

Information and Communication Technologies for Analytics of Individual Tracking in Foreign Language Teaching

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Abstract. Modern educational process is based on the use of computer science even in foreign language teaching at higher educational establishments. Electronic educational platforms are widely used in modern educational process as well as in foreign language teaching. The practice of using electronic educational platform MyGrammarLab proves that even ready-made authentic foreign language courses allow creating individual tracking of foreign language teaching. MyGrammarLab is intended for improving grammar skills of students who learn a foreign language at higher educational establishments. MyGrammarLab has courses of different levels that consist of diagnostic, audio and video, training and control materials. Various settings of this platform provide flexible management of any course despite the inability to change the content. Diagnostics within the course: the number of attendance and attempts to complete a task, the amount of time spent for a task, the number of completed assignments enables a teacher to coordinate each student's work and organize individual tracking of teaching to increase the educational productivity. We carry out the ratio analysis between the time spent and the level of student's success, and also between the number of attempts to complete a task and the final score. This statistic forms the basis to create the methodology of using MyGrammarLab and additional materials that can be uploaded into the on-line resources in order to improve the quality of education among underperforming students of higher educational establishments. When the methodology is put into practice it shows the increase in motivation of Computer Science students when they do both built-in and additionally uploaded assignments by the teachers. The teachers monitor the results by means of messages. The authors present statistics of the results obtained before and after applying the methodology. These results show qualitative improvement in educational progress due to the use of Computer Science studies. In the conclusion we propose practical recommendations for organization of individual work of Computer Science students at higher educational establishments with different levels of English using electronic educational platform MyGrammarLab.

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1 Introduction

The use of electronic educational platforms has become relevant in a foreign language teaching at higher educational establishments recently [1]. The teacher's intention to develop all types of students' language activities (reception (listening and reading), production (spoken and written), interaction (spoken and written), and mediation (translating and interpreting)) leads to the implementation of new forms of the teaching practice based on computer science, information and communication technologies into the educational process at higher educational establishments.

The ability to use statistics or, so-called, Big Data to improve the educational process is one of the important parts in the teaching practice. Big Data helps to analyze and systematize a large volume of information and also gives the opportunity to adapt and change teaching process in accordance to the educational goals.

Big data is a kind of data that is too big to be processed by traditional data management aids. Big Data concept is defined by the certain 3V model: Volume, Variety, Velocity [2] but, according to Fig. 1 there are now additional characteristics such as, Value, Veracity, Viability.

In the world of Big Data the key point is the Volume which means extremely vast amounts of data. With the increase of the experience the amount of data is constantly multiplying. Therefore, the Velocity of receiving and processing data is of great importance. The Variety means the diversity of big data. Thus, it is important to understand what data is significant and adequate in order to be used in different spheres in a long term perspective. (Viability).

The interest in Big Data in the field of education is quite natural, as there appear more and more points of Big Data application. The omnipresent implementation of e-learning systems either in distance or in full-time forms of education changes the conception of the possibilities of the information educational environment (IEE). Along with such basic IEE characteristics as the educational content with the services of development, selection and delivery, the data about the students acquires undeniable significance. There is a possibility to protocol the information about all web search requests, the consequence of working with resources, including total testing protocols, distribution or editing content in powerful (cloud as well) data bases. In this case the profile of the student is formed on the basis of full data, at the same time connected with the study of different disciplines and the development of a variety of projects [3].

For this reason, the enormous possibilities of modern technologies allow organizing an individual tracking of teaching for every student. In order to create optimal conditions for the development of individual abilities of students, the academic staff of the Department of Foreign Languages and Translation, Ural Federal University, has decided to use the electronic educational platform MyGrammarLab, Pearson [4]. This electronic educational platform has its own advantages and disadvantages [5], it

provides the data that has an undeniable advantage for organizing an individual tracking of teaching though.

