The use of mobile applications in the study of environmental safety monitoring issues in a foreign language

Tatiana Kopaneva¹*, Natalya Manuilova¹, Anna Zakharova¹, and Tatiana Pervil¹

¹Don State Technical University, Gagarina square, 1, Rostov-on-Don, 344000, Russia

Abstract. Due to climate changes caused by scientific and technological progress, there is a need to monitor and track environmental indicators. A new mobile learning technology (m Learning) has been proposed to monitor indicators and track them in mobile applications. There is a need to adjust and update the modern educational process by introducing mobile technologies, including weather and environmental informers. This increases awareness about the state of the environment in the region where students live, simultaneously stimulates their motivation to learn a foreign language and contributes to the interest of society in preserving the environment. The article emphasizes that it is necessary to maintain a balance between the use of the traditional educational process and mobile learning, which is due to the psychology of students' perception of mobile devices and applications. The article is aimed at finding ways to introduce existing mobile applications into the educational process in order to increase public interest in the processes of negative climate change and environmental safety.

1 Introduction

The rapid changes taking place in education have resulted from the development of information and computer technologies that have influenced all aspects of human life. Today, the effectiveness of teaching a foreign language is mainly determined, first of all, by the degree of motivation of students, then by the quality and content of the educational process and, finally, directly by the natural psychophysiological characteristics of the student [1-3].

One of such innovations is mobile technologies, the so-called m-learning, which many researchers refer to as e-learning technologies [4-7].

We live in the modern information society, and we should consider the fact that mobile devices provide a promising platform for the development of a new direction in learning a foreign language. Currently, there are about 1.5 billion mobile devices in the world, which is three times more than the number of traditional computers used.

The history of the mobile world has gone quite a long way of evolution, taking its origins from Alan Kay, who in the late 70s of the XX century proposed the concept of the Dynabook device - the prototype of the first laptops and tablet PCs, and reaching Steve Jobs, the founder

* Corresponding author: tkopaneva@list.ru
of Apple and developers of modern mobile devices. The development of mobile learning (Eng. m-learning, hereinafter ML) in the form in which it is now – based on the latest devices and wireless technologies, gave rise to the emergence of PDAs (handheld mobile computers) in the 1990s. To date, students have access to various ways to obtain the necessary information, including mobile applications that have rapidly gained popularity.

Today, the educational process is actively and radically changing under the influence of various information and communication technologies (ICT) and mobile technologies [8]. Programs for mobile devices are already used by many European countries, as well as in the USA, Australia, Canada and many other countries. In the Russian educational space, examples of such kind of teaching are not widely spread and, according to estimates, development in this area is lagging behind by several years.

Mobile technologies have long attracted the attention of both foreign and Russian researchers. The main advantage of the M-learning process is mobility and accessibility. The usage of the Internet can be considered a "pedagogical tool for improving the effectiveness of learning." WEB 2.0 resources, namely blogs, podcasts, wiki, social networks, messengers, video conferences have proven the effectiveness of new technologies in education.

2 Methods

Despite the relative novelty of ML technology (the first prototypes of mobile applications began to appear about 20 years ago), the scientific literature contains numerous attempts by researchers to define the concept of "ML". In a detailed analysis of the materials in this area, it was found that all definitions either relate to the technological parameters of the training tools used, or indicate general didactic aspects of the ML. According to the UNESCO definition, ML implies either the independent usage of mobile technologies, or in combination with other ICT technologies, for the opportunity to "study anytime, anywhere [10]." ML is considered as an activity where students can become more productive by communicating, receiving, creating, providing various educational information in any format on personal mobile devices (devices).

ML is a complex phenomenon that needs to be determined from both methodological and technical-didactic positions, while not forgetting about the role of software. As a result, we can assume the following formulation of the definition of the concept of ML: mobile foreign language teaching is an interactive technology; this is a technology of teaching, control, interrelation of the parts of the educational process, the basis of which is the usage of mobile devices and training applications that allow the user, regardless of time and place, to form and develop speech (language) skills and abilities, as well as to form socio-cultural, compensatory, educational and cognitive competencies that are part of a foreign language communicative competence, with the aim of freely using a foreign language as a means of communication [11].

