students with opportunities to practice the language in varied social contexts, which is sometimes not feasible due to timetabling constraints.

In attempting to achieve the optimal conditions for foreign language learning teachers need to create an environment that most closely resembles the actual use of the target language. Teachers have a number of resources and tools such as newspapers, video players and video materials, and language laboratories which all can provide varied access to language content. A variety of activity types can be employed, e.g. pair work, group work, collaborative learning, and independent learning to engage in communicative language practice. The need for personalized learning and teaching set the scene for the introduction of self-study resources designed for independent study.

Foreign language teachers have always used a "blend" of teaching approaches in order to provide as rich a learning environment as possible for the students. Therefore, blended learning is not a new concept – it refers to the change of the combining elements in order to create blended learning environment and involves ICT in the learning/teaching process, thus organizing different learning/teaching activities in the classroom and online mixing various teaching materials (Marsh, 2012; Whittaker, 2013). What is also new is the expectation of the students to use technology in and out of the classroom as part of the learning process (Marsh, 2012, p. 2).

FACTORS OF EFFECTIVE FOREIGN LANGUAGE BLENDED LEARNING

Considering the effectiveness of blended language learning environment, it is necessary to emphasize that there is no single effective model but various solutions due to specific learning contexts – goals and limitations which exist in every education and learning environment (Graham, 2006).

The important factors for creation of the effective blend in language learning and teaching are as follows (Marsh, 2012, p. 6-7; Sharma & Barret, 2007, p. 13-14): complementarity, pedagogically sound learning material, and support (technical, affective, and academic). It is important for the different components of the blend to complement each other; a mismatch between the various elements can lead to confusion and frustration of the students and increased workload of the teacher who has to bring the disparate existing components to achieve coherent learning environment. The basic steps for establishing complementarity are to identify learning outcomes, students' needs, and various potential components of blended learning solutions available to teachers. It is also important to separate the role of teacher from the role of ICT since these two roles are complement (Sharma & Barret, 2007, p. 13-14). The choice of learning material is essential; interactivity and multimodality are crucial demonstrating to students that information and communication technology has something to offer to language learning and teaching. Foreign language teachers need to evaluate educational materials such as software programs carefully and use only those materials that are methodologically sound. Moreover, in order to accommodate students needs and interests foreign language teachers need to vary the usage of newer technologies such as internet, Web 2.0 tools including the tools for saving and exchange media (Dropbox, Google Drive, YouTube, Picassa, Flickr), the tools for communication and collaboration (Skype, Google+, Twitter, Facebook, Wiki, forums, blogs), learning management systems (LMS) such as Moodle, the tools for creative learning and material design (Bubble.us, Gliffy, TonDoo, Storybird) as well as older technologies such as CD-ROM. In any blended learning context in which

technology supported self-study is vital to the blend, students will need technical, affective and academic support. Technical support is vital – students and teachers need this kind of support to feel comfortable in what is new and challenging experience. Affective support for the students who feel insecure or might be struggling with the foreign language course work, especially when working at home alone, can be provided by interaction with the teacher in the language classroom; this can be achieved by applying Web 2.0 tools that promote the communicative use of technology, such as forums and blogs, without drawing attention to it in the class. Students can struggle with the concepts and constructs characteristic for language and for learning process. Academic support is usually provided by the language teachers in the language classroom where they are on hand to answer questions as they arise as well as in online environment by using, for example, e-mails which support teacher-student interaction or by using forums where student-student interaction and group interaction are supported.

The following major issues are relevant to designing foreign language blended learning systems (Graham, 2006, pp. 14-16):

- the role of live interaction – it is expected that students place great value on the face-to-face aspects of the language learning experience;
- role of learner choice and self-regulation – students primarily select blended learning due to convenience and access (it is not time limited; students can learn from their homes); the type and amount of guidance that should be provided to learners in making their choices about how different blends might affect their language learning experience is an important issue; it is necessary to bear in mind that online learning components require a large amount of self-discipline on the part of the learners (Collis, Bruijstens, & van der Veen, 2003);
- models for support and training which guide the teachers and students in blended language learning; blended environments increase demand on instructor time (Hartman, Dziuban, & Moskal, 1999); it is necessary to provide learners with technological skills to succeed both in F2F and online environments (Morgan, 2002, cited in Graham, 2006, p. 15) and provide professional development for the instructors who will be teaching those learners; there is also a need to change organizational culture to accept blended approaches (Hartman et al., 1999);
- digital divide – the divide between information and communication technologies available to individual and societies at different ends of socioeconomic spectrum can be great; the question is whether blended learning models can be developed that are affordable and still address the needs of different student population with different socioeconomic conditions;

- cultural adaptation – one strength of e-learning is the ability to distribute uniform learning materials rapidly; yet there is often a need for customizing teaching materials to the local audience to make them culturally relevant – a face-to-face teacher has an important role in making globally distributed teaching material meaningful and culturally relevant; and
- balance between innovation and production, which is a constant challenge for designers of blended language learning environments; when creating such environments, there is a need to look to the possibilities that new technology innovations provide as well as a need to be able to produce cost-effective solutions.

