

Συνέδρια της Ελληνικής Επιστημονικής Ένωσης Τεχνολογιών Πληροφορίας & Επικοινωνιών στην Εκπαίδευση

Τόμ. 1 (2021)

12ο Πανελλήνιο και Διεθνές Συνέδριο «Οι ΤΠΕ στην Εκπαίδευση»



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Βιβλιογραφική αναφορά:

Rakopoulou, V. (2022). Design and development of a digital educational environment for teaching/learning Greek as a second language to students with Learning Difficulties: a small-scale implementation. *Συνέδρια της Ελληνικής Επιστημονικής Ένωσης Τεχνολογιών Πληροφορίας & Επικοινωνιών στην Εκπαίδευση*, 1, 490-496. ανακτήθηκε από <https://eproceedings.epublishing.ekt.gr/index.php/cetpe/article/view/3784>

Design and development of a digital educational environment for teaching/learning Greek as a second language to students with Learning Difficulties: a small-scale implementation.

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Abstract

The present study addresses the issue of learning Greek as a second/foreign language in refugee and migrant students with Learning Difficulties with the use of a web based educational environment. The aims of the present study are the design and development of an open digital educational environment called "It's all... Greek to me" as well as its implementation by ten students who learn Greek as a second/foreign language. The qualitative research method has been used and the data were collected through several tools as the researcher's diary observation, teachers' and students' interviews, students' evaluation forms and data which have been obtained from the platform of the digital educational environment. The participation of the research participants in this program aims at their smooth integration into the community of the second / foreign language.

Key words: Refugees, Migrants, Teaching/Learning Greek, Second / Foreign Language, Learning Difficulties, Web 2.0 Tools, Digital Educational Environment

Introduction

The intense migration flows that have been observed in Greece in recent years have caused rapid changes in social, economic and cultural levels. New populations have been introduced in our country. This need not only concerns the integration of immigrants on the part of Greek society, in order to ensure its proper functioning, but also aims at the personal development of its new members. Education of migrants and refugees, especially children, becomes a major issue.

Teaching Greek as a second/foreign language becomes even more difficult when students from different cultural backgrounds also face Learning Difficulties. It has been recorded that students from different cultural backgrounds tend to have some difficulties with oral expression, difficulties with grammar and syntactic phenomena of a language but also reduced participation in the educational process (Lockiewicz & Jaskulska, 2019). However, the main problems that students with Learning Difficulties face are related to all three components of reading that are decoding, fluency and comprehension. The importance of the contribution of new technologies to the education of these students is emphasized (Makris & Markou, 2015) and opportunities for students' physical, cognitive, emotional, mental and social development are proposed (Myserli, 2015).

Educational research aims to collect and apply the most appropriate methods of learning Greek to people who have another language as their first (native) language. The use of ICTs is an integral part of the modern educational process and has been assisted with digital teaching materials. Therefore, the creation and use of such materials, known as web-based

educational environments (platforms), based on modern theories of designing and learning a second language, become necessary in the present circumstances.

According to literature review, new technologies and more specifically the use of either digital tools or fully-developed digital educational environments help students with Learning Difficulties to learn a second/foreign language (Zhang et al., 2006; Makris & Markou, 2015) by improving the students' decoding, comprehension and fluency. Taking all the above into consideration, we can assume that the present digital educational environment can help students with Learning Difficulties who learn Greek as a second language, by improving the students' performance in identifying the letters of the Greek alphabet as well as reading and creating syllables and often used words. The name of the digital educational environment is "It's all... Greek to me" and includes various digital tools such as quiz, drawing, puzzles, assignments, e-books and videos.

The aims of the present study are the design and development of an open digital educational environment as well as its implementation by the participants so as to enhance students' language skills while learning Greek as a second / foreign language to students with Learning Difficulties.

Methodology

The digital educational environment "It's all...Greek to me"

The digital educational environment "It's all... Greek to me" was developed through the "Learnworlds" online platform and is accessible via www.greek.learnworlds.com website. This platform was considered suitable because of the variety of the tools and multimedia that are available, also because it is easy to manage and edit its environment. In addition, it provides the ability to create an interactive learning environment that offers a dominant role to students. As Zhang et al. (2006) says students perform better when they discover things on their own and when they control the speed of their learning procedure rather than when they come in contact with a predetermined process a fact that drives them to passivity.

