

Gamified EFL Instruction: An Overview of the Most Recent Research Trends

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Abstract—This paper provides an overview of six gamified learning environments that were developed for teaching English as a foreign language (EFL). The tools were reported upon in publications that appeared in top scientific journals in 2017. The current survey describes the main features of the educational games that were employed in the conducted experiments and focuses on the key findings that are specifically related to the EFL learning outcomes. The results of the experimental short-term studies reveal that students who played educational games obtained significantly better results than those who received conventional EFL instruction.

Keywords—*technology-enhanced, EFL, language learning, game-based learning, gamification*

I. INTRODUCTION

A variety of sources claim that English is the most popular foreign language to learn [1], [2]. A couple of decades ago, English, as well as other foreign languages, was mostly taught and learned in classroom-based formal education. However, with the rise of mobile technology, vast opportunities for non-formal language learning emerged. People are no longer limited to learning at a specific place at a specific time. In other words, they have access to ubiquitous learning [3]. It can be suggested that when it comes to ubiquitous foreign language learning, it was especially boosted by free mobile applications. There are hundreds of free or semi-free apps that address acquiring holistic foreign language skills. Some of them, e.g. Duolingo, Mindsnacks, and Memrise, feature simultaneous learning and practicing of language skills via gamified environments. That is, there are different game-like elements, such as levels, points, badges, and likewise. The aforementioned together with the gains of learning a language which is the third major language in terms of the number of native speakers, English [4], are the reason why these apps are becoming more and more popular.

In the light of the above, it is evident that formal education must keep up with the changing preferences and needs of the contemporary ubiquitous learner. Therefore, foreign language instructors strive to employ Information and communication technology (ICT) to make the teaching/learning process more attractive, fun, and at the same time efficient. Foreign language teachers either come up with innovative ways to exploit already existing ICT resources (e.g. social media [5], wiki [6], vine [7], or e-books [8]) or develop their own. In the academic literature,

one can notice an increasing number of publications on such technology-enhanced language instruction. Recent studies indicate a variety of potential or already proven benefits of game-based foreign language learning, including increasing students' involvement, motivation and attentiveness to detail [9]. The aim of the present paper is to provide an overview of the latest papers on game-based foreign language instruction that report the results of the learning outcomes when the tool that is used for instruction was developed by the instructors themselves.

A. Data sources

As the current paper gives a theoretical overview of the newest research trends in a specific area, gamified EFL instruction, the only data source is research papers. They were selected by drawing on the methodology proposed by [10]. The paper selection was carried out in several stages. Firstly, the available scientific journals from the top 20 Google Scholar scientific journals on educational technology¹ were inspected by looking for the keyword 'language learning'. Then, to ensure that none of the potentially relevant papers remain unnoticed, the researcher went through all the issues of the aforementioned journals (published in 2017) manually. Later, the selected papers were assessed in terms of their suitability for the present survey. Some papers were deemed unfit for the purpose because they (a) do not focus on gamified EFL teaching / learning, (b) do not focus on teaching skills, thus were rejected.

B. Structure

The remaining of the paper is structured as follows: Section II provides an overview of technology-enhanced and gamified language teaching/learning, Section III briefly describes the educational games that were discovered in the most recent publications, Section IV discusses the key findings, and Section V draws the conclusion.

II. GAMIFIED EFL INSTRUCTION

This section provides a concise theoretical survey of EFL and gamified foreign language instruction.

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A. EFL Instruction

To begin with, EFL stands for English as a foreign language. When it comes to foreign language teaching and learning, two main terms are used to define the phenomena. As Moeller and Catalano [11] explain, ‘foreign language teaching and learning’ refers to when students are being taught a language other than their mother tongue in a different country than the language is typically spoken. Another term is ‘second language acquisition’, which describes learning a non-native language while living in the environment where it is commonly spoken [11]. Scholars indicate that regardless whether individuals are taught a foreign or second language, the traditional teaching paradigm has shifted from teacher-centered to learner-centered language teaching [11], [12]. It means that the teacher should establish rapport with the students and take into consideration their learning styles, needs, and preferences [12].

