

## **BASIC REQUIREMENTS FOR CHARACTERISTICS OF THE KOREAN LANGUAGE E-TEXTBOOK**

**Lyudmila A. Voronina<sup>1</sup>, Sergey A. Letun<sup>1</sup>, Evgenia Rozenfeld<sup>2</sup>**

<sup>1</sup>*Moscow City University – Moscow (Russia)*

<sup>2</sup>*Tel Aviv University – Tel Aviv (Israel)*

**Abstract.** Rapid changes in the digital age making e-textbooks the key technical aid among electronic media are getting actively applied in education. A more specific image of the contemporary foreign language e-textbook is shaped by adding new characteristics to the list of the basic characteristics required. The article deals with determination of those characteristics of e-textbooks that will make their use more in demand for the study of languages, including Korean. The purpose of the article is to determine the main characteristics of a foreign language e-textbook as well as to analyze how they will reflect the specifics of the language in question and how exactly they will manifest themselves. The analytical study of e-textbook prototypes developed both practically and theoretically on the basis of criteria set for e-textbooks, the software being used and the research experience let the authors identify the mandatory minimum characteristics required for the foreign language e-textbook and compile the scheme for the distribution of the characteristics into groups. The results showed that the main requirement of a cross-cutting, primary nature for the entire set of e-textbooks under consideration is hyperconnectivity. The study allowed identifying linguodidactic and technological components of foreign language e-textbooks, as well as those of the Korean language e-textbook (a multimodal interactive dictionary) specifically, which are in a hyperconnected relationship with each other. Their introduction and implementation into specific software, a linguodidactic web constructor, will contribute to development of more sophisticated e-textbooks to be of high demand both among learners and teachers.

**Keywords:** e-textbook; characteristics of the e-textbook; hyperconnectivity; Korean e-textbook.

### **Introduction**

Today, the e-textbook as a main learning tool is taking an increasingly strong position in the world's educational systems. This is evidenced, for example, by a gradual increase in spending by university libraries on the development of their e-textbook activities (França 2021). The e-textbook's rise in popularity is driven by

three main factors. Firstly, this is an individuality of the student: a modern student always strives to use multimedia tools everywhere in the Internet space due to his/her “digital origin” (Karjanto 2021). Marc Prensky even coined a term for such students, i.e. “digital natives” (Prensky 2001). Secondly, they are challenges of the unforeseen pandemic situation of the recent years and, as a result, there is a necessity to organize training in a hybrid format, i.e. with the active involvement of electronic media, where the e-textbook is considered the main one (Nourie 2021). And, thirdly, this is effectiveness of the assimilation of educational content using e-textbooks, which is confirmed by studies on evaluating the quality of education using e-textbook. A number of studies have shown the benefits of the latter in teaching foreign languages. It should be emphasized here that the studies stating this feature were carried out both in the “pre-pandemic” period and after it. For example, a study by S. Laketa and D. Drakulic showed that learning outcomes with the help of e-textbook is greater, because, according to the authors, e-textbook supports learning motivation better (Laketa and Drakulic 2015). Research by M.P. Sari and A. Antasari also showed the best learning outcomes achieved by students using e-textbooks. Moreover, the authors emphasize that students who used the e-textbooks “indicate a very positive attitude towards learning” (Sari and Antasari 2021).

In the scientific and methodological literature, there is an endless deepening of the results of researches on certain aspects related to the development and implementation of e-textbooks in the process of teaching *a variety of subjects*. For example, the results of a study by M. Alfiras and J. Bojiah on the preference of a paper textbook or an e-textbook among students of Gulf University were quite of peculiar interest: it turned out that despite the preference for the electronic format, the latter is of the least demand for learning languages (Alfiras and Bojiah 2020). The results obtained have not been further studied, but this fact, on the one hand, prompts discussions about their causes, because now, on the contrary, the digital environment of the language education is within the area of close attention (Tareva 2021), which should lead to creation of high-quality teaching aids and on the other hand, to trying to determine those characteristics of the e-textbooks that will make their use more in demand for the study of languages.

