

# 20 "VIRTUAL MUSEUM" FOR SCHOOL CHILDREN

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The State Russian Museum in St. Petersburg is a large depository of Russian Art. It's collection numbers 400,000 exhibits. Along with conservation functions museum education is one of the main emphases of museum activity. Nowadays in a time of the informatisation of society, museums should become informational centres, not only the depositories of culture. Unfortunately, the educational functions of the museum are considered and realised only according to the existing school model. According to Ivan Ilich (1989) the method of searching, transmitting and using of information by dividing them into separate categories and the isolated parallel studying of different subjects, not connected with each other, is very contradictory to the ability of the school children (because of their ages) to understand simultaneously an enormous amount of information from different sources.

Already in 1967 Marshall McLuhan wrote that when using electronic sources of information children study them, deeply think, meditate and concentrate on them. Robin Etherington notes that there are a lot of methods to inform the study of the conceptual, cultural and other aspects of artefacts: computer graphics, animation, banks of digitised images - all these methods make it possible for museums and their visitors to interact.

Museums should be the centres of self-education for a broad range of visitors of different ages and levels if they use all the modern possibilities of computer science. In order to bring life to the museum, make it the place where the visitors can think and rest it is important to "de-school" the museum, which can be achieved by the wide use of informational technologies.

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## **Computer Assisted Learning (CAL) of the humanities**

Since 1960s computers have been used in historical and archaeological research and have become increasingly important since 1980s (Perkins, 1992). In Russia the first implementation of information technologies in museum studies dates back to the beginning of the 1980s. This was the creation of an electronic catalogue of Russian graphics in the Russian Museum and a catalogue of antique bronze in the archaeological department of the Hermitage Museum. In this phase scholars turned to the computers to help themselves manage and analyse the large amounts of data which these subjects generate. The "microcomputer revolution" of the 1980's has made it possible to use these computers to aid the teaching process. The student may use computers as another learning medium along with lectures, tutorial and reading; they learn through specially prepared lessons. Alternatively students may learn how to use computers as analytical tools in their research.

Now because of the implementation of multimedia technology it has become possible to use computers in teaching Art History and museum studies. The technology is capable of delivering what art historians need most of all - a high quality image of a work of art on a computer screen. The production of videodiscs, CD-ROMs etc makes it possible to preserve large quantities of different kinds of information - texts, images, sound.

Now we have a wide experience in using computers in the educational process. However we want to stress that the existing psychological and pedagogical concepts arise on an experimental basis, in which the human computer interaction is not included. Hence the psychological and pedagogical reasons is supposed to be developed and modified according to the specific feature of the subject field. This situation V.Razumovski estimates in the following way: "The steps to create computer assisted learning remind [one of] the attempts of the engineers to construct the mechanical horse prior to the invention of the steam locomotive. The invention thought was on the way of false analogy and because of that was fruitless. The desire to substitute book pages with a computer display and to use the old experience of programmable education did not give any positive results." (Razumovski, 1991). Therefore, we need the principal new decisions which were impossible before the computer appeared. The problem of making psychological and pedagogical theory of human computer interaction, general is understood by many scientists now.

One of the approaches is to consider multimedia educational systems as a combination of programme modules: information, diagnostic, protocol and managing modules.

When designing the informational module one should keep in mind the demands which are at the same time the didactic criteria of the value of information. They are the following : different forms of interpretation, gradual ascending of the steps of its hierarchy (levels of difficulty) of information, conceptual complexity, terseness and its relevance according to the problems. The diagnostic (control) module is used to determine the degree of understanding of learning material. It is suggested that different testing are used methods here. The protocol module is used to fix the results and give their statistical analysis. The imitational module is used to simulate the real life tasks which need to apply the given knowledge. We would like to stress, that man- computer communication is passing to a qualitatively new level. The computer is transforming from a complicated device to facilitate man's activities in collecting and processing information to a full and equal member of man-computer dialogue. Human activities in using the computer are replaced by man-computer interaction. It means, that the man should consider the multimedia computer not only as his instrument but as an equal member of the human-computer dialogue.

The user should not try to use multimedia to his own purpose alone but should adapt himself to the possibilities allowed by multimedia. The computer must adjust to man, but the man in the process of education must adjust to the dialogue with the computer. The user should correlate his goals and demands with a "real behaviour" of the computer as a equal member of the dialogue. It is supposed that the man's reaction to the computers answers will result in a correction of initial ideas and aims. It is the typical way of dealing with people when they exchange different opinions and because of this, they are enriched with information. From this idea there developed an approach to design educational systems using a context free dialogue. If a teacher participates in the educational process he determines educational content and methods and corrects educational model using pedagogical assessments of the students. Considering multimedia used within educational purposes we pass from education to self education and hence the user should be given an opportunity to choose the educational script. From this idea of partnership between man and computer the new demands of the interface programme arise.

There are four identified main requirements to the designing of an educational system. (Daibov, Scorodumov, 1992):

- designing the system as a context - free dialogue
- using effective visualisation means
- utilising different control levels
- learning capacity of the system
- Interactive programme "You are a visitor of the Museum".

