Language Technologies in Teaching Bulgarian at Primary and Secondary School Level: The NBU Platform for Language Teaching (PLT)

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Abstract

The NBU Language Teaching Platform (PLT) is a versatile tool supporting language learning. So far used for FLSP e-tuition or blended learning in general foreign language classes, it is now being extended to provide e-support for teaching Bulgarian at primary and secondary school level. Methodologically, it compensates for some of the major drawbacks of the functional/CLT approaches to language teaching. The article presents the general structure of the platform and the functionalities specifically developed to match the standards and expected results set by the Bulgarian Ministry of Education.

1 Aim of the project

The Platform for Language Teaching (PLT) was developed as a teaching tool enhancing the Moodle-supported e-tuition for blended learning at NBU, as a complement to the standard communicative methods of the language classroom. It was designed by a team of university experts in the field of pedagogy and the methodology of foreign language learning and was initially devised as a necessary supplement to foreign language classes. In view of its new application to Bulgarian language teaching at primary and secondary school level, new corpora and functionalities are now being developed in accordance with standards and programs recently published by the Bulgarian Ministry of Education¹, and with the new chal-

lenges posed by the need to teach Bulgarian (language skills, basic linguistic knowledge and familiarity with Bulgarian literature) to students for whom it is not a native language. The platform provides individualised tuition for students who prefer to work on their own, at their own pace. Monitoring is fast and precise, giving teachers and students detailed feedback on overall performance and specific errors.

2 Methodological issues

The PLT offers teaching material and drills which complement the functional/CLT method of first/second language classes by compensating for some often noted drawbacks², namely:

- insufficient attention to structure and form;
- preference for fluency over accuracy;
- unsystematic presentation and drilling of grammar;
- insufficient drilling of vocabulary;
- reliance on group and pair work (which is not appropriate to all classroom environments and students);

¹

http://zareformata.mon.bg/documents/naredba_6_11.08.2016_bg_ezik.pdf, www.mon.bg/?h=downloadFile&fileId=546

² Cf. Langeveldt, H., 2012. Communicative Language Teaching (CLT): Strengths and Weaknesses. Accessed at: https://issuu.com/miriamsheen/docs/_clt_strengths_and_weaknesses; Sumhachalam Thamarana 2015. A Critical Overview of Communicative Language Teaching. International Journal of English Language Literature and Humanities, vol. III, Issue V, July 2015. Accessed at https://www.researchgate.net/publication/282877159_A_Critical_Overview_of_Communicative_Language_Teaching.

Figure 1. Structure of the platform: modules

- toleration of errors (seen by CLT as a natural part of the process of language learning);
- exclusion of the student's native language;
- inappropriateness for beginners;
- problems of monitoring.

The new functions of the PLT as a tool for Bulgarian language teaching as both a native and second/foreign language require the development of a new corpus and a new data base, the design of new sets of drills on:

- Bulgarian vocabulary (general vocabulary and terms³, multi-word lexemes, collocations and phraseological units);
- Bulgarian practical grammar (gender, number, plurality of nouns and noun satellites, use of prepositions, verbal Aktionsart, aspect, tense, word order, etc.);
- Basic linguistic knowledge (of morphology and syntax — for students in the 6th and 7th class);
- Familiarity with literary texts.

³ The Ministry of Education does not offer clear standards for vocabulary skills. For each grade and class, we base our general vocabulary and terminology drills on textbooks and recommended literature.

The tests are based on excerpts from the literary works recommended for the respective class/educational level; the choice of texts and exercise types for the two educational levels and groups of target students are consulted with experts from the regional inspectorates of education.

3 Structure of the platform

In accordance with its aims and functions, the PLT integrates: 1/ an environment for creating, organising and maintaining electronic text; for extracting text corpora and aligning corpora; 2/ a linguistic database; 3/ a set of modules for the generation and editing of practice exercises for each text or corpus; 4/ functionalities for export from the platform and import to other educational platforms (Figure 1). Special modules have been created for test generation, performance assessment and feedback, allowing thus not only centralised presentation of abundant teaching content, but also control of the educational process, plus fast and reliable feedback on performance⁴.

The PLT is a web-based system developed using a model-view-controller (MVC) open source framework – CodeIgniter and PHP programming language. The framework provides the core implementation of the interdependences and the interdependences and the interactions between the three tiers of the MVC architecture, while the de-

⁴ Cf. also M. Stambolieva, M. Hadjikoteva, M. Neykova, M. Raykova, V. Ivanova 2017.

Figure 2. Platform navigation menu – access to the modules.

Figure 3. Grouping texts into corpora

velopers focus on the PLT specific features.

The MVC modular architecture is selected for its extensibility, supportability, scalability, and maintainability. The modules of the platform are implemented following the convention:

- controllers: class `ModuleName`, extends `CI_Controller`, file name `ModuleName.php`;
- models: class `ModuleName_model`, extends `CI_Model`, file name `ModuleName_model.php`;
- views: folder `ModuleName`, a corresponding `.php` file for each item from the items list of the module: `index.php`, `create.php`, etc.

The PLT stores the linguistic data in a relational database with 46 tables implemented on MySQL.

To provide enhanced user experience and ease of use, the PLT user-interface design is uniform for all modules. PLT look-and-feel is implemented using CSS3. The interaction between the system and the users is direct synchronous on load of the module and asynchronous communication through AJAX requests for in-module data management and updates.

The PLT is designed for extensibility and scalability. The platform may easily integrate:

- new modules for collecting linguistic data;

- new modules for generating new types of exercises;
- export to new e-learning platforms in addition to the export to MOODLE.

Finally, the PLT could be utilized as a research platform.

