The Integrating Face-to-face Learning, Distance Learning Technologies and M-Learning Technologies: Effectiveness

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Abstract. The process of higher education digitalization is driven by global transition to a digital economy and society. Building a digital economy and digital education are significant priorities of state policy in the Russian Federation. Mobile learning is a modern educational trend that allows knowledge to be acquired anywhere, anytime using portable devices. It has attracted the attention of many researchers from different disciplines who are aware of the high potential of mobile technology to enhance learning. In this research paper we will focus on the issue of improving learning outcomes using mobile technologies. An example will be the work in English as a second language classes in short-term language courses. Information technologies in teaching foreign languages have shown their effectiveness. The technical and psychological readiness of learners to use mobile technologies in learning is analyzed as well. In this research paper, the effectiveness criteria were defined as: providing learners with additional conditions for self-realization; mastering new ways of comprehending life, culture, history in the university and urban space around them, diversity of communication between teacher and students, individualization of the educational process; expanding the arsenal of learning tools, preparedness of pedagogical developments with the use of mobile learning. Teachers and students should no longer be limited to being able to teach and learn at a particular place and time. Mobile Learning and wireless technology will become an everyday part of learning, both inside and outside the auditorium. With the education standardization, mobile technology may be a chance to maintain the personalized approach to learning and bring to life the adage that the whole world is an auditorium. Conclusions and a discussion of these outcomes are offered as well as some inferences and speculation regarding the future of M-Learning in the classroom and beyond.

Keywords: mobile learning, teaching methods and tools, Mobile Learning, Mobile Technologies, Mobile Learning Systems, Life-Long Education.

1 Introduction

At the moment, higher education institutions in the Russian Federation are implementing such initiatives as the Strategy for the Development the Information Society of the Russian Federation for 2017-2030. Such initiatives as the Strategy for Development the Information Society in the Russian Federation for 2017-2030 and the Program for Modern Digital Educational Environment in the Russian Federation are being implemented to create necessary conditions for the development, implementation and use of digital technologies in education, which should improve the country's competitiveness and the quality of educational services. In order to fulfil a number of objectives, it is necessary to modernize the education system, align educational programs with the needs of the digital economy, widely implement digital educational tools in educational activities and integrate them into a unified information environment, and ensure such an individual learning path that a learner can learn throughout life, at any time and in any place.

Mobile learning (m-learning) broadly refers to the use of mobile phones, smartphones, tablets, laptops and other portable devices and data storage and transfer technologies for the direct delivery and organisation of learning. The possibility of knowledge accumulation and transfer via mobile devices already exists today poses an urgent and pressing challenge to didactics to develop teaching methods and learning technologies using such devices. It has to be acknowledged that mobile learning technologies are currently limited either by the didactic vision of their creators or by the private practice of individual teachers, usually young and following technological innovations. Such rapid development of the mobile industry cannot but affect various spheres of human activity, including education. In the field of education, mobile learning is becoming quite popular today, which is developing at a great pace due, first, to the constant growth in the number of mobile devices in use and, second, to the growth in the number of applications for organizing educational activities and learning itself.

In Soviet pedagogy, the term “mobile learning” is widely understood and rarely used. As far as the practice of teaching foreign languages is concerned, this area has hardly been explored. Today there are a large number of educational platforms, electronic textbooks and dictionaries, virtual excursions and online services. All these tools are designed to intensify the learning process, further motivate students, facilitate the effectiveness of independent extracurricular activities, aimed at systematizing and consolidating the acquired knowledge. Taking this into account, we can talk about the relevance of the problem of using mobile technologies in English as a foreign language classes within the framework of short-term language courses. The task before us is to prove the effectiveness of mobile learning technologies in relation to the discipline of English as a foreign language, supporting it with the analysis of the results of the experiment.

