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MICRO-LEARNING EFFICIENCY FOR FOREIGN LANGUAGE TEACHING

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Abstract

The increasing digitalization of all spheres of human activity and sophistication of socio-economic realities have formed a new social order and new requirements in education and all the components of educational system. This, therefore, leads to the search for new approaches, methods, teaching tools and strategies. In recent years, educators have been discussing a phenomenon known as micro-learning that implies learning through micro-content or micro-tasks, usually covering one idea or goal. The article aims to consider the advantages of micro-learning as a pedagogical strategy and its relevance for students of the digital generation who have an inherent fragmentation of perception and attention deficit. It is assumed that micro content prevents cognitive overload and ensures better retention; it also features benefits such as accessibility, feasibility and learner friendliness, obvious goal-setting and reflection. Theoretical analysis and empirical research have proved the technology to be relevant and efficient in linguodidactics, especially in technical universities where foreign language teaching faces an array of pedagogical problems (time limits, lack of motivation in language learning). The paper states that micro-learning can be successfully used in language teaching to engage and motivate students, as well as to individualize learning process. It can be effective for training aspect skills (vocabulary and grammar), improving content acquisition and retention. In order to achieve efficient learning, micro-content must be purposeful, logical, short (max 15 minute), carefully planned and included in macro structure by a teacher.

1. Introduction

The 21st century witnesses the emerging forms of social communication, lifestyle, mentality and ways of thinking. The current level of social development can be defined as society 4.0, or digital generation, since almost all spheres of human life and activity take place in both real and virtual environment. As historical categories, components of educational process such as learning objectives, educational content, teaching methods and techniques are constantly changing along with the society and environment they are developing in. The increasing informatization of all spheres of human activity and the complication of socio-economic realities are forming a new social order and hence are making new requirements for education. This, therefore, leads to the search for new forms, methods and teaching tool.

In recent years, the phenomenon of micro-learning has been widely discussed by pedagogical community. In broad terms, micro-learning implies learning carried out through micro-content or micro-tasks, usually covering one idea or goal (Souza, 2014). Researchers have different views of micro-learning: it is often associated with electronic didactics or a new stage of mobile learning development (Avramenko, 2019). It also can be defined as one of the principles of m-learning that determines its effectiveness by means of transformation of educational content (Marinskaya, 2017). On the other hand, micro-learning can be viewed in broader concept without being associated with technical tools only; it may be considered a separate pedagogical technology, with its own conceptual foundations, objectives, and techniques. The models, forms and tool of micro-learning implementation may also be diverse. It is used in distance learning as well as in traditional intramural classes or within a blended model. Micro-learning strategy can be realized by means of small-sized texts or multimedia content, info-graphics, learning management systems designed according to micro content requirements, learning applications, mobile testing systems, social networks, and messengers. Today, micro-education is widely used in the context of non-formal education, however, this trend is penetrating the walls of academia.

2. Problem Statement

The interest for micro learning is determined by a number of factors: 1) the advancement of technological progress, in particular mobile communication technologies, and, consequently, mobile pedagogy; 2) the complication of socio-economic aspects; 3) the increasing necessity in lifelong learning; 4) the psychological characteristics of the the student of the digital generation. According to many psychologists, psycholinguists and educators, partial transition of human activity into virtual space results in changes in both axiological and psychological spheres of human life. In particular, such cognitive processes as memory and perception are altering. Among the characteristics of a student from the digital generation are: the simultaneous perception of heterogeneous elements and multitasking; fragmentation of perception and thinking; attention deficit and priority of visual perception (Obydenkova, 2015). These make it challenging to ensure effective information acquisition and retention. Moreover, millennial students demonstrate a distinguished attitude to the way, volume (or capacity), and speed of obtaining information. They expect their gnoseological needs to be met immediately, therefore, modern learning should be sufficient, but not redundant, practice-oriented, and also significantly personalized (Akhayan, 2017; Titova & Avramenko, 2013).

Taking into account the above-mentioned psychological features of the digital generation, teachers of different subjects and disciplines tend to implement pedagogical strategies that imply micro-content, frequent repetition, and visualisation. Micro-learning is one of these strategies. We suppose that micro-learning is capable of enhancing and enriching linguodidactics, especially in non-linguistic universities, where teaching of foreign languages faces many difficulties (time limits, low level of language proficiency, lack of motivation).

