ICT in Vocational Secondary Education: a Platform to Support Greek Language Learning

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Abstract

In the last decade, there has been a great debate over how ICT can best be harnessed to improve efficiency and effectiveness of education at all levels. Recently, the Greek Ministry of Education recommended the use of ICT in language learning in Vocational Secondary Education. In order to meet the particular needs of students attending vocational schools, the Institute for Language and Speech Processing developed the 'Glossa for EPAL' platform (www.ilsp.gr/epal).

The aim of this paper is to describe the platform, offer concrete examples of its content and functionalities and present the results of an extensive evaluation process.

The description of the platform covers the following key components: a) one hundred (100) structured lessons depicting different types of language phenomena related to morphology, vocabulary, semantics, syntax, spelling and punctuation, text comprehension etc., b) thirty (30) revision tests, which have been designed for both self- and classroom assessment, c) additional lessons prepared by teachers to cater for the specific needs of their students, d) a dictionary of more than 11,500 single- and multi-word entries covering mainly the basic vocabulary of Greek and a number of technical terms from various subject areas, e) a database of standard diagnostic tests to select students for additional supportive courses in Greek, f) a database of progress reports exchanged among teachers and school counselors, g) a forum to support communication among teachers and school counselors and h) a management system that allows teachers to organize virtual classrooms, upload multimedia material and prepare their own lessons in any way they see fit. To further describe the content and functionalities of the platform, one language lesson and one dictionary entry are explored as examples.

To ensure the quality of the end product, 'Glossa for EPAL' was evaluated both internally and externally. Throughout the development phase, developers ran various checks on every part of the platform to ensure the top quality of the teaching material, the user interface and its various functionalities. In order to conduct external evaluation, the platform was implemented in school classrooms and teacher training seminars. Actual users, both students and teachers filled in evaluation questionnaires. The paper ends with the conclusions from the external evaluation process.

1. Introduction

ICT has penetrated the education systems around the world. As a result, digital literacy has become an integral part of the curricula of various countries, enabling student-centred learning and individualisation.

Language learning in particular has become more realistic through the use of ICT. As Rathore (2011) mentions, "ICT can be used to integrate speaking, listening, reading and writing. It enhances interactive teaching and learning styles. It also extends pupils' ability to exercise choice, work independently and make connections between their work in English [first language] and in other subjects" [1].

There have been various attempts to introduce ICT in the Greek language classroom for decades to cover the needs of teaching and learning at all levels. Recently, the Ministry of Education has recommended the use of ICT in language learning in Vocational Secondary Education (hereafter EPAL) to cater for the significant deficiencies of this specific target group [2]. Papanastassiou (2012) stresses that EPAL students perform so poorly in reading and writing that this affects their overall academic performance. Moreover, many of these students are not able to produce grammatically correct sentences and properly structured paragraphs or spell correctly. All these gaps come from earlier stages of their schooling, even as early as primary education [3].

2. A web-platform supporting language teaching/learning for EPAL

To address the needs of students attending technical and vocational secondary schools, ILSP has developed the "Glossa for EPAL" platform within the framework of the project "Design, development of web-platform and accompanying language technology tools are introduced to support the teaching of Modern Greek language in Vocational Secondary Education" [4].

With regard to content, this platform covers the language phenomena described by the Ministry of Education [5], including basic information on spelling, grammar etc. taught in primary education. The platform also allows teachers to upload their own educational material and make it available to their students so as to personalise their teaching. Additionally, they can check their students' performance in consolidation exercises (available for all language lessons) and revision tests. Last but not least, the design and functionality of this web-based platform make it easy to use both in as well as outside the classroom for self-learning. Thus, students are offered the option of studying and practicing their skills at their own pace.