Previously, the authors attempted to highlight the specific characteristics of the foreign language e-textbook, but in comparison with its traditional paper counterpart in the context of publishing. Then the focus of their attention was directed exclusively to the specifics of the *electronic format* of the foreign language textbook. Their studies have shown that a modern e-textbook should be characterized by *interactivity, polymodality and hypertextuality* (Letun and Voronina 2021), and *a linguodidactic web constructor* should be a tool for its implementation, as well as for its additions and updates on an ongoing basis, specially developed as a part of the educational and publishing platform of a modern university. However, the conceptually substantiated web constructor can, in principle, be implemented on

a variety of electronic devices, so actual connection of the related software with a specific technical device will bring us closer to shaping a more specific image of the contemporary foreign language e-textbook, including Korean, by adding new characteristics to the list of the basic characteristics required.

### **Purpose and objectives of the study**

The purpose of this study is to determine the main characteristics of the Korean language e-textbook as a foreign language e-textbook, as well as to analyze how they will reflect the specifics of the language in question and how exactly they will manifest themselves. The results of such an analysis will indicate the main requirements for the characteristics of the e-textbook and, subsequently, for a technical device, on the technological basis of which the learning content laid down by the web constructor will be implemented. The object of analysis were three prototypes of the e-textbook described in the works of modern scientists. The first one was compiled from the criteria set for e-textbooks by Korean colleagues. The second is based on a generalized e-textbook image, which is created with the help of ToolBook Instructor, AutoPlay Media Studio, MatchWare Mediator and other programs already widely used by developers, and the third is theoretical, based on the research experience generalized by colleagues.

### **Literature review**

Among the e-textbooks of various subjects, the foreign language e-textbook, on the one hand, as an information model of a certain methodological system, and on the other hand, as a technical device, requires *special attention* in virtue of its complexity for the specifics of a foreign language as an educational subject. The foreign language is not only a learning aim, but also a tool of learning, in connection with which it requires a greater number of conceptually determined exercises and tasks for the formation of competencies than for other subjects of the humanitarian curricula, for example. This substantiates the necessity to increase attention to the *procedural aspect* of mastering the subject of study, therefore, following A.L. Berdichevskii, we believe that the contemporary foreign language textbook, first of all, should *include a program of actions* for a teacher and for a student aimed at achieving the aims of education, as well as include *all the components of the content of education necessary* for them and have *a certain structure* (Berdichevskii 2020). Accordingly, it seems appropriate to divide the characteristics of the e-textbook into three groups: general (reflecting the functionality of the learning system), content and structural (basic list of components). The specified list is supplemented by those characteristics that should appear as a result of the implementation of the structured content program of actions of the teacher and student when using a certain technical device. Therefore, in addition to referring to the theoretical statements about the essence of the textbook as a linguodidactic category, it is necessary to refer to

the scientific and methodological literature on the topic under study to determine *how the use of e-textbooks depends on their characteristics*. At the same time, in virtue of the presence of a wide variety of scientific ideas about the concept of “e-textbook” under consideration, it is necessary to note the unanimity of opinion of scientists that an accepted uniform definition of e-textbooks does not exist in the academic community (Li 2021).

To date, the term e-textbook is considered the most popular among researchers, which means a textbook in a digital format, the content of which is adapted to human-computer interaction, i.e. i-textbook. The main reason for demands on such an e-textbook, among a number of other reasons, is the better assimilation of educational content by students (Urška and Grega 2018). This is not surprising, since such kind of e-textbook (we mean i-textbook) includes video, computer animations, games, etc., which contributes to the activation of psycholinguistic processes aimed at the effective mastering of a foreign language using the maximum number of receptors (Reinhold et al. 2021). In this regard, it is worth noting that, thanks to the current level of digital technologies, today devices can transmit not only smells, but even tastes: in December 2021, it became known that a prototype “lickable” TV screen which can mimic food flavors has been developed by a Japanese professor Homei Miyashita of Meiji University<sup>1</sup>. The *availability of modern technological solutions* appears to be an objective characteristic of the technological level required from the contemporary foreign language e-textbook.

The presence of excellent technological capabilities should further encourage teachers to participate in the development and contribute to the maximum involvement of electronic didactic tools into the process of teaching a foreign language, but the lack of use of e-textbook as the latest developments in science and technology in this field makes us pay attention to why teachers do not use the existing technologies widely, as it is they who largely determine how effectively students will use them (Lee et al. 2021). A fairly substantial study was conducted by K. Roberts, A. Benson and J. Mills on the level of e-textbook use by teachers, where the main result is a weak, negative relationship between teaching experience and level of the e-textbook use. The reasons for the low level of the e-textbook use are: 1) insufficient elaboration of issues of technical support for e-textbooks in their universities; 2) number of the e-textbook development projects in which the teachers' personal participation was significant for their personal experience in professional development as a methodologist (Roberts et al. 2021).

