

DESIGN AND DEVELOPMENT OF A POLYMORPHIC PEDAGOGICAL MATERIAL FOR SUPPLEMENTARY DISTANCE LEARNING IN PRIMARY EDUCATION IN THE FIELD OF ENVIRONMENTAL EDUCATION IN GREECE

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ABSTRACT

This article deals with a documented research in order to create a pedagogical framework for the application of a supplementary distance learning program in the field of environmental education for pupils of primary education, in remote and multi-grade schools of Greece. This prospect has been considered as an interesting idea with multilateral, socio cultural and democratic dimensions, as it could enrich the school and learning environment of children of the outermost regions.

In this paper, there are described the planning criteria and the development of a polymorphic pedagogical material for distance learning, under the title: 'Captain SOS, His Bunch and the Moving Island', the needs according to the characteristics of the target group, the choice of learning theories and the determination of the teaching techniques, the specific teaching techniques and the teaching methodology, the structure of the learning material, the characteristics and the structure of the educational software, the categorization of activities, the supplementary learning material. Moreover, there are described the pilot application and the ways of the evaluation.

Keywords: Distance learning, pedagogical material, environmental education, primary education.

INTRODUCTION

Distance learning in primary education is a form of education, which on an international level has an important history, as there are countries such as New Zealand, Australia, Canada and the USA, in which it is been applied from the end of the nineteenth century, and up to the beginning of the twentieth in other countries (Vassala, 2005, Manousou, 2002, 2004). Distance education for schools has been developed to address the difficulties and gaps in the conventional system of education (Chatziplis, Vassala & Lionarakis, 2007, Olcott, 2013).

Given the nature and the framework which operates from within, throughout history it has been in line with technological developments, which reclaim in an appropriate way for the adequate communication educators-pupils and for the qualitative creation of the learning material (Lionarakis, 2006). A particular emphasis has been given on the quality characteristics of distance learning, in which the distance is no longer a decisive factor, and the exploitation of various means of education, and forms of communication, the pluralism of the learning principles determine the versatility, shaping the definition of polymorphism (Lionarakis, 2001). In Greece distance learning is at an early stage, as it is little more than a decade old and mostly used at a higher education level.

THE PLANNING CRITERIA AND THE DEVELOPMENT OF A POLYMORPHIC PEDAGOGICAL MATERIAL FOR DISTANCE LEARNING 'CAPTAIN SOS, HIS BUNCH AND THE MOVING ISLAND'

The quality of the pedagogical material depends on the general learning design, in the context in which it sets out the learning theories to be developed, the degree of interaction with the pupils, the means to be used and the method of exploitation so as to be effective (Makrakis, 2000 Raptis, 2001, Lionarakis, 2003). The design of the learning material is a complex process which in addition to all other parameters has as its main angle the statement that "it relates to anything that takes place in order to facilitate the learning process" (Holmberg, 1995, Winn, 1997, Reigeluth, 1997, Lionarakis, 2001).

In this present context the general purpose was to create a comprehensive program of distance learning and training entitled (Holmberg, 1995) 'Captain SOS, his bunch and the moving Island'. The content of the learning material has been chosen to focus on environmental education and sustainability, in other words it concerns the environmental development of values and ethos (Flogaiti, 2006). The content and the philosophy which underpins the learning material is its trademark in leading to the development of a material which combines the characteristics of the scientific fields for distance and environmental education and sustainability in the context of primary education. It is thus a distance polymorphic material for schools relating to education for the environment and sustainability (Flogaiti (2003). This material must create considerations about the management of the environmental problems both at local and international level, to highlight the complexity of socio-economic and environmental issues, to provide an interesting learning environment in which innovative, discovery research learning approaches and strategies etc. are exploited.

The specific learning material was based on the theory of constructivism, primarily to activate the pupils towards autonomous learning (Lionarakis, 2001). The Basic principles-assumptions which support the creation of the material and the teaching framework of the application are:

- The support of an auto regulated learning,
- The reaction towards learning as an active construction procedure for knowledge.

Within this context, the role of the learning material concerns the creation of a pupil-oriented interactive teaching environment rich in stimuli from the direct and indirect environment, which will contribute to an autonomous and discovery learning and promote awareness of all complexed relations (Matsagouras, Chelmis, 2003, Matralis, 1998, Kapsalis and Charalabous 1995, Holmberg, 1995).



Figure: 1
The three points of the pedagogical material

An outline plan of the learning material is shown in Figure 1, which reflects the three points underpinning its creation.