Face-to-face (F2F) foreign language instruction and online language instruction may be blended at different levels (Graham, 2006, pp. 11-13): at the activity level when a learning activity contains both F2F and online learning elements; course-level blending, which is one of the most common ways to blend, where learners are engaged in different online and F2F activities (during the semester, school year) that overlap in time or are sequenced chronologically but not overlapping; then, program-level blending, often occurring in higher education, where, according to one model, the participants/students are offered F2F courses and online courses, while according to another model, all courses prescribed by the program are blended courses; and, finally, institutional-level blending, where students have F2F classes at the beginning and at the end of the course, with online activities in between or where all courses are realized in online environment during one semester.

TEACHER PROFESSIONAL ROLES AND FOREIGN LANGUAGE LEARNER ROLES IN BLENDED LEARNING ENVIRONMENTS

The teacher role has always been a key for providing a structured and engaging foreign language teaching and learning environment. Face-to-face (F2F) teaching component remains central to blended language learning – the teacher is indispensable as an organizer of the integration learning process in the classroom and in online environment. Many characteristics of the foreign language teacher's role remains unchanged; the teacher continues to guide and monitor progress, give feedback, boost confidence, and maintain motivation. The teacher in blended foreign language learning has the roles of a creator of the teaching process since he/she develops learning activities, teaching/learning materials, program, and curriculum for e-learning component (Devedžić, 2006, p. 77). Also, the foreign language teacher is a/an (Bjekić, Krneta, & Milošević, 2010; Marsh, 2012, pp. 8-11):

- planner – creates the plan of teaching/learning content, integrates goals and outcomes of online teaching/learning and F2F teaching/ learning;
- initiator – drives learning process, initiates the use of various e-sources (online dictionaries, foreign language teaching materials);
- instructor – teaches, develops students' language skills, directs the learning process by using e-learning programs;
- diagnoser – observes and examines students' reactions, behavior, activities in the classroom and online;
- evaluator – evaluates and assesses students' knowledge and performance, creates procedures to monitor learners' achievement in the classroom and online; also, the teacher controls e-learning process, evaluates e-teaching contents and procedures;
- counselor – offers students help and support in foreign language learning both in F2F and online environments, encourages autonomous and collaborative learning as well as learners' online interaction;
- learner – explores the possibilities of improving work, learns foreign language course content, learns about e-education as an element of blended foreign language learning;
- self-assessor – monitors his/her own progress, estimates his/her own efficacy in conducting e-teaching, makes decision considering changes in F2F and online teaching/learning;
- self-realisator – expresses his/her own personality and ideas of e-learning content and e-learning design.

Students need time to adapt to blended language learning environment. Students' role in the blend is to (Marsh, 2012):

- plan and manage independent study time – teachers should provide their students with a clear course plan including an overview of the course schedule, the start and finish dates of units, the dates of the unit tests and final test, and an estimate of weekly workload; teachers should encourage students to use this course plan as a basis for planning their own time for learning;
- learn independently – the online component of blended learning allows students to learn when they want since they have no constraints of fixed classroom hours; students will need to get used to working independently, making their own decisions, and taking responsibility for their own learning; teachers can help students in monitoring their progress to ensure they are keeping up with the activities set, in reviewing their study plans regularly to ensure their planning is realistic;
- work collaboratively in online environment – a blended language learning course should provide students with the tools to interact with their classmates by setting up project-type activities that

require students to work in small groups (e.g. a presentation in class or an online *wiki*) to achieve a concrete learning outcome; and

- review and self-correct – many online learning materials are automatically marked so students receive an immediate score; teachers should provide a list of reference materials for students to review and have them practice, encourage them to try activities again to help them review and consolidate learning.