At the same time, the problem mentioned in the reviewed sources is not only related to teachers: there are confirmations in the scientific and methodological literature on certain issues of the development and implementation of e-textbooks that students, for some reason, do not always prefer use the electronic format of textbooks in training. They indicated impossibility to highlight text, insert sticky notes, bookmark pages etc. (Jardina et al. 2021). Some of these claims can be satisfied thanks to the technological

progress: a solution to this was proposed by J. Bidal back in 2016, when he suggested a stylus as a mandatory attribute of pressure-sensitive screens, “which allows users to employ stylus in a naturally-feeling manner for note-taking and drawing without any noticeable latency” (Bidal 2016). Screen fatigue was also noted, but we attribute this to the students' experience of using or not using a digital source. Every year there are more and more digital formats in our life, which means that this problem will come to naught over time. All the facts discussed above once again confirm the necessity to equip the e-textbook with the latest technological solutions. From this point of view the experience of Korean colleagues is especially valuable. As a result of the study, D.K. Kim and J.C. Lee propose to divide all technological characteristics into four groups: 1) technical characteristics (optimality of building the content structure, optimality of content forms, effectiveness of pedagogical technologies, metadata, stability), 2) pedagogical design (correspondence to the level of learning, screen design, interface, convenience, educational materials), 3) administration (ability to set administration parameters, accessibility to the learning process), 4) assessment (method of assessment, assessment content, assessment tools, feedback) (Kim and Lee 2020).

Theoretical considerations about the e-textbook are gradually becoming a methodological basis for creating the first prototypes of the e-textbooks. The development of their technological capabilities stimulates the complication of the subject methodology, including the foreign language, but at the same time makes more requirements to the very technical device that implements educational content. The e-textbooks are, first of all, a system product where a component is considered as an element of the system. Therefore, we can differ simple and complex e-textbooks, perfect and unfinished e-textbooks due to the fact that they do not use one technology or other. From the previous review a reasonable number of questions arise: what structural and content components, with all available technologies at the moment, should the foreign language e-textbook consist of, what are the functions of these components, how the elements of the system form the qualities of the whole, etc.

### **Methodology**

To achieve the purpose of the study, tasks were set, in accordance with which the following was done: 1) modern prototypes of the foreign language e-textbook were selected; 2) those prototypes that are suitable for the implementation of the purpose of the study were analyzed in terms of structural and content components; 3) functions of the identified components were defined and classified as elements of the linguodidactic system; 4) those elements of the system, which are responsible for the specifics of the considered foreign language, were determined.

In accordance with the first task, searching in the scientific and methodological literature was performed for prototypes of the foreign language e-textbook.

The selection criteria were the requirements for a contemporary foreign language textbook, which were expressed by A.L. Berdichevskii as the most complete and objective.

Further, according to the second task, the selected modern prototypes of the foreign language e-textbook were analyzed. The objects of analysis were the structural and content components, and their main characteristics were formulated on the basis of this analysis allowing to understand how the ratio of the system elements forms the quality of the whole. And their main characteristics obtained as a result of the analysis were summarized together with structural and content components in the table below (Table 1).

