# VRChat as a Virtual Learning Platform for Enhancing English Listening Skills

Hambalee Jehma* and Apirat Akaraphattanawong

***Abstract*—This research aimed to investigate if the application of the virtual learning (VL) platform, developed VRChat in teaching and developing students' English listening skills is highly effective. Other different variables namely genders, majors of study, and the number of hours the students spent on the screen were also investigated. The VRChat platform has been employed as a research tool in the study for developing undergraduate students' English listening skills. The forty students themselves have been purposively randomly selected. They were from different majors of social sciences and sciences, divided 24 females and 16 males. They were studying English course at the university as a compulsory required subject. The students took the test of english for international communication (TOEIC) Listening test as the pre-test at the beginning of the semester and participated in the English language classes to practice for developing their listening skills by typically interacting with the English contents, having discussion in the VRChat platform virtually followed the instructional design with the teacher as a facilitator. The students were later asked to take the TOEIC Listening test again at the end of the semester as the post-test. The data has been analyzed through the t-test and ANOVA. The findings showed that students with different backgrounds have developed their English listening skills. Therefore, applying the VL platform of the VRChat for developing students' English language skills was highly recommended.**

***Index Terms*—Active learning, English listening skills, virtual learning (VL), VRChat**

## I. Introduction

Virtual learning or VL environments consist of several essential components such as Internet access, audio and video devices and server and client software. However, the system and the required equipment do not guarantee to have the desired learning outcomes of the VL activities. Design of VL activities becomes effective if issues such as instructional methods and the factors motivating students and the instructor are taken into accounts. It is important to determine the essential components that have key roles in the design, implementation, and evaluation process of VL practices [1, 2].

Though there were various VL applications of platforms have been applied in teaching and learning, especially in language learning classes for the students to become an active learner, the VRChat was one of the recent VL platforms employed by educators expecting better outcomes in an active learning online class [3] which the active learning is generally defined as any instructional method that engages students in the learning process. The service of the VRChat puts emphasis on interaction enhancement aiming for entertaining purposes, making VRChat ideal for any kind of team-based game. Despite the lack of social nature, it leans more toward game functions [4].

In terms of language teaching and learning, leveling up the student's listening skills requires students to do meaningful learning activities and think about what they are doing [3]. Applying the VRChat allows students to navigate on their own learning and reflect upon it. There are several activities that can enable students to become active learners in listening practice classes. Each of them is designed and have been explored in different subject areas, particularly in the content areas. Some of these are outlined in the paper of Minhan [5] when they explored how active learning can be incorporated in teaching and learning for developing the skills. Despite the growing interest in this environment and its potential usefulness for various projects, few limited studies have been reported on how to use the VRChat in the classroom effectively, especially in developing students' listening skills. This research, therefore, aims to explore if applying the VRChat platform can enhance student listening skill.

## II. Literature Review

One of the many technology-based learning methods is virtual learning. Like a real-world classroom, virtual learning is a place where online learning occurs. In virtual learning, teachers facilitate learners by engaging them in interactive activities. Essentially, both teachers and students participate in virtual learning at the same time. The online learning environment can be web-based and software-based. It provides distance learning using multiple technologies, for example, live streaming, web conferences, or video conferences and some relevant to virtual classrooms can be message boards and chat capacities. These virtual learning characteristics eventually enable remote learners to interact with one another in real-time namely VRChat [4].

In 2017, VRChat was released as an online VR game that supports multiplayer. Even though its name includes the word "VR", VR devices are not required for some of its game functions. VRChat enables players to create rooms, have real-time conversations with other players, upload their own profiles, create rooms, or play any kind of media. VRChat is trendy due to its high level of freedom and creativity. In early 2019, more than four million people joined VRChat, yet now only 30% are considered VR users and most users are gamers

