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First efforts towards distance learning instruments for sustainability

1. Introduction.

Among the complex and delicate relations between the business world and the environment, in terms of implementation of ethic and virtuous lifecycles for pollution abatement, waste reduction and management, reduction of consumption and of deterioration of natural resources, new instruments can help to promote sustainability.

From the results of a research sponsored by the E.U. Commission that has analysed the data from about 7.500 citizens in the 15 Member Countries on the item 'The sustainable development and the opinions of Europeans on the environment', a new sensibility for environmental matters comes out as a preliminary result.

In fact, about the perceptions of the influence of the environment on the quality of life, the links between strategic actions for environmental protection and economic development, job creation and social benefits, and the importance of the environmental matters with respect to the others, the opinion of Europeans is that, at a general level, the environment is more important than the social and economical factors in influencing the quality of life.

In this direction the actual efforts in terms of environmental protection are considered insufficient, as they do not produce such relevant results in other fields as job creation and social benefits.

About the perception of the main environmental problems (climate change, nature, environment and health, use of resources and wastes), the most important area is considered the one concerning the relationship between health and the environment, as pollution problems are particularly felt.

About the prioritisation of the environmental problems, traffic congestion and quality of food products are the most diffused and perceived by citizens.

From this general framework, some reflections come, related to the possibility to help citizens to perform their behaviours following their environmental perceptions; this shows that there is a need for sustainability, namely in European Central and Southern Countries.

In the 2002 edition of 'Green Week' in Bruxelles in Belgium, which is an annual environmental event sponsored by the European Union Commission, some results of another research were presented as developed from the 'Forum on advertising and communication on sustainability' in 1999, trying to study the relations between advertising and sustainable consumption in both the directions: the influence of the growing market that asks for eco-friendly messages, products and services and the role that advertising can play as stimulus towards a change in lifestyles, towards patterns more addressed, educated and suited to sustainability.

By means of test cases, this study shows that sustainability is well received at market level – 'the ethic product sells' -, with trends and requests from consumers, as for example those for products and services, with potential groups of clients for advertising and different kinds of messages in the different available channels and tools as, for instance, internet. From the 'offer' side, big producers, production companies, detailing firms, public institutions and NGOs define 5 big advertising possible areas of interventions - action, help, explore, advertise, desist -, identifying some network strategies, voluntary initiatives as 'codes of behaviour', exchange of information, larger disposal of human resources and competitiveness.

Starting from the interesting outputs of these two researches, some considerations lead to the evaluation of the need of new sustainability tools in order to develop and implement the perceptions found, and namely, information, education and training tools.

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2. The need of new sustainability tools.

The need to modify styles and methodologies of market based on production and consumption in order to improve eco-efficiency, deals, on one side, with the adoption of new behaviours and innovative technologies and, on the other side, with the promotion of the growth of new market's opportunities and borders. This process could be supported by many initiatives based on different instruments as, for example, communicative tools dealing with information, education and training.

In fact, in the process towards new paradigms of behaviour, in the search for a new 'code of being', a first substantial effort could be played by the spreading of correct information based on reliable and available examples of good practices.

At European level, some databases are at disposal for the same aims as, for example:

- the D. G. Environment Database on Good Practise in Urban Management and Sustainability, that contains the exchange of experiences of actions leading to improved urban management and sustainability, at the URL <http://europa.eu.int/comm/urban>;
- the European Local Transport Information Service, that contains the current transport measures, schemes and practices implemented in cities and regions across Europe, at the URL <http://www.eltis.org/>;
- the Urban Pilot Projects of the Regional Policy – Inforegio, that contains the latest information on the European Union's action in support of regional development, at the URL http://europa.eu.int/comm/regional_policy/index_en.htm;
- the European Local and Regional Energy Management Activities, that contains the transfer of know-how between local and regional energy management agencies, at the URL http://europa.eu.int/comm/regional_policy/index_en.htm;
- the Best Practices Database, that contains solutions to the common social, economic and environmental problems of an urbanising world, at the URL <http://www.bestpractices.org/>;
- the European Good Practice Information Service, that contains a guide to good practice in local sustainability (for those working to develop sustainability initiatives), at the URL <http://cities21.com/europractice>;
- the European Academy of the Urban Environment, that contains the SURBAN database on sustainable urban development in Europe, at the URL <http://www.eaue.de/winuwd/default.htm>;
- the database Premium for sustainable cities, that contains all the initiatives awarded in 1999 and 2000, at the URL http://www.minambiente.it/Sito/pcs/premio_fset.htm.