In the times when technology is omni-present, it does not make much sense to be still using the old ways of giving instruction, especially when it comes to foreign languages. Nowadays, the majority of students own a mobile device or can be provided with one (for educational purposes) by their educational institution. Despite that, some scholars (esp. those from Taiwan, e.g. [13], [9]) emphasize that some foreign languages, especially English, are still taught by relying on the archaic paper- and memorization-based tasks [9]. Such teaching style does not comply with the new educational paradigm. Nor does this type of instruction provide authenticity, which is important in foreign language teaching/learning [13], [14]. More technology-oriented teachers know that it is exactly where gamified learning environments can come in handy.

B. Gamified Foreign Language Instruction

Almost a decade ago, in 2009, Thrilling and Fadel claimed that the available digital tools help to develop the key “21st century skills: critical thinking, problem-solving, creativity, innovation, media literacy, ICT literacy, flexibility, initiative, and self-direction” [15]. It can be argued that all of these skills should be also transferred into the context of learning foreign languages. There are teachers around the world who are trying to achieve exactly the aforementioned. Not only do they experiment on using diverse teaching methods (e.g. problem-based learning [16], flipped classroom [17], or language immersion [18]), but they also devise their own teaching materials and those who are more tech-savvy even develop their own educational games.

Recently, gamified language instruction has become very popular. The benefits as well as challenges of educational games have been discussed and reported upon by quite a number of scholars globally (e.g. [19], [20], [21]). To prove that the outcomes of gamified learning are more satisfactory than those achieved by the traditional means, experimental studies are conducted and the two teaching/learning styles are compared. The latest studies usually note that when playing educational games, students actually acquire more knowledge and improve their language skills (e.g. those of listening and speaking) [15], [22], [23]). Some studies, on the other hand, reveal that the only significant learning outcome result is when

the lower-achieving students are compared, which means that there is no great difference between the intake of more advanced learners [13]. Ideally, gamified learning should be beneficial to each and every student.

Nonetheless, the abovementioned research conclusions should not be taken for granted. There is a lack of longitudinal studies that indicate the long-term retention results of learning via gamified educational environments [24]. To prove or disclaim the actual educational potential of gamified EFL instruction, more scholarly effort needs to be invested in carrying out longitudinal studies on the long-term effects of relying on educational games to learn English (as well as any other foreign languages).

III. THE IDENTIFIED EDUCATIONAL GAMES

This section contains a brief overview of the educational games that were identified after carrying out a survey of the most recent publications on technology-enhanced EFL instruction.

A. *The Conference Interpreter* [25]

The game was developed by the authors of the paper back in 2013. The authors note that before applying the game in an actual teaching/learning environment, in total 17 versions of the game were piloted and revised after receiving feedback from the players. The intended audience is university students. The educational game is in essence a simulator of a conference, thus students have to simultaneously translate, for which they need to know and use appropriate lexis. The simulation is in English, while the target language is Spanish. Students are then exposed to multiple-questions-type exercises in which they need to choose the appropriate option (see Fig. 1b). The purpose of the game is to increase the learners’ vocabulary and a variety of skills needed for an interpreter. In addition to the educational content and instant feedback, the game also features a level and reward system and enables collecting scores and power-ups.

To test the effectiveness of the game, an experiment was conducted. One group of students played the game without any teacher intervention (experimental group). Another group got to study from a booklet with the same contents as in the game (control group). The students were also asked to complete a pre-test, post-test, and delayed test. Statistically processed data reveal that even though students in the experimental group had no help from the instructor, they learned the target vocabulary because they played the game. Moreover, their learning results were better than those of the students in the control group. However, when their test results were compared six weeks after the experiment, there were no significant differences in students’ knowledge of lexis.



Fig. 1. The interface of the game *The Conference Interpreter*

B. Near East University Children's Story Teller (NEU-CST)[26]

The Android mobile application was developed by the authors. As it is based on children's stories, it is aimed at young students (more precisely, 12-13 years old). Some features of the application (e.g. music) are based on previous studies that reveal what aspects make the learning process not only successful, but enjoyable as well. The authors indicate that the game includes a unique component, which is speech-to-text application that allows to listen to the text being read as one is looking at it on the screen. The learner also gets instant feedback. The simplicity and colourful imagery of the game (see Fig. 2) addresses vocabulary acquisition as well as comprehension, pronunciation and listening skills. The game has an in-built testing option, too.