The effectiveness of blended language learning is noticeable in a considerable improvement of students' foreign language speaking skills (Banados, 2006, pp. 542-543), writing skills and in decrease of language anxiety levels (Adair-Hauck, Willingham-McLain, & Earnest-Youngs, 2000) as well as in the improvement of foreign language reading skills (Bojović, 2015, p. 31). In order to prove the effects of blended language learning on the development of foreign language reading skills we carried out the empirical research which explores the effects of blended learning on foreign language text comprehension.

PURPOSE OF THE STUDY

The aim of the study is to determine statistically significant differences in the students' level of reading comprehension in English as a foreign language (EFL) between two different learning environments – blended language learning and face-to-face language instruction.

The hypotheses of the study are as follows: blended language learning may increase foreign language reading comprehension; and considering the students' levels of reading comprehension, blended language learning is more facilitative language learning environment than face-to-face language instruction.

RESEARCH METHODS

Sample

The participants were 62 undergraduate students in the field of biotechnology engineering (44 females and 18 males) at University of Kragujevac, Faculty of Agronomy in Čačak, Serbia. They were junior and senior students in four-year agronomy engineering bachelor program, studying English for specific purposes (ESP) and having EFL instruction in two language learning environments, blended learning (31 students) and face-to-face instruction (31 students).

Research Variables

The following variables are used in the research:

1) the students' level of reading comprehension in a foreign language – in this research the foreign language is English language; and
2) two foreign language learning environments – blended learning and traditional face-to-face (F2F) instruction.

Instruments and Procedures

The research instruments were the authentic English language passages and reading comprehension tests.

The authentic English passages are the texts relevant for biotechnical sciences (in this case, fruit growing, viticulture, and food industry). The texts were not written for the language classroom; they retained their original terminology, vocabulary, syntax and grammar. It is important to emphasize that not only the texts but also the reading tasks related to these texts were authentic: the students needed to read the texts in English language (e.g. the topics referred to the conditions of growing specific fruits or the processing of various cereal crops) and to find the solutions for the specific problems considering these topics (e.g. how to protect fruits against the pests in the orchard).

The reading comprehension tests were created particularly for these authentic English passages in order to measure the students' level of reading comprehension in English language. The tests were formal, pencil-and-paper-based, having 18 or 20 items/questions. The assessment of reading included the following techniques: multiple-choice techniques, gap-filling tasks, matching, ordering tasks, editing texts and information-transfer techniques where the student task was to identify the required information in the text and then to transfer it (sometimes in transposed form) on to a table, diagram, flow chart, or map. The correct answer for each item has the value of 1 and the incorrect answer has the value of 0, which means that maximal possible scores were 18 or 20 and minimal possible score was 0. The final scores on each test were averaged to the mean values (M) of 1-5. The following key can help interpret the means of the reading comprehension test scores: mean values from 1-1.5 indicate the low or beginner level of reading comprehension; means from 1.51 to 2.5 indicate the lower-intermediate level, from 2.51 to 3.5 indicate the intermediate level, from 3.51 to 4.5 indicate the upper-intermediate level, and from 4.51 to 5 indicate the advanced level of reading comprehension. The students were tested at the beginning and at the end of the semester.

The initial reading comprehension test in English language was distributed to the students during their regular English language classes at the beginning of the 15-week semester (in the third week), and final reading comprehension test was distributed to the students at the end of the 15-week semester. The language classroom activities were focused on the contents, methods, tasks, and procedures characteristic for biotechnology

engineering as well as on the development of reading skills in English as a foreign language.

The following statistics procedures were used for data processing: descriptive statistics (mean values and standard deviations) and analyses of statistically significant differences (*t*-test and one-way analysis of variance - ANOVA). The level of statistical significance was defined as p<0.05. All the obtained raw data were analyzed using SPSS 20.0 for Windows.

RESULTS AND DISCUSSION

Analyzing the results obtained by the measures of descriptive statistics (mean values) (Table 1), it can be concluded that the students' level of EFL reading comprehension ranges from lower-intermediate level to upper-intermediate level, depending on the learning environment and the test (whether the reading comprehension test was distributed at the beginning or at the end of the semester).

Table 1. Students' levels of reading comprehension
in two language learning environments

Reading comprehension	Possible scores	M	Foreign language learning environment		F	p
			Blended learning (M)	Face-to-face instruction (M)		
Initial test	1-5	2.98	3.69	2.27	37.824	0.000*
Final test	1-5	3.39	3.99	2.79	35.673	0.000*
N = 62 $\quad$ *p < 0.01						

The mean value of the scores on the initial reading comprehension test for all the participants is M=2.98 (Table 1), showing that the students' reading comprehension is at intermediate level. The mean value of the scores on the final reading comprehension test is M=3.39 (Table 1) indicating the intermediate level of students' reading comprehension with the tendency toward upper-intermediate level.