In 1992 we began the pilot project of using informational technologies for preparing school children to understand and see the real piece of art in the context of the museum exhibits. This project includes a set of interactive programmes for students from 6 to 23 years old. The first programme in this series is called " You are a visitor of the museum ". To plan the designing of a set of educational computer programmes on Fine Arts became possible because of the generous gift from Apple Computers. Bob Atchison, Garry Starkweather, Robin Myers organise the Multimedia Museum Centre . In 1993 they presented 3 Macintosh II fx, a Laser Colour Printer, a Scanner and CD-ROM Readers. This summer they will bring CD Writer and two Quadra 800 computers.

The following goals have been identified:

- to provide for children's art perception skills and creativity
- to encourage their study of Art History
- to provide them with a better understanding of the relationship of visual art and humanities.

As Adele Robert (1989) mentioned, children often consider the museum as a very dull, dedicated to the specialist, establishment. They don't understand the idea of displaying different works of art in one room, the concept of the exhibit not as the sum of the parts (works of art which are displayed a certain room) but as a unique ensemble, combined by a common idea or theme. The goal of the project is to raise the student's interest in museum studies and try to give them pleasure when they visit the museum. The project consists of several parts:

- elaborating the educational principles which should be laid in the foundation of interactive programmes
- designing the model of the programme, (choosing the material, its structuring, designing of human - computer interface, students controls, choosing implementation tools)
- software and creation of application programmes .

First let's consider the educational principles which we considered in creating the programme.

Somebody may ask: "What do interactive systems add to the process of teaching Art History and Museum Studies?". The computer as a communication channel gives the widest possibilities to penetrate into the world of culture. The teacher is given options to plan the results of the lesson and to maintain control over the results with the help of technical tools. It is possible to show the main idea behind the work of art and its particular individual details, within its general context. The common (not properly educated) young visitor of the museum is able to either catch the general idea of the piece of art or to see the details. The aim of teaching is to give children the ability to see the general idea of the piece of art which is reflected in its detail. The symbolical nature of art demands us to consider the work of art as a symbol. So we think that multimedia is a very powerful tool, which enables the teacher to show students the symbolic nature of art.

We were concentrating on the children from 6 - 12 who work individually or in groups. It is possible to show children the general idea of the work of art and maintain control over those who work individually or in groups. The student has freedom to choose the order and duration of work. In our opinion the programme should awake curiosity and imagination and in the end an interest in Art History and Museum Studies. Using the programme students should be able to change the order of learning and the time of learning. The computer, supplied with the interactive programme, may be considered as a mediator between the children - visitors of the museum - and museum itself and as a depository of information about works of art.

It is very important to keep in mind the peculiarity of the process of acquiring knowledge by children. Though their way of thinking differs greatly from adult's they follow their own logic. A child's behaviour is not sporadic. On the contrary it is well organised according to strict rules, though these rules are different from the rules of the adult's behaviour (Piaget, 1919 ). In our opinion it is very important to create the situations, which demand from the student the search of the original decisions.

The following learning situations were considered (Robert, 1989):

- the situation of conflicts , when the student reveals discrepancy between the well known and the real life event. As a result the understanding of the event is changed
- the situation of attempts and mistakes. It helps the child to be convinced of the real nature of the describing characteristics of the subject
- problem situation. It requires the analysis of tasks and actions which enables the definition of the logic of the decision.

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## " Virtual Museum"

Let's construct the model of the museum interactive system for children. First we should define what knowledge we are going to give to the students. We are interested in some history of the museum and information about masterpieces within it's collections. This information consists of some historical data as well as the basic art historian notions: style, attribution, iconography, technique. It is very important to stress that this knowledge of students replies is spread all over the different layers of information from iconographical characteristics of the work of art and it's provenance to the physical characteristics (as a material). Hence the student needs to move, to orient, navigate independently in different layers of cultural knowledge. Verbal information is integrated with sound and images.

That's why we use multimedia as a tool for implementation of our ideas. The value and defects of multimedia are well known. Multimedia is an exciting, flexible learning environment in which learners can determine their own learning routes, but it can also be so difficult to navigate through, so much so that students may become frustrated, disoriented and fail to achieve their goals. Navigation problems arise because the user is unfamiliar with the underlying topology of the body of information. So the main defect of the multimedia is lack of intellectual tools for navigation. Because of this it is very difficult to orient in that an informational ocean. Unfortunately standard tools of multimedia suffer from a lack of adequate navigation programmes.

That's why it is inevitable we have to choose the basic navigation routes for better orientation in the space of hyperlinks. These basic routes give the student the freedom to move in this informational space. In order to give the student opportunity to see the whole knowledge data base we decided to present the information as it is represented in

the real museum. The information is divided according to the different chronological periods and in each period according to the kind of art.

This informational space we call the "virtual museum". The student can walk through the halls of the virtual museum on the computer screen as he usually walks in the real museum. But if necessary it is possible to use all the associative links as routes which we discussed earlier. Therefore the teacher has the possibility to give two types of tasks:

- to define some factographical data (the year of creation, school, technique, material)
- tasks on relations of works of art. The children should find to what style or genre the particular work of art belongs.

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## **Implementation**

We are at the beginning, and the programme is still underdeveloped. The first version will be ready this autumn. It will be done in Hypercard using QuickTime technology. Thanks to the gift of Apple Computers we will be able to use multimedia centre for teaching not only school children but to organise special teaching of Art History to the students of higher educational establishments.