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who only use the game function to create the virtual images rather than utilize the social features. Rec Room is another popular social-gaming VR technology. It offers various kinds of theme rooms as well as entertaining battling games. The service puts emphasis on interaction enhancement aiming for entertaining purposes, making VRChat ideal for any kind of team-based game. Despite the lack of social nature, it leans more toward game functions [4]. Since devices that support VR are not widely available now, VR applications for social networking are way behind those for VR social games in terms of development. Typical VR social tools include Haloboration, High Fidelity, and Facebook space [6]. Their primary goal is to bridge the gap between users by allowing them to create experiences in the virtual environments via cutting-edge technologies using gestures, facial expressions, eye movements, and more. This form of virtual reality brings a new take on social tools but only a few people show their interest in using them due to the limited access to the internet as well as the insufficient number of users engaging with the tools in social applications. In 2020, Facebook Horizon, a VR social realm, will be launched on Facebook's Oculus Quest and Rift platforms, which shows a promising future. In the beginning, users can simply gather and talk, and then they may explore different features, play games, form groups, and even create their own unique experiences within that linked world [5]. This virtual learning brings a sense of togetherness between teachers and students by utilizing a technological-setting experience [7]. Such rooted features are also commonly found in the popular multi-user virtual environments (MUVESs) as well as the massively multiplayer online games (MMOs) or role-playing games such as World of Warcraft and Neverwinter Nights in the gaming world. Nowadays, there are different kinds of virtual environments, however, they similarly provide a set of features that include:

- allowing multiple users to gather in a shared space side by side
- enabling the pseudonymous 3D avatars or virtual embodiment to represent real world's self
- virtualizing an object in a 3D environment and allowing users to interact in real-time
- keeping the real-world surroundings such as physical environments, gestures, or actions that illustrate a sense of existence [8].

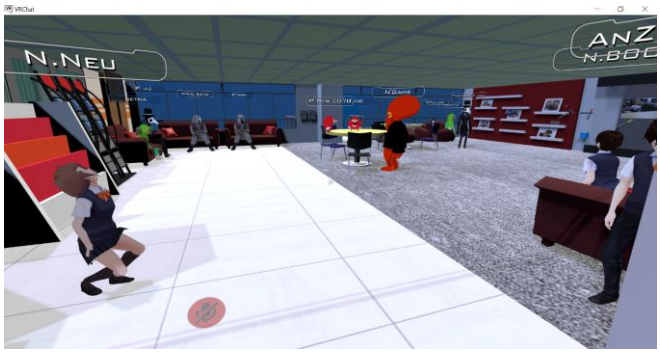


Fig. 1. VRChat developed by the researcher for learning class activity.

In terms of language learning, the VRChat (Fig. 1) is as if a helpful learning tool similarly to other VL as Caldwell (1998) mentioned that multimedia such as pictures, audio, and videos in the VL can be used to encourage students in language acquisition, stimulate their creativity, and provide the support needed in producing the desired output. Learning using such multimedia VL appears to be more dynamic, increase richness in information, and bring better engagement, according to Tseng, Liou, and Chu [9], the audio recordings with the target language allow students (as well as their teacher) to listen to evaluate progression in their language learning. Web-based multimedia systems complied in the VL, according to Lin, Hwang, and Shen [10], facilitate learning on digital content. The study looked at some studies on how to use VL technology like this to help people improve their language skills. Laia [11] ran a pilot project that combined the VL approach and online activations into an in-person discussion in the classroom to provide unity in collaborative and individual learning amongst the French-majoring freshmen. Those students were separated into two groups. After a short period of time, the results suggested that both groups performed well, however, the comparison group showed more progress than the other one because they were not involved much in a learning process where they had to get accustomed to new technologies—which allowed them to focus more on course lessons as well as teaching and learning. Additionally, the VPen annotation system was created by Gilbert [12], who discovered that it was effective in enhancing EFL students' writing, listening, and speaking performance similarly to the VRChat. Candle Talk, a Web-based VL discussion environment created applied by Nur and Setiawan [13], aimed to improve EFL students' listening and speaking skills by providing them with practical speech acts was another example of the effective VL tool which works closely to the VRChat. In the study, Candle Talk's automatic speech recognition (ASR) engine provided an assessment on how students performed as soon as they gave the proper input into the system. The findings revealed that this was beneficial to college freshmen, particularly non-English majors when it comes to the learning of speech acts together with developing their listening skills [12–15].

## III. Research Methodology

This study was designed based on a quasi-experimental research design where data were collected in a classroom context over a certain period.