**Table 1.** Characteristics of the e-textbook prototypes

| <b>Author(s)<br/>of the<br/>electronic<br/>textbook<br/>prototype</b> | <b>Structure</b>                                                        | <b>Content</b>                                                                                                                                         | <b>Characteristics</b>                                                                                                                                                                                                 |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E.Sh.<br>Shefieva,<br>O.N.<br>Bessarabova                             | Main material                                                           | Professionally oriented authentic texts, a variety of communicative situations, a set of exercises                                                     | Variety of content levels, feedback, interactivity, possibility of improvement multimedia, availability (ease of distribution), convenient navigation, possibility to be adapted to any device, presence of hyperlinks |
|                                                                       | Additional material (multimedia resources, tests, texts for discussion) | Podcasts, tests, professionally oriented additional texts covering the most pressing issues of the area                                                |                                                                                                                                                                                                                        |
|                                                                       | Reference material                                                      | Grammar rules, key terminology                                                                                                                         |                                                                                                                                                                                                                        |
| A. A. Kolesnikov                                                      | "Teacher" Mode                                                          | Working program, teacher's book, technological map of the lesson, register                                                                             | Multimedia, polycode                                                                                                                                                                                                   |
|                                                                       | "Learner" Mode                                                          | Diary, textbook (system of exercises), workbook, additional aids (additional material), interactive electronic plan of the current lesson, weekly plan | Feedback (its quality is determined by the level of interactivity and systematic assistance from a teacher), maintaining motivation                                                                                    |
|                                                                       | "Parent" Mode                                                           | Learning outcomes, scoring for implementation of tasks, automatically generated recommendations                                                        | Possibility of integrated parental control (communication between participants of the educational process), feedback                                                                                                   |

In the course of the analysis, we paid attention to the authors' comments about the connectivity of the components of the e-textbook. For example, E.Sh. Shefieva and O.N. Bessarabova emphasize the necessity for coherence between the main and additional material, where the latter should complicate the main material previously mastered by students (Shefieva and Bessarabova 2021). A. A. Kolesnikov speaks of the necessity to “ensure the real interaction of **all** (*emphasis added*) components of the teaching materials in a single digital space”, where, for example, the teacher’s technological map is directly connected to the electronic interactive plan of the current lesson, etc. (Kolesnikov 2021, p. 32). Therefore, it became necessary to determine what functions are performed by different components of the e-textbook, as well as whom they are intended for. The authors of the prototypes, in addition to the fact that they note the connectivity of the components, emphasize the need for feedback - this indicates another characteristic of the e-textbook.

Further, according to the third task, various components of the selected prototypes of the foreign language e-textbook were studied for the functions they perform, which, together with the results of the study of Korean colleagues, made it possible to formulate the technological characteristics of the desired prototype. From the point of view of the teacher, the e-textbook of Korean as a foreign language should provide the ability to manage the learning process: planning and assessment, and on the part of the learner it should provide the ability to transmit certain subject content represented by specific organizational forms. These characteristics should be provided with a certain set of structural and content components, which differ for paper and electronic formats of the foreign language textbook and perform their functions. The following were identified as components that are in a hyperconnected relationship with each other, which is subject to software implementation on the corresponding technical device:

- teaching
  - administrative (working program, methodological recommendations, technological map of the lesson, register with marks);
  - evaluating (marks with comments, automatically generated recommendations);
- learning
  - organizational (scorecard, workbook, lesson plan(s), tests);
  - subject (polymodal texts, including podcasts, visual and audiovisual visibility; cognitive matrices, including grammar rules; exercise system, dictionary).

It seems, therefore, that the foreign language e-textbooks should consist of these components at least.

A separate research interest was the question whether language specificity can cause corrections in the set of the basic requirements for the foreign language e-textbook, such as, for example, the Korean language. Therefore, in accordance with the fourth task, the specificity of Korean as a foreign language in the context of teaching was considered. Based on its specificity, the Korean language e-textbook, among other things, is complicated by the necessity to place more emphasis on

the visualization of extralinguistic information in virtue of the high-contextual nature of the Korean language for domestic students and of the presence of a large cultural distance between its native speakers and Russian-speaking students, which requires a separate selection of the special list of Korean vocabulary containing the expressed national-cultural component and its proper linguo-didactic representation in the e-textbook. Therefore, *a mandatory component of the latter should be a multimodal interactive dictionary, which is similar to the model of an educational ideographic (thematic) dictionary*, where lexical units are culturally significant words and phrases (descriptors) connected by paradigmatic/syntagmatic relationships (Drozhashchikh and Bashmakova 2021). The main value of such a dictionary is that it: 1) displays the context of the use of lexemes, as well as extralinguistic information; 2) is equipped with hypertextual access connecting the dictionary with its databases. Thanks to this feature, the dictionary visualizes the dynamics of culture presenting the word semantics in diachrony. At the same time, it seems necessary this dictionary should have the function of limiting the amount of content in accordance with the level of education in order to implement the didactic principle of accessibility and affordability.

Each foreign language has its own specifics, however, the e-textbook format itself assumes that a certain set of its characteristics will have a common composition for all foreign languages.