Other types of ICT training are closely related to mobile learning, so it is impossible to talk about ML abstractly from them. Therefore, a large number of authors believe that it is advisable to consider mobile learning in comparison with electronic (English e-learning), distance learning, and mixed (English blended learning) types of learning. This approach to determining the links between the above types of training is based on the assertion that ML is one of the kinds of e-learning. On the other hand, we can say that mobile learning is considered as a subspecies of distance learning [12].

The effectiveness of mobile learning depends on the hardware characteristics of the mobile device. The term "mobile device" refers to a compact portable device (device) running an operating system (OS, most often: Android OS, Windows Phone, Ios, etc.) that supports mobile networks and Wi-Fi technology. The characteristic features of mobile devices are considered to be small size, individuality, ease of usage, provision of mobile communication
and Internet access, compatibility with desktop PCs, laptops, sufficient battery life, quick switching on and off of the device. The following devices can be used as means of implementing the ML technology:

- smartphones;
- communicators;
- tablets;
- netbooks;
- e-books;
- MP3/4 players;
- portable game consoles, etc.

The choice of the device depends on the age, location, tasks to be solved, etc.

With the spread and development of mobile devices, the popularity of mobile applications has also grown. According to the Oxford Dictionary, an application (English app, application) is a program developed to solve a specific task, a software component [13]. It is logical to assume that, by analogy, a mobile application is an autonomous software product designed to work on mobile devices in order to optimize the solution of a problem or user task.

The network application is available for download from the network via the device's browser and works when connected to the Internet, in other words, it is a website with functionality similar to the application. The native application is developed specifically to support a given platform (For example, iOS, Android) and is installed on the device in the same way as installing a regular application on a computer. Mobile programs of interest in the framework of this work can be downloaded through the App Store, Google Play, Windows Phone Store, etc.

MALL (Mobile assisted language learning) is one of the varieties of mobile learning used specifically in the context of teaching foreign languages [14]. It somewhat resembles the CALL (Computer-based language learning) model. But there is one advantageous difference between the first model and the second - it is the instantaneous access and interaction in different contexts of usage and their continuity.

The advantages of mobile learning include:

- fairly free access to the important learning materials which does not depend on the time and place of the parties in the educational process;
- the possibility of individual choice of the pace of learning, its planning, planning stages of the learning process;
- support and updating of resources (mobile learning applications, social networks, messengers, etc.).
- study of the latest language and speech trends, because due to constant support and updating, resources use the most modern lexical material;
- training of most aspects of speech activity without the need to use additional devices, materials, etc. –
- presentation of material in a convenient, colorful form with the usage of multimedia in order to increase and maintain interest, motivation to learn foreign languages (s);
- high-quality and fast assessment of results, diagnosis of difficulties and problems that arise in the learning process.

The ML model allows students to download applications both synchronously and asynchronously. Notifications, assignments, reviews, online courses, electronic online libraries become available to them. It is also possible to individualize and personalize your learning process by independently choosing both the place and time of classes. Students can also take part in online discussions, upload audio posted by other course participants, and share videos and images.
In the educational process, podcasts are used to view and listen to interviews, programs, various video and audio materials. Podcasts allow you to improve your listening skills significantly. Today, many teachers themselves record podcasts for students. Interviews with famous people are often used in the role of podcasts: stars in the field of cinema and music, athletes, politicians, etc., which may arouse the interest of students.

The smartphone is without a doubt the most popular and affordable device at the moment [15]. It combines a wide range of functions that make learning a foreign language an effective and interesting activity.

Special attention should be paid to mobile applications that are actively used all over the world. Some of them are narrowly focused (IELTS Skills, IELTS Testbank - complement the preparation for the international English exam IELTS; Learn English Grammar, Johnny Grammar Quizmaster are dedicated to the study of English grammar; Sounds Pronunciation App, Clear speech from the start - designed to improve pronunciation, intonation; and applications such as Memrise and Babel - to increase vocabulary), while other applications are much broader in content and have functional completeness (busuu, duilingvo, voxy, Lingualoeo) [16].

Communities in social networks and messengers (FaceBook, WhatsApp). It can be used for publishing texts, exercises, video and audio sharing. It can motivate students to create their own materials, audio and video recordings, conduct discussions on the topic proposed to teachers, etc. [17].

