"FLIPPED CLASSROOM" METHOD WITH BYOD-TECHNOLOGY APPLICATION AS A TOOL TO DEVELOP COMMUNICATION SKILLS IN TEACHING FOREIGN LANGUAGES

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Abstract. A promising method of "flipped classroom" is becoming increasingly popular among university teachers. The growing demand to use this method can be explained by the desire of teachers to intensify the learning process with the existing restriction on contact hours with students. "Flipped classroom" is considered to be an effective approach for the optimal organization of training contact hours, reversing the learning process in comparison with the traditional one. The article analyzes the implementation of the "flipped classroom" method using BYOD-technology on the basis of open educational resources. The authors define an algorithm of login process and management of online resource tools, reveal and reason efficiency criteria and corresponding indicators of the approach application. A fragment of the lesson with "flipped classroom" method and BYOD-technology application within contact hours is given. The paper shows the advantage of the combined approach for higher education teachers aimed at developing authorial "flipped classroom" method content using BYOD-technology as compared with traditional teaching methods.

Keywords: "flipped classroom", BYOD-technology, interactive resources, online education, foreign language

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1. Introduction

In education, an era of radical change is coming and, primarily, the source of these changes will be information technology. The priority direction of teaching is rendered the implementation of information and communication technologies for the intensification of the educational process. External challenges affecting the learning process enforce teachers to use interactive forms and methods for practical purposes [1; 2]. The development of digital technologies changes the ways in which knowledge is captured, transmitted and created, as well as, skills are formed. In addition, digital technologies change the process of managing the development pathway; they are fundamentally transcultural and, what matters, from a consumer's point of view are relatively cheap and very affordable [3]. Herewith, a constant process of increasing the cost of education is happening in the traditional establishments of school and university systems.

Generally, foreign language teaching is carried out by the following methods and forms of training organization:

- situational method (case-study);
- problem-based learning method (searching, research and etc.);
- project-based learning method;
- gaming method (role-playing and business games);
- discussion (conference, roundtable and etc.);
- students' individual work.

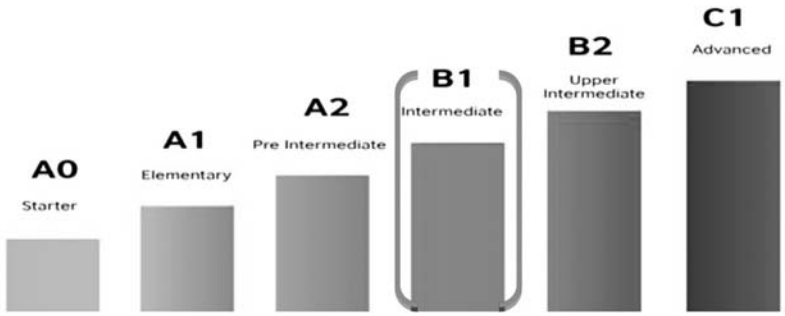

Fig. 1. Compliance scale of English language proficiency levels with code mark

Nevertheless, it is not always possible to test and give an optimal assessment to the independent work of students, and therefore interactive technologies are actively embedded into the information educational space for organizing foreign language teaching.

The tendency to reduce academic hours in the discipline of "Foreign Language" changes the position of traditional teaching [4]. Besides, due to the integration of Russia into the European higher education space, the requirements for graduates increase exponentially. For instance, knowledge of a foreign language is regarded to be obligatory in virtue of the import of technical equipment, medical devices, IT technologies infusion.

Vacancy analysis offered by leading companies, enterprises and state corporations in Russia showed that the vast majority of applicants should have not less than Intermediate English level (B1) (*Fig 1*).

Eligibility criteria for the State Corporation Rosatom to the English language proficiency level are shown in *Table 1* (data from August-October 2017) [5].

The above requirements imply serious changes in the bachelor's training programme. Based on our own experience, among the significant shortcomings of teaching foreign languages in the framework of traditional teaching, we have defined the following:

– insufficient motivation to learn the language, students mostly rely on direct communication with a teacher within classroom hours;

– contact hours limitation between a teacher and students;

– escalation of incoming information;

– difficulties in working independently with new teaching material;

– predominance of verbal teaching methods.

