Newer Approaches to

Environmental Adult Education

Contents

1. Introduction

Nowadays, the advancement of science and technology has resulted in a huge expansion of built-up environment reflecting on its turn in increased pressure on the natural environment. The negative consequences from this pressure are transformed into severe environmental problems like climate change, global warming, pollution, desertification, flooding, deforestation, loss of biodiversity, and ecosystems' imbalance. At global community and policy level, there is unicense that environmental devastation and its negative impacts can only be successfully addressed by educating people (both young and adult) on knowledge of environmental concepts, problems disturbing the environment, skills to identify and find solution of these problems, incl. application of environmentally sensitive approaches for social and economic progress, adequate attitudes and behaviour to properly use, manage, improve and maintain the quality of the environment.

Adults constitute the majority of the population. They are the main power of the production process, thus the main responsible for environmental deprivation through their activities and relationships with the environment. There is, therefore the need adults to gain knowledge, skills and behaviour for preservation and maintenance of environmental resources.

Environmental adult education has been recognized as an efficient tool for contesting and resolving environmental challenges. It is able to bring transformation by *creating awareness, enhancing values, changing attitudes and improving skills for the actualization of environmental sustainability. (United Nations Environment Programme* (UNEP, 2017). Environmental Adult Education is a lifelong process and it adopts the principles and methods of adult education to create awareness of the environment, to communicate relevant knowledge and skills, and promote attitudes and behaviors oriented towards sustainable environment. The adults' educators - teachers, trainers and other adult learning providers, are those who mediate the efficiency of the educational process to successful achievements. They need to be better equipped with knowledge, skills and attitudes to realize this important social function.

ECO-Train project corresponds to these needs proposing an ICT-based training scheme – a model for organization and functioning of a training process that promotes learning opportunities for adult learning providers. The model is grounded on the new approaches for environmental adult education and developed for the subject area of eco-friendly technologies as a tool to facilitate adult educators learning. To plan, design and deliver a learning process, a facilitator has to thoroughly understand adult learning,

and to be able to practice teaching strategies that effectively meet individual's learning preferences. This guide focusses on the basic principles of adult education and on the facilitation approaches that make the process of learning of adults' educators more efficient.

2. Environmental education

The definition of the United Nations from the end of last century for the environmental education states that "*it should have a job-specific focus, aimed at filling gaps in knowledge and skill, and would help individuals find employment and be involved in environmental and developmental work. At the same time, training programmes should promote a greater awareness of the environment and development issues as a two-way learning process*" (United Nations, 1992).

Nowadays, Agenda 21 - the comprehensive action plan to be taken by the UN members at all levels of the society tackling human impacts on the environment, declares that education is one of the most important tools to facilitate the transition to a better sustainable world.

Environmental education designates the interrelations among organisms, their surrounding environment, and all the factors that influence life on our planet, among the other atmospheric conditions, the water cycle, food chains, etc. It takes a multidisciplinary approach to the study of human interactions with the natural environment. Environmental education is a fundamental branch of science about the Earth and is important for everyone. It encompasses various disciplines, each of them characterized by numerous and multilevel scopes. The major are as follows:

➢ To raise awareness among people about the pleura of renewable and non-renewable resources and the ways of their balanced utilization for the wellbeing of all;

➢ To provide knowledge about the ecosystems and their cause-effect relationships;

➢ To deliver information and data about biodiversity, including the endangered species of plants, animals, and microorganisms in the environment and the potential steps for biodiversity preservation

➢ To empower people to understand the reasons and consequences of natural and induced pollutions, and the measures to minimize their negative impact.

- ➢ To aid people in assessment of alternative responses to environmental to be able to decide on the proper courses of action;

- ➢ To encourage environmental literacy promoting the study of the environmental acts, rights, rules, legislations, etc.) that will help taking right decisions for the protection and improvement of our planet;

- ➢ To provide information about the problems associated with extra-population, health, climate change, etc. and to promote the contribution of arts, science, and technology in eradicating/diminishing them;

- ➢ To identify and develop relevant eco-friendly skills and technologies to different environmental issues and to enable theoretical knowledge into practice and the multiple uses of the environment;

- ➢ To educate people about the need for sustainable utilization of resources.

Environment education is gaining increasing importance since the world population is growing at a threatening pace, especially in developing countries. The natural resources availability is limited. Although they are (over)exploited by advanced methods and techniques, the exploitation is unplanned and leads to massive pollution. This pollution, in its turn, affects deeply the health of all living things on Earth. That is the reason people undertake unified responsibility and corresponding actions to stop deteriorating the environment.

Education and training are among the immediate measures that are needed to save our planet's biodiversity and species extinction; to control the major sources of pollution; to enable people to understand the complexity of the environment and taking appropriate activities to pursue sustainable development in harmony with it. That is why, the educational systems and curricula must be reoriented towards these needs and be transformed into a key tool for the adoption of changes in the knowledge, standards, behavior, and lifestyle needed to achieve sustainability.

