Developing a multilingual platform for language learning using the new technologies

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ABSTRACT
Over the past decades, the use of New Technologies (NT) has become an important aspect of language learning. By exploiting NT potentials, a rich, vibrant environment for language learning can be created, which transcends the limitations of the traditional classroom and has led to the redefinition of the strategies and concepts of teaching and learning. Language, culture, information and communication can now be only a mouse click away.

The present paper aims at presenting how the potentials of the NT have been exploited within the framework of the European project MYTHE (Multimedia Young-children Thesaurus for Educational Purposes), for teaching three European languages (Greek, English and Dutch) to children aged 6-8.

The innovative features of this project can be summarised as follows:
1. The educational content of the platform has been based on a modern fable (myth) written by Eugene Trivizas (famous Greek author of children stories), dispersed with pan-human values (democracy, science and technology, health and hygiene, culture, environment).
2. A common language material has been developed for the teaching and learning of the three languages as both mother tongue and second language, thus offering an inter-European language teaching platform to be used by children in the three countries involved.
3. Cutting edge language technology tools have been integrated for supporting the production of both oral and written language.

The presentation will touch upon the overall structure of MYTHE and its components and will primarily focus on the design of the language material regarding the Greek-English language pair.

1. INTRODUCTION
Levy [1997] defines CALL as ‘the search for and study of applications of the computer in language teaching and learning’. Technology is increasingly being promulgated as a powerful mechanism that can transform education. The last decade has indeed witnessed a tremendous increase in the use of the New Technologies (henceforth NT) in the teaching and learning of languages.
The main advantage of NT lies in the fact that the combination of text, sound, video and animation creates a rich and vibrant environment for language learning. This environment transcends the limitations of the traditional classroom and has led to the redefinition of the strategies and concepts of teaching and learning. Language, culture, information and communication can now be only a mouse click away.

The present paper aims at presenting how some of the potentials of the NT have been exploited within the framework of the European project MYTHE (Multimedia Young-children Thesaurus for Educational Purposes(1999)), for teaching three European languages (Greek, English and Dutch) to children aged 6-8.

2. OVERVIEW OF THE PROJECT
The MYTHE project aims primarily at designing and developing a multilingual CALL platform to be used for the teaching and/or learning of English, Greek and Dutch both as mother tongue and as second language to young children aged 6-8. This platform will initially be developed for the three above mentioned languages, but can be easily extended with the addition of other languages due to its modular architecture.

The multilingual aspect of the project promotes cross-cultural education, which contributes to the consolidation of the user's identity, to the understanding of other cultures and civilisations and to the development of a positive attitude towards them. MYTHE incorporates a considerable number of cross-cultural elements that are introduced within the plot in a natural way.

A unified methodological approach and common language material for teaching these three European languages is employed, allowing each of them to be treated both as mother tongue and second language. The platform is designed in a way that enables the user with a simple click to switch to any of the three languages involved at any time.

In addition, the MYTHE platform incorporates a number of well-mastered language tools (spelling checkers, speech recognition tools, agreement checkers), in an attempt to achieve quicker and more effective learning of lexical and grammatical knowledge, more efficient language practice and more effective language reading and writing aids. Moreover, advanced 3D modelling and animation tools are employed in order to create a more or less authentic and appealing environment, which renders the situations of the story -therefore the emerging language functions- realistic.

Apart from language learning, which constitutes the primary goal of this endeavour, MYTHE encourages interdisciplinary learning. The educational content of this language learning platform is structured along a modern fable. The plot of the fable contributes to the awareness of certain
notions, as well as to the development of positive social attitudes and perceptions. The fable of MYTHE is interspersed with elements and values of a pan-European (or rather pan-human) nature, in order to develop a new generation of European citizens.

The fable is written by Eugene Trivizas, a world-wide famous Greek author of children books and is developed on the basis of the following five thematic areas: (i) Environment, (ii) Health/Hygiene, (iii) Culture/Arts, (iv) Science and Technology, (v) Democracy.

The story is presented in a dynamic and lively way by fully exploiting the potentials of the NT. Visual and acoustic memory of the pupils are simultaneously activated in order to trigger the learning process. By placing a fable at the core of an interactive, computer-based learning environment, we give children the opportunity to experience language learning as an active process of gaining knowledge beyond 'traditional' learning procedures. The fable of MYTHE is realised in such a way that the user is actively involved in the story, explores the multimedia environment in order to discover objects, to find solutions to logical puzzles, to participate in action games, and to answer encyclopaedic questions related to the five thematic areas of concern.

