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### Exploiting the possibility of online courses for speech and language therapy and learning

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## Exploiting the possibility of online courses for speech and language therapy and learning

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### Abstract

The use of Information Communication Technologies (ICTs) in education has changed the way we teach and learn at all educational levels. In particular ICTs find new approaches to enhance students' learning in preschool education.

The realization of the educational features of the web and online distance learning in preschool education is the main issue of this study. The aim is to investigate the possibility of creating computerized application software to be used for online distance education activities for Language Learning Goals and/or for speech and language therapy. The application may be used in formal and informal terms by preschool children.

The computerized application software of the online distance education system aims to adapt and personalize children's language needs by placing them on the centre of the educational process. Children are playing the leading role by doing things in an interactive game-based environment.

This study took place in Greece, during 2008-2009. The results of the study concern a proposal for integrating online courses and educational activities for language in preschoolers. Specially, we adjust learning processes according to the children's needs embedding the technological developments and the current needs of our society.

### 1. Introduction

#### *1.1 Technology in formal and informal setting for young children*

The advancement on telecommunications, alongside with the increased employ of the World Wide Web, influence many aspects of today's life such as the manner of communication, travel, work, entertainment, learn, services and so on. As indicated by Gillard et al. (2008), technology is truly everywhere and its widespread adoption and application has changed the way each and every one lives in our modern society.

In particular, according to a recent research (Pagourtzi, 2009), computers appear in six out of ten households in Greece and four out ten households have internet access too. The increase in computer ownership and internet access means for young children, more exposure and familiarization to this technology but under the standards of legal software use (Pange, 2006). Thus, young children are growing up with technology and they learn with technology at their home environment, in an informal

setting (Pange et al., 2001). Through formal education, preschool is the other setting where young children learn with technology. There are differences in learning with technology between home and preschool settings (Plowman et al., 2008), in terms of the human and technological resources available, the motivation and opportunities for providing guided interaction and the types of learning that are supported. Children encounter a more diverse range of technologies at home, are more likely to request help from computers and can benefit from observing family practices (Plowman et al., 2008). On the other hand, the limitations on the technologies available in most preschool settings and their lack of use for authentic activities mean that there are fewer opportunities to develop children's awareness of the different cultural and workrelated uses of technology, plus the fact that preschool and primary school staff have limited knowledge of children's home experiences with technology (Plowman et al., 2008).

### *1.2 Language learning and Young children*

Children hear and absorb language throughout continuous social interactions of every day experiences. They get familiar with oral and written language over time and a rich in language environment, such as variety of words used in extended conversations, interesting stories and explanations, which support their language development (Snow et al., 1998). Language development is closely tied to relationships and to child's early experiences (Van Scoter, 2008). According to Van Scoter (2008) pretend play provides important opportunities to practice and experiment with language and additionally interactive activities such as storybook reading, language games and communicative writing can also have important influence on oral and written language.

Children's most favourite activity can be considered to be the play. Everything they do one way or the other ends on playing activity. Along with Wood and Attfield (2009) "*play can not be easily defined or characterised as it is always context dependent and the contexts are varied. There are many different forms of play including: role playing, imaginative play, socio-dramatic play, heuristic play, constructive play, fantasy play, free-flow play, structured play, rough and tumble play all of which involve a wide range of activities and behaviours and result in varied learning and developmental outcomes.*"

It is therefore important to create a rich software environment where young children can play and gain towards their language development. Activities that include games can be embedded in the software design. According to Vogel et al. (2006), when students navigated through the programs themselves, there was a significant preference for these games and they did interactive simulations.

### *1.3 Technology and language for young children*

Although McCarrick and Xiaoming (2007) findings indicate that while computers may not enhance gains in language development, computers do provide an environment in which children use a large amount of language, similar to other learning areas of the classroom. There is, however evidence in the literature supporting the benefits and positive influence of computers on language learning and language abilities.

Especially, Kocaman-Karoglu (2008) states that digital storytelling (known as combining the art of telling stories with digital graphics, text, recorded audio narration, video and music to present information on a specific topic) has an

encouraging outcome on students. In an previous study of Pange (1998) children who were not so familiar with computers as today, had preference to their teacher to read a story instead of watching a story in a video.

On the same issue, Kogezou and Sfyroera (2008) study results indicate computer affects enriching the story comprehension and particularly the questions of logical reasoning at preschool. Further more, Kogezou and Sfyroera (2008) state that it appears that computer contributes to better story comprehension principally from children who exhibited initially low level at story comprehension tasks.

The Kelly and Schorger (2001) study results indicate that the use of computers, as a self-selected activity, in early childhood classrooms can be as enriching for children's language development as other traditional learning centers.