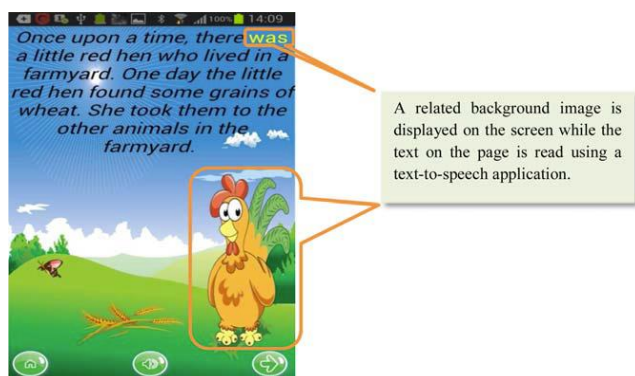


Fig. 2. The interface of the game *NEU-CST*

An experiment was conducted to check whether the students in the experimental group would achieve the target results without any teacher intervention, by solely relying on playing the educational game. The students in the control group read a traditional children's storybook with the same contents as in *NEU-CST*. The students in the both groups also completed a pre- and post-test. The results reveal that there is a statistically significant difference when it comes to the aforementioned students' achievement. The experimental group shows better learning outcomes of vocabulary, comprehension, pronunciation, and listening.

C. Problem-based English listening game [9]

The authors developed the game. They do not indicate at what specific age category the game is aimed, but in this case, it was played by ninth graders. The purpose of the game is to enable the students to practice, enhance or develop their listening skills and to reduce their language anxiety. They supposedly do so while following a storyline of a wizardry school from which they will eventually graduate provided they perform the necessary tasks and successfully overcome some challenges on their way. The game is built on three databases, namely those of materials, gaming elements, and students' profile. The first database is comprised of resources (i.e. listening tasks, a vocabulary, and extra materials) provided by an expert language instructor. The second database holds a variety of game components, such as battles and weapons as well as treasures and bonus rewards. The third database collected information on the learners' status and learning behaviours. The listening game has different difficulty levels (see Fig. 3), or phases, to achieve which, students need to complete various listening tasks.

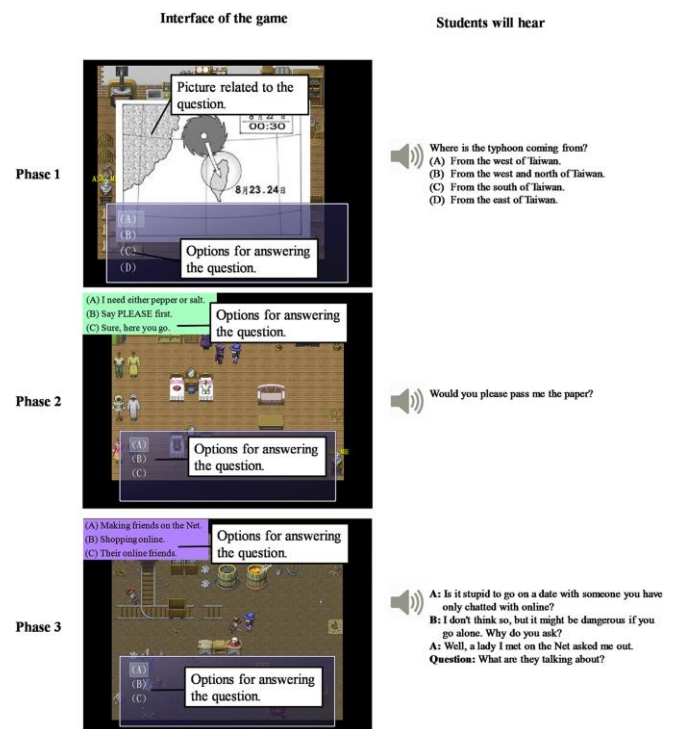


Fig. 3. The interface of problem-based English listening game

The authors compared the problem-based game to conventional technology-enhanced teaching. The experimental group was exposed to the former, and the control group to the latter. The both groups took a pre- and post-test. The statistical analysis shows that students benefited more from playing the problem-based game than from the other type of instruction.