3. THE TARGET GROUP AND THE METHODOLOGICAL APPROACH

As mentioned earlier, the primary aim of MYTHE is to develop an environment for the teaching and learning of three languages (Dutch, English and Greek) as both mother tongue and second language, thus offering a common inter-European language teaching platform to be used by children in the three countries involved. By setting three languages within a common platform and placing the educational methodology and experience of the respective countries together, we have young children - regardless of their geographical location and national, cultural or social background - united through the common study of universal values.

The concept of the development of a common platform for teaching both the mother tongue (henceforth L1) and a second language (henceforth L2) constitutes one of the most innovative aspects of the whole endeavour. The same language material and methodological approach will be deployed to address the language needs for both L1 and L2 learning.

As Cook [1996] points out, the knowledge of language that the speaker possesses is known as linguistic competence. All native speakers have acquired their language system without having to study it. It is implicit knowledge. This view of language as knowledge treats it as something stored unconsciously in the mind (the native speaker's linguistic competence). Native speakers also possess knowledge of how language is used, i.e. communicative competence. At the early stages of foreign
language learning, the learner possesses neither competence. An L2 learner, on the other hand, already possesses this knowledge to some extent.

The term L2 is generally used to include the learning of any language other than the first, in whatever situation or for whatever purpose. In fact, this is the sense of the second language, as defined by UNESCO: "A language acquired by a person in addition to his/her mother tongue". In order for the goal of this project to be feasible, it should be clarified that within MYTHE, L2 learning should be differentiated from foreign language learning, as the latter is a totally different learning situation.

MYTHE, therefore, addresses children who are native speakers of any of the three languages involved (English, Dutch and Greek), but who also have sufficient linguistic background in L2, either because they are bilingual or because they are exposed for some reason to this second language. Furthermore, it addresses children who may not be native speakers of any of the three languages, but who do have some linguistic background in any of them, as a result of their direct exposure to it (e.g. immigrant children living in the UK, Belgium, the Netherlands or Greece).

The language material is constructed on the basis of the communicative approach and aims at the comprehension and production of both oral and written speech in order to acquire communicative efficiency.

Following the view that communicative competence is the desired goal (i.e. the ability to use the linguistic system effectively and appropriately) -this being a fundamental principle in the communicative approach [Richards & Rodgers, 1986] - it is aspects of communication that will mainly be presented in the framework of this project. Language functions and the way these are realised through interactions (between the characters of the story) will comprise the primary goal of the endeavour (e.g. learning how to greet, to introduce oneself and others, to describe people or things, to ask for something in a polite way etc), rather than extended presentation of grammatical and syntactic phenomena. All the language components will be taught through such interactions, since languages do not differ over the functions themselves -these being universal- as over the way these are realised across languages, i.e. what kind of linguistic apparatus is deployed for each language function. Such an approach also favours the switch at any time to any of the three languages involved, since the language material will always run in parallel.
4. THE "MYTHE" COMPONENTS

MYTHE consists of the following components:

- The story level
- The teaching level
- The language tools
- The dictionary

The story level
This level involves the actual story-line, which is realised in six episodes. Although no systematic presentation of the language phenomena takes place at this level, the user is exposed to language through: a) the actual dialogues of the story-board: The story evolves in video sequences, during which the user has the chance to be indirectly exposed to all aspects of language (phonology, morphology, vocabulary, semantics, pragmatics). Parts of these dialogues will be employed and further expanded later on at the teaching level, for a systematic presentation of particular phenomena and functions. b) logical puzzles: dispersed throughout the episodes are little 'problems' which the heroes face in order for the plot to move on. The user is actively involved, as these instances encourage the user to explore the environment, discover new objects and learn their names, thus expanding his/her vocabulary. c) encyclopaedic questions related to the five thematic fields representing the pan-European values. These values are tested as encyclopaedic knowledge: certain characters pose multiple choice questions on our heroes regarding these values. This means that the user is again encouraged to use the target language, understand the questions posed and provide the appropriate answers.

- The teaching level
This level includes the systematic teaching of the language material, realised in the form of presentation of the language functions and/or phenomena, followed by relevant exercises. Parts of the original dialogues of the story level will be employed here, but will be further expanded to accommodate all morphosyntactic realisations of a phenomenon.