As it's possible to observe, not so much has been developed for the business aspects, neither for the behaviour aspects and the same for all the considerations related to the market's analyses.

These trends probably identify possible areas of work for the next future and show that a lot of activities have to be done to design, to prepare and to finalise new affordable sustainability instruments able to give an help towards new 'codes of being'.

In Italy, for example, APAT has developed the GE.L.SO. Database, that is represented at the URL www.gelso.apat.it, in which are listed and contained many examples of 'good practices' for local sustainable development. From an analysis of these examples contained into the database, there are some cases of projects for information, education and training of citizens under the classification 'Local Agenda 21' that can be mentioned for the good results achieved and for the positive effects gained on people.

Also the Italian Regional Agencies for environmental protection (for example: ARPALAZIO) are trying to check all the initiatives that Local Administrations are realizing or financing in the field of the Sustainable Development and Local Agenda 21 including the so called "*Unconscious Agenda 21*". This survey aims to create a network of national and regional agencies for the observation, evaluation and support of all the sustainable actions.

3. New 'environ-mentality' in behaviours through environmental networks.

New environmental policies and strategies, together with the launch of new fashions and habits referring to the analysis, appreciations and diffusion of 'best practices' could be enlarged by means of innovative instruments as for example remote distance information, education and vocational training for people involved in decision making but also for citizens interested to change their behaviours with 'environ-mentality'.

A preliminary work, for example, has been performed and still is in progress for participating and promoting new instruments for information and education for a sustainable consumption, under and inside the European Union patronage.

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For example, some new interesting aspects of information, education and communication are promoted at the moment and can be mentioned, as they are dealt by some new networks, and namely:

- the international networks on communication and information (Green Spider Network);
- the sustainability at local levels (Urban Forum for Sustainable Development - UFSD);
- the environmental relations (European Ambassadors for the Environment);
- the responsible involvement of young people (Youth Environmental Council of Ministers - YECM);
- the creative discussions on environmental problems (Forum of Young Europeans for the Environment - YEE);
- the best behaviours competitions (European Environment Awards);
- the environmentally sound business (Green Business);
- the green trade and commerce (Green Products for European Consumers);
- the updated and correct information (Greening the Media);
- the involvement of women on environmental themes (Europe's women for the environment);
- the coordination of learning aspects (Green Teachers).

The work that could come from these groups of experts and professionals will help in creating new relations in different European Countries about these arguments, spreading new common addresses and perhaps starting initiatives that could achieve interesting results, creating knowledge through participation in new good practices for sustainability.

4. The Project 'Skills and competencies for local Agenda 21'.

In this attempt, the Project entitled 'Skills and competencies for local Agenda 21' is one of the examples of the recent efforts promoted by the European Union and developed, also together with other Partners, by the Italian Agency for Environmental Protection and Technical Services (APAT), in order to prepare and validate useful supports to the changes that are taking place in markets and in people behaviours and that should be taken into account by decision makers at local level to better manage a renewed request for environment management by means of sustainability.

The Project is sponsored by the European Union through the 'Leonardo da Vinci' Programme and is started in December 2001, after a preliminary phase of about 6 months, and will perform its activities since the end of 2003, when a final conference will be organized in Italy to present the work done and the results achieved.

The activities are developed by some European Partners, as the Istituto per il Lavoro of Bologna (who is the coordinator), APAT, the Wupperthal Institute of Germany, the University of Naples Faculty of Architecture, the Catholic University of Eichstatt, the Lanza Foundation, the Goteborg University, the Cataluna University (CPSV) of Barcelona and the Laboratorio delle Idee of Ancona.