The pedagogical community is trying to solve acute problems through the creation and use of electronic educational resources [6]. In the world educational space, technologies such as the Internet of things, adaptive learning, mobile learning (or *m-learning*) are widely used [7]. Some foreign universities have found ways to overcome the drawbacks outlined above by implementing distance education platforms such as Moodle, Toolkit, MOOCs, but the issue of integrating

Table 1

Vacancies for candidates

Vacancy	English level requirements
1. Head of fuel contracts division	Advanced (C1)
2. Project management expert	Upper-Intermediate (B2)
3. Professional employee (JSC "Rusatom Service")	Upper-Intermediate (B2)
4. Technical expert for the development of low-power reactor technologies	Intermediate (B1)
5. Leading expert of the reactor researchers group	Upper-Intermediate (B2)

additional effective learning tools has not been resolved yet. Comprehensive solution of these problems requires a new intellectual approach.

Our research is worked out to improve the quality of active learning thus to demonstrate that students have the opportunity to achieve targeted learning goals by means of daily domestic use of their computers, laptops or mobile devices.

Most of the above issues are successfully solved within the confines of the "flipped classroom" application method in practical English classes. The first experience of applying the method was described in 2007, when two chemistry teachers at Woodland Park High School in Colorado intended to solve the problem with students missing classes due to school activities. Students had difficulties to do the tasks. As an experiment, the teachers took screenshots using a special program and, through PowerPoint, recorded video lessons that were then uploaded to YouTube [8].

The "flipped classroom" method assumes that the instructor uses the teaching time to introduce learning material in such a way that the work is done by each student outside the class. This process is carried out by viewing video lectures, listening to podcasts, studying the extended content of electronic books or communicating with friends on social networks [9]. But not only video lectures are taken into account as the basis for the specified method, thus any educational online resource can be used.

Thereby, students gain access to online resources and platforms at any time when the need arises because most of online tools created for academic purposes are available on tablets and mobile phones, even without an availability of a mobile version.

We have decided to unite the "flipped classroom" method and BYOD-technology on purpose of determining the effectiveness of the combined approach realization.

2. Methods

The "flipped classroom" method refers to a type of learning that overhauls the time spent both in and out of class with a view to transferring responsibility for training from the educators to the students. It is safe to say that "flipped classroom" is regarded as teaching approach in which valuable class time is devoted to higher cognitive, more active, project-based learning where students work individually first to prepare for in-class meetings in face-to-face mode thereby comparing existing knowledge with learning practice in class [10].

We have tried the authorial comprehensive approach of the "flipped classroom", which has proved itself as an efficient educational method, with the integrating of BYOD-technology within the studied theme included in the work program for 1st year students on "Foreign Language" discipline.

The term BYOD (Bring Your Own Device) was introduced by Intel in 2009, when it was first noticed that the increasing number of the company employees used personal mobile gadgets, connecting them to the corporate network.

Learning process by using personal mobile devices allows teachers to upgrade ways of transferring knowledge and evaluating learning outcomes. With 86% of undergraduate students owning a smartphone or a tablet, 239 today's students expect to be able to use whatever devices they choose to access learning content, take notes, gather data, and communicate frequently with their peers and instructors. In this sense, the adoption of BYOD does not revolve around promoting technology use, but facilitating ubiquitous learning and productivity gains [8].

We suggest evaluating the systemic use of the "flipped classroom" method, which involves preliminary students' preparation for classes, with BYOD-technology inclusion by virtue of mobile applications (whatsapp) that will contribute the intensification of the learning process.

The main research methods are theoretical which include the analysis of the studied method condition in Russia and abroad, and empirical including observation, questionnaires and peer review method.

3. Experimental procedure

Since the experiment is considered to be the most effective way of proving the studied issue, so it was decided to check empirically students' ability to work under the conditions of flipping classroom with BYOD-technology application. The main aim is to evaluate an integrated approach and prove its efficiency.