We have attempted to take into account, as equally as possible, those points without having a quantitative evaluation of this attempt.

The polymorphic material is in both paper and digital form and consists of four different sections:

- Learning software (digital format)
- The Notebook/activity notebook (printed and digital edition)
- Digital library (digital format)
- Supplementary learning material by the Hellenic Marine Research Centre (HCMR) (paper and digital form)

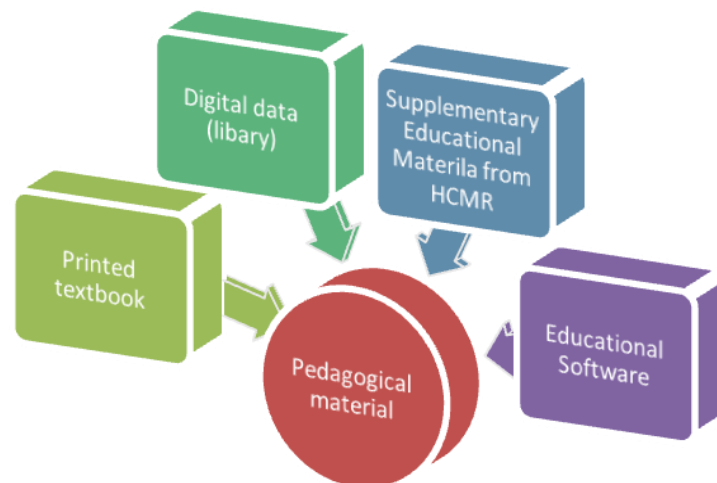


Figure: 2
The parts and forms of the Pedagogical material
“Captain SOS, his bunch and the moving island”

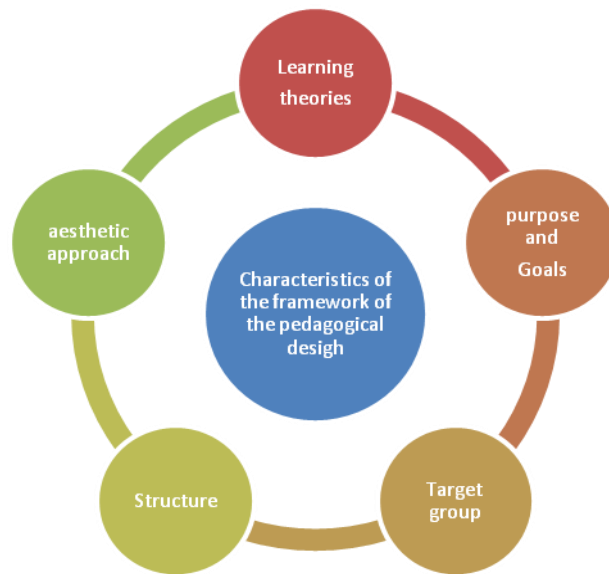


Figure: 3
The general characteristics of the framework of the pedagogical design

Figure: 3 shows the general characteristics of the framework. The same learning theories, common aesthetic approach, structure, purpose, objectives and of course the same target group, have been applied to all segments of the learning material.

The pedagogical material 'Captain SOS, his bunch and the moving island' (<http://www.mesogeios.antthais.net/>) provides pupils multiple representations of knowledge in order to facilitate learning. A key feature is the polymorphism (Lionarakis, 2001), which is achieved with the use of multimedia and audiovisual language, among others.

The design of the material was based on a combination of the common characteristics, as proposed in the model IDDE Amy M.Carr & Chad S.Carr (2000):

- Dick & Carey (1990), models
- Robert Gagné (1985), models
- The progressive understanding of Charles Reigeluth (1997),
- The taxonomy of West-Lionaraki 2001, but also
- To the characteristics of the learning material for environmental education, as defined by Flogaiti (2003) and the North American Association for Environmental Education (2000)

More specifically, the design was achieved as follows:

- Identification of learning needs according to the characteristics of the target group
- Setting objectives
- Selection of learning theories and determination of teaching methodology and teaching techniques

- **Organization of the structure**
- **Choice of forms of the learning material**
- **Development of the first edition of the learning material**
- **Pilot application and evaluation of the learning material**
- **Development of an upgraded version of the material**

The planning stages, as described above, are not so distinct and defined, and between them there is a relationship of interdependence.

The determination of the objectives, for example, does not precede the determination of fully learning theories and teaching methodology, because the objectives are subordinated to the theory learning and vice versa.