Particularly, the main goals of the Project are:

- to define a state of the art of the international, European and national strategic addresses for the local Agenda 21;
- to perform a survey in the different European Countries to evaluate the experiences directly carried out by the different actors involved in Local Agenda 21 processes and the training requirements, expressed by the interviewed stakeholders, to acquire the skills and the necessary competencies to manage local sustainable processes strictly related with the aspects of "environment and work";
- finally, to finalise a remote distance vocational training model prototype, in order to train managers and experts capable to start and manage local Agenda 21, facing the relationship between sustainable development and labour.

The aim of this distance vocational training model is to take into account the specific features and needs of local public Administrators diffused on the European Union territory. Therefore the model structures has been designed in order to deal with the needs of a wide group of users in terms of deepening, involving and time availability while the contents presentation is aimed to be attractive and useful.

Therefore in developing vocational training model different and operative related aspects of work and environment have been deepened, following a general scheme organised in seven *Training Modules* regarding the fields of competencies, that contain the *Training Units* of the distance training model (DTM). The fields of competencies deal with the different aspects of sustainable development:

- a) the policy orientations and strategies promoted by the international Organisms, the European Community and the national Governments dealing with environmental issues and strategic sectors, promoting voluntary and legally binding instruments;
- b) the governance principles as promoted at international level and their strategic approach to improve democratic participation, public awareness and to allow the governance implementation at local level;

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- c) the social and economic dimension of sustainability introducing the concepts of structural changes, innovation and sustainable work, integration of environmental aspects into the sectoral policies, improvement of the quality of work and employees participation, and also, the individuation and definition of specific economic instrument to carry out inter-sectoral integration.
- d) the ethical approaches about the environmental protection, human right and work;
- e) the urban ecology and ecosystems approach, their strategies and the instruments' implementation in the urban framework;
- f) the introduction to the concepts of built-up environments including also the cultural heritage and the application of the integrated conservation strategies and approaches in different local built-up environments;
- g) the introduction to the integrated evaluation concepts and theory widening this approach as strategy for urban planning and conservation of cultural heritage and considering it as an instrument to support participatory decision making processes, planning and projecting.

In order to prepare the contents of each module, some surveys have been carried out to demonstrate that the specific professional figures operating within the Agenda 21 activities have definite training needs and also start from different kind of knowledge. The partners of the project decided to develop the vocational training model subdividing the Training Modules on the basis of the three levels of knowledge in order to give to the trainees various possibilities of widening suggested arguments:

- the *basic level*, that explains the general context of different problem fields;
- the *strategic level*, that suggests the strategies to approach the environmental, social and economic issues describing the targets and orientations of actions for problem solving;
- the *instrumental level*, that introduces the existing tools that local Authorities can apply to start up a sustainable process management. In the Figure 1 are summarised the competencies fields and their organisation on the basis of the different typologies of knowledge.

The three main foreseen characteristics for the vocational learning model are:

- the "flexibility" to permit different specialisation;
- the "dynamism" to carry out a training context fixed and specific and, at the same time, adaptable in different contexts;
- the "organised network" to enlarge the knowledge available on the web, by means of databases on good practices, web sites on sustainable development, lists of URL and e-mail addresses of experts in the fields of reference.

The technical organisation of the vocational training model is schematised in Figure 2.

All the works performed by the Partners as documents and reports are contained on the web site of the Project at the URL www.ambiente-lavoro.com that has been developed to publish the results found and the issues related.

5. Contents of schedules developed in the Project 'Skills and competencies'

Among the preliminary results and recent running developments of specific parts of a distance training model for local Authorities, and namely for decision makers responsible of the management of land planning participated design, the Project has highlighted some important matters related to sustainability tools that have been developed.

The first Training Unit (basic) of the Training Module, that concerns the 'Policy orientations on sustainable development', introduces to the main sustainable development concepts, describing the rise and the spreading of the debate on the real possibility for societies to grow without compromising the common natural heritage and carrying out equity distribution of world's resources among populations and different generations, as affirmed during the United Nations Conference on Environment and Development, held in 1992 in Rio de Janeiro.