For the successful operation of mobile technologies in the learning process, it is necessary:
- represent the language as a dynamic system;
- integrate fundamental skills into the learning process: writing, reading, speaking and listening;
- timely respond to the needs of students;
- provide the right to choose in the study of materials;
- motivate and encourage students' achievements and their desire for success.

When introducing mobile technologies, the following factors should also be taken into account:
- the usage of modern and the latest information technologies creates an interdisciplinary connection between a foreign language and, in fact, computer science, which requires the student to have basic skills of owning a mobile device;
- the dependence of application performance on the hardware characteristics of the device, data transfer speed, which requires students to be able to connect to the Internet, as well as ownership of modern devices;
- the psychological factor of students' perception of working with applications and mobile devices: mobile phones, smartphones and tablets have long been an almost integral part of human life, which has led to a number of problematic factors - for young people, for example, working with devices and applications most often means entertainment and leisure (these are mobile games, social networks, video hosting, etc.), which often leads to the displacement of cognitive motives;
- too frequent usage of mobile devices, as well as the structure of user interaction with them, lead to the development of "clip" thinking, instead of "abstract" thinking, which in some places creates difficulties with traditional educational technologies and methods;
  - it is also worth noting that people who use mobile devices too often in everyday life, over time it is more difficult to concentrate their attention for a long period of time, in addition, a large visual load arises from prolonged work, which eventually causes increased fatigue, headaches, as well as visual impairment.

Taking into account the above, we can say that although m-learning technologies can be used as the only means of teaching languages, the combination of the usage of mobile
technologies with traditional forms and teaching methods is still much more effective, since the role of the teacher is still one of the leading ones in the educational process [18].

Live communication between a teacher and a student performs important functions that cannot be replaced, namely:
- motivation of a student in the process of live communication;
- creating a favorable psychological climate during classes;
- forcing, if necessary, the student to more thorough, diligent and intensive work through methods of pedagogical influence;
- the possibility of variation of methods and manners of presentation of theoretical material, depending on the individuality of the student, his characteristics and learning abilities;
- the ability to perceive and detect errors in oral speech, including pronunciation, while most mobile applications do not have such a function;
- the ability of a teacher to create and conduct a live dialogue in a foreign language in various communication situations, modeling various variants of communicative situations; at the same time, the concept of a communicative (speech) situation as a set of conditions in which the speech act of utterance itself unfolds is important for understanding and interpreting speech [19].

3 Results and discussion

The process of developing a mobile application is similar to the process of developing software products for other platforms and contains, in general, the same steps performed in the prescribed manner, which depends on the chosen development model [20].

The following steps of the software product or mobile application development process are highlighted:
- domain analysis, requirements analysis, software specification;
- design;
- programming;
- application testing and debugging;
- application implementation (for mobile applications: uploading the application to the Google Play and/or AppStore catalog);
- maintenance and support of the developed software product.

The idea (concept) and functionality of the application are thought out at the stage of analyzing the requirements and specifications of the software. The customer creates a list of requirements and a description of the desired functionality and structure of the application. This document can be drawn up in any form and may also contain design requirements. On its (document) basis, the project manager develops a detailed technical specification.

After that, a prototype of the application is developed, containing the functions stated in the terms of reference. A prototype (alpha, beta versions) is a created model of a mobile application that does not yet contain design solutions, only the location of elements in the overall structure is important in it. At this stage, the design process is considered complete. After clarifying the requirements and making adjustments and changes, the programmer responsible for the development sets tasks to the design development workers who think over the graphical implementation of the prototype taking into account the preferences and needs of the intended users (target audience).

At the next stage, the design and interface of the application is developed according to the project. After agreeing on the final version of the test version of the application, the developers proceed directly to the development of the final version – the finished application.

The final stages of design involve testing and debugging the application before its release, after which it remains to upload the developed mobile application to the catalog. At this stage,
the defects identified during testing are corrected, as well as the publication of the application on the mobile application market, depending on the supported platform.