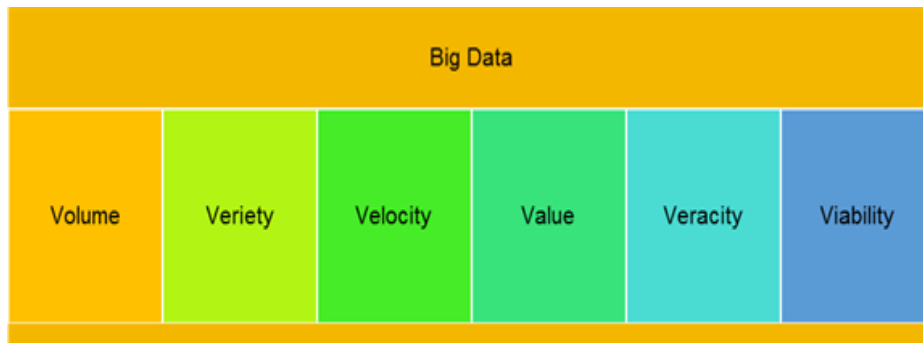


Fig. 1. Components of big data.

2 Methodology

The object of this research is the statistics of the platform MyGrammarLab, which allows the development of an individual tracking of teaching for each student. The subject of the paper is the methodology of the individual tracking working with the electronic educational platform MyGrammarLab.

Theoretical and empiric methods of academic research were used to achieve the purpose of the research. Theoretical methods, the analysis of psychology-pedagogical and methodological literature, objective-logical and information-goal analysis of text based content allow developing step-by-step methodology of working with electronic educational platform MyGrammarLab. Empiric methods include, the implementation of the research results in teaching practice, tracking students in their work with the platform, the analysis of progress in the course of education, statistical analysis of the results and its graphical representation.

3 MyGrammarLab description

The resources of MyGrammarLab course offer the opportunity to study and practice English grammar combining a book, online and mobile materials. This course is developed for students of different levels: ElementaryA1/A2, IntermediateB1/B2, Advanced C1/C2 where each level refers to the Common European Framework [6]. The goal of this course is to create the environment where the student has the possibility to get the individual tracking of studies and expand his educational opportunities. Due to the data the teacher receives about each student from automated database of MyGrammarLab individual tracking becomes possible.

In order to organize individual tracking as precise as possible the statistics provided by MyGrammarLab online is used. The statistics is presented in the tab page “Gradebook”. Monitoring the results, the teacher makes changes in the course to improve the individual results. The result is shown in the number of indices in percentage, a grade (according to knowledge assessment system A-F), the number of completed assignments, with the possibility to view the first and the last attempts, as well as the average score or the highest score of the total number of attempts. The teacher can also change the view of results to display tasks and tests, only tasks, only tests, exercises and tests and only exercises. The student’s results are shown in the form of diagnostic chart of the course. The amount of time spent by the students on each task in a unit of the course is shown in the first diagnostic chart “Time/Unit” (see Fig.2).