The results obtained by applying the paired-sample *t*-test on the whole sample (Table 2) showed that he differences between mean values on the initial and final reading comprehension tests are statistically significant (*t*=-3,323, df=61, p=0,002, p<0,01); this result indicates that the students-participants in the research generally improved in reading comprehension.

Table 2. Significant differences between initial and final reading comprehension test

| | Paired differences | | t | df | p |
	Mean	SD			
Initial test – Final test	-.41	.970	-3.323	61	0.002*
	N = 62	*p < 0.01			

Considering the foreign language instruction in blended learning environment, the mean value on the initial reading comprehension test is M=3.69, while the mean value on the final reading comprehension test is higher M=3.99 (Table 1), although the participants remained at the upper-intermediate level of reading comprehension. As for the foreign language instruction in face-to-face learning environment, the mean value on the initial reading comprehension test is M=2.27 (the lower-intermediate level of reading comprehension) while the mean value on the final reading comprehension test is higher M=2.79 (the intermediate level of reading comprehension) (Table 1).

The results obtained by ANOVA show that the significant differences considering the students' level of foreign language reading comprehension are recorded among the students who were exposed to face-to-face and blended learning/teaching environments during their regular university EFL instruction (Table 1). The students who were exposed to blended learning have significantly higher scores both on the initial and final reading comprehension tests than their peers exposed to face-to-face foreign language instruction (F=37.824, p=0.000, p<0.01 and F=35.673, p=0.000, p<0.01, respectively), as seen in Table 1.

The results obtained in the research revealed that the biotechnology engineering students either exposed to face-to-face foreign language instruction or blended language leaning environment increased their levels of reading comprehension from moderate to more advanced reading skills during their regular university EFL/ESP courses. It seems that both blended learning and face-to-face learning instruction facilitated the students' improved reading skills in EFL. However, it was obvious from the findings that blended language learning was more facilitative learning environment since the students exposed to such learning context had higher levels of reading comprehension on both initial and final reading comprehension tests (the upper-intermediate level on the initial and increased on the final test) than their colleagues who were exposed to face-to face instruction (the low-intermediate level on the initial and the intermediate level on the final reading comprehension test). These findings are consistent with the results obtained in other research studying the effects of face-to-face instruction and blended learning on EFL students' reading comprehension performance (Alshumaimeri & Almasri, 2012; Behjat, Yamini, & Bageri, 2012; Kim, 2014). The online component of

blended learning provides the readers/learners with constantly updated materials with real-life vocabulary making the process of reading in foreign language more motivating and valuable. Reading in such environment has one additional advantage – it is rich in multimedia which provides the learners with more varied stimuli and learning styles (Szymanska & Kaczmarek, 2011, p. 40).

CONCLUSION

The experimental study examined the biotechnology engineering students' EFL reading comprehension in two learning environments, face-to-face language instruction and blended language instruction, in the university education context.

The students-future biotechnology engineers manifested significantly higher scores on their final reading comprehension test than on initial reading comprehension test in both learning environments. However, the students exposed to blended language instruction were more efficient on both initial and final reading comprehension tests than their peers exposed to face-to-face language instruction. These findings indicate that blended learning increases levels of students' FL reading comprehension more than face-to-face language instruction does.

The implications of these findings are that both learning environments are effective in developing students' reading skills. It also seems that blended language instruction is more effective basis for a program to improve foreign language reading ability. Some studies report greater effectiveness of blended learning, comparing to F2F instruction (Marquis, 2004, cited in Garrison & Vaughn, 2008, p. 4), as well as high students' satisfaction with (Albrecht, 2006, p. 6) and benefits from blended learning (Hitch et al., 2013).

The right blend in foreign language learning/teaching is not easy to determine and create (Neumeier, 2005). If a blended learning course is run without a principled approach it can end up as a blending together of course components in a confused unit (Sharma & Barrett, 2007, p. 8). In order to create the language learning environment which will meet the students' demands, it is needed to consider the identified learning outcomes for each classroom lesson, course and teaching program as well as the constraints presented by the number of classroom hours per week the students are expected to attend. Moreover, we need to take into account the number of hours of students' independent study they are expected to do per week and how much time teachers have to monitor and support online segment of blended learning.