Also, the organization of the content does not precede the choice of forms and means but is in direct relation with it. Furthermore, the choice of forms and means has a direct relationship with the characteristics of the target group. Generally speaking, there is a direct relationship between objectives, content, and teaching methods (Matsagouras, 2001), forms and means.

NEEDS ACCORDING TO THE CHARACTERISTICS OF THE TARGET GROUP

The target group of this research were the pupils of the 5th and 6th grades of the primary multi-grade schools, remote schools and schools in degraded areas, where the possibilities to cover all learning and cultural needs were not provided (such as participation in an environmental education program, etc.) by conventional education (Chatziplis, Vassala, Lionarakis, 2007, Vassala, 2003).

The possibilities of grouping the school population have been highly valued, and based on the similarity of the biological and psychological development per class region, sex and nationality (Newson and Newson, 1976, Piaget, 1979). The specific target group was chosen because of characteristics related to skills in written and oral communication, to the use of information and communication technologies (ICT), to the specific characteristics of the intellectual level of the pupils (Piaget, 1979), to the possibility of autonomy and cultivation in psycho-social and moral development of children of this age group (Paraskevopoulos, 1982).

The above characteristics were a general framework, as well as taking into account that all pupils are not simultaneously at the same evolutionary stage in terms of knowledge or moral development and maturity, given that the physical changes are not consistent with the psychological changes (Greene, 1997).

The Setting of Targets

The determination of the objectives in the formulation of the learning material is one of the key points in the process of the design as it lays down all subsequent stages in the design of the learning material (Holmberg, 1995, Lionarakis, 2001, Laurilland, 2002, Pantano-Rokou, 2001).

The objectives of the material 'Captain SOS, his bunch and the moving island' are based, on constructivism, the creation of a pupil oriented and exploratory learning environment, in order to contribute to the development and creation of knowledge by the pupils themselves (Raptis, Rapti 2007).

In all distance learning material, the authors must always justify with accuracy and clarity the content, the activities and their requirements.

In addition, they must also provide the possibility to learners to know the reasons for which they are asked to do things and control the results of their actions (Rowntree, 1994, Holmberg, 1995, Matralis, 1999, Race, 2001).

According to Race (1999), a clear definition of the objectives creates the desire for their involvement required in the learning process. With particular emphasis in the cultivation of critical thinking, in the design of the objectives the targets have been created according to:

- **Bloom's taxonomy**
- **SOLO (Structure of the Observed Learning Outcomes)**
- **Critical thinking**

Special emphasis is been given to target forms in critical thought (Matsagouras, 2001) concerning:

- **The formulation of ideas**
- **The formulation of critical thinking, generalizations and forms of understanding of the world.**
- **The plan and automation skills which acquisitions organize knowledge on nature.**
- **The development of knowledge skills and strategies of productive thinking**
- **The development of procedural knowledge.**
- **The capacity in acquiring social and ethical attitudes and skills.**
- **The metagnostic thinking.**

According to a combination of the above target forms' development and to the selection criteria according to Matsagouras (2001):

- **the significance, referring to what is an important element of education in general and the issue specifically in order to contribute to the development of learners and to facilitate learning,**
- **The enlarged academic content, referring to the content of the scientific knowledge and**

The aspirations of the analytical program, referring to the individual and social aspirations of education, the objectives of the learning material the "Captain SOS his bunch and the moving island" is as follows:

The formulation of a basic conceptual framework on the Mediterranean and more specifically:

- **To learn some of the main characteristics of the marine ecosystems in the Mediterranean**
- **To describe the geomorphological characteristics of the Mediterranean**
- **To identify animals threatened with extinction and to describe the risks they face**

- To be able to recognize the Mediterranean key elements of the culture and their environment

The Cultivation and Development Of Cognitive Skills So That:

- to observe systematically, to record and to organise their observation in integrated descriptions relating to human activities and interventions carried out on the coast and to reflect on the effects of these activities
- to seek information about the Mediterranean, to collect and handle it
- to analyze information and make their comments at their disposal
- in a single whole understanding the interrelations between the Economic and Social-ecological factors and to create generalizations
- to compare the information and their comments on issues relating to marine ecosystems, pollution in the Mediterranean countries
- to classify and to appropriate information at their disposal about the population, religions and languages of the Mediterranean countries
- to become familiar, observe and interpret the visual material (pictures and photographs) related to the sea
- to be encouraged to design, recommend solutions and organize actions relating to the problems of the Mediterranean
- to implement the solutions and actions planned
- to become familiar with the use of technologies so that they can use them to support learning through research and methods of communication
- to cooperate with fellow pupils of other schools, by broadening the learning and social framework, by exchanging views and by creating common work
- to develop skills which will enable them to participate in the design and implementation of operations relating to the sustainable management of coastal areas
- to be sensitive, to reflect and to be activated in tackling the problems relating to the coastal ecosystems
- to recognize the cultural wealth of the Mediterranean
- to familiarise them with various art forms such as music, theatre and painting
- to express artistically in all forms of art creating projects with importance and significance on the environment and cultures of the Mediterranean
- to be alert in matters of peace in the Mediterranean