Moreover, the ability to access and use the platform either via a computer, a tablet or a mobile was an especially important factor in developing the digital educational environment "It's all... Greek to me" through this specific platform. Specifically, the digital educational environment "It's all... Greek to me" consists of four sub-modules, each of which utilizes various tools offered by the online platform according to the learning outcomes that are expected. The titles and description of the sub-modules are:

- "**O kosmos ton...grammaton !!**": in this sub-module the student meets all the letters of the Greek alphabet.
- "**Ta grammata eginan...zevgarakia!!**": in this sub-module the student interacts with double consonants and double vowels of the Greek language.
- "**Pareoula pareoula gemizei... i sakoula!!**": in this sub-module the student interacts with simple syllables that can be created by combining the letters of the Greek alphabet.
- "**O kosmos ton...lexeon!!**": in this sub-module the student interacts with several frequently used words of the Greek language, which are divided into groups according to their use.

For the development of each sub-module, a variety of tools provided by the "Learnworlds" online platform have been adapted in order to meet the learning objectives

of the 'steps' - activities of each sub-module of the digital educational environment. Also, each sub-module requires a different number of "steps", in other words the number of activities of each sub-module that have to be completed by the student in order to gain the "certificate of completion" of the sub-module he/she is attending. Some of the offered tools of the web platform, which were used, are Video, eBook, YouTube, Quiz, Assignment, Certificate, Certificate of completion, Embed and External link.

Participants

The participants of the target group of the research were chosen because they learn Greek as a second/foreign language and they all have diagnosed with Learning Difficulties, and more specifically dyslexia, by the Educational & Counseling Support Center in Greece. All participants had to have a certification from public bodies. The target group of the research consisted of ten students who were divided into two groups according to the setting (formal or informal) that the intervention with the use of the digital educational environment was scheduled to take place. The subgroup of the formal setting consisted of six students, two girls and four boys, who attend the 2nd Primary School in Alexandreia Imathias and the subgroup of the informal setting, each participant's home, consisted of four students, three girls and one boy who live in Imathia.

Research questions

The research questions that were used as a basis upon which to formulate the research tools of the present study were:

- Is the digital educational environment "It's all...Greek to me" structured as to cover the needs of students with Learning Difficulties in order to learn Greek as a second/foreign language?
- Is the digital educational environment "It's all...Greek to me" offering an interesting and easy way of learning Greek as a second/foreign language to students with Learning Difficulties?

Research methodology

To begin with, the design and development of the activities that comprise the digital educational environment were done by the researcher in the period of three weeks. After that, the researcher attempted to identify students with Learning Difficulties who learn Greek as a second/foreign language with formal diagnoses of Learning Difficulties in Alexandreia Imathias and around it. When the researcher identified the desirable target group, discussions with the headmaster of the school, teachers, and participants' parents as well as the production of consent documents took place.

Moreover, the qualitative research method was decided to be used, because it is a type of educational research in which the researcher decides what to study and on what to focus. Also, it offers the opportunity to the researcher to go deeper into the personality of the respondents in order to understand and record the social influences of the respondents on the subject of the research.

Finally, the implementation of the digital educational environment was done through scheduled educational interventions in the formal setting as well as in the informal setting. More specifically, in the formal setting four educational interventions took place for all students of the Integration Department of the school. Also, in the informal setting four

educational interventions took place for each student individually at their home. The duration of the implementation of the digital educational environment was three weeks.