3. Research Questions

The above-mentioned problems pose the following research questions:

- Does micro learning meet the modern requirements to the educational process?

- What are the possible benefits of micro learning?

- Is it efficient in language acquisition and retention?

- How does micro-learning influence student activity?

4. Purpose of the Study

The purpose of the study is to ascertain whether micro-learning can be used an effective strategy of foreign language teaching in a non-linguistic university in the modern environment.

5. Research Methods

In order to answer the questions posed and achieve the objectives stated, Russian and European pedagogical literature analysis as well as empirical research methods (experiment) were used. The research was divided into two stages, with the first one aimed at clarifying the student's attitude towards micro learning, and their learning preferences, while the second stage intends to determine whether micro-learning is efficient for foreign language acquisition and retention, and whether it affects the students engagement in the educational process.

6. Findings

The theoretical part of the research has shown that although micro-learning is an emerging trend in formal education, especially in higher school, there already exists a number of researches who state the convenience and time-efficiency of micro-learning strategy (Javorcik & Polasek, 2019) and prove the 18-20 % positive impact of micro content on information retention (Giurgiu, 2017; Mohammed et al., 2018). Significant contributions were made by Buchem and Hamelmann (2010), who worked out micro content design principles and micro-learning units which should be self-contained, easily perceived, have a clear focus and cover a particular topic and idea. However, the majority of these researches focus on disciplines that are traditionally conducted in a form of a lecture, and there are just a few studies related to more practice-oriented disciplines (Avramenko, 2019; Rogovaya, 2017), which makes it relevant to check micro-learning efficiency for foreign language teaching.

The analysis of pedagogical and psychological literature has shown that micro-learning is a psychologically feasible and time-relevant learning strategy. Its efficiency is determined by cognitive psychology which states that working memory capacity is limited, with human mind being able to focus for no more than 8-20 minutes. Therefore, small pieces of information are absorbed and digested more efficiently, while large amount of data lead to cognitive overload and reduces the interaction between information and the student hence frustrating the learning process (Giurgiu, 2017). It's particularly relevant with the reference to the millennial student's characteristics mentioned above (short attention span, perception fragmentation). When designing learning content, it should be taken into account that the recommended workload of one micro unit (task) should not exceed 15-20 minutes (Rogovaya, 2017). The figure is approximate and depends on various factors (the goal of the unit, the format of learning, the level of language proficiency, etc).

The small size of educational units is not the only efficiency factor, as information retention also depends on repeatability of educational units over time. Since the 19th century, scientists have been investigating the problem of forgetting information, the solution to which is mediated by revising the material at different time intervals after 20 min, 1 hour, 9 hours, 1 day, 2 days, or 31 days (Murre & Dros, 2015). This idea is crucial for learning foreign languages. To learn vocabulary or grammar rule properly a student has to face it many times with different contents which get more and more complicated. One big advantage of micro-learning is the opportunity to ensure interval repeatability and revision of learning content. Micro units can be absorbed anywhere and anytime, including "downtime" in transport or in a queue, by means of various mobile applications, messengers, and social networks.

Micro content is mostly multimedia in nature and is characterized by a high degree of visibility, providing polymodality of perception, which, when combined with high mobility and accessibility, creates the basis for the implementation of the learner-oriented approach. Moreover, micro-units can be absorbed at the learner's own pace depending on language proficiency level, and individual learning style.

Micro-learning is comfortable for both educators who can easily keep learning content update, and students. According to our survey, 88% of students believe that micro tasks are more learner-friendly and efficient, 62% of respondents feel that it is better to do a 15-20-minute task a day than one-two hours' activity once or twice a week. These data are also confirmed by our observations during the first stage of the research when students were given optional home task. The choice was between a few short tasks and one long activity, with the overall workload of both options being the same. 89 % of students chose a few micro tasks to complete. However, it should be noted that a fragmentation of educational material does not imply a simplification of pedagogical strategies, but rather complicates them by integrating many methods, approaches and techniques (Bruck et al., 2012). The micro units that a student "consumes" are included in the macrostructure, which must be carefully planned by the teacher.