3. The background and the scope of the adult learning process

To plan, design, and deliver a learning process, an adult educator/provider has to thoroughly understand adult learning and be able to practice teaching strategies that effectively meet an individual's learning preferences. That is why the basic principles of adult education and the facilitation approaches that make the process of adult learning more efficient are of primary importance.

Learning is a process of acquiring new understanding, knowledge, manners, skills, standards, attitudes. It is a constant change in behavior or knowledge. Learning comprises apparent activities and internal processes like thinking, attitudes, and emotions. It is based on the following principles - those elements that assist people to learn more effectively:

- ✓ Use of two or more senses (multi-sense learning), e.g. visual, auditory, kinesthetic

- ✓ Learning by doing (active learning), problem-solving, discussion, case studies, etc.

- ✓ Remembering the first and last experiences

- ✓ Feedback between learners and learning providers

- ✓ Efforts rewarding

- ✓ Practice, repetition, revision, and strengthening

- ✓ Holistic Learning provides a logical framework for thinking

To perform learning, an appropriate learning environment should be provided. The learning environment is a complex mixture of:

- ✓ Social environment, which satisfies the human need to belong to a social setting

- ✓ Physical environment, that assures physical comfort to promotes efficient learning

- ✓ Emotional environment, that guarantees effective communication for efficient learning

- ✓ Cognitive environment, which stimulates the sense of relevant and beneficial learning

- ✓ A holistic environment encompasses the differences and needs of each individual for learning.

The learning process can be performed through different styles. The style of learning depends on the type of learners. According to the way people learn, four learning types can be distinguished. These are the Dynamic learner - energetic and very involved; the Imaginative learner - perceived and reflecting; the Analytic learner - a theorist, learning by thinking, and the Common sense learner - practice and efficiency-oriented.

Classified by the methods of learning people use, the learners are: Visual learners - think in pictures; learn best by seeing new information; Auditory learners - learn best by listening to new information; Kinesthetic learners – learn through touching; proactive experience to learn and acquire new skills or information.

The learning process is supported by learning resources. The purpose of the learning resources is to arise interest in learners. That is why they have to correspond to the following requirements: to fuse information, to help to remember; to apply to different learning styles; to highlight major points.

Some of the modern learning resources exploited are electronic whiteboards; overheads/handouts; videos/DVDs; posters; PowerPoint presentations.

4. Adult education

Adult Education (andragogy) is an adult-centered practice of teaching, applying a problem-posing approach to learning. The main goal of adult education is to facilitate change in the knowledge, skills, attitudes, and behavior of learners. Adult education requires learner-centered methods; the trainer is a facilitator rather than a teacher.

Adult learners Adults are individuals who can take charge of one's life having accumulated basic life experiences and knowledge. They perform adult roles in society, as citizens, employees, parents, etc. They can take responsibility for their decisions and subsequent actions being self-directed and goal-oriented. Adult learners determine whether and in what form participate in education; they are motivated to learn when they experience a need.

Adults need the education to validate the information from their values and attitudes, to challenge and reflect on ideas. They can decide for themselves what is important to learn and be actively involved in

their learning. The sources that motivate adults to learn are both social and personal. The social relationships' context is grounded on their need for associations and friendships, to fulfill external expectations for social welfare, and the personal one: to realize personal advancement; to break the routine of home/work; to stimulate the cognitive interest.

5. Adult learning provider/educator

The one thing that all educators of adults have in common is their mission to facilitate learning. Facilitation means enabling and empowering people working with them. It is a method that encourages people to share ideas, resources, and opinions. In adult education, facilitation means guiding learners through knowledge content and stimulate their knowledge-gaining process. It stresses the questions WHAT is being learned and HOW it is being learned.

Adult Learning providers/educators are those who guide an individual or group to learn through interactive activities by using skills and methods to achieve measurable Learning Outcomes. They instruct (make clear and provide guidance), motivate (encourage the learning), and manage (monitor the progress of learning).

These professionals should be flexible and adaptive to modify activities before and during their use; proactive & responsive, to consider the characteristics of the participants and the purpose of the activities, and to make modifications during the activity. The good AL educator should be as well robust and patient, taking time to explain things properly; creative - open to questions and new ideas.

The main values and principles of AL providers are focused on being neutral and objective with active participation and inclusiveness in the training process. They must acknowledge and respect each participant as having an equal right to contribute, influence, determine the direction of the group. Trust and safety, flexibility, and authority are the other important moral properties to be considered.