The document Agenda 21, issued during such Conference, underlines the need to consider the relationships between environment, economy and society to solve the problems of disparity among Nations, poverty and deterioration of the natural environment and also assigns to the local Authorities a central role in carrying out a sustainable and shared land planning design.

All these themes and principles have been recently reaffirmed during the World Summit of Johannesburg 2002 in which new co-operation tools and a Plan of implementation of sustainability principles were promoted.

The vocational training model deals with such issues also from a strategic point of view in the second Training Unit (strategic) deepening the documents of Agenda 21 and the Action plan of Johannesburg, together with the European Union ones and particularly with the Sixth Action Programmes for the environment 2001-2010.

The main environmental quality objectives for the next years are highlighted in the fields of air, water,

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waste and natural resources.

For every environmental issue the critical state is described and are also explained the strategies and the approaching instruments that should be applied at different Govern levels to implement sustainable development processes.

The promoted strategies are based on the respect of existing environmental laws, voluntary actions, involving citizens to share responsibilities, integration of environmental aspects into sectoral policies which are considered as fundamental pre-requisites to reach environmental protection together with social and economic growth. These indications are acknowledged also into the National environmental strategies for sustainable development, as for example the Italian one. Therefore the third Training Unit (instrumental) proposes a more operative point of view of the policy orientations on sustainable development, introducing the accomplishment aspects of the different and specific instruments already existing that the local Authorities can apply in order to reach specific objectives of sustainability and namely:

- the mechanisms of local acknowledge of the Community measures based on an high level of environmental protection;
- the definition of a sustainable land planning agreed by local Authorities and all stakeholders such as local Agenda 21 process;
- the use of support instruments such as guidelines for Agenda 21 implementation and best practices data base that facilitate the exchange of experiences;
- the choice, application and interpretation of indicators as descriptive instruments of the status and of the performances towards sustainability;
- the financial measures such as environmental taxes and fund programmes;
- the voluntary instruments that promote the engagement of private sectors to achieve a better environmental performance;
- the local Negotiated Planning finalised at creation of territorial partnerships to support employment and environmental protection.

In the first Training Unit (strategic) of the Training Module 'The socio-economic dimension of sustainability' the APAT contribution proposes a strategic lecture of the "integration principle" that brings environmental protection and sustainability considerations into all sectoral policies.

The main productive activities such as agriculture, industry, infrastructure, transport, energy and tourism, generate relevant impacts on the environment and the adopted production models are analysed in order to highlight the possibilities to implement more ecological production processes.

In this sense the second and third Training Unit (instrumental) suggest to the trainees a widening of the operative instruments for integration, by means of:

1. the binding tools linked to the Community rules and dispositions, such as: laws and regulations to transform environmental policies into action, environmental taxes in application of the "polluter pays" principle and the Environmental Impact Assessment (EIA) procedures to monitor the possible impact of projects on environment;
2. the voluntary tools to develop a dialogue between institutions and industry in order to readdress the existing production and consumption patterns such as instruments to promote green production (EMAS, Eco-label, Environmental Product Declaration, Life Cycle Assessment) and instruments to promote a green market (Green Public Procurement).

In this section, also other instruments are explained to the trainees, considered useful to join together the social and economic targets with the environmental protection such as:

1. the land planning, in order to develop the economic capabilities of the territories, conserving natural resources and cultural heritage;
2. the use of indicators to monitor the progress towards integration;
3. the education and communication instruments to enhance environmental awareness to promote sustainable behaviours and green consumption.

Another application that could lead to possible opportunities of work in the environmental protection field is related to occupational safety, that promotes new standards and new professional figures with profiles according to recent legislation at European Union level and adopted at national level.

The figure 3 summarises the competencies fields developed by APAT.

6. The need for a correct environmental education.

The parts of the vocational training model presented deal with the special aspects of international orientations on sustainable development, socio-economic relations between environment and work, political tools for green production including education, and they are an example to start some proactive reflections on the importance of the contents of these kinds of instruments for sustainability.

