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THE TECHNOLOGY OF ROTATION MODEL OF BLENDED LEARNING METHOD IN TECHNICAL INSTITUTIONS

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Abstract

In this research we defined the effects of Rotation Model of Blended Learning method on first-year students' attitude toward English as a foreign language (EFL). An experimental part was performed to two intact groups consisting of 40 students at Moscow Aviation Institute (National Research University). Two groups of students with the same language level were taken but two different strategies were applied to carry out the experiment. We taught the control group using traditional teaching approach. The integration of Rotation Model of blended learning method was used while teaching the experimental group. Students from both groups were testing before and after to measure their efficiency and relation toward EFL. We noticed significant difference between the respective average growth scores of the two groups under our consideration. Findings showed a considerable difference in their achievements before the test and after it though only the experimental group demonstrated substantial different attitude toward EFL. The authors defined the existence of a considerable difference in results of the two groups as well as in their relation toward EFL where the experimental group was announced to show better results. A slight positive ratio between the efficiency and relation toward EFL could be observed from the experimental group.

Keywords: Blended learning, experimental group, group under control, rotation model, EFL, aviation English

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1. Introduction

English is a language has a long history. It was first spoken in early medieval England, and it has eventually become the leading language of international discourse in the 21st century. It is not just a science but a tool for professional communication. The students that professors cater to in the 21st century live in a technology-laden environment where every information is just one click away; thus, they are referred to as digital natives. Prensky (2001) described this phenomenon in his book "Digital natives, digital immigrants". All these appeals to set the stage for different innovations in teaching and learning processes. These innovations pushed forward the concept of blended leaning to improve teaching methods. This method gives us (both professors and students) a unique opportunity to fill in the digital technology knowledge gap between what we consider as digital immigrants (DIs) and digital natives (DNs). This theory is described in book written by Helsper and Eynon (2010). That is why, professors at higher institutions should be able to meet the requirements of a new digital era. We should emphasise the significance of implementation of technology inside the classroom within any activity to achieve better results in learning process. Chiong et al. (2012) concluded, that this is an opportunity to motivate students in a proper way to study ESL, improve their learning skills and aspiration to learning process, and encourage them towards learning.

Nowadays the popularity of blended learning models possesses our minds because of its diversity, creativity, critical thinking, and efficiency in students' performance in EFL. These models have become a motivating source which engages students in a learning experience that is both meaningful and relevant to the current reality as it was shown by Krasnova and Loginova (2015). Therefore, we decided to integrate this technology in teaching aviation English, so we tested two groups and gathered the main information how this method of teaching affects students' development of knowledge.

With the rise of online technology and the necessity of its use, the modern classroom is changing – and one of the biggest changes is blended learning. At present time we consider blended learning as a new model for organizing the educational process in higher educational institutions and it attracts the utmost attention of many researchers, professors and teachers all over the world and has become extremely popular especially this year due to the coronavirus pandemic.

Blended learning the researchers can determine as the mixing of face-to-face teaching and online learning. Students have some choice over where they study (at university, at home or somewhere in between) and when they study (during university hours, in the evening or at weekends). But it is still the professor who decides the extent of the choice, as well as which elements of the student's education are completed online, and which elements are completed in the class.

The increasing popularity of distance learning is defined by present conditions, coronavirus pandemic and that is why it leads to different changes like social and economic in every sphere and in the society. Of course, it affects the demands for students of higher educational institutions to acquire better knowledge of the subject. Highly qualified professionals and specialists with opportunity of continuous professional and personal development are required to conduct efficient classroom activities.

If we look inside the blended learning models, we will see that they comprise several types of models: rotation, flex, and perfected different virtual models. There are also several sub models. For

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example, we share the point of view of Friesen (2012) and name flipped classroom model, station rotation and lab rotation.

