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THE TELEVISION UNIVERSITY NEW MODELS OF DISTANCE TEACHING AND LEARNING

**by
Garito Maria Amata**

**Professor with chair of Teaching and Learning Technologies at the University "La Sapienza"
and Director of the NETTUNO Network per l'Università Ovunque**

Introduction

The problem we faced when designing the NETTUNO teaching model was to create a distance education structure that, while meeting the educational needs of students, would take account both of the evolution and development of information technology and the results of educational psychology that form the theoretical basis for implementing the process of distance learning. The proposed distance university model is based on the idea that distance teaching should originate within traditional universities, which have to reorganise in order provide an adequate response to the qualitative and quantitative needs for education and the demand for flexibility, diversification and internationalisation of teaching-learning processes.

The NETTUNO experience shows that the university can meet this challenge, thanks to the research and teaching functions that have always characterised its objectives. In fact, in the NETTUNO project the university plays a leading role in innovation, providing new contents and new models for communicating knowledge, based on the new technologies and new organisational systems.

The universities have not only ensured the flexibility of the whole process but also given it quality and freedom. In order to carry out their tasks, the universities joined together to create new organisational models parallel to, but totally different from, the traditional ones.

Nowadays, the two models exist side by side in the same university, one still linked to traditional teaching methods with traditional classrooms as the physical spaces where traditional face-to-face teaching process take place, centred around the lecturer. The other model is based on the use of the new technologies that have made it possible to alter not only the teaching-learning process but even the physical structures where that process takes place: classrooms have been replaced by open structures where the technologies make it possible to implement a flexible education process and allow self-learning to be developed. The setting up a Consortium of traditional universities and advanced-technology firms has proved to be strategically important. It made it possible to create a distance teaching model that challenges the concept of the mass production and industrialisation of the educational process and, at the same time, makes it possible to offer equal educational opportunities to vast numbers of users. Distance teaching, based on the institutional functions of traditional universities, has made it possible for distance students to enrol in the same course, follow the same programme, be assisted by the same teachers and obtain the same qualifications as face-to-face students. The same teaching staff divides its time regularly between internal and external students. University teachers perform all the same functions for distance students as they do for regular students, as well as other functions peculiar to the duties of a distance teacher. The tasks of distance teachers include planning and preparing the lessons to be given by video and preparing material, such as texts and software, to back up the video lessons. The teachers also have to answer the questions asked by distance students on the INTERNET Forums or through interactive face-to-face process or, virtually, over the ISDN. All these activities are co-ordinated among teachers from

not just one university but from all the universities in the consortium and this is certainly the factor that characterises the quality that can be obtained with this distance-teaching model by involving the best teachers in several universities, who collectively design and implement the new teaching and learning model. The NETTUNO model is therefore a mixed model that modulates the experience obtained from teaching done with the new technologies and self-learning enriched by the use of the new technologies with situations where teaching-learning still takes place in the traditional manner, according to the bi-directional, face-to-face, interaction and communication method. The teaching activity therefore allows students to make use of:

1. services and technologies that make it possible to achieve a synchronous model: direct broadcasting of television lessons, interaction between students, between students and teachers and between teachers and teachers over the ISDN and INTERNET networks and by computer conferencing;
2. the materials, products and tools (texts, videocassettes, hypertexts, multimedia products, and virtual laboratories) that make it possible to implement the diachronic model. In this case, the model gives the students teaching and learning autonomy and, at the same time, allows them to organise their space and time independently.

The organisational model based on a consortium of traditional universities and firms has also contributed to the success of the initiative, making it possible to bring the worlds of education and production closer together and also to provide a better response to the strategically important need for the constant refresher training of human resources.

Combining several structures in the area gives the Consortium a wider and more varied range of choice, both with regard to the teaching staff and the subjects and content of the education.

What is more, the new technologies, the RAI-NETTUNO-SAT satellite network, INTERNET and ISDN, have made it possible for the consortium to operate at the European level and, with a view to internationalisation, courses are already being held using teachers from universities in other countries. The possibility is therefore emerging of offering everybody, in an open manner, teaching by the greatest experts, scientists and teachers in the world.