2 Literature Review

Mobile learning theory is well established in international pedagogy. The UNESCO Institute for Information Technologies in Education has developed the UNESCO Policy Recommendations on Mobile Learning [1]. The document provides a succinct definition

of mobile learning: “Mobile learning refers to the use of mobile technology, either alone or in combination with other information and communication technologies (ICTs), to deliver educational experiences wherever and whenever it is needed. Learning can take many forms, with mobile devices enabling learners to access educational resources, connect with other users, and create content in and out of the classroom. Mobile learning encompasses the activities necessary to achieve learning goals, e.g. effective management, improved interaction between educational institutions and students' families”.

Most researchers [M. Bransford, J. Douglas, D. Kelly, T. Reckedal, S. Gedess] [2-4] distinguish between E-Learning and M-Learning. In their view, the main difference between E-Learning and M-Learning is that the latter is not tied to a specific time and place. This in turn individualizes the learning process, making it informal.

Scientists [S. Hargadon, S. Geddes, J. Douglas, D. Kelly, M. Bransford, etc.] [2-4] consider M-Learning as one of the most promising areas of modern pedagogy. C. Robinson [5], the British international adviser on development of creative thinking, education systems and innovations in public and social organizations, is convinced that development of M-Learning technology aimed at optimizing the learning process to meet the needs of students who daily deal with modern technical means, will certainly lead to a revolution in education.

M. Kumari and S. Vikram [6], speaking about advantages of M-Learning, notes that such learning is truly individualized, taking into account interests, needs and capabilities of a particular student.

M.A. Goryunova and M.B. Lebedeva, analyzing M-Learning note the following features:

- “clear focus on meta-disciplinary learning outcomes: the use of mobile devices helps to form all kinds of universal learning activities (cognitive, regulatory, communicative);
- opportunity to implement new approaches to evaluation - involvement of students in evaluation process, increasing role of reflective evaluation tools, use of computer based evaluation tools;
- orientation towards increasing students' independent work;
- ensuring a wider range of information resources used in teaching (electronic textbooks, electronic educational resources, cloud tools and services)”. [7].

Researchers note a certain connection and complementarity of traditional and M-Learning. For example, M.B. Fine is convinced that “the most promising way of introducing mobile devices in education is in a competent combination of new forms of learning (interactive lectures, webinars, simulations, trainings, discussions), new types of learning tasks (slide presentations, web projects, educational podcasts) and traditional ones” [8].

Of particular interest is a study by I.N. Golitsyna and N.L. Polovnikova [9] who highlight the strengths and weaknesses of M-Learning technology.

The strengths include:

- students’ interaction with each other and the teacher;
- the simplicity of providing the classroom with technical devices (e.g. much more space is needed for a computer than for a mobile phone or tablet);
- space saving nature of mobile learning technologies;

- ability to exchange information between students and teacher;
- the ability to use mobile devices at any place and time;
- greater motivation to learn by appealing to the interests and needs of those actively using mobile devices.

But weaknesses are also noted:

- mobile screens are capable of presenting a limited type of information correctly;
- limited storage capacity for mobile phones and PDAs;
- special attention should be paid to the operation of the device itself, as its incorrect operation may lead to loss of information;
- less reliability (in comparison with desktop computers);
- there may be problems with the use of graphics;
- quickly obsolescence of the device;
- reduced bandwidth when actively using a wireless network.

The authors also note that many of these weaknesses, which for the most part relate to the technical side, are solvable due to the active development of technology in this area.

I.N. Golitsyna and N.L. Polovnikova [9] cite the following forms of mobile technology (mobile phone) implementation in the learning process:

1. Internet access to sites with learning information;
2. a means of playing back files of different formats (audio, video, audio, text);
3. opportunity to use adapted electronic textbooks and training courses.

V. A. Kuklev singles out the following means of mobile learning:

1. "mobile means for studying mobile content (mobile textbook, electronic book, mobile dictionary, interactive translator, mobile TV facilities, mobile excursion, on-line presentation, set of bookmarks for resources, mobile guide, podcast, network storage of multimedia objects);
2. tools for mobile communication with learners (mobile chat, mobile email, mobile videoconferencing, mobile forum, mobile blog);
3. tools for mobile control of knowledge (SMS-testing tools; SMS polling tools, voting tools; mobile forum and chat tools; mobile testing tools on PDAs, smartphones and communicators; knowledge testing tools for mobile Internet devices);
4. mobile skills-building tools (mobile games and simulations; mobile training, mobile group projects, mobile research);
5. tools to support mobile learning (mobile information and management system; tools for mobile access to information in computer networks)" [10].