The exercises component, on the other hand, is the part where the consolidation of the linguistic input the user has received is tested. This component aims at developing all language skills (listening, reading, writing and speaking).

The main types of exercises are:
- multiple choice
- true-false/ yes-no (supported by speech tools, if oral)
- matching words/sounds with pictures
- typing (supported by the spelling checker)
- anagrams
- drag and drop
- hangman-like
- puzzles
- role-playing

The exercises are presented in a scalable order, starting from the easy ones and proceeding with more demanding ones.

It would be interesting at this point to mention certain problems which were encountered while designing the language material for Greek and English. These problems are related to certain language specific characteristics of the two languages:

- In the vocabulary presentation and exercises it was deemed necessary in Greek and Dutch to accompany each word with its article. The reason for this is that the article, definite or indefinite, denotes the grammatical gender in Greek (i.e. whether a noun is masculine, feminine or neuter) and Dutch (neuter vs. non-neuter). In English, however, the notion of the grammatical gender is non-existent.

- Another instance of interest was when designing the presentation and exercises on the 'this/that' distinction. In Greek, deictic pronouns (αυτός/αυτίνης) have three genders (masculine, feminine and neuter) for the third person both in singular and plural. This is not the case in English, however, since there is only one morphological realisation for all genders in the third person, in both numbers (this-these/those). As a result, the presentation of the phenomenon in Greek, as well as the corresponding exercises had to be expanded.

- A similar difference was encountered in the presentation of the personal pronouns: in English, the third person singular has three genders (he, she, it/masculine, feminine and neuter), whereas only one general gender 'they' in the plural. In Greek, on the other hand, both the singular and plural number have three genders in the third person (αυτός, -η, -ό / αυτοί, -ές, -ά). Once more, the presentation in Greek had to be expanded (compared to English) to accommodate all additional forms.

- Conventions over politeness was another point of differentiation, as these vary between languages and cultures: in English the use of imperative to ask for something (e.g. "Come out, Mr. Cuckoo!") would sound rude if not accompanied by appropriate words or phrases that would moderate the impact of the imperative and make it sound more like a favour and less like a command (e.g. 'Could you please come out, Mr Cuckoo?'). On the contrary, such an utterance (i.e. «Βγείτε εξώ, κύριε Κοίκε!») would be considered acceptable -more or less- in Greek, where things tend to be expressed in a more direct way.
• *The language tools*

The exercises will be supported by the spelling and agreement checker, as far as production of written speech is concerned, and by the speech recognition tool, for controlling oral speech. Spelling checkers available for the three languages of the system under construction will control the correct spelling of the written language produced by the user. This tool will constantly be active, so as to react to a spelling mistake the very moment the child types it. The agreement checker, on the other hand, will examine for each word the morphological characteristics of its neighbouring words and will decide, based on a set of syntax rules, if those characteristics match the characteristics of the word under examination. In this way, the tool is able to locate words without spelling errors but with characteristics that do not fit. As far as Greek is concerned, the syntax rules now available will control the following: a) agreement in number, case, and gender between article and noun, or adjective and the modified noun (e.g. *η ναύτης, *κόκκινη καπέλο) and b) subject-verb agreement in person and number (e.g. *O παπαγάλος μιλάω). As far as English is concerned, agreement between the subject and the verb will be controlled (e.g. *The parrot are speaking).

These tools will prove to be of particular importance as the demands of the language material advance in the course of the episodes, i.e. when the users will have already acquired the knowledge to produce written speech in the form of sentences, and not just simple words (which will be the case in the early phase of language learning).

With respect to the oral speech production, the speech recognition tool will help users practise their speaking and listening skills. The user will be asked to pronounce a particular word and the system will automatically recognise it and test it for correctness.

• *The dictionaries*

All words appearing in the texts and contexts of the MYTHE platform, both at the story and the teaching level, will be included in the electronic glossary integrated within the platform. There will be three monolingual and six bilingual dictionaries (for each pair of languages), which will include examples of use, audio-visual material related to the meaning of the words, pronunciation and classification of the words in semantic fields. The pronunciation of a word will be presented by a 3D face, which will be driven by a lip animation tool, allowing viewpoint manipulation. The search of a word will be realised by the incorporation of the spelling checker, thus giving the best retrieval result in the case of misspelled words.
4. DEVELOPING LANGUAGE SKILLS IN “MYTHE”

The definition of the list of the language phenomena to be included in this common platform was established after a contrastive analysis of the national curricula of the countries involved for language requirements of the first two classes of primary education. It was an interesting finding that all three curricula share a lot and the overall approach was similar. This is justified by the fact that the language needs of the particular target group converge, since at the early stages of primary education—and, in fact, during the transition-to-literacy period—basic language skills are acquired. This comes in compliance with and actually reinforces the initial assumption of this endeavour, thus rendering the development of a common language platform for the three languages involved and for both L1 and L2 learners a feasible task.