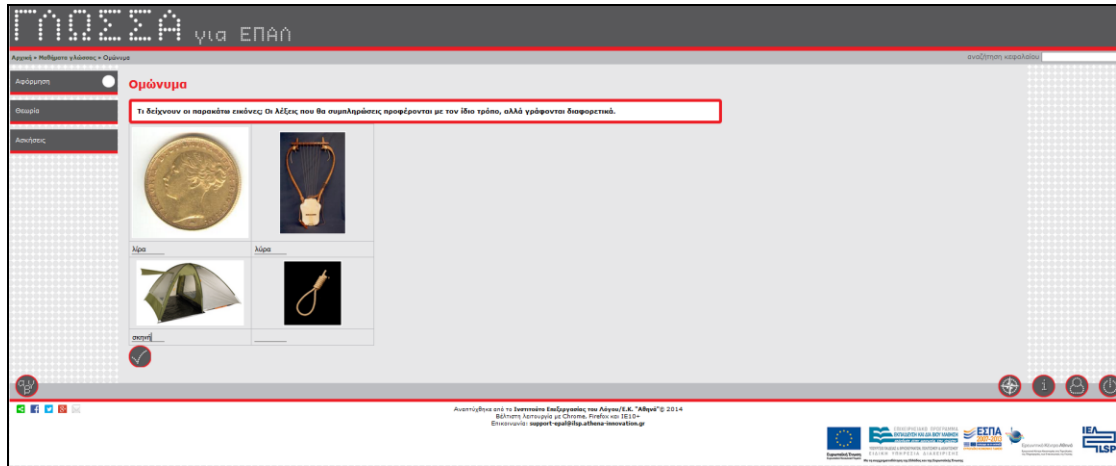The platform consists of the following key components:

- **One hundred (100) structured language lessons** covering different types of language phenomena related to morphology, vocabulary, semantics, syntax, spelling and punctuation etc. The material used is original and designed to cover the aims and objectives of the language course of General Upper Secondary Education plus those of previous educational levels. The structure of a typical language lesson includes a warm-up activity to introduce the subject; a theory part to present the language phenomenon; and exercises for consolidation. To facilitate self-evaluation, students are given feedback and the correct answers at the end of each activity.
- **Thirty (30) revision tests**, designed for both self- and classroom assessment. Feedback is given to students, who can repeat each exercise for as many times as they wish to improve their grade. The system does not provide students with the correct answers; they need to refer to the theory part in order to understand their mistakes.
- **Additional lessons** prepared by teachers to cater for the specific needs of their students. These share the same interface and types of activities with the 100 language lessons.
- **A dictionary** of more than 11,500 single- and multi-word entries covering mainly the basic Greek vocabulary and a number of technical terms from various domains (mathematics, physics, technology, economics, computer science etc.). The dictionary is included to support students not only when using the platform but also when studying in general.
- A database of **standard diagnostic tests** to be distributed at the beginning of the school year. Based on their performance on these tests, students may be selected to follow additional supportive courses in Greek.
- A database of **progress reports** exchanged among teachers and school counselors.
- A **forum** to support communication among teachers and school counselors.
- A **management system** allowing teachers to organize virtual classrooms, upload multimedia material and prepare their own lessons. The system also offers teachers the opportunity to follow their students' progress as they perform exercises.

The last four components are accessed exclusively by teachers.

A sample language lesson and a sample dictionary lemma are presented below from the user point of view.

2.1 Exploring a language lesson

To explore 'Homonyms', students click upon the title from the list of lessons and get access to the three sections of the lesson. In this particular warm-up section (Picture 1), students have to type in the right word at the bottom of each picture of homonyms. The submitted answers are evaluated and correct feedback is provided upon request. Warm-up activities combine various multimedia materials (pictures, sounds, videos, animations) with authentic texts in the form of closed-ended questions/activities (blank-filling, multiple choice questions, matching questions, drag & drop exercises).

Picture 1: 'Homonyms' warm-up activity

The theory section of 'Homonyms' consists of a definition of homonyms and some illustrative examples in sentences. Theory sections are simple and concise, usually consisting of one or more definitions and examples, so as students do not get lost in details. Hyperlinks are used to provide additional information.

The final section of this lesson consists of two blank-filling exercises of escalating difficulty. In the first exercise students are given two homonyms and are asked to complete a sentence with the correct one, whereas in the second exercise they have to find the homonym of the word given in brackets and use it to fill in the blank. As in the warm-up section, this section consists exclusively of closed-ended activities. After submitting their answers, students get feedback and have the option to ask for the correct answers.