D. Task-based learning AR educational game and Self-directed learning AR educational game [27]

Both games were developed by the authors with a specific audience, third-graders, as well as different learning styles in mind. The AR educational games run on Tablet PC. The goal of the games is to expand learners' vocabulary and increase their spelling skills. To investigate and compare different learning approaches, one game is built upon the self-directed learning style, whereas another game is based on task-based learning. The former AR educational game allows students to regulate their own learning by giving them the opportunity to choose the order of the learning targets as they wish. The latter AR educational game gave no freedom for the students to select the sequence of the tasks, and everything was controlled by the system. Another difference between the two games is that in the first version, students can re-choose the target, whereas in the second game they can only proceed to the next step if they have successfully fulfilled the previous one. Despite the aforementioned differences, the games have some features that they share; for example, they contain the same vocabulary resources and have seven situational stations. Every learning target is superseded by a vocabulary test. As children cannot type well enough yet and the screen is rather small, the tests rely on dragging the letters with fingers to make up the words required.

develop the game, the authors combined game science and mobile computing. The game was played by tenth-graders. In the game, the learner can choose an appropriate level of difficulty and, to proceed with the game, has to answer the questions that are based on the learning objectives. In addition, students have the chance to discuss the materials and the game itself on Facebook. The game is built to be beneficial to the instructor as well. That is, the teacher can manage the resources that are present on the game and see the discussions on the Facebook forum.

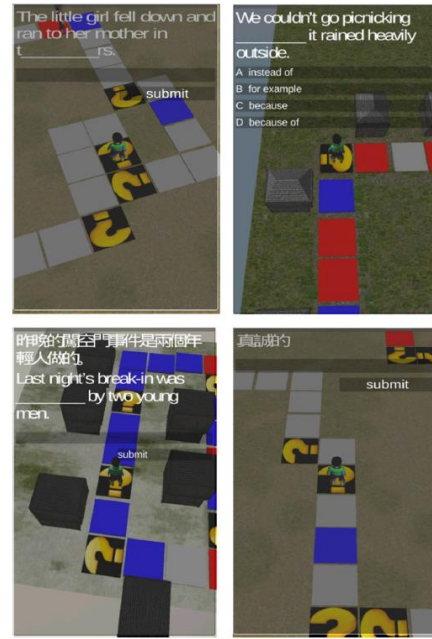


Fig. 5. The interface of Happy English Learning System

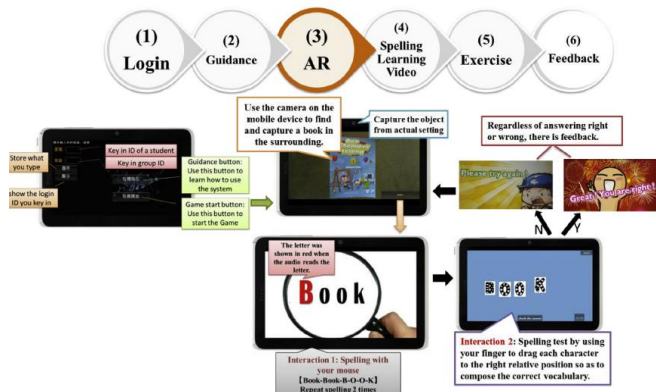


Fig. 4. The interface of the AR educational game

The two approaches to learning were compared. Students took pre- and post-tests. Interestingly enough, after applying statistical measures to see whether there is any significant difference between the results of the two groups, none were found. In other words, all students performed equally well.

E. Happy English Learning System [28]

The downloadable off-line game is based on *Monopoly* and *Chance* and was designed for mobile devices. It incorporates course materials and assignments with gaming elements. To

The effectiveness of the game was experimentally tested. There was an experimental and a control group, both of whom also took a pre- and post-test. After applying statistical analysis to their dataset, the authors conclude that the group that played the educational game achieved better results.

F. OpenSimulator Project-CLLiOP [Content and Language Integrated Learning in Opensimulator Project] [15]

The authors report that it took a total of 160 hours to develop the game. It was then piloted and afterwards improved. The target age group is not specified, but the educational game was employed to teach six-graders. The aim of the game is to teach the learners lexis related to Geography, thus they get to control avatars that are visiting a virtual island and exchanging conversations in English. In the game, students traverse the island and get information about the target vocabulary on the way, at sign-posts and media corners which were specifically designed for that function. The latter two elements of the game contain such resources as videos and presentations. Students can interact with them by pausing, rewinding, and likewise. The game also suggests benefits for the instructor as it is based on ready-made scripts. This means that s/he need not invest too much time in scripting and programming. The authors claim that once the script is

developed, it does not require too much effort to adapt it according to other lesson plans.