### A. Participants

Forty undergraduates participated in this study were the students studying the university compulsory English course at a university in Thailand. There were 16 males and 24 females studying in two different majors, 17 students from social studies and 23 students majoring in science. They all have been studying English since they were at the secondary and high school levels as compulsory subjects following the Thai education system requirement. All of them have passed the similar minimum English requirement admission examination for getting to the university.

### B. Pre-test and Post-test

The test of English for international communication or

TOEIC has been employed in this study to explore the development of students' English listening skills. The students in this study were initially informed regarding the test format and shown the samples of each category of the test before the pre-test begins. They were, then, asked to finish the first part of the test which was listening questions including 100 questions divided into different categories: the photograph, question-responses, conversations, and talks. For the post-test, similar procedure has been done at the end of the semester before the scores had been finally analyzed.

### C. Instructional Design

Applying the developed VRChat in the virtual classroom for improving students' English listening skills in this research has been followed the instructional design developed by the teacher shown in Table I.

TABLE I: SAMPLE OF INSTRUCTIONAL DESIGN APPLIED VRCHAT

| In-Virtual-Class via Developed VRChat | |
|---|---|
| *Step 1: Teacher-Student Discussion Time* | • Students are logging into the virtual platform, VR Chat.<br>• At this stage, the students and teacher meet in the class virtually.<br>• Teacher opens the floor for questions and clarifications regarding the videos the students have viewed before proceeding to the virtual activities. |
| *Step 2: Teacher-guided virtual activities* | • The teacher asks the students to be in a group of 5, and they are encouraged to actively participate collaboratively in class.<br>• Teacher introduces what the "GIST" is about.<br>• Teacher plays the audio "Satnav" by asking the first set of GIST questions before the audio starts and let the group write the answers while listening.<br>• After the first audio, the teacher gets the answers and discusses with the students.<br>• Teacher introduces another set of activity question concerning distinguishing facts from opinions.<br>• Teacher then plays the same audio again and lets the students finish the questions, the Virtual Task 1.2 Satnav Quiz and upload the answers in the Classtart's exercise section. |
| *Step 3 Interactive feedback session* | • After the collaborative activity, the teacher asks the students how to get the answer from the students. At the end, the teacher gives feedback and suggestions about listening for a gist skill. |

The sample of the instructional design shown in Table I portrayed that all the classes explored in this study have been implemented by the developed VRChat platform which the students as the participants would access and followed the instructions mentioned in the instructional design though the activities for each class might be different in terms of its contents, the purposes of the skills needed to be developed were unchanged and the duration of each period was similar.

### D. Data Analysis

Not only the improvement of English listening skills was assessed, but other variables such as genders, students' majors of study, and the numbers of hours spent on computers weekly were also monitored in order that the results of the treatments could be strong evidence to support the research objectives. The data from pre-test and post-test were analyzed by applying the t-test and one-way ANOVA as the results from the t-test itself were able to show a difference between two groups which was unlikely to have occurred because the sample happened to be atypical. This statistical significance is determined by the size of the difference between the group averages, the sample size, and the standard deviations of the groups, and the one-way ANOVA was applied to determine whether there were any statistically significant differences between the means of two or more independent (unrelated) groups of variables: male/female, social science/ science, and the numbers of hours spent. The results were able to affirm if there was any different impact of the different variables on developing students' English listening skills.

## IV. RESEARCH RESULTS

After the pre-test and post-test have been examined, the data from the tests were, then, analyzed and portrayed as follows:

### A. Development of Students' English Listening Skills

Table II has clearly shown the forty students' TOEIC Listening scores with different variables. All variables of the post-test scores considered in the study were higher than that of the pre-test ones. In terms of genders, both male and female students had higher listening post-test scores than that of the pre-test though the females have achieved higher than that of males (Female mean = 258.96, Male mean = 238.75). In terms of gender variables, the study majors of the students counted. Although both social science and science students have performed better in the listening post-test, the students from the social science majors have performed with higher listening scores than that of the students from science (Social science mean = 253.24, Science mean = 249.13). Another variable assessed in the study was the number of hours the students spent on the screen weekly divided into three groups, 5–6 hours, 7–9 hours, and 20 hours and more. There was no difference of development in terms of the listening post-test compared to the pre-test since all the groups performed with the higher listening scores in the post-test compared to the pre-test ones. Surprisingly, the higher number they have spent weekly on the screen did not show the relevant higher performance accordingly as the students who spent 7–9 hours a week had performed better than that of the students who spent higher numbers of hour on the screen (5–6 h = 231, 7–9 h = 261.54, 20+ h = 254.41).