## Results

The aim was set to determine the main characteristics of the Korean language e-textbook as a foreign language based on the challenges of modern reality. We analyzed the relevant literature in order to determine and summarize a positive pedagogical experience of the predecessors. Thus, regardless of its format, a number of *basic linguo-didactic characteristics*, which the foreign language textbook should have, was developed (Table 2).

**Table 2.** Basic linguodidactic characteristics of the modern foreign language textbook

| Requirements to modern foreign language textbooks as systemic programs of actions of teachers and students (according to A.L. Berdichevskii) | Characteristics of the modern foreign language textbook |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| To create material conditions for mastering the means of the language and at the same time for implementing foreign language communication   | Completeness of material conditions                     |
| To be a stimulus that promotes verbal-thinking activity                                                                                      | Motivating potential                                    |

|                                                                                                |                                                                                |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| To provide administration of the pedagogical process                                           | Usefulness of feedback and control, possibility of evaluation                  |
| To have clear aims that are consistent with the requirements of a particular historical period | Balance between relevance and fundamentality of learning objectives            |
| To reflect modern methods of education                                                         | Methodological support of learning materials                                   |
| To teach learners to learn                                                                     | Support for independent learning and cognitive activities                      |
| To be supported by technical teaching aids and the Internet                                    | Certain level of technological support to the learning, access to the Internet |

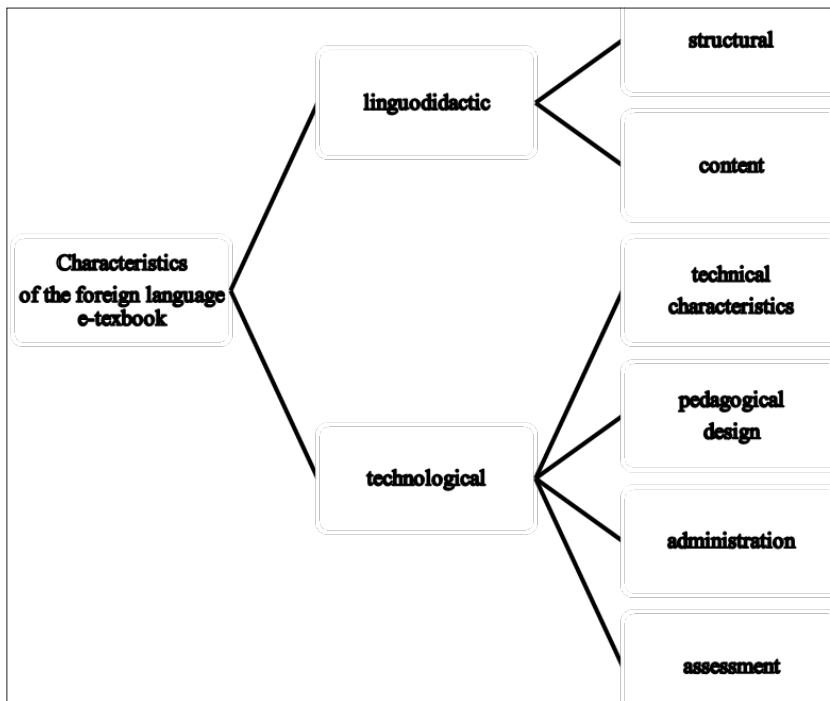
The performed analysis showed that the main requirement of a cross-cutting, primary nature for the entire set of the considered e-textbooks is **hyperconnectivity**. *Hyperconnectivity* is a characteristic of the e-textbook indicating that a technical device with the learning content embedded has a program that provides hyperlinking of the components, various documents and records in them, etc., realizing the hypertext function. It also provides communication and connection of all participants of the educational process. At the same time, it is important to differ the hyperconnectivity of all components in a single digital space and hypertextuality: the first differs from the second in that it characterizes the technical device, the content embedded and the training program (functionality) as a whole, while the hypertextuality characterizes its educational content presented in a text form (Table 3).

**Table 3.** Comparison of the related content and structural characteristics of an e-textbook

| <b>Content characteristics</b> | <b>Structural characteristics</b> |
|--------------------------------|-----------------------------------|
| Polymodality                   | Multimedia                        |
| Interactivity                  | Possibility of feedback           |
| Hypertextuality                | Hyperconnectivity                 |

Thus, the components of the e-textbook are presented non-linearly, and the learner has the opportunity at any stage of the foreign language learning to refer to any content component of the linguodidactic system, without the necessity to refer to any source of information outside its interface - this is the main feature and distinctive characteristic of the e-textbook.