Teaching English as a second language using M-Learning technology is discussed in an article by I.V. Nefedov and K.A. Popova [11]. The authors are convinced that in English as a foreign language classes it is possible to use specialized educational programmes (today Google Play can offer about 80), create virtual excursions, have students create video clips and work with them in groups, use QR codes in the learning process. So,

despite the minor disadvantages of M-Learning, mostly related to the technical capabilities of modern mobile devices, researchers are convinced of the necessity and feasibility of its use in the learning process.

3 Materials and Method

The following research methods were used in this work:

1. analysis of previous pedagogical experience on the problem under study in order to assess the relevance and feasibility of applying mobile technologies in English as a foreign language classes in short-term language courses;
2. making changes in the model of Russian as a foreign language lessons;
3. observing the changes made and assessing their appropriateness and effectiveness;
4. analysis and selection of didactic material forming the content component of the experiment;
5. creating learning activities using mobile technologies.

Taking into account the strengths and weaknesses of mobile learning, noted by both foreign and Russian researchers, we came to the following conclusion:

- mobile learning meets all the principles and features of short-term learning (intensive nature of classes);
- additionality in comparison with the main course and practical orientation of the educational process;
- the corrective character as compared to a fixed-term course;
- the heterogeneity of the learners with respect to their age, psychological and social characteristics;
- narrow learning objectives and narrow communicative orientation; priority of aspect-complex approach).

Short-term ESL courses are characterised by a communicative approach and an individualised learning process. The possibility of using mobile learning for self-study is also of great importance, as the number of class hours is very low due to the specific nature of the courses. The new forms of lessons, designed with mobile devices, help to keep the learning motivated, diversify the learning process and remove psychological barriers. Tasks for experimenters are designed to be used on mobile devices, which each student uses on a daily basis. In this way, a comfortable learning environment is created that takes into account the individual capabilities and needs of the student, his or her temperament and cognitive abilities (comfortable pace of the task, speed of reaction and memorisation, etc.).

4 Results

The introduction of Mobile-Learning technologies in “English as a second language” classes was conducted at Kazan Federal University, as well as IACLD CPE ANCO, from 2018 to 2020.

We would like to point out some special features of the summer language courses:

1. an average course which lasts four weeks and consists of 80-100 academic hours;
2. the main aim of course participants is mastering of communication skills in Russian;
3. training groups are formed on the basis of the results of an entrance test designed to determine the level of language proficiency, as well as the professional interests of the participants (students of philological specialities and trainees constitute separate groups);
4. the level of English language proficiency of the trainees varies: from elementary A1 to B;
5. the composition of groups is usually multinational;
6. taking into account the main goal, the main method is communicative, which implies mastering a large amount of lexical material in a conversational context. Classes are focused mainly on oral communication;
7. the task of language immersion is solved by additional courses (elective courses): "English and American Literature", "Country Studies", etc;
8. the philological profile of education has a number of specific features, in particular, it has a set of special courses designed to improve the professional skills of students: English Phraseology, English Lexicology, Syntax, etc.

Elements of mobile technologies were applied to the disciplines "English as a second language" and "English phraseology". The elective course "English Phraseology" includes an introduction to terminology, a study of Russian phraseology, and assignments. The language proficiency is B2 level.

There were 114 participants in the experiment, including 61 in the control group and 53 in the experimental group. Extracurricular work for the participants of the experiment was organised with the help of an interactive trainer "English phraseology", which could be accessed from a mobile phone or tablet connected to the Internet.