The innovation-transfer mechanism that has started in traditional universities is rather like that used when technologies were being introduced into factories, leading to a change in structures and professional skills, in order to make it possible to implement flexible production processes. In fact, the rigid separation of training courses has been abandoned in the universities that give the Nettuno distance courses and, thanks to a system of enrolment by module instead of by course-year, the way has been opened to an open and flexible system of education. Students can manage their learning process independently and freely. School and university classrooms are no longer the only places where one can receive teaching but anybody, Anywhere, provided they have adequate technological equipment and material, may organise a space to implement their educational and self-learning process.

The new profession of teacher

The new model proposed calls for a transformation of the traditional functions of the university teacher. Our teachers are not merely persons who teach and communicate knowledge: they are the authors of dynamic educational processes and guides who assist students in making the distance learning processes productive.

The new model proposed also calls for a transformation of the traditional skills of the university teacher: in fact the professors of Network for University Everywhere-NETTUNO have had to learn how to teach a course on television; they have learned how to design and implement the multimedia products and virtual laboratories required for video lessons; they have learned how to teach by videoconference and how to create an interactive teaching site on INTERNET, how to guide students in the self-learning process with non-traditional tools, methods and technologies.

Television for teaching

Television has played a fundamental role in the new approach to teaching.

There is no doubt that the medium has forced university teachers to contend and compete with a new language for imparting knowledge that was not part of their teaching- communication method.

In video lessons, teachers not only impart knowledge on a particular subject, they propose a method of study and learning and a critical interpretation of examination texts to the student. The videotaped courses take the form of a guided teaching dialogue, in which the professor directly addresses virtual students, inviting them to think about things and getting them involved from the emotional point of view also, asking them to take notes, suggesting exercises and stimulating self-evaluation by questions on the subjects dealt with. Teachers have to present their knowledge to virtual students in such a way as to set off a process of critical learning. The experience gained with nine thousand hours of video lessons produced by the NETTUNO Network highlights the very great differences between teaching by television and traditional university teaching. In particular, the differences not only concern the potential linked with three-dimensional images and the greater variety of sources, and hence of information, but also the possibility of reviewing and correcting the lessons already recorded and the methodology for preparing a lesson related to group work. Group work has altered the traditional approach to university teaching. Preparation of the lessons involves many people, each of which contributes the necessary competence to the different sectors of the course. This has led to a precise work model, achieved by detailed planning of the lessons and careful planning of development times.

This plurality of contributions and competence has led to greater homogeneity in the choices made and enabled the critical paths to be limited. Generally speaking, professors have paid heed to suggestions about how to behave in front of the telecamera and the use of written words, gesticulation and dress, they have applied the theories on communication, learning and memory and followed appropriate psychological theories for defining the scientific basis on which the teaching method was built. It is estimated that twenty to thirty hours of preparation are needed for each hour of video lesson.

Once they overcame the initial difficulties, many professors were encouraged by the results obtained and even altered their traditional teaching methods. This is one of the positive features of the teaching model of the Network for University Everywhere-NETTUNO. In fact, technologies are not passively included the university's teaching activities as if they were just one more instrument but have been introduced co-operatively as new teaching tools. This experience has certainly led to a rethinking of methodologies for communicating knowledge and thus of university teaching. The professors are exposed not only to the judgement of their students but also of their colleagues and everybody who decides to follow lessons on television.

