Virtual simulators application in the foreign language studying as the factor of students motivating

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Abstract. Our research paper draws attention to the problem of exploiting of the Virtual Reality simulations in studying foreign languages and we also attempt to authenticate the positive impact of employing this technology in forming an educational motivation of the students. The urgency of the investigations was promoted by the utter spreading of the immersive technologies interwoven into all spheres of our daily life. The aforementioned factors arise the significance of changing the pedagogical paradigms and doctrines to be up-to-date with the things change. Our study detected that being a complex phenomenon motivation plays a significant role in the educational process; the experimental cohort comprised 64 first year students of the of the Humanities Department, of the Hotel Business and Tourism Business specialties of the Rostov State Transport University who were asked a list of questions connected with the motivational factors; we chose a "Field Trip" simulation as a learning tool for our experiment and then statistically validated the fact of educational motivation rise after the incorporating of the aforementioned technique into the procedure of the studying of a foreign language.

1 Introduction

Twenty-first century can be correctly characterized as the digital age because of the deep immersion of the people throughout the world into the smart devices exploiting.

Figure 1. Adults' Emotional Attachments to the Gadgets Chart [1]

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Within the past, fewer years having smartphone in your pocket has become a common-place helping ordinary citizens carry out mundane things. Modern technologies created a digital revolution offering us numerous benefits and changing our life paradigm simultaneously. It appears to be that we have a voracious appetite for information in our fingers. The Pantas and Ting Sutardja Center for Entrepreneurship & Technology [2] highlighted the results of Dr. Veronika Konok and her team those cite that even responsible adults are attached so much to their smart gadgets (figure 1). The same institution outlines that the consumption of the digital devices has become disproportionate withing the last decade. We can observe the growth comprising 300% in the period between 2011 and 2016 and 23% growth by 2020. The statistics numbers are widespread all over the world e.g.: Felix Richeter, the data journalist from Statistica.com interprets the results of the Internet utilizing by the American teenagers in the form of the diagram that indicates that almost three thirds of the youth spent almost all the day being online withing the frame of that or this social net (figure 2).

1 in 4 Teens Are Online Almost Constantly
% of teenagers in the U.S. who use the internet with the following frequency

Based on a survey of 1,016 teens aged 13 to 17 conducted in Fall 2014 and Spring 2015
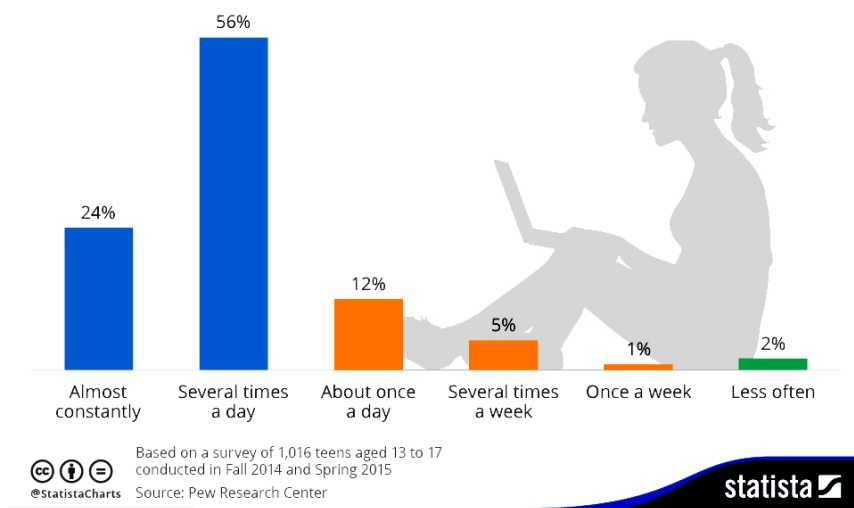@StatistaCharts   Source: Pew Research Center

Figure 2. American Teens Internet Frequency Use Chart [3]

Bearing in mind the aforementioned statistic data we should recognize the urgency of the modifying of the classical teaching methods and adopt them to be relevant to the time challenges and eventually to help the students grasp the material better in connection with the foreign languages study.

This section presents a recent focus on the aforementioned topic by means of the brief analysis of the literature about the utilizing of the innovative digital technologies employed by the educators into the studying process considering the motivation aspects. We must mention that motivation plays a vital role in studying in general and in studying foreign languages in particular. The academic community has extensively explored the topic of using the innovative methods employed by the educators with regard to studying foreign languages and we can posit that much is known and at the same time there are certain gaps and much space for investigations in this area of study, highlighting the correlation between the Virtual Reality (hereby simply referred to as VR) incorporating into the teaching process and students' motivating for foreign languages mastering.