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In fact, it seems important for any Country, to achieve from the international network the needed ethic assistance and guidance – that is through the knowledge management and right applicative examples too – during its own approach towards new sustainable levels of development, production, marketing, trade and consumption.

In these last decades, the concept of environmental education has become strictly related to that of sustainable development, according to the statements of Agenda 21 and subsequent international documents.

The need for a correct and efficient environmental education, addressed not only to children but to all members of citizenship, is becoming more and more part of the Environmental Strategies of the European Union (see V and VI Plans of Action) and of the initiatives of Local Agenda 21, as fundamental political tool to integrate environmental issue into the social and economic politics, to enhance the people sensitiveness towards the environment and to stimulate a proactive participation in the democratic processes of sustainable development.

At a scholastic level, in the last years, the opportunity to include environmental education among the other disciplines has spread, with the support of texts, guidelines, manuals for teachers, and, first of all, with institutional and non institutional web sites, where it's possible to find every kind of information on different themes.

In fact, the aim of the environmental education is to strengthen the knowledge of the environment, both at a global level (to understand the processes that drive the natural cycles and their changes), both at a local level, to help children to be more aware of their territory, and to the natural and urban context in which they live.

In this field, to face the growing number of local projects, promoted by several subjects, the European Union is trying to look for a more homogeneous way ("language" and methodologies) to talk about the environment and to teach environmental education in the schools of the Community as for example with the "Flepy" project. This, because is emerging the necessity to guarantee the scientific basis to knowledge and to drive so many different paths to the same direction.

Also for the adults, the European Union has promoted other networks and initiatives to favour the meeting among representatives of different Member States of the Union and the comparison of different local situations as already mentioned.

For example, the already noted research promoted by the European Union DG Environment, aims to assess the degree of awareness of European citizens on the themes of environment and quality of life, the efficacy of the environmental policies and the social and economic benefits of them, the environmental problems mostly felt important in their own Country and so on. This is an important contribution to build a common awareness towards environment, and to find together the right solutions to the problems.

Considering environmental education by the socio-economic point of view, it assumes the role to support the green conversion of production and market, enhancing the diffusion of right information on products and stimulating public Authorities and people to change their purchases in order to achieve sustainable models of consumption. In this field, education is strictly linked and works together with information, communication and advertising, also because they are more and more supported by the technological media, such as internet or television, by means of which is possible to reach both people involved in decision making processes (for example through remote distance vocational training), and citizens interested to change their behaviours towards 'environ-mentality'.

In this frame, the promotion of technical capabilities for environmentally sustainable capacity building pursued by means of the development of preliminary studies to build up and validate a remote distance learning model is capable to cope with the main environmental related issues making available on line good practices' databases and experts' references, with appropriate links with the most important case studies' web sites.

7. Conclusions.

Some final comments, trying to give a contribute to the above discussed arguments, could be added by means of the design of a comprehensive scientific and technical model that could give the requested assistance in achieving the prefixed goals related to the management of innovative business styles for sustainable development.

This will be the argument of a next step initiative of APAT education and training sector by means of the development of a preliminary study of a remote distance model for vocational training in the different productive areas and more generally in the environmental protection areas.

In this direction a first study is already started and a practical application is running by means of the APAT participation at the task 'Training and education' of the Project Cascade sponsored by the European

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Union Program 'Competitive and sustainable Growth', in which a specification for on-line training packages for different figures will be developed, in order to define a suitable training that could enable non expert Life Cycle Assessment (LCA) users to employ LCA techniques within a limited timescale and gain credible results.

All these efforts are finalised to carry out different paths of remote distance vocational training that could lead to a general system for capacity building, in which different modules can give learning to the new environmental protection professional figures.