The results of the analysis of actual sources were compiled into groups and presented in a scheme showing the distribution of the foreign language e-textbook characteristics by groups: linguodidactic (structural and content) characteristics and technological (technical, pedagogical design, administration, assessment) characteristics (Figure 1).



**Figure 1.** Groups of characteristics of the contemporary foreign language e-textbook

In addition, the study showed that the presence of “multimodal interactive dictionary” is considered a distinctive component of the Korean language e-textbook. At the same time, the presence or absence of such a component does not refer to an additional characteristic of the prototype of the Korean language e-textbook.

### **Discussions**

The question is to what extent the presented set of characteristics will be of general character depending on the language specificity, which can subsequently serve as a subject for new areas of comparative research.

In addition to the previously identified characteristics, the following two e-textbook characteristics are considered important for any foreign language, though they are not directly related to the structural and content characteristics of the foreign language e-textbook, as they are closely related to the technical device where the educational content is implemented. These characteristics are the matter of discussions by its nature.

### *Possibility to use e-textbooks for offline learning*

Perhaps in some cases it is better to use the e-textbook offline, i.e. offline from the Internet, because the internet communication interference can not only greatly disrupt the integrity of the perception of educational content (sequence and quality of the formation of a certain psycholinguistic mechanism), but also interfere with the educational process itself. In the event of, for example, voltage drops and even a short-term power outage, technical devices (router and computer) will require a certain time to resume their operation, as a result of which the formation of a certain psycholinguistic mechanism will be interrupted, and it will be necessary to make the exercise repeated from the beginning. In this case, the time allotted for the exercise or even for the lesson may not be enough.

### *Internet security when using e-textbooks*

Another argument in favor of the autonomous use of the e-textbooks based on certain technical devices is the learner's internet security, which can be compromised during the learning process. An educational institution that developed the e-textbook must guarantee the privacy during educational development of a specialist by stopping any information outflow going beyond the educational process, which later may be used against the learner. And, since information leakage can turn out to be bidirectional, the inflow of any information from the outside should also be stopped, including the information, which in the learner's opinion can be useful as a kind of clue. So, for example, the Russian IT company Smart Life, which develops and implements innovative integration of software and hardware systems and introduces software in the field of the educational and corporate segments, solves this issue by limiting the learner's access to the internet or to some internet sources (URL: <https://www.edpad.ru/o-plansheet-edpad>).

## **Conclusion**

The analytical study of the e-textbook prototypes developed both practically and theoretically on the basis of the criteria set by the leaders in the industry for e-textbooks, the software used by the e-textbook developers and the research experience obtained by colleagues let the authors identify the mandatory minimum characteristics required from the foreign language e-textbook and compile the scheme for the distribution of the generalized characteristics by groups, as the use of e-textbooks depends on their characteristics.

The performed analysis showed that the main requirement of a cross-cutting, primary nature for the entire set of the considered e-textbooks is hyperconnectivity. Therefore, there is the necessity to increase attention to the procedural aspect of mastering the foreign language in the form of a program of actions for a teacher and a learner. The availability of modern technological solutions appears to be an objective characteristic of the technological level required from the contemporary foreign language e-textbook.

This and other characteristics shall be provided with linguodidactic and technological, structural and content, teaching and learning components of the foreign language e-textbooks. It was identified that all these components and the components such as a multimodal interactive dictionary, which is distinctive for the Korean language e-textbook, are in a hyperconnected relationship with each other.

Each foreign language has its own specifics, however, the foreign language e-textbook format itself assumes that a certain set of its characteristics will have a common composition for all foreign languages.

Introduction and implementation of the analyzed and identified characteristics into the specific software, a linguodidactic web constructor, will contribute into development of more sophisticated e-textbooks to be of higher demand at learners and teachers.

## NOTES

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✉ **Lyudmila A. Voronina (corresponding author)**

**Sergey A. Letun**

Moscow City University

129226 Moscow, Russia

E-mail: VoroninaLA@mgpu.ru

✉ **Evgenia Rozenfeld**

Tel Aviv University

P.O. Box 39040

6997801 Tel Aviv, Israel