Improving the Quality of Students' Vocabulary Knowledge through the Calm Application on the Samsung Galaxy Watch

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Abstract

The study describes the implementation of the pedagogical model for promoting students' vocabulary knowledge acquisition in English as a foreign language through the Calm sleep and meditation content on the Samsung Galaxy watch. The pedagogical experiment was based on Relaxation Action Learning according to which the research participants, University majors in the Humanities (History, Journalism and Philology), learned new vocabulary on a certain topic by listening to the Calm Sleep Stories (Relaxation Phases) and practising vocabulary use in various language and communication activities (Action Phases). Providing the acquisition of the learning material in a state of relaxation, and rotating the relaxation and action phases ensured maximizing students' thinking potential and involving all channels of information perception. The results obtained demonstrate the effectiveness of the designed model for teaching foreign language vocabulary.

Keywords 1

Quality of Vocabulary Knowledge, Relaxation Action Learning, Sleep and Meditation Content

1. Introduction

Emergence and development of new technologies contributes to expanding intellectual potential of society, promoting the progress in scientific, industrial and educational activities of its members, and providing them with access to credible information sources. However, technology moves faster than societal and institutional capacities required for its effective implementation. Moreover, there are some concerns about adopting technology in education as it "lags behind in tech replenishment, holding on to hardware the longest of any sector surveyed" [9]. It is stated that while "ubiquitous computing is common in work environment", it is "often not even recognized upon entering the educational realm" [2, p. 235]. At the same time it is stressed that higher education institutions prepare students "for a labour market that is undeniably moving towards the use of emerging technologies" and therefore the graduates are required to develop "the literacies, skillsets and mindsets" in order to succeed in a technology-driven world [4, p. 2].

Wearable technologies and the appropriateness of their implementation in education present special research interest, though still remain insufficiently explored, in particular the problem of accessing and using their content for educational purposes, inter alia, to increase the quality of linguistic knowledge by interacting with smart-watch applications.

The research is aimed to describe the implementation of the pedagogical model for promoting student's vocabulary acquisition through the Calm sleep and meditation content available on Galaxy *wearables*, in particular the Samsung Galaxy watch.

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2. Purpose of the study, research hypothesis and questions

It is hypothesized that the quality of students' vocabulary knowledge will improve by providing Relaxation Action Learning with the help of the Calm Sleep Stories.

The study therefore addresses the following research questions:

1. How does the role of smart-watches expand beyond supporting health and wellness?
2. How can the quality of vocabulary knowledge be improved as a result of rotating the relaxation and action phases of the learning process?
3. How can the meditation and sleep content available on smart-watches facilitate perceiving, memorising and further use of new vocabulary?

3. Research methodology

3.1. Sample

The research was carried out in Mariupol State University (MSU), Ukraine. 25 students from different degree programmes in the Humanities, i.e. 9 History and Archeology majors, 8 Journalism majors, and 8 Greek Language and Literature majors formed three groups of research participants. The pedagogical experiment was conducted in the process of learning English as a foreign language. In our study we used the comparative pedagogical experiment when there is no control group but several experimental ones. The model was implemented in all three groups which served as points of comparison for one another. The experimental programme as part of the MSU quarantine curriculum lasted for four weeks in the process of distance learning.

3.2. Instruments and procedure

Firstly, based on Ensmann's research [2] *the preliminary questionnaire* was designed in order to determine the students' most common intents for wearing the Samsung Galaxy watch and using the Calm application. The respondents were asked to identify the purposes of using the smart-watch in general and the above-mentioned application in particular.

Secondly, *modelling* was used as a "method of cognitive activity that enables to adequately and holistically reflect in model representations the essence, the most important qualities and components of the process, to obtain information about its past, current and future state, possibilities and conditions for its construction, operation and development" [8, p. 11]. The pedagogical model has been designed for promoting students' vocabulary acquisition through the Calm Application on the Samsung Galaxy watch.

Thirdly, *assessment testing* and *creative writing* were used to measure the quality of students' vocabulary knowledge. Rybalko determined completeness and flexibility as the indicators of the quality of knowledge, and developed the relevant measurement method. Based on her research [7] knowledge completeness and flexibility were measured in accordance with the following formulas:

$$\text{CKC} = \frac{N_1}{N_0} \leq 1, \qquad (1)$$

where CKC is the coefficient of knowledge completeness in a students' group,
N_1 is the number of students who completed all testing tasks correctly,
N_0 is the number of students who took the test.

$$\text{CKF} = \frac{N_1}{N_0} \leq 1, \qquad (2)$$

where CKF is the coefficient of knowledge flexibility in a students' group,

N_1 is the number of students who managed to independently transfer the acquired knowledge to a new context,

N_0 is the number of students who tried to transfer the acquired knowledge to a new context both independently and under the teachers' guidance.

4. Organizing and conducting the pedagogical experiment

The students' questionnaire responses enabled to identify the uses of the smart-watch. Hence, the majority of respondents (14 students, 82,35 %) prioritised physical intents (encouraging activity and tracking weight by monitoring exercise intensity, measuring food and water intake, calculating calories burned; collecting health data and controlling chronic diseases). 12 students (70,59%) mentioned social and spatial intents (interacting with others by making and answering calls, sending and receiving text messages and emails without using a smartphone). The Calm application was used by 15 students (88,24 %) for emotional intents (managing and reducing stress, achieving relaxation, improving mood by employing the meditation content), by 5 students (29,41%) for physical intents (improving sleep and preventing insomnia by employing both the meditation content and sleep stories), and by 2 students (11,76%) for mental intents (improving concentration by listening to meditation music and sounds).