## **2. Design of Online distance education for language learning and/or speech and language therapy at preschoolers**

As early childhood is a crucial period of life for language development and it mostly depends on parental attitudes and activities, day care system and exposure to technology, may support children. Nowadays, the objective is to use web-based technology to provide/enrich the language learning opportunities for young children at preschool age, since the choice of web-based platforms are becoming standard. Although the term online distance learning usually refers to formal learning, in this study we consider the usage in formal and informal settings according to the particular needs. Some children in our society are able to use the online distance software at home or at the preschool setting.

Online distance education can offer synchronous and asynchronous activities. The focus of the study is the creation mostly of asynchronous language activities where participants can access the contents through internet at any place at any time. Login is possible from any internet connected computer with the option of accessing a personalized account that keeps information on the child's progress. Even though, the system runs on the internet, when using it looks as if it is installed locally. Thus, such an online application offers easy access as long as they have an internet connection.

Systems of online distance education present great easiness for the end user in case of updates and upgrades. The process is carried out centrally on the server and the end user does not need to manually do the process on his computer. This is extremely useful for an adult who is not familiar with such matters what to do for his/her young children. The end user sees directly the end update and upgrades results on his screen. Another significant aspect for using online distance education systems is that for research purposes there is a need for feed back information from the end user. As a result, information gathering and evaluation of the results is much easier and reliable, since a database can be used for such purposes in which data can be organized and stored.

Participant children can benefit in a number of innovative ways, such as:

- Credit learning course for all children
- Enrichment program for gifted children
- Early intervention material in case of speech and language problems

All language activities must fulfil the children's demands, needs, and preferences for learning according to the educational and social needs in Greece. Such a system can

serve as a free and open education resource in the native language for the Greek young children.

The end users of the system are mainly the young children under the supervision of their parents or teacher or other facilitator, as developmentally does not seem to be the most appropriate way to have children work alone at the computer (Chang, 2001). So, the interactions on the system involve the children – content – parent /teacher/facilitator.

Light and Drager (2007) support that the design of appropriate augmentative and alternative communication (AAC) systems, that support children with complex communication needs, must meet three essential criteria:

- Appeal to young children
- Are easy to learn
- Are dynamic

In a corresponding manner on online distance learning system designed for any preschooler 4-6 years old the same criteria must be fulfilled.

### **3. Interface Design**

Designing the interface of an online application for preschool children implies designing activities for non-readers. Therefore, what is really important in such an interface is to pay special attention and give all the instructions in audio at all stages as well as some in print. Moreover, simplicity and not complex situations on such activities are very crucial (Maddux et al., 1997; Aslan and Carliner, 2007).

The user interface is implemented in Macromedia Flash. Macromedia Flash is a tool that allows the software developer to demonstrate attractive animations and motivating games for children. Additionally, with the library use it offers the opportunity to create small size files, a really important feature when the system is running on the internet.

As the application is intended for use by young children the set of functions for the video control are reduced to the minimum for simplicity and visual clarity. The minimum functions are just Play and Stop. Same applies to the audio control and the minimum functions for the audio application are just Record, Play and Stop.

The online application in order to appeal to young children can make use of a meaningful amusing environment for interaction with many bright colours and cartoon characters and animation.

### **4. Content - Tasks and Games**

The application consists of a series of tasks and games, elements of a certain scenario, with a start and a finish. The context regards new vocabulary and language concepts to support language learning. Information is presented in a new format with images, music, sound, animations, videos and text. During the operation of the application the child can navigate and interact with objects on the screen. These objects suggest pathways that point towards the completion of the tasks. In such an approach, the application appears more attractive and motivates the children to accomplish the given learning tasks.

Each task has levels of difficulty. Difficult tasks are started at simple level to facilitate learning and develop the skills for the completion of the task, one step at a time. This is due to the fact that the application aims for a non homeomorphous population, as each child is unique in every aspect. Advancement is based upon mastery of each task and is held automatic from the system. When feasible, task randomization is created to avoid memorization of the correct answers.

## 5. End user support

Help is provided though the system at the form of a cartoon character. When a child is having difficulty a cartoon character pops up with a hint of what to do next. All the cartoon characters are chosen by a group of children of the target age.

Demonstration of articulation exercises and examples is done by real video. The end user (child) can interact and play them as many times as needed.

## 6. Conclusions – Future work

The online distance education system for language learning can provide the end users (preschool children) with the possibility to discover language through navigation and interaction in an attractive and motivating game based environment. Children have the option to use it from school, home or any place and when ever they want/need too. Preschoolers can interact with the help of their parent/teacher/facilitator/speech and language therapist or even in collaboration with other children, in order to play and finally accomplish the proposed language tasks in their own pace.

The design and development of the system needs more work for the implementation of the whole system. Further work needs to be carried out on large sample that will lead to accurate results. Activities on other aspects of language can be the subject of further research which could also be focused in taking into consideration teachers' and parents' opinions and attitudes on current language activities and their impact in the educational process.

Finally, the online system can be supported by specialists to monitor centrally the end user and offer feedback to any situation that requires particular help. Consequently, ICTs may help preschoolers to use the today's means of online technology for supporting language activities with the help of their teachers and families.

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