The Development of Critical Thinking In Order To Be Able

- to seek and process many different aspects of one issue and to organise an argument.
- to interpret data and information about pollution in the Mediterranean and the endangered species to explain the causes and to describe the consequences
- to develop criteria for evaluating information provided to them, solutions and the proposals concerning the Mediterranean and the whole of learning process in which they participate.

The Choice of Learning Theories and The Determination of The Teaching Techniques

The pedagogical material was created based mainly in the theory of social constructivism. The new knowledge is the product of the continuous interaction between the previous and the present.

The main characteristics of such a constructive environment are (Anderson & Dron, 2011, Rapti, 2007, Barr 1988) the facilitation of the pupils to participate in the defining process of the objectives, the cognitive activities and the construction of a learning process within authentic environments, which makes sense to them.

It encourages them to take initiative, the experimentation, in the process of different knowledge approaches, the management of primary energy sources, the processes of critical thought and deeper understanding.

In particular, constructive reason environments contribute to the development of pupils' self esteem, the constructive use of different cultural environments as learning fields, the opening of schools in society, and to provide opportunities of cultivation of metacognitive skills, and not only to broadcast information but give emphasis to the same learning process as the reconsideration, the self-analysis, the critical self-evaluation and the self-regulation.

Also there are opportunities for cooperation with specialists for the creation of genuine work, the cooperative learning favours the collective action, the interactive confrontation, the flexibility in knowledge and in empathy, supplied "Scaffolding learning" (participating intermediaries) in order to assist pupils in the enlargement of cognitive capacities and abilities.

The assessment is determined as a genuine process, which is involved in the process of learning and for its carrying out there is an evaluation of multiple criteria for qualitative and quantitative analysis of the behaviour and of the work of pupils, as well as self-evaluation.

Teaching Techniques

In the pedagogical material 'Captain SOS, his bunch and the moving Island', many teaching techniques have been used with the objectives being the establishment and strengthening of the constructive nature but also the achievement of environmental issues of education and sustainability.

The kind of techniques and methods were selected in order to encourage learning and to lead to

- an active participation of pupils,
- the cooperation among them and
- the promotion of activities with meaning (Vosniadou 2001, Walberg & Paik 2001).

The choice of appropriate techniques is a difficult process and the teacher must actively involve all the learners. Some of the teaching techniques which were selected and evaluated in the formulation of the learning material were: conceptual mapping, work plans and projects, case studies, role playing, problem solving, learning visits, interviewing, debates and group work.

The Structure of the Pedagogical Material

One of the most discussed issues in the learning process is the question of an adequate structure which can facilitate the learning process: Dewey, 1902; Rugg, 1927; Tyler, 1950; Taba, 1962, Ausubel, 1964; Bruner, 1960; Suppes, 1966; Gagne, 1970; Popham & Baker, 1970; Posner, 1974 as referred to Posner & Strike, 1976).

The creation of an adequate structure is one major issue in the organization of information, for the facilitation of the learning process and can significantly affect the final result (Marton and Booth 1997, Ramsden 1998, Laurillard 2002).

The determination of the structure of the learning material is concerning:

- The sequence of various parts,
- The ranking of information within the learning material,
- The changes to the presentation form of the information,
- The schedule for the study of all the above.

The organization of the structure is a difficult process, and depends on the characteristics of knowledge, the characteristics of the distance learning material and the specific needs of the pupils.

In distance learning it's been considered as a requirement a "strict" and consistent, coherent structuring of the 'courses', which offers learners safety, reliability and flexibility (Peters, 1998).

The objective is that the pupils, with the support of the learning material, will operate autonomously, held responsible for their choices and should define their own independent learning process. The basic structure of the learning material is shown in figure: 4.

The main component of the learning material is the learning software, which is in constant interaction and cooperation with the notebook of activities, the supplementary learning material and the digital data base.