F.G.E. Fandino et al. [4] highlights that motivation turns out to be one of the most significant factors in studying a foreign language; he supports the idea of Woon et al. [5] that motivation is a mixed process including many spheres of the human behavior such as: biological aspects, cognitive aspects, aspects connecting with the action taking; the findings of the team of the scientists discovers that motivation in influenced by many external elements. Jafar Pourfeiz [6] from the Hacettepe University, Ankara explores the correlation between the academic motivation and the foreign languages studying interpreting the results of the experiment as the reciprocal interdependence of the abovementioned constituents and highlighting a special role of the estimating components of the inclination to foreign language study. Ediz Tuncel et al. [7] findings on this topic demonstrates that there is a certain contradiction in positive performance and negative motivation in studying a foreign language in the experimental target group of students. W.L. Quint Oga-Baldwin and Luke K. Frye [8] detected interesting facts in the framework of their study, they discovered that gender influences the motivation to study foreign languages positing the idea that female teens are more motivated to learn foreign languages comparing with male ones. W.L. Quint Oga-Baldwin also states the difference of Western and Asian type of motivation in learning a foreign language in favor of Asian one. Mohialdeen Alotumi [9] supports the same ideas of gender influence on the motivation of study a foreign language, his findings also prove the fact that girls in colleges manifest more motivation than boys being the participants of the experiment in target groups on the study.

Meeting today's requirements educators all over the planet find the idea of transforming the teachers' strategy as topic significant and to support these trends many scientists explore the innovative methods of teaching including VR which in other words is called simulation and presents the digital technology facilitating us with the immersion into the imaginary world. Merriam Webster's dictionary gives the following definition of this phenomenon as "an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment" [10].

This method is relatively easy to build in to the education process due to the wide spread of the digital technologies however if we evaluate the width of spreading of the VR technologies in a foreign language study (hereby simply referred to as FLS) we can recognize a small portion of scientific studies connecting this very subject. The major part of all investigations on the aforementioned theme is dedicated to the study of simulations in medicine study management and law. Thus, Ram Nataraja [11] examines the simulations in the sphere of laparoscopic skills education process; Madeline C. Mier et al. [12] explores the simulations in the field of emergent pediatrics; Michaela Jánošiková [13] consider simulation in crisis management education in the group of Visegrad countries. At the same time a few of the educators still set up a question of VR techniques in SFL, e.g., Tynkaliuk Oksana V. and Semeriak Iryna Z. [14] survey of the PC technologies and Internet facilities in connection with SFL. This scientific tandem offers such techniques as online chat training and game playing simulation methods for SFL. We also want to mention the academic paper of T. Isaeva et al. [15] which points out the pedagogical aspects of simulation technology exploiting in connection with the SFL.

Bearing in mind all the aforementioned points our team proposes that the utilizing of the VR applications within the frames of SFL can contribute to the formation of the students motivating; the objectives of our study paper is to identify the positive effect of the incorporating of the VR technologies into the education process for forming students' motivation for SFL.

The studies have shown the lack of the methodological and pedagogical materials dedicated to the using of the VR applications in studying foreign languages in terms of motivation forming.

2 Materials and methods

Describing the prior research, we can deduce that all the VR applications shown in table 1 have their strong and weak points; we summed up the advantages and disadvantages of the described ones below.

Table 1. VR Applications

Application	Description	Advantages	Disadvantages
360° videos: Expeditions	Case online & downloaded videos	Possibility to visit different places, developing speaking competencies	Needs the Internet, Internet Limitations
Google Arts & Culture	Online Art content from more than 2000 museums and archives	Possibility to widen the culture study knowledge, developing speaking skills, creating friendly atmosphere	Needs the Internet, emotional lack
Google Cardboard Box	Immersive technology with VR viewers	Affords to widen the speaking and writing skills	Cannot be online, unsuitable for group work
National Gallery	Online Gallery tours	Possibility to watch word masterpieces speaking skills improving	Needs the Internet, emotional lack
"Fields Trip"	A role play modified with VR technologies	A big variety of cases developing speaking skills	Needs the Internet