New ways of learning

With the video recorder it is no longer necessary for teaching and learning to take place at the same time, since the telecast lesson can be viewed later. This not only makes the whole process more flexible but also makes it possible to introduce new, interactive learning processes. The learning strategies implemented while the videocassette is being viewed are based on the fact that students can watch parts of the video lesson over again, as many times as they like, to reinforce long-term memory, and on the fact that they can interrupt the lesson to think it over and to decide whether it is necessary to look up other sources. These technical functions are not only linked to how the video lessons are interpreted but also to cognitive strategies capable of facilitating self-evaluation of understanding activities. In a traditional classroom lesson, it is not always possible to stop the teacher and get him or her to repeat something that he or she has explained and it is practically impossible to interrupt a lesson to think or to consult other sources. Usually students take notes and only make comparisons, seek clarification or think the matter over later, but they cannot always fulfil their intentions to investigate and, in any case, these obviously lose their urgency and energy because of the time lapse. There are two multimedia levels in a video lesson: the multimedia element in the video, represented by the use of various media, operating on a single support aimed at common objectives; the multimedia element of the video that is represented by the ease with which students can use and consult other media to study, compare, memorise and evaluate both the information content and what they have learned. The multimedia and hypertext learning strategy made possible by video is effective because it makes it possible to organise and store knowledge, using various records (text, sound, image), and then broaden access and depth of understanding and reinforce memorisation of the content.

The media normally used by students at their workstations are: books, multimedia products, databanks and INTERNET. The possibility of interrupting the video lesson to consult databanks, books or other research material enables traditional teaching to be transformed from a repetitive system of knowledge, set out in rigid programmes and modules, into an open system that can be updated and supplemented by all the knowledge available "on the web" and around the world.

Television and new languages

Our activity has confirmed that the language of thematic television has to be very different from that traditionally used in the various commercial television programmes. The language used on commercial television relies on the rhythm and on the spectacularity of the image to capture the viewer's attention. The very same elements that can help to arouse and hold attention in commercial television can be distracting, and therefore negative, in a television lesson. For this reason, all the capacities of the television medium (visual contribution, transmission of information presented by diagrams, animation) only become important support elements if they are included in the lesson logically. A wonderful animation, unless presented by the teacher in the correct teaching context, may make a good impression on the student but not convey any greater knowledge to him or her.

Repetitiousness and slowness are usually undesirable during a normal television broadcast whereas in a broadcast intended for instruction and education they are necessary expedients for the purpose of improving learning on the subjects. New communications models have emerged, thanks to the explicit purpose of using television for the development of critical learning.

The way television is used in the NETTUNO courses has shown that it can also be a technology of the mind, a cognitive technology that influences communication models, learning and memory for developing knowledge, that influences the formation of values and ideas and the ability to interact with the world.

Thanks to the new languages, television can really become an important tool for democratising knowledge. It can allow all those people who have no access to forms of higher education and training to attend courses without leaving their homes or workplaces; it can be a useful tool for the development of new knowledge and new skills. With RAI-NETTUNO-SAT thematic television it is really possible to

- give everybody access to knowledge;
- deal with the problem of social exclusion;
- promote active use by television viewers.

This experiment has led to the identification not only of new production models but even of new languages and new styles for communicating scientific and humanistic subjects over the television at the academic level. In a manner of speaking, the gap that has always existed between the world of television and the world of academia is closing.

The use of these new languages is particularly important nowadays because the development of so-called interactive technologies, communication highways, telematic networks, digital satellites and the related development of interactive TV are already making it possible to use television as a road for conveying lessons, multimedia products, databanks, self-evaluation systems, the holding of examinations and electronic notice boards from the university direct to the user's desk. In other words, interactive television, which greatly expands not only information but also "learning" and "structured knowledge", which, in virtual dynamic spaces, promotes collaborative learning, which allows and will increasingly continue to allow the best universities in various countries in the world to dispense scientific and technological culture to the a great body of users. No longer television aimed at developing popularity and learning facts but a tool for the development of new ideas and critical and creative abilities. In other words, a television that makes people think.

RAI-NETTUNO-SAT

With the RAI-NETTUNO-SAT television network it is possible to make use of a digital satellite television channel with a range of coverage of all the European countries, including Eastern Europe and the Mediterranean Basin, thus making Italy the first country to broadcast televised university education courses round the clock, distributing them without restriction.

A new link in the evolutionary chain has thus been created: *homo videns-sapiens*.