The functionality of the mobile program should meet not only the principles of didactocentricity, but also the motivation of users, i.e. students. Since the mobile application serves as a compensatory learning tool, it is able to positively influence the internal motivation of the user, provided that the functions contained in the application will correlate with a three-step "ladder": interest, goal-setting and success. These "steps" are primarily related to the principles of activity, accessibility, visibility and consciousness. It is these principles that are considered to be the basis for recognizing a teaching mobile application as didactocentric.

The main competitive advantage of a mobile application is the elaboration of functionality, which makes the developed software product individual, i.e. unique and attractive to users. The realization of the principles of didactocentricity in teaching mobile applications can be considered by the example of using the lexical orientation functionality, which corresponds to the stages of teaching foreign language vocabulary.

In the methodology of teaching foreign languages, it is customary to refer to the stages of work on vocabulary:
1. familiarization with a new lexical unit: presentation, semantics, verification of understanding the meaning;
2. automation - training of the usage of lexical unit at the levels of word forms, phrases, sentences;
3. development of the skills of using the studied lexical unit in speech through dialogue or monologue.

It is also necessary that the functionality of the mobile application contain functions aimed at solving problems with motivation: namely, the problems of falling motivation and the development of internal motivation of users. These functions include the following:
- inviting classmates, classmates, friends to the app and the ability to chat with them exclusively in the foreign language being studied;
- the ability to send feedback and comments to developers, the presence of "feedback" between application developers and users;
- interface in a foreign language;
- ability to work with various multimedia files and materials in the application.

Further, the functions should implement the basic principles of didactocentricity: activity, accessibility, visibility and consciousness. The main means of implementing the principle of activity are functions that form and retain the user's interest, his involvement in the process, for example, "events" on the passage of which the user receives certain "bonuses", a variety of tasks, tasks in the form of a game, as well as some other functions:
- maintaining statistics, which are usually reflected in the personal profile of achievements;
- the presence of tips for working with functions, a friendly and intuitive interface;
- ability to choose the complexity of tasks;
- setting positively formulated short-term goals;
- revision of the goals to achieve them.

The algorithm of working with the application should correspond to the stages of learning foreign language vocabulary, which means that the program should use both verbal and nonverbal methods of semantics of new lexical units being studied, as well as there should be a well-developed vocabulary and exercises for practicing the usage of LE [21]. If an application is being developed to improve another aspect of the language, then its functionality should correspond to the features and stages of work inherent in a given language activity.
Finally, the mobile application must meet the needs of users, i.e. its target audience. From here we can formulate a general list of recommendations regarding convenience, design, interactivity and other conditions in this area:

- user-friendly interface;
- ability to search for specific material;
- the ability to save progress, including in automatic mode;
- the ability to design the application in a stylistics that is in demand and popular with the target audience.

Currently, there are several of the most actively used mobile applications around the world. Some of them are narrowly focused: they complement the preparation for international IELTS exams (IELTS Skills, IELTS Testbank); they serve to study English grammar (Learn English Grammar, Johnny Grammar Quizmaster); to study phonetics and pronunciation, intonation (Sounds Pronunciation App, Clear speech from the start); to study vocabulary (Memrise and Babel). Some applications are more versatile and combine tools for learning and training all aspects of the foreign language being studied. Such applications are distinguished by their "functional completeness". These include – LinguaLeo, busuu, voxy, duolingo.

The Duolingo application is freely available and is designed to learn not only English, but also Italian, Spanish, French, German, Portuguese. With each update, the range of languages available for learning grows. It can be used as an additional manual with interactive exercises for foreign language learners from scratch. An internet connection is required to work with the application. The language learning course is divided into levels "from simple to complex". This application allows you to train the skills of oral and written speech (there is a mechanism for checking pronunciation: during some exercises: the student is required to pronounce the studied phrases), reading and listening.

Voxy is available in several versions: platforms for corporate, individual training, for higher education institutions. A distinctive feature is the authentic integrated content, with the possibility of its configuration according to the preferences and needs of a specific organization, a specific user, as well as the presence of personalized sections.

