Educational software: Linguistic Training method for foreign languages' speakers

Natalia Burlacu

State Pedagogical University "Ion Creangă"
nr. 1, str. I. Creangă, Chişinău, MD – 2069, Republic of Moldova
E-mail: natburlacu@hotmail.com

Abstract

This article describes the educational applications of own conception ("DicEl" and "RecitalMaster") developed by the author for studying the Romanian Language by language regions' people via of other close themed projects. Proposed educational software are applicable in the conditions of: self-study; student-teacher contact (full and-or partial, or at the distance). These elaborations are absolutely adaptable for studying other foreign languages.

Keywords: Educational Software, Digital Skills, Linguistic Training.

1 Introduction

Today knowledge and using of computer products and information, including communication technologies (ICTs) are becoming a mandatory goal of contemporary man. Society's requirements call for a permanent optimization of teaching and learning, in general, and of language's studying especially, the most important link in this context for multilingual citizens of Republic of Moldova is learning of Romanian language, as a mother language and also as a language of interethnic communication. The intersection of these two aspects of social and educational defines conditions' creations which ensure high efficiency in the studying process of Romanian language through implementation of educational software able to respond to demands of society and pupils' personality of gymnasium level (Burlacu Natalia, 2010).

The interest in studying the issue of languages by the aid of computer is determined of the need for centring educational process on the pupil, as he became subject of educational process in this question, which requires a individualization of that (educational process). Computer's using is an optimal opportunity to individualize the educational process.

In the context of formative-productive education we should be concerned not only in studying of Romanian language through traditional methods and strategies, student's attitudes towards immanent language's values, but also in skills' extension of information and communication. Thus, there is need to use the computer as a tool in Romanian language's learning, considering that just this type of studying is of great value in functional terms.

1.1 Concept of educational applications "DicEl" and "RecitalMaster"

Intended to meet the requirements set out in the Delphi programming environment have been developed two educational applications of own conception: "DicEl" and "RecitalMaster". These educational software serve to build and preparing written and oral language skills to individuals of different ages Romanian, Romanian native carriers or speakers of other languages than Romanian, which in the conditions of Republic of Moldova and Romania, feel the need to increment the

competencies grammar, spelling and orthoepic in different compartments of the Romanian language for the multiplication of theirs academic success, social integration and/or augmentation of fruitful impacts of professional life.

Through these educational products the knowledge of spelling, punctuation, development of phonemic hearing - Romanian language specific may be granted in an auditorium's conjuncture in the during of contact hours with the teacher or in during of self-regulated learning. Romanian language's adequate competences have an important and quite high percentage in the various levels of studies, especially at: primary, secondary, higher and continuing education, with serious impacts on the entire itinerary of life, particularly at career.

For creating an effective dialogue with prospective user in both proposed applications - "DicEl" and "RecitalMaster", into the best traditions of software development, have been developed interfaces with unified aspect, provided with common menu bar (see *Figures 1, 2*) in the style the Windows' applications, which aim to facilitate the interaction of potential applicants to use the gave product with internal system of described applications, source flies' organization, error correction mechanism, printing process and electronic reproduction of learning's activities results. Order to reflect applications' interferences "DicEl" and "RecitalMaster" have been elaborated *Table 1.*

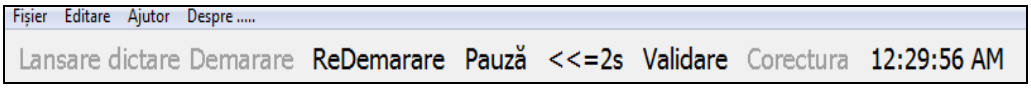

Figure 1. The menu bar of application "DicEl"

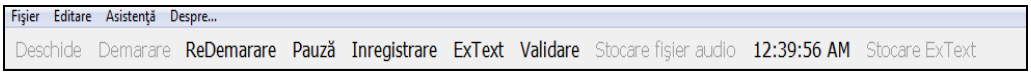

Figure 2. The menu bar of application „RecitalMaster"

The model of developed educational software, as the whole research, promotes the idea to approach through competencies the training process.