The educational process is organized in the following way that students sat in offline classes, and they already have some knowledge in theory and practice and general understanding of the topic that will be discussed in the classroom. It is called flipped classroom. Giving these classes the teachers make their students feel more comfortable, they push them to ask questions, to feel more confident in discussions, and active in asking each other and their lecturer questions and discussing the issues with the professor and groupmates that in the long run gives the positive effect on efficiency of the lesson or even lecture and brings more fruitful work. In flipped classroom the attention is devoted to discussions and group work in outbreak rooms instead of monotonous lectures. They prefer to participate in creating their own product based on theoretical knowledge given beforehand according to Moran et al. (2013).

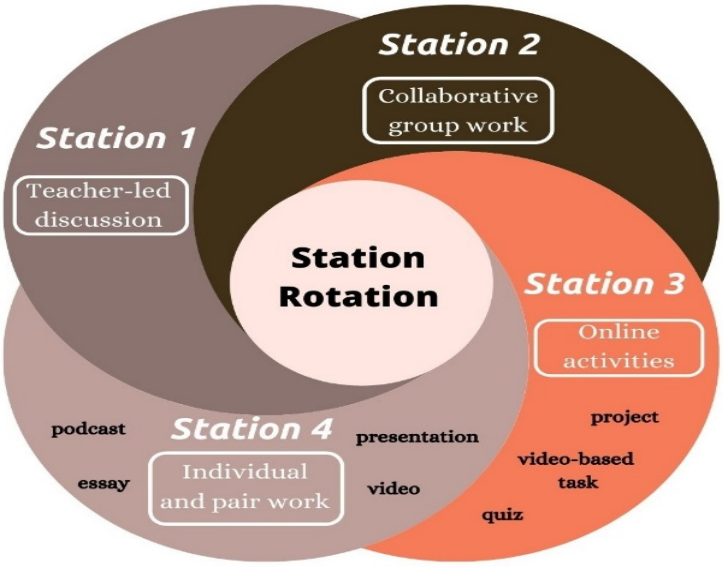

Figure 1. Stations in Model of Station Rotation

As seen in Figure 1, in a Station Rotation model, teachers organize students to different stations (4) and they use different approach to students and methods of teaching and learning to satisfy different needs, fulfil a certain task and complete the whole cycle of activities. While having a lesson the students are focused on a single topic or competency, but they pass through all of them to get better results. If we talk about these stations, we join students in Station 1 to discuss the topic of the lesson where the instruction is facilitated by the professor. Station 2 shows the independent work of students and shows their collaboration. Station 3 is the Online Learning with the following activities such as making projects, video-based talks, and theme related quizzes as it is depicted by Christensen et al. (2013).

Firstly, we use blended learning to compose different competences of the targeted skills (grammar, listening, writing, etc.). Secondly, blended learning is anchored on the Theory of Hybrids. It is meant that we combine the new, disruptive technology with the old classical one. It is an innovation relative to the old technology of conducting classes. Nowadays it is urgent to speak about distance learning in different hybrid

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forms, so we tried to combine online learning with all the benefits of the traditional classroom. Thus, this new theory just explains how effectively blended learning models are to be used while offering higher education. These models offer both the benefits of online teaching alongside with traditional teaching to achieve more impressive results.

Our research revealed an increasing in scores with the help of blended learning comparing to other approaches. There is also a positive effect on students' attitudes toward EFL. It is called "an attitude" by Horn and Staker (2017).

The experiment identified and proved that the achieved levels in academic study of the experimental students being taught with the help of the Rotation Stations were much more efficient than the students being taught using the classical methods in education and techniques. In alike manner, we claim that blended learning has the same affirmative influence on students because of using interactive activities in general in any classroom activity.

To sum up, we would like to say, that these students were tested:

- to specify the positive results of other researchers;
- to facilitate the modern studies on blended learning done at Moscow Aviation Institute;
- to think how the students' attitude toward EFL can be improved.

2. Problem Statement

In the conducted experiment we made an attempt to measure the influence of a digital innovation, the blended learning station rotation, on the efficiency before the test and during the test and first-year students' of MAI relation toward EFL of during the first semester the School Year 2020-2021.