LinguaLeo is a multifunctional application for learning English. In it, the user is offered four types of training: word - translation, word -translation, word constructor, listening. In addition to the application, there is also a website of the same name integrated with it, which also provide you with educational materials to learn new words, listen foreign speech, read and translate educational texts, do puzzles, etc. All the words studied on the site are available and displayed in the mobile version, since the account is the same for both the site and the application and its data is synchronized. LinguaLeo contains many courses, both paid and requiring a paid subscription. Before starting working with the application, the user is tested to determine his level of proficiency in a foreign language. Based on the test results, the user receives individual tasks daily that increase the efficiency of the language learning process. The LinguaLeo library has about 250,000 free audiobooks, songs, texts and videos in English. All materials are provided with "clickable" subtitles.

Busuu, in turn, resembles a social network that unites users all over the world.
A characteristic feature of complex and extensive (from the standpoint of software implementation) applications is the impossibility of evaluating them according to a single quality criterion that characterizes this application, its functionality and design features - this criterion cannot be distinguished. At the same time, functional completeness analysis makes it possible to quantitatively compare information systems with each other and assess their compliance with user requirements for rational choice.

or the clearest understanding of the picture that has developed in the market of mobile applications for teaching a foreign language, we conducted an analysis of their didactocentricity and an analysis of functional completeness.
Table 1. Analysis of didactocentricity of applications.

<table>
<thead>
<tr>
<th>№</th>
<th>Function</th>
<th>Puzzle English</th>
<th>LinguaLeo</th>
<th>Duolingo</th>
<th>Busuu</th>
<th>Words</th>
<th>Memrise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Setting goals</td>
<td>—</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td>Analysis and revision of goals</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>—</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>Tasks in a playful way</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>Maintaining statistics</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td>Reviews</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>6</td>
<td>Variety of exercises</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>7</td>
<td>Multimedia</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>8</td>
<td>Interface in English</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>9</td>
<td>Choosing the difficulty level</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>+</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>10</td>
<td>Tips</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>+</td>
<td>—</td>
</tr>
<tr>
<td>11</td>
<td>Dictionary</td>
<td>+</td>
<td>+</td>
<td>—</td>
<td>+</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>12</td>
<td>English-language chat</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>13</td>
<td>Autosave</td>
<td>+</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Total +</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

Google Play Rating 4.7 4.7 4.7 4.4 4.5 4.7

Based on the analysis, it is possible to formulate a conclusion that the activity principle turned out to be the easiest to implement in the selected applications. The principle of visibility is presented here least of all, because in most of the applications under consideration there are no video materials. The principles of didactocentricity are most fully, comprehensively and fully embodied in the LinguaLeo, Busuu, Pazzle English applications, and high ratings in the Google Play service indicate their popularity among users.

Next, let us move on to a formalized analysis of functional completeness. First of all, as mentioned earlier, this analysis is a quantitative assessment of the compliance of user requirements to these applications, and also allows you to compare application data with each other. It is performed on the basis of mathematical operations with matrices, where the main data source is the selected applications themselves, as well as the functions performed by them.

After listing the functions performed by the listed applications, matrices are compiled showing: which functions are contained in one, but not contained in other applications; which functions occur simultaneously in several applications, etc. Further, a mathematical transformation is performed on these matrices, which shows us the full component of the applications under study.

The analysis of the matrices shows that, basically, the studied applications are narrowly focused – each mobile application focuses on one thing: while one application is more focused on writing skills and translation, the other specializes in training conversational skills, memorization, learning new languages, etc. For example, LinguaLeo contains the largest number of English language training courses, extensive libraries of audio, video and test materials, while Memrise cannot boast of an equally large number of courses, but in turn teaches British and American English, as well as many other foreign languages.

On the basis of logical matrices, graphs of superiority, similarity and absorption are constructed, showing how and by how much one application is superior to another, by how
much they are similar and by how much the functions of one application "absorb" the functions of another.

But for the optimal choice of one or more mobile applications that are most suitable for the user, satisfying the requirements of the educational program when introduced into the educational process of a school, university, college, etc., it is important to conduct a comparative analysis with some "conventional" mobile application [22].

Let's introduce some application "Easy learning with My Little Pony", which contains all the functions preferred by users and compare it with the applications under study using the same algorithm.