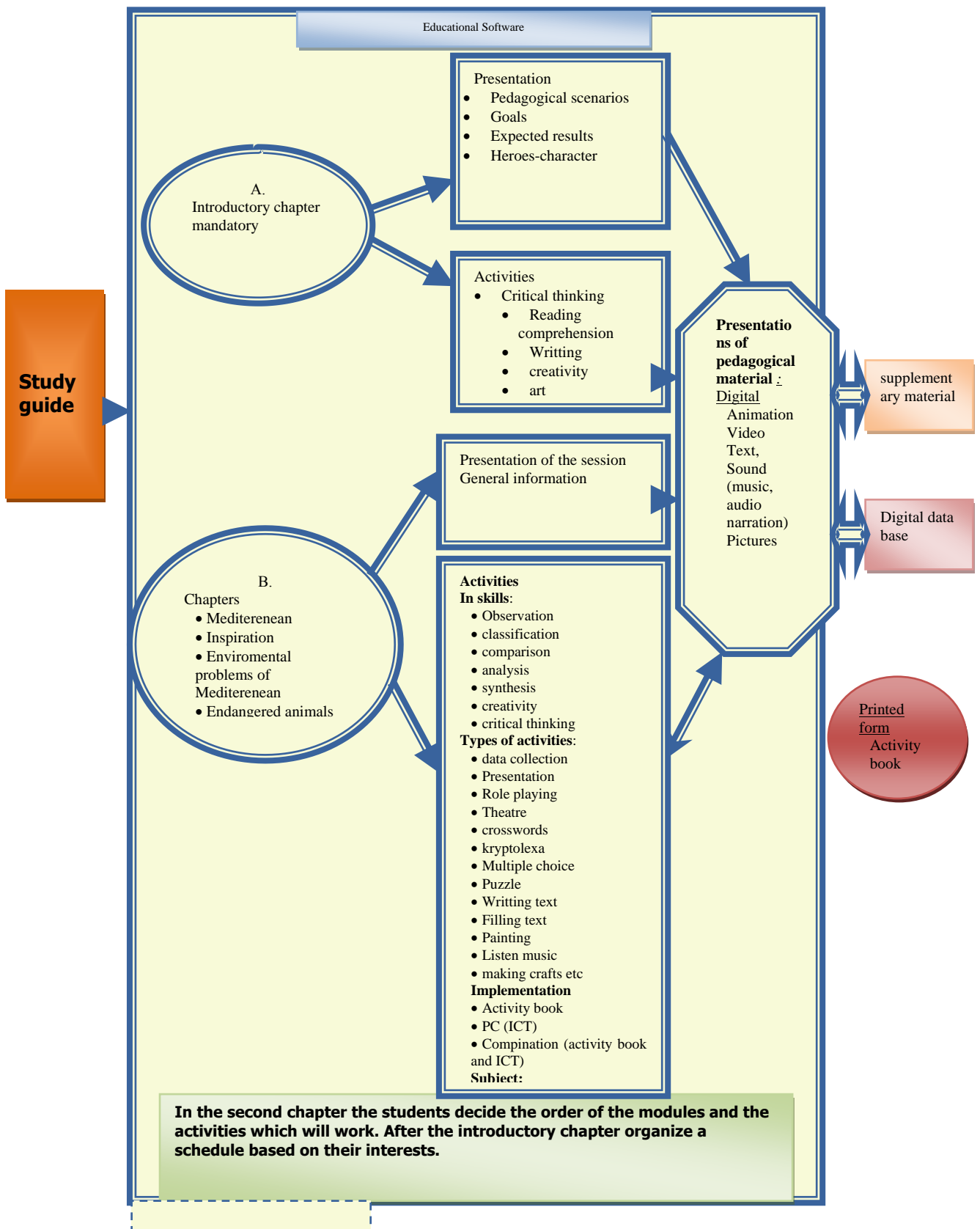
The Educational Software

The learning software which is the core of the learning material is divided into two parts. The first part is entitled "We Travel... ' (figure: 5) is an introduction.

In this study the pupils (animation figure: 1 'The Captain SOS') learn the history of Captain SOS, get to know the heroes, demonstrate their intention to participate to the program, get to know the objectives of the program, subsequently determine their own objectives and lastly they are informed of the expected results.

The structure of this chapter has a proposed conceptual continuity in its design and organization, but it is neither absolute nor rigid, so that in case that the pupils will not follow it as designed, it will maintain its cohesion and will not lose its meaning, (namely the introduction to the issue of the program and the pupils' commitment for participation).

The second part is entitled: 'The Journey Begins' consists of four units (figure: 4: Mediterranean", "inspiration", "and Mediterranean problems "," animals threatened"). Each unit is autonomous, and in each it is presented an issue with a brief information material, which pupils are invited to elaborate achieving the activities.