Research tools

Five different research tools were used for the purpose of this study. The purpose and use of the research tools aimed to highlight students' reactions before, during and after the use of the digital educational environment, activities that stimulated their interest or made it difficult for them to use, whether there was something that confused the students, whether the students got tired or the use or whether there was the need for the researcher to intervene while students were using the digital learning environment and the possibility of technical issues that may arise during the time of the use as well as possible changes that could take place on the basis of the observed reactions of the students. More specifically, the research tools were:

- Researcher's diary
- Evaluation Forms
- Teachers' interview protocol
- Students' interview protocol
- Platform's data

Data collection

The data collection by using the already mentioned research tools took place on separate dates and times according to the participants' informal setting program and also the children's school program in which the digital educational environment "It's all... Greek to me" was implemented. Initially, after each application of the digital educational environment in both formal and informal setting, students were required to complete the evaluation forms. More specifically, 40 evaluation forms were completed by each student at the end of each of the four implementations of the digital educational environment, 24 evaluation forms in the formal setting and 16 evaluation forms in the informal setting. Completion and collection of the evaluation forms as well as the collection of each student's data retrieved for the e-platform were done after each student's application of the digital educational environment. In total, 4 researcher's diaries were produced in the formal setting and 16 researcher's diaries in the informal setting as the application of the digital educational environment was done individually and not within a group as the formal setting. Also, the interviews of the four teachers in the formal setting who participated were conducted in the school unit at pre-agreed date and time when the teachers did not have to perform any teaching tasks so that there was no problem in the curriculum of the school and the four students' interviews of the informal setting took place in their houses in a pre-agreed day and hour.

Findings

The structure of the digital educational environment "It's all...Greek to me" as to cover the needs of the students with Learning Difficulties who learn Greek as a second/foreign language

Modern theories of designing and learning a second/foreign language, become necessary nowadays (Ellis, 2003). In this context, more and more actions are being taken to learn the Greek language, which aim not only at understanding but also at improving the

communication skills of young speakers so that they can use it in their daily lives without being trapped in a sterile and pointless learning. The use of computers in the teaching of Greek offers unique advantages. Several approaches can be followed as to fascinate students with the use of the Web tools and make their learning easier (Fitzpatrick, Lund, Moro & Ruschoff, 2003). Regarding the students' socio-cognitive development, the use of computers helps to develop their thinking, promotes learning autonomy and creates appropriate conditions for collaborative learning (Geisert & Futrell, 2000).

The success of the use of a digital educational environment which is based on the Web, facilitates the interaction between the learner and the learning environment (Lohr, 2000). A convenient platform can gain the attention of students with Learning Difficulties that learn Greek as a second/foreign language (Balakrishnan et al., 2015). The use of the digital educational environment "It's all... Greek to me" it is showed to be a convenient platform due to the findings of the present study. It includes several multimedia tools that are mostly well-structured as to cover positively the needs of students with Learning Difficulties in order to learn Greek as a second/foreign language. Students used all the designed activities that were available in the digital educational environment with positive feelings generally.

The structure of the digital educational environment covered the needs of these particular students due to the fact that they were having fun and desire in completing the designed activity as they were integrated with contemporary educational values as mentioned by Maysami- Cooper et al (2007). Every day the participants learnt something new and as it is shown they had special preferences in some activities. Videos for example were used as an attractive presentation of the subject which activated students' senses of seeing and hearing. They made them focus a lot and not lose their attention (Papazoglou, 2002). Students wanted to repeat videos because they understood letters in a better way than from books.

Researcher did not make a lot of interventions during the implementation of the digital educational environment. That means that a few technical needs were indicated through the use of the digital educational environment. The above concludes to the fact that the digital educational environment is well-structured and has no disadvantages through the use of it. The only problematic area that concerned the researcher is the connectivity to the Internet. It could be downloaded at a PC so as no need of connectivity would be needed.

As for other tools that are included in the digital educational environment "It's all... Greek to me" it is suggested that the activities of the quizzes and exercises may be simplified by the use of some voice-recording text for children but generally no technical changes are suggested. Another proposal by students and teachers as well, was to add a digital game that will keep students more concentrated and happier with the use of it.

Taking all the above into consideration, there is an improvement in children's performance by the use of the digital educational environment as reported from the researcher's observation, teachers' and students' opinions that is a great gain for the positive cover of these children's needs from a well-structured digital educational environment for them.

The digital educational environment "It's all...Greek to me" as an interesting and easy offered way of learning Greek as a second/foreign language to students with Learning Difficulties

A general agreement of the students about the positive use of the digital educational environment they used was obvious from the findings. Students showed a particular preference for using the digital educational environment in relation to learning Greek through books. They mostly did not feel tired as they usually seemed to feel in the classroom. It was an interesting way for them to learn Greek through the digital educational environment.