TABLE II: DESCRIPTIVE STATISTIC FOR STUDENTS' TOEIC SCORES

| TOEIC Scores | | | *Total Number* |
|---|---|---|---|
| *Variables* | *Mean* | *S.D.* | |
| Post_Male | 238.75 | 42.837 | 16 |
| Pre_Male | 194.69 | 40.557 | 16 |
| Post_Female | 258.96 | 52.419 | 24 |
| Pre_Female | 213.33 | 47.792 | 24 |
| Post_Soc | 253.24 | 45.378 | 17 |
| Pre_Soc | 213.82 | 35.643 | 17 |
| Post_Sci | 249.13 | 52.886 | 23 |
| Pre_Soc | 200.00 | 51.500 | 23 |
| Post_5–6 hrs | 231.00 | 38.064 | 10 |
| Pre_5–6 hrs | 189.00 | 29.136 | 10 |
| Post_7–9 hrs | 261.54 | 50.637 | 13 |
| Pre_7–9 hrs | 217.69 | 47.064 | 13 |
| Post_20+ hrs | 254.41 | 53.147 | 17 |
| Pre_20+ hrs | 206.76 | 51.019 | 17 |

The paired differences in Table III have shown the significant data of the TOEIC Listening pre-test and post-test scores analyzed by applying t-test in all variables. Based on the mean comparison analysis using t-test for dependent sample, it clearly showed there was significant mean score differences of the TOEIC Listening pre-tests and the post-tests at 0.05 level (sig. ranked from 0.127 to 0.947) meaning that all the TOEIC Listening post-test mean scores were greater than all the pre-tests mean scores. All the students who have participated in the study had significantly developed their English listening skills through the VRChat platform applied in this study.

TABLE III: MEAN SCORES OF ENGLISH LISTENING SKILLS

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Listening Posttest | Male | 0.561 | 1 | 38 | 0.459 |
| | Female | | | | |
| | Soc | 0.004 | 1 | 38 | 0.947 |
| | Sci | | | | |
| | 5–6 h | 2.186 | 2 | 37 | 0.127 |

Table IV clearly showed the test of homogeneity of variances portrayed all the variances of the mean scores of the TOEIC Listening tests were significantly equal at 0.05 level (Sig ranked from 0.197 to 0.429). It can be summarized that all the variables shown in TABLE III were able to affirm that the students participated in this study have performed better with higher scores of the TOEIC Listening post-test compared to the pre-test ones.

TABLE IV: TEST OF HOMOGENEITY OF VARIANCES

| Variables | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Male / Female | Between Groups | 3720.938 | 1 | 3720.938 | 0.638 | 0.429 |
| | Within Groups | 221623.438 | 38 | 5832.196 | | |
| | Total | 225344.375 | 39 | | | |
| Social / Science | Between Groups | 4734.401 | 1 | 4734.401 | 0.815 | 0.372 |
| | Within Groups | 220609.974 | 38 | 5805.526 | | |
| | Total | 225344.375 | 39 | | | |
| Hours | Between Groups | 18967.576 | 2 | 9483.788 | 1.700 | 0.197 |
| | Within Groups | 206376.799 | 37 | 5577.751 | | |
| | Total | 225344.375 | 39 | | | |

Table V clearly showed the mean score comparison of the TOEIC Listening post-tests analyzed by ANOVA. The data in the table revealed that there were no significant mean differences of any types of post-tests mean scores of different variables: male/female, social science/ science, and the numbers of hours spent at 0.05 level. To clarify, students with different backgrounds which were gender, fields of study, and the numbers of hours they spent on the screen have indifferent mean scores in their listening skills.