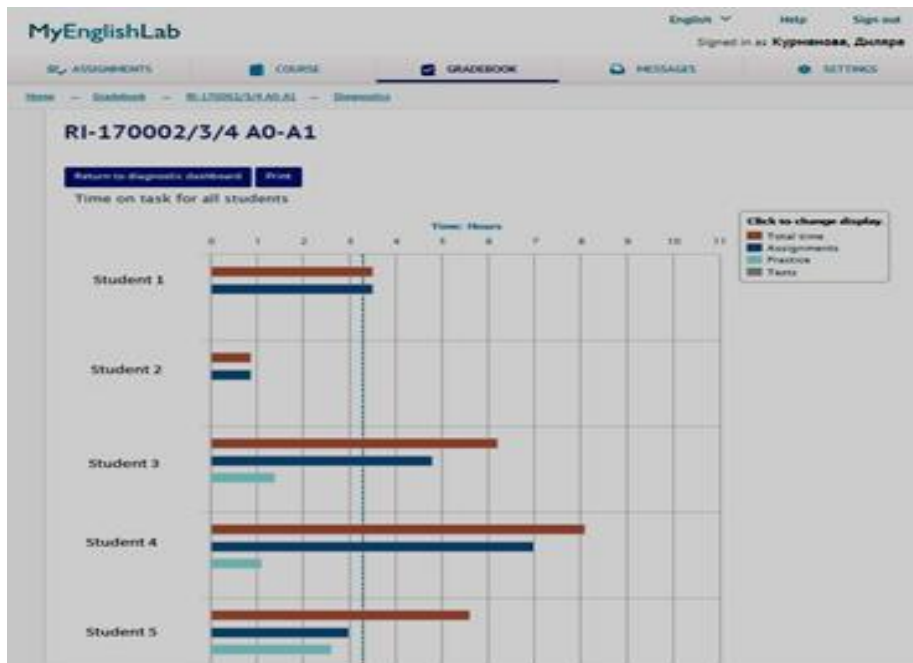


Fig. 2. Diagnostic chart “Time/Unit”.

The average time spent on a task in a course unit MyGrammarLab is shown in the second diagnostic chart “Time/Sub-section” (Fig. 3).

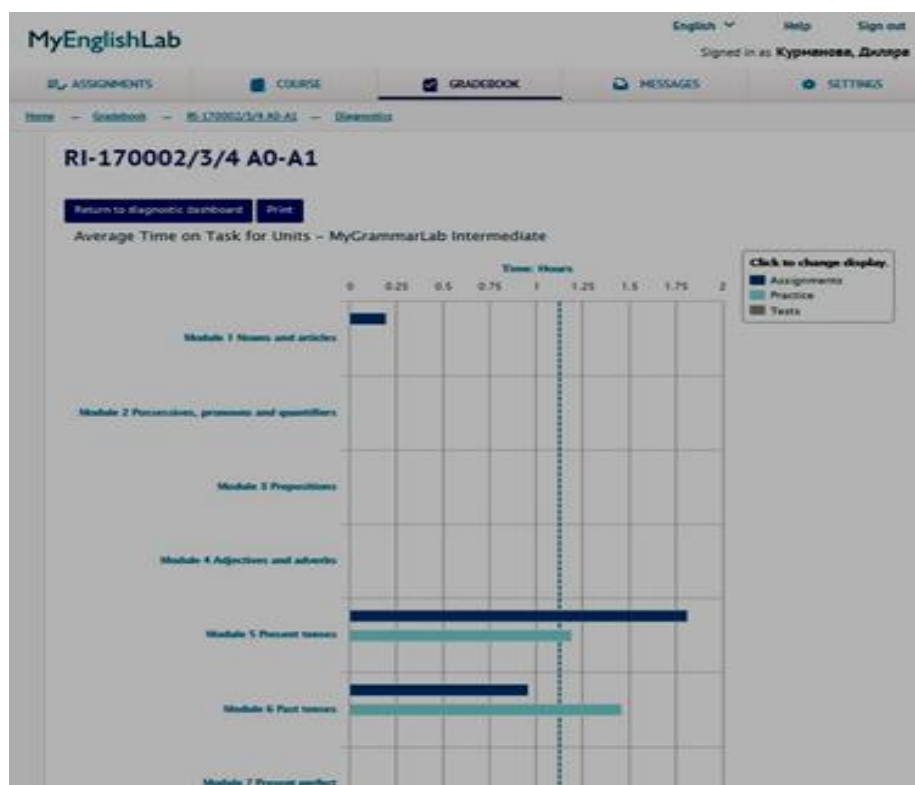


Fig. 3. Diagnostic chart “Time/Sub-section”.

The number of attempts and the average score of all the units are shown in the third diagnostic assessment chart “Attempt/Score”. (Fig. 4).