3. Research Questions

Students from Moscow Aviation Institute participated in the experiment with the pre and posttest design where an allegedly experimental technique of testing was implemented. We taught the experimental group of students with station rotation way of blended learning while the control group was given the material in traditional way by professors.

4. Purpose of the Study

In this study we tried to describe the efficiency in the process of study and relation toward EFL of the two groups of experiment and control of Moscow Aviation Institute in terms of the students' being tested before and after to identify respective average growth scores. We tried to measure if there is any substantial difference between the achievements before the test and after the test of each group and found them in students' efficiency in EFL, relation toward EFL, personal confidence about English grammar, vocabulary, understanding of the subject matter and comprehension of the teachers' methods.

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5. Research Methods

Under our consideration was a quasi-experimental method of research of pre and posttest design. The blended Station Rotation methodology was used in an experimental group of respondents. In the control group we practiced the traditional classical approach with traditional methods and techniques of teaching. In the latter the professor did everything at university.

5.1. Participants in the Research

Twenty matched pairs (40 students) from two sections of the first-year students enrolled in MAI, School Year 2020-2021 participated in the testing. Matching was based on their ability level using UNESCO Teaching and Learning program for a Sustainable Future (2015) - Policy Guidelines on Classroom Assessment for the K to 12 Education Program.

A group of students from MAI was announced as the experimental group in the testing and the second one was the control group of respondents. A lecturer conducted orderly classes, but we considered only 40 students and the data taken from them were under our consideration during the experiment.

5.2. Logistics of a Station Rotation blended learning model

The issue of logistics to implement a Station Rotation blended learning model in the classroom activity continually occurred throughout the study. Points of the study highlighted how to set up the stations, to use timing, the work with routines while implementing the stations, how and where to get materials for each station, the work expectations within the stations, the arrangement of the workstations, the types of stations themselves, the variety of tasks for students. In book Blended: Using disruptive innovation to improve schools written by Horn and Staker (2017), they gave general information about the Station Rotation model with the number of stations and the types of stations create by a lecturer. This logistics of blended learning rotation stations because of a classroom that runs smoothly while the implementation of the blended learning model. As lecturers use this model regularly, they become more comfortable with implementing it in the classroom and with students with different language level and abilities. It is particularly important to address as many components as possible of a Station Rotation model running in a classroom because this will help the stations run smoothly. While these considerations are numerous, it is noticeably clear that thoughtful planning of activity prior to the implementation is crucial to a successful learning classroom experience.

5.3. Research procedure

While conducting this experiment in Moscow Aviation Institute the authors applied the Station Rotation model, but it was a mixture with face-to-face learning and it was improved by mixture with on-line activities including making podcasts, showing presentations, and making projects on different topics. To maximize the results of online learning with control groups, we applied a variety of Rotation Stations, and definite assignments were given to find out specific competency or skills of the respondents.

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In this experiment we offer three phases as we can see from above paragraph: activities before the experiment itself, the testing itself and activities after testing. In the first stage the pretests on the definite themes were given and it was done according to the schedule of the semester. During the second stage, the group under experiment was given lessons with the blended learning station rotation technique. But the group under control during that phase was taught by the classical teaching method. The posttests were administrated in the final phase of the experiment. We used the same procedure for both groups to guarantee objectivity principle while testing students to eliminate the effect of the teachers' influence, that is why the classes under our consideration were organized by the authors.

For our research group the main purpose was to define the difference between the test before and test after scores with respondents from each group during and after the experiment being conducted. Due to these facts, we carried out the experiment with the same samples to find out the presence or absence of substantial difference between the testing before and after to measure their efficiency and relation toward EFL of the two groups of respondents from Moscow Aviation Institute who were studying aviation English for the first year. We wanted to identify the quantity of improvement in the scores.

6. Findings

The first part of our experiment shows the results of the Achievement test in EFL (English as Foreign Language), and the Table 1 demonstrates the group under control and experimental group before the test and after the test, during the test itself and after the test in their relation towards the language.