In the second chapter the students decide the order of the modules and the activities which will work. After the introductory chapter organize a schedule based on their interests.

Figure: 4
The structure of the pedagogical Material

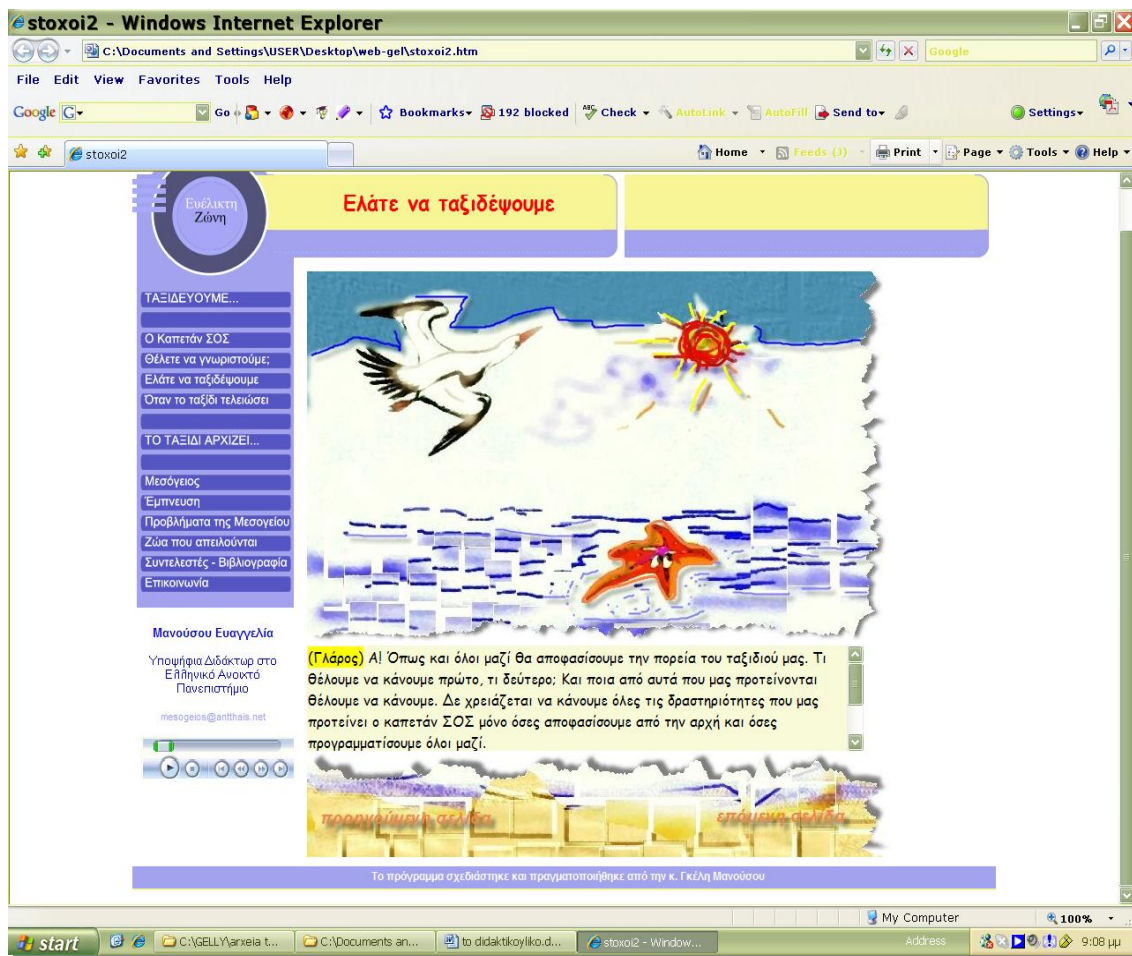


Figure : 5
Let's travel

The activities constitute a key component of the learning material, as well as through these they harness and process information, apply their knowledge, reconstruct the existing knowledge, connecting the new information with the existing knowledge. (Vosniadou, 2001). The pupils have the opportunity to choose, to define and organise:

- what activities they will carry out based on qualitative criteria relating to their interests
- the order in which they want to implement (Figure: 2).

The activities are in printed form in the 'notebook of activities', with which there is a constant interaction and interdependence with the software, as the software refers and requires the notebook, in order to achieve the most activities, but without the software there are few activities which can be implemented solely with the use of the form. It is necessary to be noted that, for research needs, all the activities have been printed in a notebook of activities, which the pupils have received at the beginning of the program, so that all the activities assembled, would be easy to access.