Many practicing educators such as Paul Driver mention that we have no need to invent the wheel again in the sphere of teaching methods in connection with the changing the education environment evoked by the incorporating the digital technologies into the studying process and we still can apply the traditional teaching approach such as role play called "Field trips" upgraded by means of digital technologies [16]. The role play game implies many modifications such as: at the hotel (for the hospitality industry), at the HR department (for the future HR specialists), at the advertising agency (for the PR managers) etc. "Field trips" can help in studying for the future specialists of the tourism and hotel business industries by letting the students travel virtually to different countries and to communicate in different workplace situations, to employ the "Field trips" technique educators apply the "Google expedition" application. Raquel Ribeiro [17] introduces the "Google Cardboard Box", "National Gallery", "Google Arts & Culture", "360 videos" and "Expeditions" applications for using within the frames of FLS, she mentions that the first one (Google Cardboard Box), cannot be used nowadays because of the Covid-19 spread hence she deduces that the other aforementioned four applications can suit best for the purpose of utilization during the remote English classes. All

the applications, of course, have their own peculiarities, thus the educator asked children to make their own videos commenting on the seen piece of arts in Instagram; the advantage of this kind of activity was the possibility to narrate stories anonymously which contributes to the creating of the friendly atmosphere during the classes which in its turn rise the motivation for studying. Raquel also gives instructions on using the application called "360° videos", they can be easily found in YouTube with the indication in the left upper angle of the screen with the selected video. One of the interesting variants of incorporating of the "360° videos", is the "Expeditions" containing vast variety of the narrated tours besides this app can be modified by means of not only VR but also AR (augmented reality).

Analyzing the above-mentioned table, we can observe that the all the online applications need to be provided with the high-speed Internet technologies though there are places where such technologies are still not available; educator should be creative and the students should sometimes have sound knowledge of the language to be involved into the VR provided activities, methods and strategies chosen by the teacher should be pedagogically relevant and justified.

The changing educational environment calls for changes in the teaching paradigm to face the time challenges so fast that we should adopt the new pedagogical methods and strategies faster and apply them more frequent in our daily educators' routine.

To describe the analytical scope of the paper we have chosen the "Field Trips" digital role play for our experiment.

The initial sample consisted of the two groups of students comprising 64 participants of the Hotel business and Tourism Business specialties, the Department of Humanities of the Rostov State Transport University.

The average age of the participating students was 18. Females comprised 76% ($n = 48$) and males comprised 35% ($n = 18$) of the contingent, correspondingly. Regarding the year of study all the participants were freshmen. The students could be characterized as having relatively the equal level of knowledge of the Foreign Language (English one).

The experiment was conducted within the frames of one academic year beginning on the 2nd of September 2019 and finishing on the 31st of May, 2020.

We employ the VR role play that is "Field Trips" in a synchronous environment because of the epidemic lockdown and one more fact contributing to our choice is that this VR digital role play best suits for the students to develop speaking skills in the professional sphere for the mentioned specialties of Hotel and Tourism Businesses.

Our digital role play presents a downloaded application for smartphones called "Google Expeditions", as the targeted groups were the future employees of the recreational activity sphere our research team created a game "A tour Guide". The participants were offered to find information according to the chosen tours "Moscow" and "Travelling across Saint Petersburg" and "Lake Baikal" to perform as a tour guide. The "Moscow" virtual 360° video tour consisted of incorporated five videos of Vodovzvodnaya Tower, Savior Tower, Bolshoi Theatre, Statue of Peter the Great and the panoramic video of the Kremlin from Manege Square. The tour "Lake Baikal" comprised eight videos those were: Lake Baikal with Trans-Siberian Train, traffic signs on the frozen lake, Russian Banya on the Ice, The interior of a Small Russian Orthodox Church, Lake Baikal Ice, Lake Baikal Omul Fish Sold in Listvyanka Market, Interior of the Ivolginsky Datsan Buddhist Monastery, Ice Fishing Hole. All the videos contained podcasts; also, the participants were offered to create their own tour about the city of Saint Petersburg called "Travelling across the Saint Petersburg".

To estimate the motivation constituents, we asked the participants to answer the question "How often do want to use VR during the classes?" before and after the experiment and the range of variations were: 1) almost always; 2) frequently; 3) sometimes; 4) rarely; 5) almost never.