Table 1 shows a substantial difference in the testing before and after to measure their efficiency and relation toward EFL at 0,05 level in their performance in EFL for students from Moscow Aviation Institute. The authors support the ideas claimed by Doepken et al. (2011) that the achievement levels of learning of the experimental group are much higher than of the control groups.

Table 1. Statistical Data of the Group under Control and Tentative Group on their Efficiency and Relation toward EFL

Variable		Group of Students	Before test		After test		
			Mean score	Data	Mean score	Data	Efficiency value
Efficiency		Control	10.00	2.53	29.0	4.11	-31.19 (S)
		Experim	9.80	4.11	32.37	3.10	-23.78 (S)
Relation towards ESL	Personal Confidence	Control	3.45	0.40	3.50	0.86	-1.026 (NS)
		Experim	3.40	0.35	4.03	0.5	-8.29 (S)
	Usefulness	Control	3.45	0.38	3.0	0.55	-0.465 (NS)
		Experim	3.5	0.3	3.92	0.54	-3.56 (S)
	Teacher's relation	Control	3.60	0.37	3.95	0.64	-2.35 (S)
		Experim	3.65	0.39	4.00	0.55	-2.46 (S)

Note. C– Considerable InS – Insignificant

From this table we can see that in the attitude toward English as Foreign Language, we fail to find any considerable difference in the testing before and after to measure their efficiency and relation toward EFL of the students from the control group (20 pairs) in terms of assurance in learning process or asking

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questions (both each other and the lecturer) and usefulness of English language, but teacher's attitude occupies the leading position in the teaching process.

The authors estimated the difference between the average scores before the test and after the test of MAI students from the group under experiment. That is why we can say that there is a significant positive difference in their relation toward EFL (aviation English) in studying with the help of stations of learning rotation.

Despite one can notice the performance of a control group is slightly different by approximately 0.23 in favor of it, the total result shows the absence of difference between the two groups (the experimental and the control one) at the 0.05 level of significance. The difference in total value, that is a small one, shows that the students in both groups have almost the same results in awareness, confidence, and at the start of the experiment the students possessed the same competitiveness in EFL and attitude toward the process of learning, and we consider that on the first level of the experiment the respondents were much alike.

From Table 2 we draw out the conclusion that there is a substantial difference in the testing before and after to measure the efficiency and relation of the control and experimental groups. Also, one can notice that the effect size is significant and the difference between performances is great. From Table 2 you can see that about 70% of the group under control have lower scoring, even lower than we could predict. This brings clear evidence that the Model of Station Rotation proved to be a better achievement in teaching aviation English as EFL in Moscow aviation institute. The figures fully support the conclusion that the blended learning Rotation Station method of teaching. The same notice was highlighted by Lin et al. (2016), Hung (2007), Liu (2010). In works presented by Wang and Yu (2012) the station Rotation model is considered more efficient than the traditional method and technique of teaching to improve achievements in studying subjects at university.

Table 2. Comparison between the efficiency and relation to Group under Control and Experimental Group

			Group	Mean Score	Data	Efficiency value	Size of Effect
Efficiency		Before test	Control	10.03	2.50	-0.363 (NS)	0.069
			Experim	9.80	3.99		
		After test	Control	29.27	3.99	3.341 (S)	0.794
			Experim	32.37	3.13		
Relation Toward EFL	Personal Assurance	Before test	Control	3.43	0.45	-0.059 (NS)	0.027
			Experim	3.40	0.32		
	Usefulness		Control	3.45	0.40	0.473 (NS)	0.118
			Experim	3.49	0.29		
	Teacher's Relation		Control	3.64	0.37	0.100 (NS)	0.026
			Experim	3.64	0.39		
	Personal Assurance	After test	Control	3.50	0.78	2.803 (S)	0.786
			Experim	4.04	0.49		
	Usefulness		Control	3.49	0.46	3.165 (S)	0.809
			Experim	3.95	0.51		
	Teacher's Relation		Control	3.94	0.64	0.482 (NS)	0.139
			Experim	4.01	0.54		

Note. C– Considerable InS – Insignificant

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In this table we can see that the two tested groups do not differ substantially in their scores before the test at the 0.05 level to such an extent as their assurance to learn EFL (aviation English), understanding necessity of EFL, and their teachers' attitude while preparing and giving lessons toward them. From the last column one can notice that the respondents from the two experimental groups perceive EFL (aviation English) the same at the beginning of the experiment.