The platform keeps a record of the students' performance on each exercise for future reference and data analysis. Students may repeat each exercise if they wish to improve their performance; teachers, on their part, can print out the list of students' grades and incorporate it in their portfolios.

2.2 Exploring a dictionary lemma

Students have four ways to look up words/phrases in the dictionary according to preference: scrolling down/up an alphabetised list; clicking on a letter of the alphabet to limit search results; typing in the word/phrase; searching by domain. Taking the lemma 'vessel' as an example, the query results are presented in the middle of the screen (Picture 2). Three senses of the word are given: 1. container (in history/archaeology), 2. blood vessel (in biology) and 3. a canal for plant fluids (in botany). Cross-references are clickable hyperlinks leading to respective dictionary entries. Users can navigate among lessons, tests and dictionary at all times as they wish.

Picture 2: Looking up the lemma 'vessel' in the dictionary

Further types of information offered in the dictionary include alternative entry types, basic grammatical information, usage notes, hyphenation, derivatives, compounds and domain.

With regard to entry selection, a large, general language corpus of Greek was used for reference. Secondary entry sources included a specialised Greek corpus of educational language and other dictionaries and glossaries previously developed by ILSP. Last but not least, new lemmas were created for words used in the definitions of other entries for easy reference.

For the needs of this target group, the dictionary includes the most basic senses of lemmas, explained through simple definitions and one or more examples for each sense, carefully picked to be as interesting as possible to students.

To conclude, special effort has been made to compile a balanced dictionary of high educational value, which, at the same time, will be easy to access, user-friendly and as interesting as possible to the target group.

3. Evaluation results/Implementation results

The evaluation of the 'Glossa for EPAL' platform was both internal and external [6]. Throughout the development phase, the team ran various checks on every part of the platform to ensure that the content, the user interface and its functionalities were of a very high standard. In addition, the platform was evaluated externally in two phases by a random sample of users using questionnaires. The questionnaire method was selected because it allowed for extensive data collection within a relatively short period while, at the same time, data could be statistically treated.

Phase A aimed at evaluating the design principles of the platform and the list of language phenomena that it would cover. To this end, every structural element of the platform was evaluated by teachers in samples (31 structured lessons and 1,000 dictionary lemmas). In phase B, the final edition of the platform was evaluated by both students and teachers, including every structural element and the entire educational material.

During phase B, students attended one-hour classes piloting the platform. They had the chance to navigate through every component, study theory and perform activities and exercises. They demonstrated interest in participating and eventually commented fairly positively when asked to fill in the questionnaires.

The results from the teachers' questionnaires were highly positive. Teachers attended a 5-hour training seminar including a presentation of all platform components as well as guidance for uploading material and creating lessons. At the end of the seminar, they filled in an electronic questionnaire in which they made exceptionally positive remarks. It is worth noting that, in general, the percentage of teachers answering positively exceeds 95%.

Furthermore, a large number of teachers decided to answer the open-ended question contained in the questionnaire with enthusiasm. Many promised to use the platform in class; others appreciated the access to additional educational material about Greek. It is worth mentioning that some of the teachers with no internet access at school suggested that they can use the platform at home to offer students guidance during self-teaching outside school. After the seminar, some teachers more familiar with ICT asked to become local platform administrators at their schools so that they could share the platform with their colleagues. All these suggestions by teachers indicate that a wider scope of evaluation can eventually "bring to light extra merits" [7] of using the platform, namely that it can be exploited not only at school but also in asynchronous learning, without space and time restrictions.

It should be noted that teachers felt very positive about the emphasis on teacher training, particularly with regard to the management system, which allows them to create their own lessons. They also commented very positively on the guidance and encouragement they received from the training group. It appears, once again, that appropriate teacher training in the use of educational software is a condition sine qua non. A well-organized effort on the part of teacher trainers can greatly mitigate the technophobia that many Greek teachers still feel and, therefore, lead to the more effective integration of ICT in school practice [8], [9].

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