The simulator is thematically divided into 6 parts: four groups of phraseological units (relations between people, with verbs of motion, character of a person, about time) and repetition exercises. The students received lexical comments on the idioms in the classroom and the simulator is designed for extracurricular self-study. After repeating their previous knowledge of English phraseological expressions, the students start performing tasks, which are educational mini-games, quizzes, puzzles, etc.

At the end of the interactive trainer-book there is a vocabulary of the studied idioms. Thanks to the system of hyperlinks, the student can at any time refer to the dictionary, where he or she will find the definition of a phraseological unit, its translation into English, an example of its use in a sentence and its pronunciation.

The arithmetic mean test results of the control and experimental groups are shown in the diagram (see Figure 1). The control group performed traditional tasks: insert phraseological units omitted in the text, connect phraseological units in pairs, correct mistakes in the use of phraseological units, invent situations in which certain phraseological units should be used, etc.

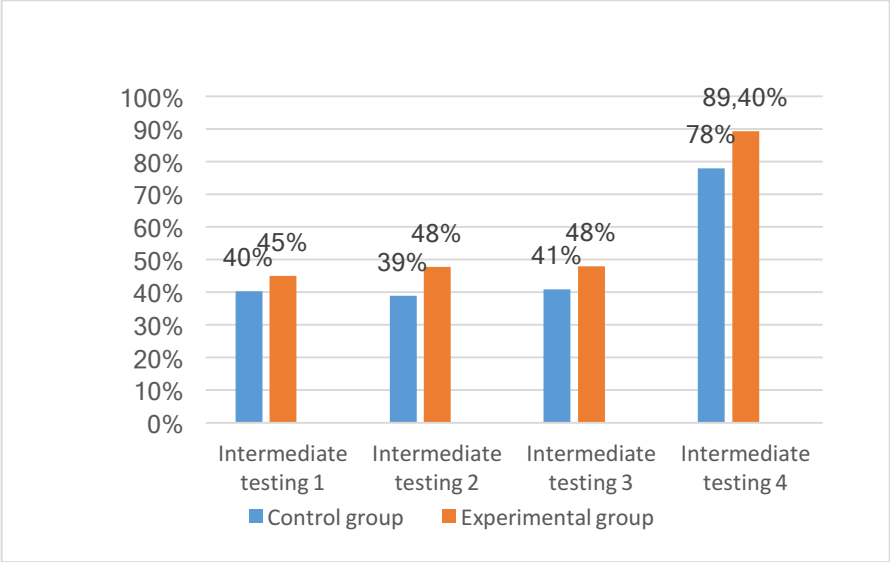
Throughout the course and at the end of it, tests were conducted. The maximum score for each interim test was 50, the maximum score for the final test was 100.

The average score of the experimental group was higher in both the interim and final tests. The experimental group also showed a higher percentage of assimilation of the material (the difference was 10.9%). We can therefore conclude the effectiveness of

mobile technologies in teaching ESL (elective course “English Phraseology”) within the framework of short term language courses.

The second part of the experiment was conducted on the basis of an ESL course. The level of participants was B1. The average age of students in the group is 21 years old. The ESL course is designed to form students' speech competence. The communicative learning principle implies a strong focus on oral expression. Taking into consideration the individual approach to learning, the choice of topics and communicative situations is in line with the interests and wishes of the students themselves. Accordingly, the topic “Social networks, computers and modern technology” is proposed.

Fig. 1. Distribution Diagram of the test results in the control and experimental groups