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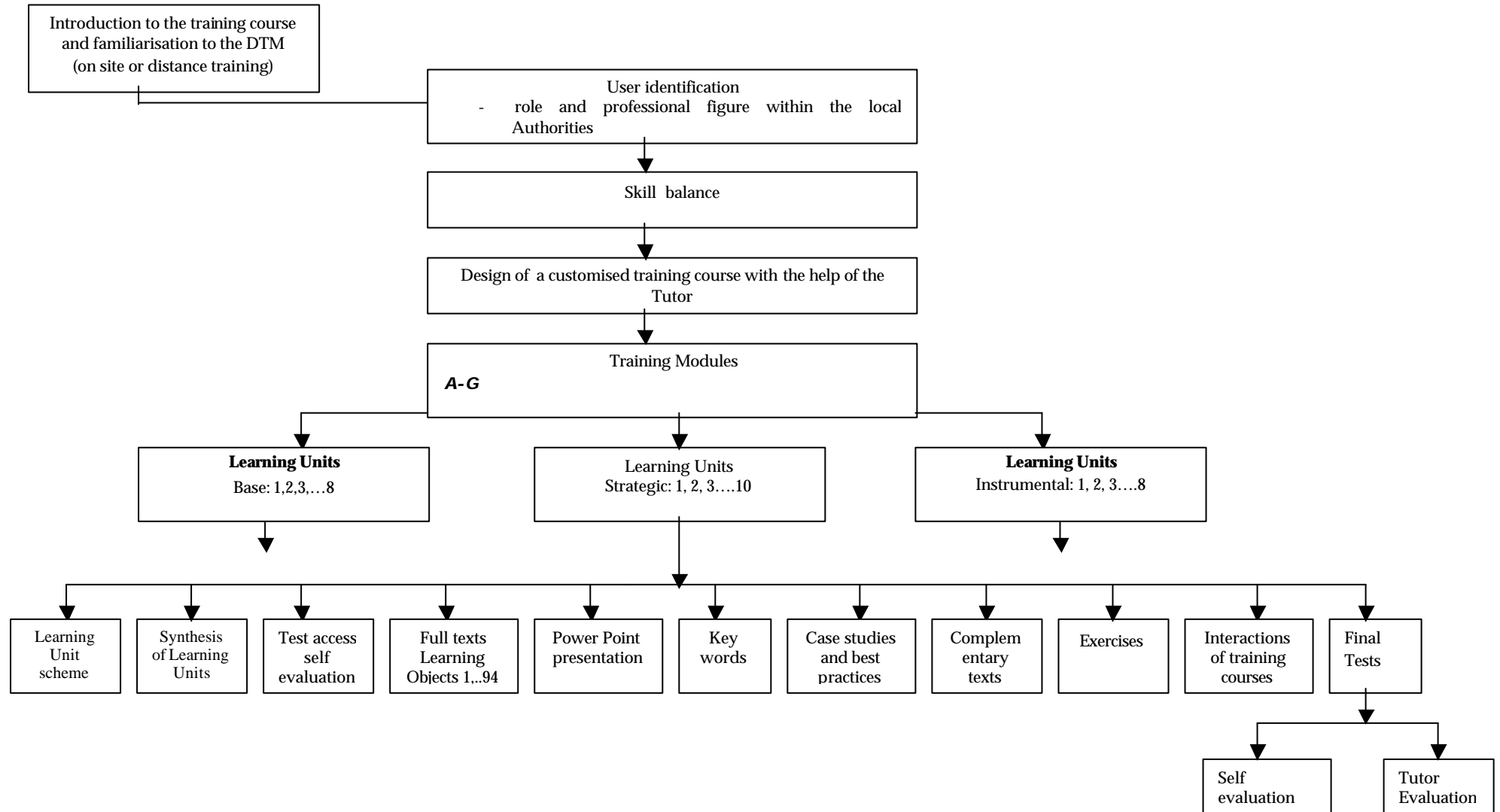
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Figure 1