However, all activities exist in the software as a PDF, which may also be printed. In each module there are links and references to additional information material included in total learning material and delivered to pupils, providing opportunities implications and opportunities of deepening the subject.

An approach of the structure of the learning material directly connected to the organization and form is the categorisation of West and Lionarakis (2001). This is a classification of learning material based on constructivism and qualitative criterion of polymorphism (Giosos, Koutsouba, 2005).

According to the classification, there are three main strands, connected to an organic tied and functional whole, which reflects the structure and coherence of a polymorphic distance learning material (Lionarakis, 2001). These strands are roughly the following:

- *First package:* text, co-text, metatext, which includes the history of Captain SOS, and the basic texts of each unity, activities, exercises, defining titles, contents, general and specific objectives, activities/exercises verification cognitive skills, literature, references, operating (in printed form), glossaries
- *Second package:* retro-text which consists of activities/exercises self-evaluation mechanisms recharge, mechanisms of understanding/application, definitions, clarifications, glossaries, texts bridges, binder texts, photographs printing peculiarities, fonts, etc.
- *Third package:* multi-text and multimedia, namely, the audiovisual material, the main software, the guide for the work notebook, evaluation, skill devices development, printed forms of communication material consisting of a form (paper directives, notebook activities etc) and a digital section (software, website, digital data collection) located in interrelationship between them.

According to Raptis and Rapti (2007) but also to Harel (1991 as ref. Komis, 2005), the best option for the design of the learning software as well as of the learning and teaching activities is the constructive theories and socio-cultural views for learning. From this combination the objective is to achieve the creation of an environment, which will provide opportunities for individual construction of knowledge (individualistic constructivism) but also the use of language in the context of social interaction and cooperative activities. In this particular learning material the pupil is treated as an 'active' organism who takes its decisions on the 'What' and 'How' of learning (Makrakis, 2000).

The choice and configuration of the content for learning material, "the captain SOS, his bunch and the moving island", was based on certain criteria, related to:

The Compatibility of the Pedagogical Material With The Curriculum

The design of the learning material falls on one hand on a flexible zone program. As a consequence its choice is not subject to the strict framework of the analytical program and on the other hand the teaching methodology, with which it is approached, is related for the biggest and most important section to the environmental education program and for the smaller part to the cultural program. In addition through this material, because of its multi-subject nature, many direct or indirect objectives are achieved and pursued in geography in 6th grade, and in Language 5th and 6th grade etc.

The Epistemology of the Content

The information is presented appropriately, structured, scientifically precise, clear and free from the unnecessary and the well-worn and at the earliest possible objective (Matsagouras & Chelmis, 2003).

In this particular learning material, the knowledge is established, mostly by forms of activities, as well as by the emphasis in the cultivation of critical reading of simple scientific texts, with the active involvement of pupils and the functioning of the material as 'a learning tool' and not as 'fund corner retailer information'. The process of "simplification" of the information is organized carefully in the learning material so as the pupils can understand the unity and the continuity of the environment and culture of the Mediterranean and not just to participate in unrelated actions, which do not favor the learning activation process (Matsagouras & Chelmis, 2003).

TEACHING METHODOLOGY

In this particular learning material it has been used a plethora of teaching methods and strategies, which are depicted in a variety of activities. In accordance with the criteria of the teaching methodology of Matsagoura and Chelmis on the learning material (2003: 98-101) 'The Captain SOS, his bunch and the moving Island':

As To the Goal

- The teaching objectives are clear and unambiguous
- The material is suitable for the pupils' age
- There is balanced promotion of knowledge, emotional and psychokinetic objectives.

As To the Methodological Approaches

- the ideas of pupils are valued
- The exploration search, data processing procedures are promoted.
- There is a supply of possibility of choices
- The strategy of 'digressive guidance' has been adopted
- There is diversification of activities according to the interests of pupils
- Combined individual learning and group work has been supported
- Various learning techniques and methods such as conceptual mapping, work plans (projects), case studies, role playing problem resolution, learning visits, interview of a specialist

As To the Activities And Exercises

Within this learning material particular emphasis was placed on arousal of the interest of pupils within an authentic learning environment and in order to nurture the possibilities of self-learning, developing knowledge and cognitive and metacognitive skills and to this regard many types of activities have been exploited. The activities of the learning material emphasize mainly the mobilising of the superior knowledge functions and the search of meaning in data according to Dewey, (1916) and not in aggregate increase and reproduction of information.