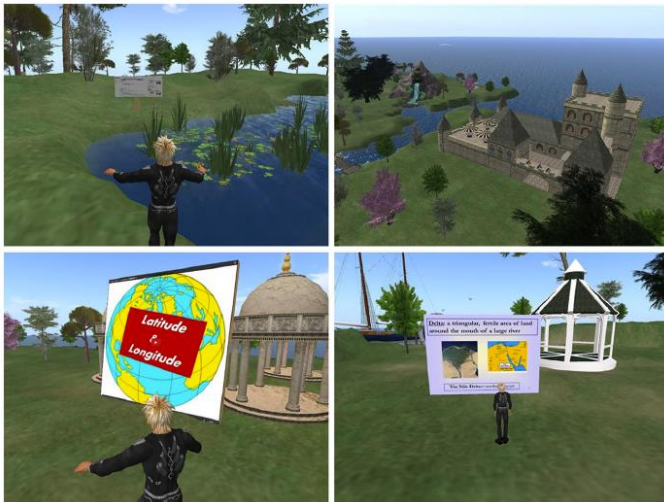


Fig. 6. The interface of *OpenSimulator Project-CLILiOP*

The authors investigated the potency of the game. In total, there were three groups of students that took part in the experiment. The first one was control/conventional, the second was taught by using conventional CLIL, and the third one was exposed to CLILiOP. The members of each group got to take pre- or post-tests. The results indicate that those students who had the latter method included in their learning process achieved more than two times greater results than the control group.

IV. DISCUSSION

Almost all the previously described educational games (except [25]) are used as a supplement for at least somewhat traditional teaching/learning. It is not specified whether instructors employ any additional innovative strategies in teaching EFL. The latter is important because it may effect students' cognitive abilities, motivation, or other factors that play a role in language learning.

The greatest drawback of the surveyed studies is reliability. The experiments were carried out with small samples in a short period of time. Only one paper [25] employed a delayed test, and its results suggests that with time, the better learning outcome achieved by playing an educational game, plunge to the same level of those who received traditional EFL instruction. It is of paramount importance to investigate the long-term results of playing educational games, otherwise their real educational potential remains undisclosed. That is not to say that carrying out long-term studies of this kind would be easy. The same instructor does not necessarily teach the same students and it would be hard to claim that students' knowledge was not influenced by other sources or factors (e.g. media, films, music, or even other games).

The authors (developers of the educational games) admit that it is time-consuming to develop and launch the games. Nonetheless, the way some of them designed their games provides a good framework that can be easily adapted to a

variety of different topics (e.g. [15], [28]). It can be suggested that the games could also be adapted to teaching languages other than English as well.

By looking at the screenshots of the game interfaces, one can see that some of the games are more sophisticated than others. The quality of the graphics and game elements may have an effect on how well the game performs its desired function – conveying educational content that one is supposed to comprehend and consequently learn. None of the studies address this issue, but future studies should take this concern into account.

Despite the aforementioned short-comings, the results of the studies can be regarded as promising to at least some extent because the educational games are compared to traditional teaching/learning materials. That is, authors conduct experiments on two (in one case, three [15]) groups. One is exposed to experimental conditions (i.e. play the game), the other works on the same materials but in a more traditional way (i.e. students do the exercises and tests on paper).

In general, it can be stated that the six educational games comply with the student-centered educational paradigm. The amount of instruction is reduced and there is more emphasis on self-regulated learning, thus empowering the learner to control his/her learning process. More importantly, by learning EFL via educational games, students also acquire or at least improve the earlier mentioned 21st century skills (e.g. problem-solving, creativity, and ICT literacy).

V. CONCLUSION

This paper provided an overview of six educational games that were developed in order to teach EFL. All the six games were developed by EFL instructors themselves with the purpose to increase their students' language skills. The games address holistic language skills and are mostly directed at the youngest segment of EFL learners. The effectiveness of the educational games were tested experimentally. Five out of six games result in significantly greater learning outcomes when compared to the results of the control groups. Nevertheless, the results should not be taken for granted as the studies only reveal short-term results. Future studies could address this issue and reveal the potential of technology-enhanced EFL learning in the long run.

ACKNOWLEDGMENT

The author of the paper would like to thank the anonymous reviewers and editors for their insightful comments.

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