TRAINING MODULES	TRAINING UNITS	
	Type of knowledge	Keywords
A) Policy orientations on sustainable development	Basic	International orientations and policies
	Strategic	Strategies, action areas and sectors
	Instrumental	Instruments
B) Democratic governance	Basic	Governance concept within the framework of Sustainable Development
	Strategic	Improving democratic participation and public consciousness
	Instrumental	Operational Aspects of the Governance Model
C) The integration of work and environment in local and regional policies	Basic	Work-related problems and changes due to globalisation, structural changes, innovation processes and flexi-time-strategies
		Grounding a common viewpoint on sustainable work
	Strategic	Integration of environmental aspect into the policies
		Integrated strategies: looking at barriers and synergetic potentials in different action fields
		Improving the quality of work
		Improving the participation of employees
	Instrumental	Integration of environment aspects into the policies
		An economy based on eco-efficient products and services
		Local and regional action fields, applied instruments of local labour policy, best practices
D) Ethic in Sustainable Development	Basic	Environmental justice in and between generations
		Risk and potentialities of the technological development
		New models of wealth
		Human rights
	Strategic	Environmental ethics
		Ethics for a global society
		Ethics of work
	Instrumental	Responsibility principle
		Instruments
E) Urban Sustainable development	Basic	Urban sustainable development concept
	Strategic	Objectives and strategies
	Instrumental	Applied instruments
F) Integrated Conservation of Cultural Heritage	Basic	Concepts related to Integrated Conservation of built-up environments including Cultural Heritage
	Strategic	Application of Integrated Conservation strategies and approaches in different kinds of built-up environments including cultural heritage
G) Integrated evaluations for urban planning and conservation of cultural heritage	Basic	Integrated evaluations: theory
	Strategic	Integrated evaluations: approaches
	Instrumental	Implementing integrated conservation strategies

Figure 3

**'Leonardo da Vinci' Program Pilot Project Local Agenda 21
Distance Vocational Training Model**



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Figure 3

APAT Contributions			
TRAINING MODULES	TRAINING UNITS		
	Type of knowledge	Keywords	Learning Objects
A) Policy orientations on sustainable development	Basic	International orientations and policies	The main environmental issues (environment and biodiversity; air, water, waste, natural resources) in international and European Policy.
	Strategic	Strategies, action areas and sectors	<p>Agenda 21; Johannesburg Summit; European Strategy for SD; VI European Action Programmes; National Strategy and Action Plan for SD.</p> <p>Global Agreements (Climate Change; Biodiversity; Desertification)</p> <p>International Agreements (Aarhus Convention, Aalborg, Hannover, Lisbon)</p> <p>Environmental issues 1: Biodiversity</p> <p>Environmental issues 2: Air</p> <p>Environmental issues 3: Water</p> <p>Environmental issues 4: Waste</p> <p>Environmental issues 5: Natural resources</p> <p>Production (agriculture, industry, infrastructure, transport, energy, tourism)</p> <p>Social issues: (health; social aspects of sustainable development; information; public involvement and environmental justice access)</p>
	Instrumental	Instruments	<p>Legal instruments (European, national and local environmental law)</p> <p>Local Agenda 21;</p> <ul style="list-style-type: none"> - Economic instruments: Programmes (Structural Funds, Habitat, Life); - Voluntary agreements; - Analysis instruments: Sustainability Indicators (UNEP, OCSE, ECI, Ecological Footprint); - Guidelines (ICLEI, APAT); - Best Practices (GELSO/APAT)
C) The integration of the work and environment in local and regional policies	Strategic	Integration of environmental aspects into the policies	<p>The main objectives of European and National policies (for example Italian and German national policies) and Global Agreements for integration of environmental considerations into following productive sectoral policies:</p> <p>Agriculture</p> <p>Industry</p> <p>Infrastructure</p> <p>Transport</p> <p>Energy</p> <p>Tourism</p> <p>Occupational safety</p>
	Instrumental	<p>Integration of environment aspects into policies</p> <p>An economy based on eco-efficient products and services</p>	<p>Integration of environmental aspects into the sectoral policies at the local level of implementation: legal instruments.</p> <p>Approaches and instruments towards integration: regulatory, fiscal and assessment measures.</p> <p>Criteria and methods for judging progress towards integration.</p> <p>Political instruments to favour the adoption of "green" production's systems (NEAs): definition, objectives, arguments for and against them.</p> <p>Instruments to promote a green production (EMAS, Eco-label, EPD, LCA, etc.).</p> <p>Instruments to promote a green market (Green Procurement, etc.)</p> <p>Instruments to enhance an environmental awareness (communication and education for environment).</p>