They put emphasis on correlations, reconstructions, reorganization of the information, in order for pupils to create generalisations, interpretative figures, to assess, to provide cases, to increase their autonomy (Matsagouras, 2001).

As the various strategies are revealed from the activities and disseminated to those in the formulation of material a complex system of categorisation of activities has been created as to:

- The degree of difficulty (easy, moderate ease etc.)
- The type of activities (group, individual)
- The types of skills required and developed in relation to the learning levels in order to achieve the cultivation of critical thought and creativity (Matsagouras, 2001:95, Lionarakis, 2001).
- The form of expression/speech required (written expression, verbal expressions, artistic expression)
- Their objectives in relation to education about the environment and sustainability in accordance with the characteristics of a holistic and systemic approach Flogaiti (2006), in multidisciplinary and interdisciplinary work but also in critical thinking.
- As to the pedagogical material to which the content and in particular: (language, mathematics, geography, etc.)

The Digital Data Collection

Within the learning material of "Captain SOS" there is a digital data collection, which was conceived and created specifically for this program.

The specific data collection consists of digital addresses of organizations that can provide information to pupils, images of all Mediterranean countries, paintings with sea themes, musical pieces of all the Mediterranean countries, electronic literary records relating to matters for the sea.

Supplementary Learning Material

In addition, for the pupils involved, there is accompanying material available, which could be a source of additional information.

This material was selected after investigating various materials from the learning material of the Hellenic Centre for Marine Research (HCMR.), entitled: 'Knowing the Aquatic Environment and its Inhabitants', which is considered appropriate as a supplementary material according to the pedagogical criteria of the learning material.

Usability Criteria of the Learning Material

During the design there have been some issues regarding the criteria of usability of the material (Matsagouras, 2003).

- The time required for the teacher to devote to this.
- The necessary equipment.
- The knowledge and skills required
- The time required to train teachers and pupils

Pilot Application of the Learning Material

After the completion of the design and creation of the learning material, a pilot implementation was organized for pupils of the 5th and 6th grade, in order on the one hand, to evaluate the learning material, and on the other hand to investigate the problems that may arise during its implementation.

THE EVALUATION

The evaluation which was designed for the drawing of an environmental distance learning program through the learning material 'the captain SOS, his bunch and the moving island' concerns the adoption of alternative assessment methods (Zigouri, 2005), which include quality methods, such as interviews of the participants (pupils and teachers), the direct observation of activities of the program and the evaluation of their portfolio (Kouloubaritsi, 2003).

The socially critical model has been followed, which concerns a participatory evaluation process, which puts emphasis on the words reveal and change.

During the design of the learning material the main axes and assessment criteria of pupils were created with qualitative alternative methods relating to:

- Their cognitive skills
- The preparation of operations (the pupils' portfolio)
- The analytical framework of the assessment but also the results presented

CONCLUSIONS

The design and development of this polymorphic learning material has been a long and difficult procedure which lasted for nearly 18 months of systematic work.

The stages, which have been followed in the design and the creation of this material were as follows:

- Review of the literature, research and exploration of various models of design of the learning material
- Target group choice
- Identification of needs, regarding our target group
- Setting of objectives
- Selection of applied learning theories and determination of teaching methodology
- Organization of the structure
- Choice of forms of the learning material and the instruments to be used
- Development of the first issue of the learning material.
- Pilot application of the learning material.
- Development of the upgraded version of the material
- Implementation and final evaluation of the learning material In six multi grade and remote schools and one classical urban school

The result of the above design process was the development and creation of a constructive, polymorphic learning material, in which cooperation, social interaction and the promotion of the learning process was cultivated.

The learning material has been implemented and assessed systematically with the exploitation of many different methods of collecting data (semi-structured interviews, questionnaires, observation, etc) and combined levels, triangles, (evaluation by pupils, teachers, outside observers, etc.) both of the material and its implementation.

The results of the assessment showed that they meet the objectives and the needs of the additional distance learning and can contribute to improving the quality of education particularly in remote regions and single-grade schools (but not only), as it is designed and constructed in such a way, so as to support independent learning, to connect schools with many open resources, to familiarize pupils with new technologies,

to support the implementation of environmental education programs, by removing factors preventing their implementation (Michaelides, Kimonis, 2000), to enhance creativity, active learning, cooperation, to exploit methodological approaches which meet the specific needs and interests of pupils, and to familiarise pupils with a lifelong learning process.

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