2 Educational software's implementation of Linguistic Training for languages' speakers

For determining the efficiency degree of proposed applications in the course of the Romanian language's study by Romanian non-speaking people, in the period from 1/02-25/05 - 2013a.st. into theoretical lyceum (LT, High School) "OLIMP" from Chisinau has been initiated a pedagogical experiment with implementation of software applications "DicEl" and "RecitalMaster". During the experiment, we had monitored the independent variables' effects: ways to promote organization forms in the sense of training and development of the Romanian language's written and oral skills to the people participated in the experiment; providing to pupils didactic materials into electronic format - supplying the above-mentioned applications; source files in formats of: *. mp3, *. doc, *. wav - previously encrypted in order to protect the data and to prohibit unauthorized accesses in educational contents, which can be sometimes of the current or final evaluation of knowledge; delivery of support information relating to cases of software's applicability, etc., the dependent variables: training and development digital skills' level and current linguistic preparation level in Romanian language of the students. Additionally, we compared the level of motivation of participants in the experiment, an item which was designated as intermediate variable.

Table 1. The menu bar's components of applications: "DicEl" and "RecitalMaster"

Nr:	Menu	Presence / absence of the function and menu's purpose in application	
		DicEl	*RecitalMaster*
1.	**Dictation's Release Open the Exercise**	The sole active menu on the entry into working interface of the application; displays tree structure of the location on the hard disk from where can be opened the selected dictations. All dictations placed in the working location of application have to be processed in a special and originally way presented in two basic formats: of audio file *.WAV or *.MP3 and some standard: of *.DOC - its then are subject to serious decrypting modifications provided by given application.	The sole active menu on the entry into working interface of the application; displays tree structure of the location on the hard disk from where can be opened for expressive reading exercise. All texts placed in the working location of application have to be processed in a special and original way presented in two basic formats: of audio file *.WAV or *.MP3 with or without auxiliary file *.DOC, which contains forward the literary text and / or sequence of text (in prose or lyrics) for study.
2.	**Start**	Accessing the given menu it start playing the audio content of chosen dictation; into the file, according to the method of dictation's implementation is recorded the first reading of the text - integrally; the second reading - dictation of text's phrases; followed by reading three - dictation of text's syntagms; the fourth reading, dictation of phrases again; the final reading - verification of dictated text.	Accessing the given menu it starts playing the audio content of chosen marked sound sequence.
3.	**ReStart**	Stops scrolling of current electronic audio dictation; audio file recovery can be performed only acting on again the Start menu.	Stops scrolling of audio track dedicated to the expressive reading text; relaunch audio file can be achieved only acting on Start menu again.
4.	**Pause**	Stops scrolling of current electronic audio dictation; repeated Pause Menu's operation resumes scrolling of the audio file from where it has been stopped.	Stops the audio scrolling of current recording; repeated Pause Menu's operation resumes scrolling of the audio file from where it has been stopped.
5.	**<<=2s**	Scrolls of dictation, repeating the now read text two seconds ago; can be operated several times, repeating of dictation will be done from position of: Nr_of_clicks * 2 seconds ago.	-
6.	**Check**	Makes the verification of written, given the algorithm implemented in the application, which compares the student's written version with the original dictation.	-
7.	**Correction**	Opens the work area's second part of application, displaying all written by the student with all errors' marking committed by him.	-
8.	**Statistics**	Displays a box, presenting statistical data regarding the number of errors committed by the user - at the level of characters and words against the total number of text's characters and words.	-

9.	**Registration**	-	Make available to users the opportunity to make records of expressive reading in many audio file formats such as uncompressed WAV (PCM), Compressed WAV (ADPCM, A-LAW, U-LAW, DSP, GSM, etc., MP3 (MPEG Layer-3) ratio of 8, 16 or 32 B, which allows correctly recording and reproduction of text that has been pronounced previously at the moment of sound's creation record.	
10.	**Validate**	-	Performs the storage of sound sequence with expressive reading recently recorded at the level of algorithm implemented in the given software.	
11.	**Save Results of Dictation Save Audio File**	Saves the dictation's results in one of working locations of application; saving is made in a *.DOC file, formatted: name and surname of student; system date and time, including its seconds; dictation's text written by the student; total number of text's characters; total number of modified, further, omitted character and the total number of words, all of its followed by original text of the dictation.	Achieved expressive reading record results can be stored in file formats *.WAV or *.MP3 on the host computer, local network server or any computer on the network off-line, sent on-line to in a distant place computer.	
12.	**Close**	Enables the dictation closure and exit from the application; accessing given menu program will display a dialog box that will ask for salvation's confirmation of dictation made with or without leaving the application.	Enables leaving the personal development's regime of audio file with artistic content and possible abandonment of the application by clicking *Exit* on the program's *File* menu. There is will display a dialog box which ask for confirmation rescue sequence perform with or without leaving the application here.	