4 PLT modules and features

4.1 Creating texts and corpora

The environment for the maintenance of the electronic text archive organises a variety of metadata: bibliographical information on the publication, professional area of the publication, text difficulty – with recommended level of the European language framework. These metadata, either individually or in different combinations, form the basis for the extraction of text corpora. Linguistic analysis is performed on either a single text or a corpus of texts; at any time, corpora can be expanded with additional texts from the archive or in other ways reorganized, without loss of linguistic information.

The word form lists generated by the platform and the results of lemmatisation are used to derive vocabulary lists for the respective educational level. General vocabulary words or terms can be provided with definitions, synonyms or translations, to be used for the generation of multiple matching exercises⁵.

⁵ For the methodological foundations of the project and the design of the exercises, Cf. M.S. Hadjikoteva 2005 and M. Neykova 2014.

Figure 4. Morphemic analysis

Figure 5. Generating a Multiple choice exercise
(Fill in the blanks with an appropriate Preposition).

4.2 The linguistic database

The PLT includes an up-to-date system of modules designed in the spirit of an earlier Linguist's Workbench package⁶, but integrated here into a new linguistic data base⁷. The corpora are lemmatised and POS-tagged, morphemically and syntactically analysed. Selected vocabulary items are provided with simple definitions, synonyms or translations (Figure 4).

4.3 Generating practice exercises

The linguistic data base allows the generation of a large number of language drills. Most of these appear in the format of standard Open the brackets, Open cloze, Multiple choice, Multiple matching or Reorder the words/sentences/paragraphs exercises (Figure 5). Newly developed options are based on the results of the morphemic and syntactic analyzers (Open cloze or multiple choice exercises with derivational or inflexional affixes or

roots; multiple matching exercises for word form - part of speech pairs; word form-grammatical category pairs; phrase-syntactic function pairs).

Drills are based on one or more paragraphs from the corpus. The paragraphs need not be consecutive and can even come from different texts.

The generation of an exercise is based on the choice of a specific set of options. For the multiple choice exercise above, the set of options chosen is POS: Preposition, Occurrence: each, Lemma: unticked (i.e. the lemma will not appear). A further choice relates to the format: Gapfill, Drag-and-drop or DropdownFormat.

The platform also allows the generation of vocabulary drills of the multiple matching type, based on definition, synonymy or, also, translation (for non-native speakers of the language).

For reordering exercises, the following options are available: word in sentence (suitable for both primary and secondary school level), sentences in paragraph and paragraphs in text, syntactic phrases in sentence/clause (suitable for secondary school level) (Figure 6).

⁶ M. Stambolieva 1996, M. Stambolieva, and D. Dragostinov 2014.

⁷ M. Raykova, V. Ivanova 2017

Figure 6. Generating a Reordering exercise (sentences in paragraph).

Figure 7. An Open-the-brackets exercises (ticked Lemma)

Figure 8. A reordering exercise (words in sentence).

5 From the PLT to other educational platforms

The training exercises generated in the E-platform can be exported to other educational platforms. There, the exercises can be organised in archives attached to each level (language level or class) and can be combined to form tests. Figures 7 and 8 illustrate the visualisation of the exercises in Moodle.

5.1 Student performance assessment

The results of students' performance are generated automatically, with quantitative information for each student and group statistics. Students, teachers, headmasters or higher institutions (regional inspectorates, Ministry of Education administrators and others) can receive immediate feedback for each student/class/school, for each separate task and for the test overall. This feedback offers a mechanism of control and can be used in identifying areas of difficulty, underperforming students, classes and schools (Figure 9 and 10).

Завършен	16 август 2017 21:48	16 август 2017 22:18	32 мин.	39,14	ДА	✓ 13,84	✓ 9,33	✓ 2,80	✓ 2,17	✓ 10,42	✓ 4,17	✓ 3,13
Завършен	16 август 2017 21:54	16 август 2017 22:39	45 мин.	19,15	ДА	✗ 8,88	✓ 6,25	✓ 5,25	✓ 1,99	✗ 8,88	✗ 8,88	✓ 1,56
Завършен	16 август 2017 22:18	16 август 2017 22:48	29 мин.	85,38	ДА	✓ 13,84	✓ 12,88	✓ 12,88	✓ 9,24	✓ 12,88	✓ 12,88	✓ 12,88
Завършен	17 август 2017 12:04	17 август 2017 12:42	38 мин.	76,08	ДА	✓ 13,84	✓ 8,21	✓ 12,88	✓ 9,24	✓ 12,88	✓ 12,88	✓ 12,88
Завършен	17 август 2017 12:39	17 август 2017 13:12	41 мин.	76,63	ДА	✓ 13,84	✓ 6,25	✓ 10,05	✓ 9,24	✓ 12,88	✓ 12,88	✓ 12,88
Неприключен	17 август 2017 12:39											
Завършен	17 август 2017 18:29	17 август 2017 18:01	41 мин.	83,29	ДА	✓ 13,84	✓ 10,42	✓ 12,88	✓ 9,24	✓ 12,88	✓ 12,88	✓ 12,88

Figure 9. Feedback on performance

Figure 10. Statistical information on student performance

6 Conclusions and future work

The PLT offers a variety of options for corpus creation and corpus-based or text-based generation of educational content for one or more languages. It combines the general advantages of e-learning with blended learning and teaching supplementation to function-oriented or communicative teaching in the language classroom.

The flexible design of the system and its multiple functionalities make it an appropriate tool for e-teaching of native or second/foreign languages at all educational levels.

The corpus and educational content presented are designed for the specific needs of teaching Bulgarian and will be tested in the course of the school year 2017/2008.

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