The only reason for tiredness was due to the difficulty of using the mouse or touchpad in writing-drawing or puzzle activity. That is the only time when students lost for a few seconds their attention to the activities. The difficulty encountered with the use of the mouse that made a few students to resent it but after the reward reminding of the researcher they came back to the activities. The reward with the certificate made the total procedure very motivating for the students, because they wanted to gain a new certificate every day.

It seemed to them as a game where they played and did not realize that they were learning at the same time. That made the digital educational environment an easy way for these students to learn Greek as second language. The expressions made like "*can we spend more hours? I can stay longer than school hours*" and "*let me go on please, I want to sit down again, Don't go, Please stay for another half hour*" to the researcher and so on, informed us how much easier the thought to use the environment was, who wanted to stay longer and practice more.

Following the use of the digital educational environment in children's emotions was very positive. Many times, the reaction was that they did not want to stop using it and now that they wanted to repeat the process immediately. Their dissatisfaction was only because of the end of the lesson because they wanted to continue to learn the same letters and see other stories, play other games. The excitement of the children is evident from the first day of using the digital educational environment. Although there were some instances of children from the informal settings who were hesitant and shy at first, after the first intervention was implemented, they felt comfortable and smiling.

About the students' interaction with the digital tool, teachers' views are incredibly positive. They emphasize the positive emotions of their students using the digital educational environment. The children's enthusiasm was recorded by the teachers as being present after the end of the interventions. Students' interaction with the digital tool was intense since they referred to their positive impressions during the break. In the time break in school, students from our study used to analyze to their classmates the process and discuss positively with their teachers about learning easily and mostly with fun Greek. Generally, students were looking forward until the next time they would attend to a corresponding intervention.

Conclusions

As it is reported, refugees may face Learning Difficulties that make difficult to learn Greek as second language. Computer use has been shown to produce positive results in students with Learning Difficulties. Respectively, the refugees' and migrants' use of technology to learn a second language is also significant and positive. The dynamic and interactive nature of new technologies in education transforms new technologies into a powerful tool for enhancing learning and offering students with Learning Difficulties a supportive learning environment that incorporates new technologies can take advantage of the opportunities for bilingual students with Learning Difficulties.

The results of having a digital educational environment in a classroom as to give the "digital" opportunity to students with Learning Difficulties, who try to learn Greek as a second language, show high correlation with children's performance and absorption of knowledge of the Greek language. The use of the digital educational environment "It's all... Greek to me" achieved that due to everyone's reactions of the use of it. Students wanted to continue the use of it as to replace the real books with this specific digital material. They showed that they could understand better the letters and remembered more information than in a typical class who used only books and a whiteboard.

The implementation of interventions to students with Learning Difficulties in learning Greek as second language through the digital educational environment "It's all... Greek to

me" has had a positive impact. It is showed that its structure can cover positively the needs of those students in learning. The use of multimedia, the colors and the sounds made them to use it for a long time without being as tired as they are in a typical learning environment. The designing of this was due to designing principles that help those environments to be as more useful and easily accessible. Students found it as an interesting and easy way to learn Greek due to the fact that they did not get tired as usual in their classrooms and also, they wanted to continue the use of it every day.

It is encouraging that all teachers seemed to understand the positive reaction of the digital educational environment. The digital educational environment "It's all... Greek to me" proved to be a digital environment which found the embrace of all the above as an easier way to learn Greek. It seems that everyone would like to continue in using it in their classroom. Moreover, refugee and migrant students are often absent from school for a long period of time and as a result valuable time of the educational process is wasted. So, through the digital educational environment "It's all... Greek to me" the students will be able to continue their journey of knowledge on their own under the only condition to remember their password and have access to the Internet.

Finally, in the future it is proposed to use the digital educational environment "It's all... Greek to me" to students with diagnosed Learning Difficulties other than dyslexia or to refugee students from Persia or other countries that economic or war issues forced their families to move to Greece. Also, it would be a good practice as to use the digital educational environment to a bigger part of population of students which could be over the size of the ten students and four teachers who got interviewed.

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