So, based on the analysis of popular training applications with "conventional ", the following conclusion was made: currently, the training solutions available on the mobile application market are highly specialized. Multifunctional LinguaLeo, by the way, specializes only in teaching English, paying special attention to the ability to perceive foreign speech and grammar. TalkEnglish also specializes in conversational speech, having in its functionality means for recording audio and conversational exercises. Memrise and DuoLingvo have focused their attention on increasing vocabulary and basic grammatical skills, however, they have the opportunity to choose a foreign language to study, for example German, French, Spanish, Italian, Arabic, etc.

This situation suggests the possibility of occupying a niche in the markets of mobile learning applications by developing a universal mobile platform for teaching several foreign languages, which would equally pay attention to both spoken and written speech, learning new languages, etc. As can be seen from the analysis, to date, the development of such an application is the most promising direction in the field of ICT implementation in the foreign languages teaching process.

So as to get a significant result from the usage of mobile applications in lessons, both English and other foreign languages, it is necessary to properly organize the process of their implementation in the learning process, as well as to organize work with applications in a way that will compensate for the shortcomings and certain aspects inherent in this type of training.

In general, the problems can be divided into groups:

1. problems of hardware and technical support - availability of devices; availability of a stable communication channel with the Internet; general technical equipment of the educational institution;
2. problems of psychological and organizational nature – motivation of students; psychological factor of students' perception of working with applications and mobile devices; development of "clip" thinking with frequent usage of mobile devices; the need to possess knowledge in the field of computer science to work with the device, application settings, etc.

As for solving the problems of the first group, it is worth noting that in most cases educational institutions do not have sufficiently good technical equipment in the field of ICT necessary for comfortable work with applications. And the purchase of technical equipment is very expensive, which makes the task of technical equipment difficult (for example, in rural schools). It should also be noted that the educational institution bears additional costs for maintaining devices in working order, repairing or replacing damaged equipment, etc. In addition, it is worth paying attention to the psychological factor of perception of the device by students. Often practice shows that a student or a student feels comfortable using his personal device, which he can configure according to his preferences.

The most effective in this case is the usage of the BYOD model (English: Bring Your Own Device), in which students are strongly motivated to bring their own mobile devices to school. With this approach, an educational institution does not need to centrally purchase devices, which allows overcoming one of the main barriers to the introduction of MO into the educational process – the issue of logistics. This allows you to optimize the cost of
equipment and logistics: you only need to provide access to possibly paid courses in the mobile applications themselves. Many teachers also note that people prefer to use personal devices, even in cases where an educational institution can offer an alternative. Psychological comfort, a sense of ownership and habit turn out to be more important, which has already been noted earlier, as well as personal devices are often technically superior to "educational" ones.

The problems of the second group require the teacher to know the psychological and motivational characteristics when working with devices. So, for example, if adult students can perceive a smartphone or tablet as a device for working with educational material, and as a result concentrate, then primary school students perceive a mobile device more like a toy, a "console" for video games, rather than a teaching device, and teenagers also as a means of communication in social networks, which thereby distracts students from work and seriously affects the course of the lesson and the assimilation of the material [23].

As a result, it is possible to formulate a number of methodological recommendations to minimize the problems of this group:

− in order to avoid loss of concentration by students and interest in using mobile applications – it is not recommended to use electronic materials for more than 15 minutes per standard lesson (45 min);
− in order to slow down the progression of "clip" thinking, it is required to provide groups of interesting and, most importantly, diverse tasks in mobile applications, at the same time most comfortably combined with the traditional teaching methodology;
− in order to increase motivation to use mobile learning technology in conjunction with Case-study technology, business games;
− it is also recommended to use courses at the end of which, after passing the final control, the student receives a certificate, which also serves as a means of increasing and maintaining personal motivation;
− it is not recommended to use monotonous, similar tasks that require long monotonous work;
− it is important to use mobile applications to support the program being studied, and not to be used as the main means of teaching or as ready-made methodological tools.

You should also pay attention to the fact that in most cases foreign language learners have a low culture of using mobile applications in the classroom: students either do not know how to use applications or often use them incorrectly, which can hinder the development of communicative competence. In particular, the blind use of electronic translators hinders the development of the skills of competent translation of the text, the concept of the basic principles of translation, the skills of "contextual" translation, as well as the expansion of vocabulary.