Two groups of 1-year Intermediate level students (30 people) were selected. First term theme "Healthy lifestyle" was chosen to approbate the experiment. The components of the learning outcomes that should be obtained with the traditional study of this topic:

- Knowledge: functional features of oral and written texts including scientific and technical nature;
- Skills: to present the results of individual/group research in oral and written forms with descriptions of illustrations, tables, etc. in a foreign language;
- Abilities: main strategies of organization, planning and analysis of the effectiveness of their own autonomous educational and cognitive activity;

As a means of an empirical impact on the experimental group, we name it Group 1 and Group 2 (G1, G2), online resource www.thinglink.com was used. In accordance with the work program of "Foreign Language" discipline at National Research Tomsk Polytechnic University, the theme "Healthy Lifestyle: Healthy Diet, Sport and Fitness" is the third in a block of topics which is necessary for mastering in 1 semester; 16 hours of classroom time are allocated for studying the topic. The current monitoring is worked out to determine the knowledge level of the studied language material and formation degree of language skills among students for the specified period of time. The current monitoring form of the productive oral skills formation includes a Power Point presentation on the subject "5 ways to a healthy lifestyle". Efficiency criteria of the learning process based on the "flipped classroom" method were decided to determine by the following indicators:

– time-saving when contact hours;
– argumentation ways using the studied lexical material (phrasal speech patterns, extended field of application);
– time spent on homework.

Thinglink is an online resource for creating interactive images and videos in various formats. Using *Thinglink* tools is aimed at individual and team work of a teacher and students. In addition to creating own content, a registered user is able to create interactive photos and videos by adding active Internet links to individual elements of the uploaded file. Thus, the user can place a large amount of information as links, video and audio files in one thematic image.

The teacher is also given a possibility to create student groups, blogs, participate in webinars, import created resources into any social networks or to an email address. Each media product developed within the framework of this site has open access through an Internet link.

An algorithm of actions for organizing the work of users on www.thinglink.com is shown:

Step 1. The teacher logs on the site by an email or account on Google or Facebook.

Step 2. The administrator is able to create a nominal group of students. At this stage, he writes a greeting and upload a suitable thematic image.

Step 3. Registration process is not obligatory for students because the created content has an open status and is imported to any resource. To share an interactive picture or video, they need to click "share" and choose a way of transferring a media product.

The purpose of the following block of studies is to introduce and train new material on the topic "Healthy lifestyle". The experiment was conducted within 4 practical lectures; students received the created thematic content (interactive image) before the beginning of the experimental contact hours to observe and study theoretical material in the framework of using the "flipped classroom" method.

Implementing the resource *Thinglink*, we flip learning process by means of the interactive image due to its multifunctionality, determined by Internet links position of all themes under study. Before lesson 1, students previously surfed the

Fig. 2.

Table 2

Lesson plan using "flipped classroom" method with BYOD-technology implementation

Lesson 1 "Healthy Diet"			
Lesson stages	**Activity**	**Format**	**Outcome**
Warming-up discussion	Following a diet, advantages/disadvantages	Oral speech	Short reasoned statement
Working with an online resource (Fig. 1)	Click on the link, highlight the benefits of water when being on a diet	Copy the required content by screenshot, share it in whatsapp	Agree/disagree with the author
Lesson 2 "Vegans vs. Meat-eaters"			
Watching the video	Define benefits and drawbacks of vegetarians' and meat-eaters' lifestyle	Write in whatsapp group 1 benefit and 1 drawback	Express your opinion why the amount of benefits/drawbacks is more/less
Dialogue speech	Make a dialogue "For and against vegetarian food"	Oral dialogue speech	Identify and reason the conclusion

material (*Fig. 2*) and were ready for discussion in the class. Before lesson 2, the task of watching the video was given, which reflected the theme subject matter, instead of traditional reading a text and training exercises afterwards. Accordingly, the learning process is provided with studied material thereby contact hours are more productive, including the following principles: 1) adaptivity; 2) comprehensiveness; 3) scientific character [11].

BYOD-technology use was carried out by dint of personal mobile gadgets through created in advance groups in whatsapp application.

A lesson fragment is shown in *Table 2*.

4. Findings

The effectiveness of using the "flipped classroom" method with BYOD-technology is shown in *Table 3*.

The effectiveness of the method is determined by the following reasons:

1. Independent search, processing and systematization of information from visually attractive content that is conditioned by higher strength of knowledge and abilities.