We also asked students to answer the questions to evaluate their desire to use the VR within the frame of the SFL classes by means of commenting on the following statements: I would rather exploit the VR because: 1) it's enticing; 2) it's useful for my language proficiency; 3) VR stimulates my individual work. To estimate the answers, we used a 5-point Likert type scale containing the variations from: 1 (strongly disagree); 2 (disagree); 3 (neutral); 4 (agree); 5 (strongly agree).

3 Results

Our findings indicates that before the experiment 23% of the students were eager to use the VR technologies during the classes and after the experiment almost 31% of the participants demonstrated the desire to exploit the VR application for SFL.

Below we can see the pie charts (figures 3 and 4) indicating the difference in numbers before and after the experiment.
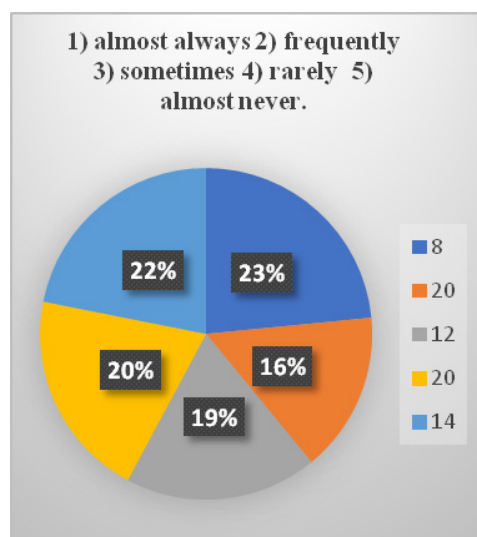

Figure 3. Pie Chart diagram indicating the frequency of VR apps use before the experiment
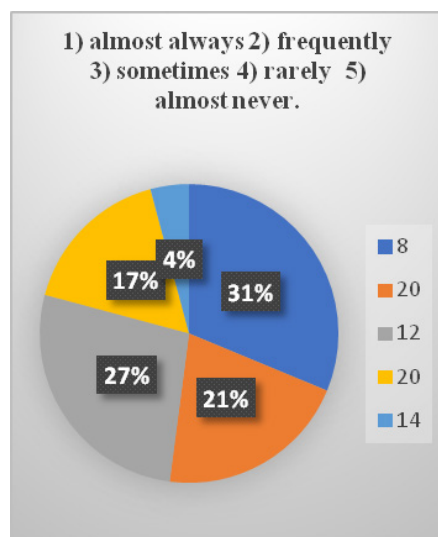

Figure 4. Pie Chart diagram indicating the frequency of VR apps use after the experiment

Analyzing these two pie chart diagrams we can detect the difference in frequency of the use eagerness comprising 8% in favor of exploiting the VR technologies during the study.

As for the questionnaire about the reason of using the VR applications for SFL taken after the experiment, the results were as follows: the entertaining factor was predominant but the proficiency factor also was among the leading factors.

While considering the results of students' motivating for exploiting the VR applications for SFL, we can indicate that entertaining reasoning and convenience are predominating over the other factors influencing students' motivating, at the same time we should highlight the creating of the friendly atmosphere to be among the leading factors that impact on the motivation for study.

We also process the data before and after the experiment on the students' eagerness to use VR applications by means of the statistic method that is *T-students criterion* designed and intended for comparing the average results among small groups within the frames of

the experiment and the results detected that the observed differences in the attribute data are statistically sustained and indicate the significant difference because $p < 0.05$.

4 Discussion

The abovementioned results and data support the idea of the prominent American linguist Stephen Krashen [17] who proposed the dependance of the results of studying a foreign language on the mood of the students within the frames of his "Input Hypothesis", indeed the entertaining component of the VR applications technologies contributes much to the motivation, on the other hand the VR utilizing methods follows the modern trends in the society that is the spreading of the omnipresent digital technologies which enter all spheres of our life making the possessing of the smart gadget to be a commonplace and giving birth to insatiable need for information in our minds. At the same time our study paper achieved the to authenticate the firm domination of the motivation factor of the SFL when using VR simulations.

5 Conclusion

This study illustrates the utter urgency of changing the educators' techniques and doctrines under the modern conditions of the fast-changing reality which is deeply involved into the immersive technologies. Our studies promote the wide introducing and incorporating of the VR simulation methods into the educational process and the curriculum on studying foreign languages in particular. Our work has a practical and applicable significance; it's easy to reemploy in any education curriculum. The applying of VR technologies in the educational process though has some gaps and unexplored areas and we understand that it is an open-ended scientific question.

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