The authors can claim that the effect size of the perception by the respondents of lecturer's attitude towards them while giving and checking tasks is 0.139 (quite low) which means that score with both groups is alike.

While integration of the Model of Station Rotation in teaching EFL (aviation English) the students' attitude toward the subject as it is has been refined. Our conclusion is supported by the experiment that to search and implement, introduce and apply more effective ways to teach EFL we have to use the blended learning method (Station Rotation) which is more effective than the traditional method to improve positive attitude toward EFL and to give more options to get better higher education as well as knowledge of the subject.

The authors wanted to define the relationship between the efficiency and relation toward EFL of the group under control and the experimental group after the testing. To carry out the experiment we used Pearson correlation coefficient for each group and the results are shown in the table below.

Table 3 shows positive relationship between the efficiency and relation toward EFL (aviation English) in both groups. This proves that the affirmative relation toward EFL is an independent method of learning foreign language being used and while most students have their own pace of study (background, speed, level of knowledge) this method brings positive attitude toward the subject as it is and possibility to practice new styles and methods of study.

Table 3. Relationship between the Efficiency and Relation toward EFL of the Groups in Testing

Name of Group	Relation toward EFL	N	Ratio Coefficient	Pearson-value	Comments
Control	Personal Assurance	20	0.186	0.326	Not Significant
	Usefulness of EFL	20	0.120	0.527	Not Significant
	Perception on Teacher's Relation	20	0.020	0.916	Not Significant
Experiment	Personal Assurance	20	0.163	0.389	Not Significant
	Usefulness of EFL	20	0.280	0.134	Not Significant
	Perception on Teacher's Relation	30	0.085	0.656	Not Significant

7. Conclusion

Having conducted the experiment the authors came to conclusion that Station Rotation model helps to deliver English as a foreign language (aviation English) lesson in different stations with different teaching techniques and assignments for students according to their pace, attitude and level of knowledge. The authors find distant blended learning Station Rotation model efficient in class activity and it is

increasing as students are actively involved in their process of learning in many ways through practical work or through a discussion, creative activity and critical thinking to strengthen their knowledge in the subject matter (see Figure 1). Moreover, the differentiated approach while using the Station Rotation model activities satisfied different needs and demands of students possessing different level of the language and different attitude toward the subject. Because learners' attitude toward EFL was mainly positive, we found it more useful, and it provided students critical thinking. The research showed that although the use of great variety of the different activities in distant learning is wide but minor merger of model of blended Station Rotation in application in EFL is proved to be more efficient than the method of conventional method conducting lessons in improving the efficiency and relation toward EFL of the first-year students in MAI and it was tested and described by Zheltukhina et al. (2019). In the aspect of lesson organization, quantitative findings showed a positive students' response on the following issues: extra activities of the Station Rotation model were well prepared, and easy to follow both by students and the lecturer. Students' quantitative responses on performing during Station Rotation activities were generally positive.

7.1. Recommendation

The authors recommend integrating of the Model of the Blended Station Rotation in teaching EFL. There are several reasons for this. First, it is the assured and confirmed effect on the students' efficiency. Secondly is the relation toward English as a foreign language. Professors should be encouraged to use different blended learning strategies with Station Rotation model to provide lectures, seminars and workshops with effective learning and positive attitude to EFL of students and make lecturers ready to implement this interactive on-line teaching strategics at their lessons.

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