To minimize this problem, it is important to teach electives, instructing on working with applications, as well as to use visual, specially designed exercises to demonstrate aspects of working with applications and improve the skills of the culture of their usage in foreign language lessons. As part of this work, a specialized course of exercises was developed.

A set of exercises, using mobile training applications and electronic translators, aimed at:
- formation of skills for using applications in practical specialized activities;
- formation of a culture of using mobile applications and electronic resources for self-improvement in this area;
- formation of vocabulary, speech and grammar skills in a specialized field - business correspondence;
- consolidation of acquired skills and competencies;
- formation and improvement of skills of unprepared speech - native speaking in this field.
Necessary equipment and additional requirements: laptop/netbook/smartphone, Internet access. Registered account on the website www.lingualeo.com. Below is a fragment of three exercises on rules for conducting business correspondence in English from this complex.

Ex.1. Put all requisites of the letter in the right order.
   a. The Date  
   b. The Body of the Letter  
   c. The Signature  
   d. The Reference  
   e. The Title  
   f. The CCNotation  
   g. The Salutation  
   h. The Enclosure  
   i. The Inside Address  
   j. The Complimentary Close  
   k. The Issuer Field  
   l. The Special Denotations

Ex.2. Translate the following sentences into Russian:
1. We have received your letter of 15 March 2019
2. Yours faithfully / Yours sincerely
3. Please, quote competitive prices and terms of payment for …
4. We would appreciate prompt response
5. Attached to this letter is / Please find attached
6. We are implementing …
7. Our offer is valid till /to …
8. Please accept our apologies …
9. The price includes packing and transport costs
10. We can give you 10 per cent discount.

Ex. 3. Match the names of the business letters (a-e) with their extracts (1-5).
   a. Memorandum- 
   b. E-Mail- 
   c. Fax- 
1. To: Keith Smith, Personnel Director.
   Company: Addcom Communication Pte Ltd.
   Fax number: 563290458
   From: April Green, Managing Director
   Date: 31March 2019
   No of Pages: 2.
2. Memorandum
   To Madeleine Stowe, Administrative Secretary
   From Amanda Taylor, Personal Assistant
   Ref MN/WH
   Date 15April 2019
   3 Subject: Meeting
   Date: Mon, 18March20198:32:17
   From: jonnysmith@gmail.com
   Hi Kara
   Thanks for your e-mail today.
   I wish you to have a nice date.
4 Conclusions

Due to the changes caused by scientific and technological progress, the educational process is also changing, new educational technologies are emerging [24]. One of such technologies is the technology of mobile learning (m Learning).

The introduction of mobile applications in the process of learning a foreign language allows you to unify and modernize the learning process itself in such a way that, without significant costs and re-equipment of classrooms, it is possible to practice speech communication with native speakers, remote learning, to work with all aspects of learning a foreign language: reading, speaking, listening, writing, because mobile applications contain numerous exercises, additional materials, games, courses for working with the above aspects of learning English.

Based on the possible ways of implementing didactocentricity in the structure of the training application, the conclusion was formulated that the created training application should include options that affect interest, goal-setting and success, i.e. increase the motivation of students, as well as meet the principles of activity, consciousness, accessibility and visibility.

It is necessary to maintain a balance between the usage of the traditional educational process and mobile learning, which is caused by the psychology of students' perception of mobile devices and applications.

There are a number of methodological recommendations that make it possible to increase the efficiency of using mobile learning technology in English lessons, solving both the main problems that arise during the introduction of this technology, both hardware and organizational and psychological.

The test on the developed material in practice showed its effectiveness. The results show that the exercises developed within the framework of this work fulfill their goals, namely:
- forms the culture and skills of using mobile learning applications in English lessons;
- teaches the competent usage of these applications and electronic resources for self-improvement in this area;
- serves the formation of vocabulary, speech and grammatical skills in a specialized field, according to the educational program;
- serves to consolidate the acquired skills and competencies.

References

2. Pervukhina S.V., Radchenko G.I: Interactivity in digital teaching of a foreign language (on the example of Don State Technical University)/ E3S Web of Conferences 210, 18036 1-10 (2020) https://doi.org/10.1051/e3sconf/202021018036