MyGrammarLab online version has the tab page “Course” which contains all the grammar units including grammar practice for international exams PET and FCE. This tab page allows the teacher selecting the necessary module and assigning the tasks according to the current course. Each unit contains the diagnostic test, the progress test, optional exercise and the exit test. Each unit includes a video with an explanation of grammar rules, practical grammar exercises, listen and check tasks with the answers to the assignments on the topic of studies from MyGrammarLab book and fulfillment of practical pronunciation tasks. A student listens to the exercise and records himself to improve English pronunciation. This practice increases greatly the motivation of a student to pay attention to the pronunciation, as he controls the development of his phonetic skills within the course. However, the essential disadvantage of this task is the absence of self-recording opportunity with the further sending of the recorded audio file to the teacher within the online course. Therefore, students have to send audio files to the teachers via e-mail, what makes this activity more complicated for students, and teachers. The tab page “Messages” helps teachers and students to be in touch within the course using messages, which are sent individually, or to all students (mass messages)

by the teacher. Besides that, the teacher monitors the list of assignments in the tab page “Assignments”, as well as manages the course, groups, personal profiles, statistics and notifications in the tab page “Settings”. The teacher creates a new course, adds other resources and registers students for an existing course in the tab page “Settings”. The course provides the possibility to upload additional materials into the current online course according to the requests of students and teachers.

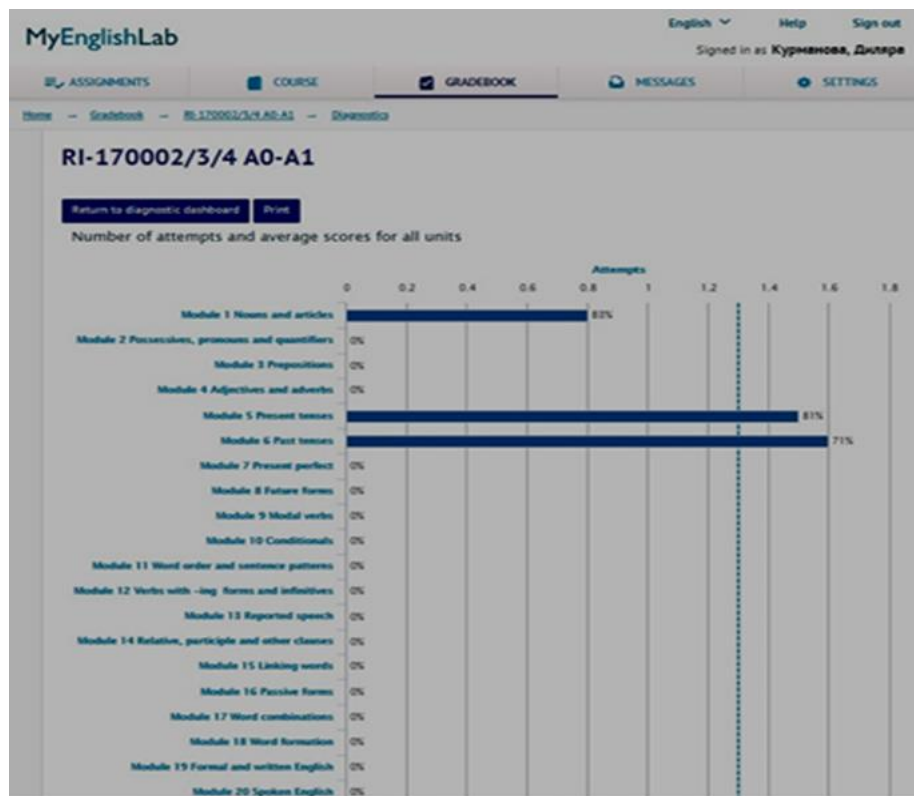


Fig. 4. Diagnostic chart “Attempt/Score”.

4 Methodology for MyGrammarLab implementation

The teacher creates the course for each group of students to join the on-line course. The ID for each group of course is automatically created at this stage and then it is sent to the students by the teacher. The students register on the platform and join the course using the ID.

In order to introduce new material, the teacher uses video included in each topical unit. Then students study theoretical material from MyGrammarLab book together with the teacher in the class. They work with practical exercises from the book during classes either. It allows the teacher to pay students’ attention to the specific features of the

grammar material of the current unit and plan further individual work of students in the on-line course.