The objectives of experiment:

- Demonstrating the effectiveness of developed educational software – "DicEl" and "RecitalMaster".
- Developing of generic digital skills: knowledge of the keyboard; adequate typing of text, taking into account diacritical graphic signs, etc.
- Formation and development of correct writing ability in terms of spelling and punctuation.
- Forming and skill development adequate and expressive artistic reproduction of various literary genres such as epic and lyrical.
- Training and developing the digital abilities to interact with educational applications' modules "DicEl" and "RecitalMaster".
- Setting the level of training and development of specific competence for development and implementation spontaneous, fluent, precise, various acts of oral and written communication into Romanian language to students participating in the experiment.

The experiment included 77 students from grades: VI VIII (native language and study's language of representatives is the Russian language) from theoretical lyceum (LT, High School) "OLIMP", Chisinau, Republic of Moldova. Samples' composition and amount of students from each class is shown in the *Table 2.*

Table 2. Composition of experimental samples from Alolingual School (LT "Olimp", Chisinau, Republic of Moldova)

The experimental group (EE)		*The group of control (EC)*	
Institution / Class	Number of students	Institution / Class	Number of students
cl. 6-th A	20	cl. 6-th B	18
cl. 8-th A	20	cl. 8-th B	19

3. Processing the results of the experiment

There are several methods to estimate the differences / similarities between two samples in statistics. By (Clocotici and Stan, 2001) "The sample is a subset of the statistical population considered".

We call an experimental sample (EE) the sample which was trained by applying the implementation's methodology of educational software developed - "DicEl" and "RecitalMaster" - and a control sample (EC), the sample was trained traditionally.

Resulting from the fact that the amount of in the EC population is not identical to the whole population in the EE, for validation of experimental results have been used two statistical criteria, namely:

1. Criteria Cramer-Welch (Labăr 2008).
2. Mann-Whitney U test Criteria (Opariuc-Dan, 2011).

Homogeneity of EE and EC samples has been determined from the controlled experiment through the use statistical criteria listed above in the given article (see *Tables 3, 4*).

Table 3. Statistical data of training experiment in Alolingual School

The experimental group (x)			*The group of control (y)*	
EE6A			**EC6B**	
Number of students	N (x)	20	N (y)	18
Average mark	M (x)	6.35	M (y)	6.444…
Dispersion (D)	D (x)	2,481578947…	D (y)	2,745894118…
T	**0,1711173137662988697969**…			
Minimum value (Min)	Min (x)	4	Min (y)	4
Maximum value (Max)	Max (x)	9	Max (y)	9
SUM (S)	S (x)	127	S (y)	116
EE8A			**EC8B**	
Number of students	N (x)	20	N (y)	19
Average mark	M (x)	6.4	M (y)	6.5
Dispersion (D)	D (x)	2,025263158…	D (y)	2,4861…
T	**0,20756430…**			
Minimum value (Min)	Min (x)	4	Min (y)	4
Maximum value (Max)	Max (x)	9	Max (y)	9
SUM (S)	S (x)	128	S (y)	124

Cramer-Welch criteria applied on collected statistical data show that between the experimental samples EE6A and EC6B; EE8A and EC8B no significant differences.

Based on the data presented in Table 4 and EC6B EE6A experimental samples; EE8A and EC8B at **STAGE CONTROL EXPERIMENT** showed significant differences, while at the **EXPERIMENTAL STAGE TRAINING** already show significant differences in levels of student preparation of the samples subjected experiment (see *Tables 4, 5*).

Table 4. Mann-Whitney U criteria applied to determine the homogeneity of the samples. EE and EC's Sum of Ranks calculation.