The AL providers play several interconnected roles. They are designers, planners, and managers of training being responsible for handling financial, material, and human resources, assessing learning needs, and evolving learning objectives. They are educators and moderators, providing the main input on the training topics and leading the trainees through the training process. They are also evaluators,

responsible for assessing the success of the training. And finally, they are learners for gaining additional insights and testing and revising training methods.

The AL providers have to be focused and interested in the learning that is taking place. They have to be responsible for the arrangement of the learning environment with all its aspects, to select learning resources, and use them in a way to keep the process moving.

6. Facilitating Adult Learning

The steps in planning & implementing training activities comprise a procedure that starts with a definition of the objectives and the target group of the training. It is followed by identification of participants and other relevant stakeholders and drawing the budget for the activity; specification of the technical details such as date, venue, and schedule of the training and communicate them to the participants. An important step in the elaboration of the content determination of the training materials to be used. Then follows the training process itself, its evaluation, and reporting.

The above listed moments in implementing AL training activities focus on the following steps:

✓ **Preparing to conduct learning**

This step concerns making the difference between current and desired knowledge, assess the reasons for this difference and focus learning on the skills and/or knowledge needed to achieve the desired performance.

✓ **Developing task-oriented learning objectives**

The idea of this step is to develop new knowledge using past experiences. That is why it is important to reflect/discuss trainees' experiences and find the best solution to how the learning can be performed and what measures to be used to test how does it work.

While preparing learning objectives, the facilitator has to apply the main principles of the theory of learning and cognition relating them to the trainees – adult learners. The specific characteristics of the development of the cognitive process throughout adulthood have to be considered as well. Since the

theories (that of learning and the specific ones) are evolving progressively, the development of the learning objectives has to reflect the evolution of the specific cognitive and/or learning principles.

✓ **Using appropriate learning methods through facilitators' communication skills**

Selecting the proper learning method is of key importance for the implementation of the training process. The variety of methods is huge: from short lectures and group discussions – to field trips and assignments. Whatever is the method used, the AL facilitator's skills to communicate the knowledge to be transmitted, is the one determining the effectiveness of the training methods.

The communication can be verbal (the actual words spoken), meta-verbal (the way the words are said), and non-verbal (the use of body language). The components of effective communication comprise listening, questioning, feedback, and empathy. Thus, the AL facilitators have to possess communication skills, such as reflective listening and encouraging, the ability to paraphrasing and summarising, ability to

✓ **Planning the training event**

Usually, the training event plan considers elements like specific training topic; learning outcomes; assessment criteria; content overview; training activities, methods, and resources; time and equipment

The event structure usually encompasses an introduction that tells what will be covered; the body – the content told, and the conclusion that tells what has been covered.

✓ **Reviewing Training**

The purpose of the evaluation is to ensure that the training objectives are achieved and learners' needs are met. Evaluation determines If the right training has occurred for the right people, at the right time, in the right way, to meet the right objectives. Different evaluation models are exploited, Kirkpatrick's Hierarchy of Evaluation being in the basis of the most popular ones. According to this scale, four levels of evaluation are specified based on different assessment criteria: Level 1 Reaction - response of participants and trainer; Level 2 Learning - change in skill, knowledge or attitudes; Level 3 Behaviour - changes in job performance; transfer of knowledge and skills to the workplace, and Level 4 Results - identifies the organisational benefits/changes.

7. New Approaches to Adult Learning

The adult learning theory goes beyond Andragogy because of several developments that pave the route of the future of adult education. They are grounded on the fact that adults learn through experiences, contact, connectivity, and engagement with peers.

➢ **Learning through connectivity**

The theory of "connectivism" was first promoted by Stephen Downes and George Siemens. It explains the fast-changing digital world and involves learning experiences associated with it. The theory claims to learn through connections in networks of people and things. Learning through connectivity offers continuous acquisition of new information and development of abilities in the learner to make the difference between important and unimportant information. It is focused on connecting sets of specialized information, and in this way - upgrading the current state of knowing.

➢ **Transformative learning**

This is learning through a change of perspective through critical reflection of beliefs and assumptions. Transformative learning supplements the traditional way of acquiring information or mastering a new skill (via regular learning).

➢ **Spiritual learning**

Spiritual learning is far beyond religion. It comprises learning from a spiritual experience (e.g., music, nature, death/birth, etc.). since new knowledge is structured because of experience, this experience (in the form of stories, music, images, traditions, etc.) helps to integrate knowledge in a new manner.

➢ **Embodied learning**

Embodied learning regards the use of individual (brain & body) experiences as sources of knowledge. This is a holistic approach of learning that explores gaining knowledge through all senses in comparison with the traditional learning in the classroom that is restrictive to the

whole human body. The embodied learning rather concerns experiencing events that are out of the human comfort zone, such as facing challenges or taking risks. Namely understanding the body's reaction to these types of experiences is leading to the accumulation of important knowledge.