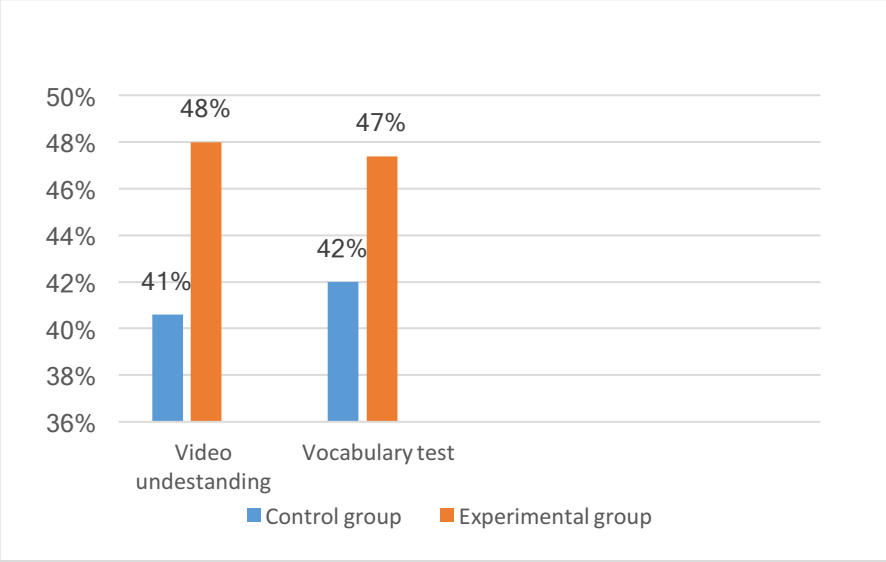
A total of 125 students took part in the experiment: 68 in the control group and 57 in the experimental group. Self-work on the topic for the experimental group was based on a video clip and the tasks for it. At the beginning of the work the students were introduced to the vocabulary relevant to the topic being studied. In the picture the students see objects or actions on objects. In order to find out the lexical meaning of a word they need to click on the marker with the mouse.

The vocabulary check is done using a “puzzle”: the student selects a new vocabulary item at the top of the screen and clicks on the picture corresponding to that word. If the task is completed successfully, the thematic picture appears. After viewing the video on the mobile device (available on Youtube: 10 comic strips on how social media has changed our lives for ever) is followed by a text comprehension check. The students work in a dialogue simulator. A character asks them questions about the content of the video. Each correct answer is followed by a follow-up question. If they answer incorrectly, the character advises them to review the episode of the video. All of the character's remarks are spoken with corresponding facial expressions and gestures.

The control group works with the traditional tasks for learning new vocabulary and understanding the video.

At the end of the independent work on the topic "Social networks in our life" the students in the control and experimental groups were given a final test on understanding the video and assimilating the new vocabulary (see Figure 2).

Fig. 2. Distribution Diagram of the test results in the control and experimental groups



It is revealed that the percentage of comprehension of the material of the experimental group is higher by 13.8%. This gives us the right to speak about the appropriateness of using mobile learning technologies in ESL independent work in short-term language courses.

5 Conclusion

Thus, mobile learning has a high didactic potential and its technologies are being integrated into education, creating a new model of training. The implementation is possible with the effective use of interactive, innovative learning methods, methods based on learner autonomy. It should be noted that the most promising way of introducing mobile devices in education is to combine new forms of learning (interactive lectures, webinars, simulations, trainings, discussions), new types of learning tasks (slide presentations, web projects, educational podcasts) and traditional ones. Thus, mobile learning should be based on the principle of interactive guided self-learning, which will reduce the destructive impact of information and communication technologies on social and cognitive activity of the learner.

The realities of the twenty-first century are forcing pedagogy to rethink all educational paradigms. New technical possibilities inevitably lead to radical changes in technology

and teaching methods. The modern life is inconceivable without mobile devices. This is particularly true for the young generation at schools and universities. Taking into account individual peculiarities, appealing to their interests and desires can increase learning motivation and lead to better assimilation of acquired knowledge.

The main strength of mobile learning as a modern educational technology are its universality, an individual approach to every student, and the possibility to receive education at any time and in any place. Mobile learning has proven its potential, but there are a number of serious problems that hinder its implementation in the educational process: the material and technical provision, the ability to supply mobile devices to students, low computer and technical literacy of teaching staff, lack of basic research on the problem in relation to specific branches and levels of knowledge, insufficient software for the educational process built on the principles of mobile

In our opinion, mobile learning has great potential in working with students at different stages of education and with different levels of language proficiency.

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