Summarizing the findings obtained within the first stage of the current research, we can formulate the following benefits of micro-learning: accessibility, flexibility, psychological-feasibility, time-relevance, potential for interval repeatability and visibility, the learner-oriented approach, and the ease of updating learning materials. In order to be efficient, micro-learning contents is to meet the following requirements: be purposeful, self-contained and logical, short (max 15 minute) and easily perceived, carefully planned and repeated.

The second stage of the current research was aimed to prove micro-learning efficiency for acquisition and retention, and lasted for 6 weeks. Thirty first-year students of a technical university with A2-low B1 level of language proficiency were taken as population of the study. The learners of both groups were given identical multiple-choice placement tests which included 25 items. Learning of both groups was supported by an e-environment designed on the basis of Learning Management System (Moodle). The LMS tasks for both groups were absolutely the same, but the experimented group got them in smaller chunks. All the learning activities were designed according to the above-mentioned requirements.

After the 6 weeks of studying, the students were offered 25-items multiple-choice final tests identical for both groups.

Table 01. The mean score, standard deviation, t-test of the placement and final test in control and experimental groups

Groups	Placement test MS	Placement test SD	Final test MS	Final test SD	T-test
EXG	16,4	3, 85	21,2	3,1	3, 81
CG	16.7	3, 28	18,4	2,89	1,47

Learning outcomes of the experimented group considerably improved (16,4 to 21.2), while the controlled group showed a less significant increase in mean score (16,7 to 18,4). Statistic difference between the two tests which was calculated using a Student's t-test: in the experiment group is 3,81 and in the controlled group is 1,47 (as shown in Table 01). These data demonstrate a tendency for improvement in the students' performance when using micro-learning strategy.

The current research also showed that micro-learning contributes to the increase of student activity and their involvement in the educational process. Before the experiment had started, some of the students of experimented group had performed long LMS tasks with very low score, without any effort shown, or hadn't performed them at all. Table 02 shows the number of students in experimented group successfully performing tasks (with positive marks) 6 weeks before the integration of micro-learning strategy and the number of students in the same group performing task during the experiment when micro-learning strategy was used. With micro content being introduced, 13% more students were involved. We suppose that this occurred because micro tasks make setting goals more obvious, hence boosting confidence in success and allowing students to see productive result of their actions. Moreover, it facilitates reflection which is an integral part of any skill development. "Heavy" tasks, on the contrary, can be inadequate to the language competence level and make learning goals unachievable which may be a serious factor in demotivation.

Table 02. The amount of students performing tasks before and during the experiment.

Time period/ number of students	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	MS/ Percentage
Before micro-learning integrating	14	11	8	9	9	8	9,8/ 65 %
Micro-learning	12	14	10	11	11	13	11.8/ 78%

Thus, the results obtained support our thesis that micro-learning is efficient for foreign language acquisition and retention, and positively affects students' engagement in educational process. However, our study was confined to a small number of participants and was mainly focused on vocabulary learning. It would be interesting to proceed further to find out whether micro-learning is efficient for development of different language skills and whether micro-learning is equally efficient for the students of all language proficiency levels. These questions are planned be considered within a further and bigger-scale research.

7. Conclusion

The current research shows that micro-learning activities contribute to foreign language learning enhancement. They help to improve language acquisition and retention, and students' engagement. Among the functional advantages of micro-learning are accessibility, feasibility, the potential for individualization and learner-oriented approach implementation. Moreover, the concept of micro-learning is correlated with traditional didactic principles of accessibility and activity, feasibility, visibility, and learner-oriented approach. It meets the modern requirements to the educational process and addresses millennial students' needs. Taking into account the above didactic properties and functions of micro-learning, this technology can be successfully applied in linguodidactics, especially for training aspect skills such as vocabulary, grammar, and pronunciation. Nevertheless, micro-learning strategy cannot be considered universal, and its efficiency is doubtful for the development of creative abilities, soft skills and getting profound knowledge. Thus, integration of micro-learning, or any other teaching strategies, in formal second language education should be contingent on the specific learning goals and conditions.

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