Phase of control experiment 1-2						
The experimental group (x)				*The group of control (y)*		
EE6A				**EC6B**		
Sum of Ranks	T1 (x)		323	T2 (y)		302
Total Sum						742
Sample Volume	N1(x)		20	N2(y)		18
	W1 (x)		227	W2 (y)		211
	U					211

EE8A				**EC8B**		
Sum of Ranks	T1 (x)		331	T2 (y)		321
Total Sum						652
Sample Volume	N1(x)		20	N2(y)		19
	W1 (x)		239	W2 (y)		230
	U					230
Phase of training experiment 1-2						
EE6A			**EC6B**			
Sum of Ranks	T1 (x)		454	T2 (y)		276
Total Sum						730
Sample Volume	N1(x)		20	N2(y)		18
	W1 (x)		96	W2 (y)		237
	U					96
EE8A				**EC8B**		
Sum of Ranks	T1 (x)		452	T2 (y)		312
Total Sum						764
Sample Volume	N1(x)		20	N2(y)		19
	W1 (x)		118	W2 (y)		239
	U					118

Table 5. Empirical calculated values by statistical criteria

Value of U_{emp}	**Critical Value of U_{cr} 0,05**	**Samples**
Phase of control experiment		
211	112	EE6
230	119	EE8
Phase of training experiment		
96	112	EE6
118	119	EE8

Since the $U_{cr} < U_{emp}$ (see experimental phase control - Table 5), both statistical criteria indicate significant differences between levels of student preparation of the samples subjected to the experiment.

Since $U_{cr} > U_{emp}$ (see experimental stage training - Table 5), both statistical criteria indicate significant differences between levels of student preparation of the samples subjected to the experiment.

Broadly academic achievement representatives EE6A lots, EE6B, EE8A, registered the following dynamic EE8B expressed in the marks (see *Table 6, Figures 3-6*).

4. Conclusions

The resulting values of EE are higher than the results of EC, which confirms our intention to optimize the acquisition and development of skills to non-native students to write correctly and perform expression readings through using the developed by us own design software - "DicEl" and "RecitalMaster".

The success can be recorded as an effective method of language training for foreigners, applicable both under student-teacher fully or partially auditors' contact or remote, or in a self-regulated learning format, concomitant giving pronounced digital skills of the students.

In technological point of view the educational software "DicEl" and "RecitalMaster" are absolutely adaptable and can be perfectly adjusted for other cases the study of modern languages.

Table 6. The groups' dynamics of alolingual students' academic progress at experiment stages: Control and Training

Control experiment	**Training experiment**
Class VI, LT (High School) "OLIMP", from Chisinau	
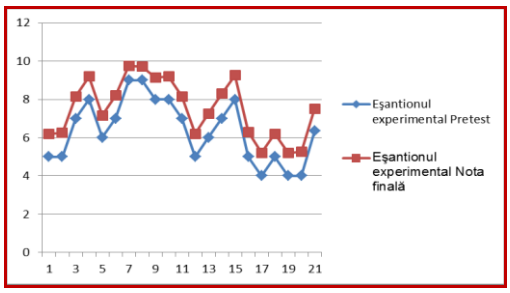	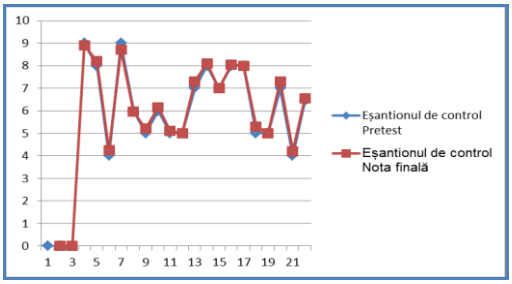
Figure 3. Experimental group – EE6A	*Figure 4.* Group of control – EE6B
Class VIII, LT (High School) "OLIMP", from Chisinau	
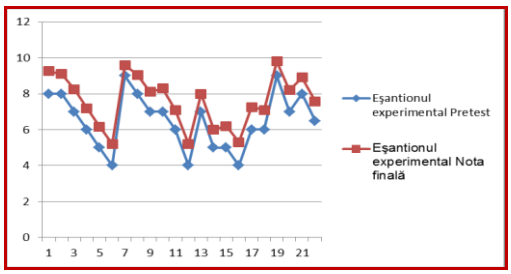	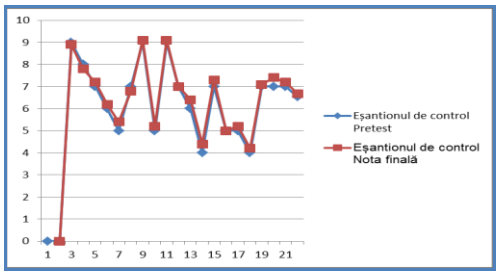
Figure 5. Experimental group – EE8A	*Figure 6.* Group of control – EE8B

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