Key principles to provide students with an effective and efficient use of classroom time, increased opportunities to use a foreign language outside of class, maximum opportunities for review and recycling for improved learning involve (Marsh, 2012, pp. 15-18): online segment, which precedes

the teaching/learning in the classroom where students prepare for the classroom and get introduced with new vocabulary and concepts in a foreign language; in-class segment where the focus is on communication activities that encourage real foreign language use through pair and group work; closing online segment where students use Web 2.0 tools (forums, blogs, wiki, Skype) in order to go online and interact in the target language.

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МЕШОВИТО УЧЕЊЕ КАО ОКРУЖЕЊЕ
ЗА УЧЕЊЕ СТРАНОГ ЈЕЗИКА

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Резиме

Развој и ширење информационо-комуникационих технологија пружили су нове могућности за учење које подразумевају не само традиционалну наставу у учионици већ и е-наставу/е-учење и мешовито учење. Појам мешовито учење први пут се јавио око 2000. године. Овај појам се прво повезивао са различитим облицима стручног усавршавања у пословном окружењу, да би потом био усвојен у области високог образовања и, на крају, у области учења/наставе страног језика. Упркос распрострањеној употреби термина у сва три претходно поменута домена, није једноставно дефинисати термин мешовито учење јер нема потпуне сагласности о његовом значењу. У сва три поменута домена мешовито учење означава комбиновање традиционалне наставе лицем у лице у учионици и прикладну примену информационих технологија.

Различити су разлози за увођење мешовитог учења у област професионалног развоја у пословном окружењу и у домен високог образовања. Што се тиче професионалног развоја у пословном окружењу, разлози обухватају већу ефикасност у учењу, проширење домашаја, оптимизацију трошкова и времена за развој програма учења, оптимизацију резултата. Основни разлози за увођење мешовите наставе у област високог образовања су: унапређена педагошка пракса, повећање могућности приступа учењу и флексибилност наставе/учења, те и повећана финансијска ефикасност. Ово су и разлози за увођење мешовитог облика наставе у контекст учења страних језика, уз додатне разлоге као што су: очекивања ученика да технологија буде саставни део наставе страног језика, флексибилност као могућност уклапања наставе/учења у друге дневне обавезе, директиве Министарства просвете/образовања да се осмисле курсеви у мешовитом окружењу за учење.

Пошто учење страног језика може да представља изазов за различите ученике у различитим контекстима, неопходно је испунити одређене услове за ефикасну наставу страног језика који обухватају следеће: ученици улазе у интеракцију на страном језику са аутентичном публиком; ученици су укључени у аутентичне језичке активности; од ученика се очекује да охрабрују друге и да буду сами охрабривани да се на страном језику изражавају разноврсно и креативно у усменој и писаној комуникацији; ученици имају могућност да ступају у социјалну интеракцију; ученици имају довољно времена за обављање активности и добијају повратне информације од наставника и вршњака; ученици се усмеравају да учењу језика приступају са свешћу о процесима који су његов саставни део; ученици раде у атмосфери са идеалним нивоом анксиозности; подржана је аутономија ученика. Такође, значајни фактори у стварању мешовитог окружења у настави страног језика подразумевају комплементарност, дидактички материјал и подршку (техничку, афективну и академску). Следећи чиниоци су, такође, веома важни за ствараоце наставних садржаја у мешовитом окружењу за учење страног језика: улога интеракције уживо, улога учениковог избора и саморегулације, модели подршке и обуке који дају смернице наставницима и ученицима у мешовитом окружењу за учење, постојање дигиталног јаза између

друштава на различитим крајевима социоекономског спектра, културолошка адаптација, равнотежа између иновације и продукције.

Професионалне улоге наставника страних језика одувек су биле битан чинилац у адекватно структурисаном окружењу за учење. Многе улоге наставника у мешовитој настави језика остају неизмењене у мешовитој настави. Наставник и даље води и надгледа напредак ученика, пружа ученицима повратну информацију, ради на повећању њихове самоуверености и одржавању мотивације. Такође, наставник страног језика је планер, инструктор, дијагностичар, евалуатор, саветник, ученик, самоевалуатор. Ученици страног језика планирају и организују време за сопствено учење, уче самостално, укључени су у колаборативни начин рада у онлајн окружењу, преиспитују и коригују сопствени рад.

Ефикасност мешовите наставе страног језика огледа се у значајном побољшању учениковых говорних вештина на страном језику, вештина читања и вештина писања, али и у смањењу нивоа језичке анксиозности. Резултати емпиријског истраживања указују на то да мешовито учење представља ефикаснију основу за унапређење разумевања прочитаног текста на страном језику у односу на наставу лицем у лице.