TABLE V: MEAN SCORE COMPARISON ANALYZED BY ANOVA

| Variables | Mean Difference | Std. Deviation | Std. Error Mean | Mean Difference |
|---|---|---|---|---|
| PostLisMale - PreLisMale | 44.063 | 33.378 | 8.344 | 26.277 |
| PostLisFemale - PreLisFemale | 45.625 | 37.222 | 7.598 | 29.908 |
| PostLisSoc - PreLisSoc | 39.412 | 30.510 | 7.400 | 23.725 |
| PostLisSci - PreLisSci | 49.130 | 38.602 | 8.049 | 32.438 |
| PostLis1 - PreLis1 | 42.000 | 31.728 | 10.033 | 19.303 |
| PostLis2 - PreLis2 | 43.846 | 34.227 | 9.493 | 23.163 |
| PostLis3 - PreLis3 | 47.647 | 39.730 | 9.636 | 27.220 |

## V. DISCUSSION

The VRChat platform has been applied specifically in developing students' listening skills in this study. The teacher and students have had the discussion, and participation for developing their listening skills through the platform following the lesson plans prepared by the teacher. The students' TOEIC listening post-tests have confirmed that the students had achieved better scores in all variables, genders, students' majors of study, and the numbers of hours spent on computers weekly as the mean comparison analysis using t-test for dependent sample clearly showed there was significant mean score differences of the TOEIC Listening pre-tests and the post-tests at 0.05 level which meant all the TOEIC Listening post-test mean scores were greater than that of all the pre-tests mean scores. This can be affirmed that learning and developing the listening skills through the virtual platform of VRChat was effective, and the students had interest in learning through this platform.

This can be explained by the previous study [4, 13] mentioned that the number of its users has reached 4 million which is only 30% of the four million users were VR users, most users are not only addicted to the game function of creating virtual image, but the social attribute of VR social

games, and its features. In terms of interacting functions provided, the students can learn amazingly fast though there were some students have never experienced with this platform, "I have never used this platform before, but it was not difficult using and I like it" [7]. To be more specific, the students from different background of study majors, different genders, and different numbers of spending time on the screen have also achieved the better listening skills. This phenomenon revealed similar results to the previous studies by Lin, Hwang, Shadiev, and Shen [10] who explored on how to use VL technology like this to help people improve their language skills. Nur and Setiawan [13] also ran a pilot project that combined the VL approach and online activations into an in-person discussion in the classroom to provide unity in collaborative and individual learning amongst the language students. The students in those studies mentioned that "It is incredibly fun, and I can learn how to use the features within no time", and "I enjoyed VRChat as it looks like the games, and we can develop our English skills happily". This reflects that applying this platform can benefit the students in terms of both their engagement and the skill development.

## VI. Conclusion and Recommendation

This study demonstrated that it does add to the literature on the virtual platform of VRChat being used in the field of education especially in developing the students' English language skills. This was particularly important because to date, there have been almost no research published in the field of university students applying the VRChat platform especially for teaching language. These positive results have confirmed that it will be beneficial for more research to be conducted in this new area. As there are some limitations of having programming knowledge for developing the closed-environment virtual platform like the VRChat applied in teaching language, the university as a policy maker was advised to invest and support all the educators or language teachers upon their request of developing this virtual platform for learning because this platform shows very beneficial for the language educators in different way compared to the other platform as this can be controlled as a closed virtual environment platform.

## VII. Recommendation for Further Study

Although this study has been done conducting the research particularly in English language teaching and learning for developing language learners' English listening skills, other productive skills namely speaking, and writing was interesting topics can be explored as there were limited studies conducting the topic by applying the virtual platforms advised from this study. Another potential research was with other students in different levels of education such as high school students, and the post-graduates were advised. Exploring the students studying teaching or the teacher themselves teaching in different subjects such as science and social studies related to applying the virtual platforms such as the VRChat.

## Conflict of Interest

The authors declared no conflict of interest.

## Author Contributions

Hambalee Jehma conducted the research, analyzed the data, and wrote the paper. Apirat Akaraphattanawong gave very insightful ideas and analyzed the data throughout the conduct of the study.

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