Generally speaking, for children of the particular target group, language teaching should develop their abilities to communicate effectively in speech and writing and to listen and understand. By putting the key points of the three curricula together, the following requirements were set:

(i) Listening

Pupils of our target group should be taught to:

- Listen carefully and comprehend oral speech
- Be able to get the overall gist of what they hear
- Be able to remember key-points and answer comprehension questions
- Be able to distinguish how speech is influenced by the purpose and the intended audience

As far as the native user is concerned, s/he will most probably have no difficulty in listening comprehension questions (since this is knowledge of the language s/he already possesses). For L2 learners, on the other hand, listening comprehension may prove to be a more demanding task. It is very likely that an L2 learner will be able to comprehend to a certain extent (which may vary, depending on the particular child’s background in L2) the story-line, i.e. s/he may get the overall gist while listening, but fail to make out every single word of what is said. MYTHE aspires to extend the repertoire of what this child can do. The learner will gradually improve his/her comprehension skills in L2 by constantly being exposed to well-articulated speech. The option to switch in his/her L1 (or, to be more precise, in any of the languages) is naturally always available, should the user decide to do so.

With respect to the point that pupils should be able to distinguish how speech is influenced by the purpose and the intended audience, this common platform will help young learners become aware of the importance of adapting their speech to a widening range of situations and demands within
the same language system (e.g. who is talking to whom, when, for what purpose, what is the relationship between them etc.).

(ii) Reading
Pupils should be taught to increase their ability to read with fluency, accuracy, understanding and enjoyment. In particular, children should be able to:

- read accurately, fluently and with understanding
- understand and respond to the texts they read
- use dictionaries and be able to read the information stored there.

(iii) Writing
The language needs of the particular age group we are addressing with respect to writing mainly focus on producing written speech with correct spelling. In particular, pupils should be taught to:

- write each letter of the alphabet
- write common letter strings
- spell simple words
- use punctuation signs (full-stop, question mark, exclamation mark)

The latter, for example, is a very important feature in Greek, since it is the insertion of a question mark at the end of the sentence which signifies that this sentence is interrogative.

E.g. **Είναι ναύτης.** (affirmative) = He’s a sailor.

**Είναι ναύτης;** (interrogative) = Is he a sailor?

In English, additional language units and movements have to be used (e.g. the copular “to be” followed by subject-verb inversion: He is a sailor → Is he a sailor?) to transform an affirmative sentence into interrogative.

The difficulties that the L1 learner will encounter will to a great extent coincide with the L2 learner when it comes to comprehending and producing written speech (e.g. spelling exercises, reading comprehension questions). In order to be able to introduce text from the start (i.e. everything that is heard can optionally appear in written form right from the beginning), it is assumed that the target group already knows how to read and write to a certain extent. By using the MYTHE platform, the reading and writing skills will be further developed and enhanced.

(iv) Speaking
Pupils should be taught to:

- acquire clear articulation
- pronounce properly
- acquire correct intonation and prosodic patterns
The pupils will be able to practise all the above-mentioned features, aided by the speech recognition tool in the role-play activities of the program.

6. CONCLUSION
The MYTHE platform’s ambition is to introduce the user to a new thrilling world of linguistic and cultural reality. Language teaching closely connected with the related cultural experience will hopefully be transformed to an adventurous discovery. It does not statically present mere language information and boring grammar rules, but makes an effort to transfigure language learning into a journey in the exciting world of the fable. The overall philosophy of the design of the system intends to satisfy the innate need of children to explore and discover things on their own. To achieve these goals, the platform provides the necessary tools and resources in order to encourage the users’ active participation and involve them in the language learning challenge.

The proposed platform also aspires to balance the advanced technology with current trends in language education. By combining state of the art features of the two previously mentioned disciplines, it is expected to function as a powerful tool, available both to tutors and pupils and boost CALL practice.

REFERENCES