The experimental pedagogical model for promoting students' vocabulary acquisition was built upon the foundations of the Relaxation Action Learning (REAL) introduced by Maslova [6] and further developed in East European education science. In the REAL the relaxation phase (accumulation of information) is rotated with the action phase (information analysis and structuring).

The material for vocabulary acquisition on the topic "Describing Places" was comprised of the following eight Calm Sleep Stories: Ancient Paths of Anatolia, Colombia's Lost City, The Crown of the Places, A Cruise on the Nile, Exploring Easter Island, Once upon a Time in Bavaria, The Myth of Atlantis and The Temples of Shodoshina. In defining criteria for selecting active vocabulary we relied on the work of Gersten and Baker who recommend that the words "convey key concepts, are of high utility, are relevant to the bulk of the content being learned, and have meaning in the lives of students" [3, p. 62].

It is worth noting that besides vocabulary acquisition the scholars enumerate other benefits of using audio narrations through story applications: pre-empting pronunciation problems, fostering reading motivation and contributing to reading strategies development [1].

The process of vocabulary knowledge acquisition was divided into four phases according to the REAL design:

1. The sensorimotor phase was aimed at presenting the information by introducing the new learning material on the basis of the Calm Sleep Stories. The knowledge acquisition took place in a state of relaxation by constructing mental images.
2. The symbolic phase involved perception of information by activating various centres of the brain and through the transition from the mental images to their verbal description and graphic visualization; creating visual and motor connections between the acquired information and individual images.
3. The logical phase implied information processing and developing awareness through logical comprehension and creation of logical connections between the acquired information and individual images.
4. The linguistic phase was devoted to accommodating the information, creative use of mental images in communication practice.

The following **Fehler! Verweisquelle konnte nicht gefunden werden.** gives a summary of the phased model implementation in the process of distance learning.

Table 1
Rotation of relaxation and action phases in vocabulary acquisition

Components of the learning process	Phase 1 – relaxation	Phase 2 – action	Phase 3 – relaxation	Phase 4 – action
Goal	presentation of information	perception of information by activating various centres of the brain	information processing through logical comprehension	accommodation of information
Learning techniques	listening and visualization	mental image drawing and discussion	focused listening	using vocabulary in various language and communication activities
Type of distance learning	asynchronous	synchronous	asynchronous	synchronous and asynchronous
Students' actions	listening to a sleep story through the Calm app on the smart-watch, individual constructing of mental images related to the text vocabulary	sharing their impressions via online communication	listening to the sleep story for the second time, identifying key points and ideas	completing oral and written tasks
Teacher's actions	giving recommendations to students how to achieve psycho-physical balance, encourage them to listen to a particular sleep story and create mental images	encouraging students to speak up and share their personal experiences: *What picture did you see? Is this a real picture from your experience / fantasy world? Describe it. What colours were there? movements? smells? What did you like?*	setting focus points for listening	setting post-listening tasks, engaging students into language and communication practice

At the end of the pedagogical experiment with the help of the online assessment testing the completeness of students' vocabulary knowledge was measured in all experimental groups.

In addition, the students were engaged in creative writing to describe a real and fictional place in order to measure flexibility of their vocabulary knowledge. The results obtained were compared with those before the experiment and are illustrated in the Tables 2-3.

Table 2
Results of the vocabulary knowledge acquisition in experimental group 1 (History and Archeology Majors)

Indicators of the quality of vocabulary knowledge acquisition	Before the experiment	After the experiment
completeness	0,56	0,89
flexibility	0,44	0,67

Table 3
Results of the vocabulary knowledge acquisition in experimental group 2 (Journalism Majors)

Indicators of the quality of vocabulary knowledge acquisition	Before the experiment	After the experiment
completeness	0,38	0,75
flexibility	0,25	0,63

Table 4
Results of the vocabulary knowledge acquisition in experimental group 3 (Greek Language and Literature Majors)

Indicators of the quality of vocabulary knowledge acquisition	Before the experiment	After the experiment
completeness	0,5	0,87
flexibility	0,38	0,87

It should be said that the positive changes occurred in all three experimental groups, however, they were more obvious in the group of Philology majors. It means that taking courses in Linguistics and Literature enabled students to be more prepared for the modes of narration used in the Calm Sleep Stories; prone to create mental images of the learning material and transfer the acquired knowledge to their own creative writing.

5. Discussion and conclusion

The study expanded students' awareness of the role of wearable technologies, in particular as means for facilitating the learning process and enhancing the education quality. In Ensmann's research students were "directed to use wearables to intentionally set goals, monitor health and wellness" and, as a result, they improved their classroom performance [2, p. 244]. By analogy, it was confirmed that the use of relaxation exercise and positive affirmation enhanced students' performance, especially that of the low ability students [10]. Similarly, it was stressed that "relaxation training increases working memory capacity and its components, storage and processing, and academic achievement" [5, p. 608].

In an attempt to ensure the quality of vocabulary knowledge acquisition, the introduction of new learning material took place in the process of relaxation. The latter as a psychophysical process is aimed at stress reduction, and therefore provides optimal physical, mental and emotional well-being at the most important moment of learning. The rotation of the relaxation and action learning phases stimulated students' thinking and involvement of all the channels of information perception in the

learning process. The results of the pedagogical experiment enable to enhance the existing rationale for using wearable technologies in education, in particular for vocabulary knowledge acquisition and provision of knowledge completeness and flexibility as the indicators of the knowledge quality.

However, there were some research limitations. Thus, a relatively small number of participants were engaged into the research project. It is due to the fact that the Samsung Galaxy watch is still not affordable for many students, especially for low and middle-income ones. Besides, the designed model needs to be implemented for students of other majors, for example non-humanities ones, in order to prove its overall effectiveness for vocabulary knowledge acquisition in learning English as a foreign language.

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