The teacher makes regular assignments in the on-line course. The teacher can make assignments to all students or individually. If a student performs quickly and has qualitative results during in-class practical activity, then the teacher hardens the condition of the activities: gives less attempts to complete an assignment, hides the links to theoretical material (hints) and sets limited time to complete the tasks.

The teacher establishes the same conditions for all students while making assignments. Different indices of completed assignments provide the real picture of educational effectiveness. If the average time spent on completing practices and tests is approximately the same for all students as well as the results (Fig. 5, Students 2, 3, 4, 5, 6, 7) the teacher continues making the assignments for all the students.

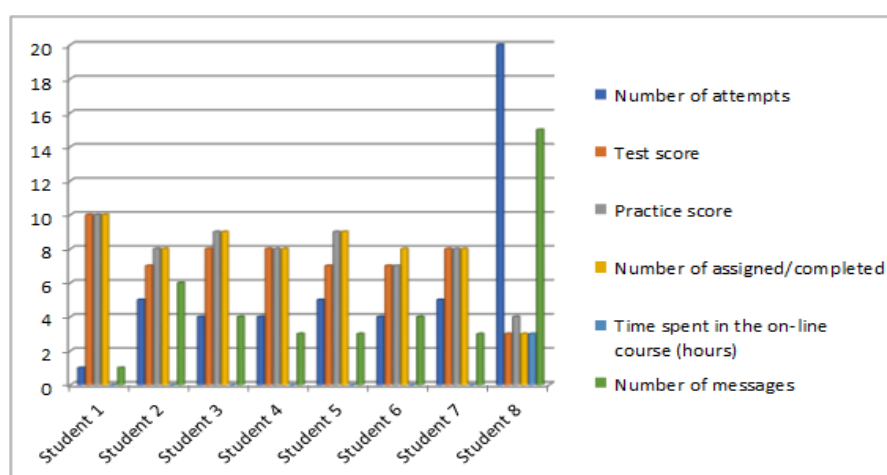


Fig. 5. Progress results in the group.

If the teacher notices that one of the students spends the least amount of time for an exercise, successfully completes all the assignments and rarely consults the teacher via messages (Fig. 5, Student 1) the teacher makes individual assignments, i.e. increases the number of exercises within the assignment, provides less attempts and time for completion, assigns written tasks using messages.

If the teacher remarks that a student spends much time in the on-line course, makes a great number of mistakes, and the assigned-completed tasks ratio is very low, in this case it also requires an individual approach to this student (Fig. 5, Student 8). The teacher consults the student via messages, increases the time to complete an assignment, provides the links to the theoretical material. The teacher also uploads additional exercises from other resources in the Word format if the practices in the on-line course are not enough for the student to achieve good results. Tests are also uploaded additionally. Thus, the objective indices in the electronic educational course give the opportunity to organize an individual teaching tracking of students.

It should be noted that the materials uploaded by the teacher allow completing not only text exercises but also creative ones, e.g. to describe a picture, complete a story for a picture, etc. The tasks are cooperative and individual which allows organizing an individual teaching tracking for each student depending on the level of a foreign language within the group.

5 Conclusions

Computer science studies and information and communication technologies are essential for modern and effective educational process at higher educational establishments. Various tools of computer science and information and communication technologies may widely be used in foreign language teaching. The electronic educational platform MyGrammarLab provides enough data for creating effective educational process. The data Variety, Velocity and Visualization enable the teacher of a foreign language to organize an individual teaching tracking for each student on the electronic platform effectively. The acquired data is important in determining the methodology of working individually with each student. The electronic educational platform guarantees data security and allows addressing the previously obtained data to predict individual tracking of students work in foreign language studying.

Thus, the electronic educational platform MyGrammarLab provides the methodology of individual tracking of foreign language teaching at higher educational establishments by the automated analysis of the analytical statistics.

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