2. Creating authorial algorithm to work with an interactive media product, rather than a mechanical set of activities within the conventional teaching process.

3. The use of individual gadgets, and therefore the ability to have access to educational information in the format of "any time/any place".

4. The use of BYOD-technology allows students to create online lesson notes, namely, keeping the content of lesson notes in whatsapp groups (or other available mobile applications

Table 3

Time spent on contact hours to achieve learning outcomes for the topic "Healthy lifestyle"

Components of learning outcomes	Conventional teaching	Academic hours	"Flipped classroom" with BYOD-technology	Academic hours
Knowledge	Strategies for communicative behavior in situations of intercultural academic communication (within the work programme)	6	Basic lexical grammatical phenomena, strategies for communicative behavior, corresponding to modern standards of foreign languages	4
Skills	Retrieve and verbalize required information from written foreign-language sources, created in various sign systems (text, table, diagram and etc.)	6	Retrieve and verbalize required information from written foreign-language sources; choose eligible speech formats, corresponding to a certain style of communication within the framework of intercultural communication in academic and professional fields of communication	2
Abilities	Performing individual and group assignments in a foreign language including project-based and creative as tasks of an increased complexity level	4	Using information technology and electronic resources methods for search and research purposes in a foreign language	2
Total	Conventional teaching	16	"Flipped classroom" with BYOD-technology	8

or social networks). Students are always able to reproduce forgotten information by opening a social network or mobile application where they spend 50% of their daily time [8].

The following percentage ratio was identified when students shared their impressions on working with *Thinglink* resource and assessed its availability by the following criteria: quick search in various browsers, mobile version and operating system quality on Android by means of anonymous questionnaire survey:

- 100% of students highly evaluated new method of studying new material;
- 84% did not have any problems with surfing the site from mobiles, tablets or laptops;
- 93% could easily log in from any browser.

5. Conclusion

The flipped classroom technology requires remote working conditions, which may cause difficulties for students who prefer to rely on a teacher as the leading source of implementing new material. In the current conditions teachers are trying to search, combine and intensify learning process to achieve learning outcomes. That is why "flipped" interaction is organized in a simple way and meets the following requirement: more learning content is given out of class while both practice and communication training skills take place in a face-to-face format. BYOD-technology efficiency integration is considered to be potentially significant approach that increases both motivation and access to educational process. While preliminary research data show limited explication of possible combinations covered in the present study, it makes sensible to expand comprehension of flipped classroom implementation by means of other key trends accelerating technology adoption in higher education.

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МЕТОД «ПЕРЕВЁРНУТОГО КЛАССА» С ПРИМЕНЕНИЕМ BYOD-ТЕХНОЛОГИИ КАК ИНСТРУМЕНТ РАЗВИТИЯ КОММУНИКАТИВНЫХ НАВЫКОВ В ОБУЧЕНИИ ИНОСТРАННОМУ ЯЗЫКУ

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Аннотация. *Перспективный метод «перевёрнутого класса» (flipped classroom) становится всё более популярным среди преподавателей высших учебных заведений. Растущую потребность в использовании данного метода можно объяснить стремлением преподавателей интенсифицировать процесс обучения при существующем ограничении на контактные часы со студентами. «Перевёрнутый класс» считается эффективным подходом для оптимальной организации учебных контактных часов, радикально трансформирующим процесс обучения по сравнению с традиционным. В статье анализируется внедрение метода «перевёрнутого класса» с применением BYOD-технологии*

(собственных мобильных устройств) на основе открытых образовательных ресурсов. Представлен алгоритм действий процесса регистрации и управления инструментами онлайн-ресурса. Выявлены и аргументированы критерии эффективности и соответствующие им показатели применения исследуемого подхода. Приведён фрагмент занятия с применением метода «перевёрнутый класс» и BYOD-технологии в режиме контактных часов. Показано преимущество комбинированного подхода для преподавателей высших учебных заведений, нацеленных на разработку авторского (собственного) «перевёрнутого» контента с применением BYOD-технологии по сравнению с традиционными методами обучения.

Ключевые слова: *метод «перевёрнутого класса», BYOD-технология, интерактивные ресурсы, онлайн-образование, иностранный язык*

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