> **Narrative Learning**

Narrative learning also means learning through experience. Historically, learning through sharing stories has been practiced for thousands of generations. Learning comes through story hearing, telling, and recognizing. Narrative learning is a permanent process along which one identifies things that are still not understood. In this sense, narrative learning means a conceptual process in which people are engaged on a human level through their emotions, imaginations, experiences.

> **Active learning**

Active learning is an innovative teaching approach with a leading position among modern education strategies. It encourages tutors to foster a more trainee-centered, interactive, and participatory approach to learning that engages.

> **21st Century Learning**

21st Century learning embodies an approach to teaching trainees in a way that they master content while making, synthesizing, and assessing information from a huge variety of subjects and sources. During this process, trainees demonstrate creativity, communication, and collaboration. Twenty-first-century learning matches content to skills. It requires trainees to know how to learn, and the educators to teach them how to develop strong critical thinking and interpersonal communication skills.

The 21st generation of trainees is living in a technology-driven society that allows for 24/7 access to information, permanent social communication, and easily created and shared digital content. In Considering this reality, educators can influence technology to create a personalized environment to meet the emerging educational needs of this generation.

The current post-industrialized world needs a new way of teaching and learning. New educational opportunities are demanded to empower educators to teach trainees to be "self-evolving learners" since today it is not enough to know things. It is more important to be curious about finding out things.

Thus, 21st Century learning is a learner-driven one. Adaptability, complex communication skills, untraditional problem solving, self-management, and systems-thinking are the essential skills that the 21st-century workforce has to possess.

8. Adult Education & COVID-19 Crisis

The organization, delivery, participation, and access to adult learning have been deeply influenced by the COVID-19 emergency. The sector responded with appropriate measures that guarantee the maintenance of the quality of the education provided. The major approaches are as follows:

➢ Assurance of discontinuous adult learning process: although the adult learning provision by face-to-face has been discontinued, the process of education delivery continued online, including the training in the workplace. The adult education providers, both with prior experience in offering training online and without any at all, have to adapt to the new reality finding the best ways to continue serving their learners: using online platforms, email services, telephones, etc. However, some of the activities of adult learning relying on physical communication such as training via equipment, coaching, and counseling have to be postponed.

➢ Transformation of traditional education into online: restructuring of the face-to-face elements into online learning environments, the establishment of online relations with the learners, and provision of adequate infrastructure for these purposes. Special attention is given to the selection of those components of adult learning that can be

transformed, work-based learning being the most challenging. Examinations and assessments also need restructuring.

➢ <u>Assurance of equal access to learning opportunities:</u> the lack of equipment, time for learning, and digital capacities of the learners are among the main challenges faced by adult learners. Concentrated efforts are needed to support those learners that lack digital competences and/or appropriate ICT tools and those that face health-related problems to use the online educational offers. Last but not list the putative lack of self-directed learning skills among adult learners has to be considered in the support of upskilling and re-skilling through adult education.

➢ <u>Strengthening the online training capacities of adult learning providers</u>: the need to quickly adapt to the transition during the Covid 19 crisis revealed gaps in the digital competences of adult educators that negatively influence the quality of the online training. The focal point is to improve the quality of the instructions' delivery (both in design and content) and to ensure that learners gain the desired learning outcomes through online learning. Thus, the adult learning providers have to improve their tutoring and knowledge assessment skills as well as their adaptability and flexibility to the changing learning environment.

➢ <u>Funding</u>: assurance of adequate financial support for adult learning providers and educators to cover the additional expenses related to ICT infrastructure for online training delivery.

The adult learning sector answers to the Covid 19 crisis by formulating specific policy response patterns, related to:

➢ <u>Organisation solution:</u> provision of financial support to adult learning educators and learners. Measures to guarantee free of charge online courses availability and use of online data for educational purposes, state support for the online platforms, budget for job-related adult learning, flexibility in knowledge provision.

- ➢ <u>Lack of equipment solution</u>: mix of different media - telephone, postal services, email, and even TV to reach adult learners.

- ➢ <u>Information solution:</u> provision of information on available adult learning opportunities in a more transparent manner through the dissemination of factual data and instructions

- ➢ <u>Support solution:</u> delivery of assistance, learning materials, and online training for educators - access to online learning materials and online learning platforms, guidelines on how to get organized at distance, didactical instructions on using online learning tools, delivery of capacity building opportunities.

9. Adult Education – the Future

Developing and exploitation of people's competences will be a key contributor to the Covid 19 recovery process. Thus, reform in the education and training systems that deliver life-long learning options and support both individuals and institutions is foreseen. Adult education is shaping characteristics oriented towards the future of the learning systems, as follows:

- ➢ Strengthening the blended and online delivery modes of high quality to remove all barriers to online learning for all learners and ensure equal access to the process;

- ➢ Cooperation and organisation at a community level – expanded partnership within the adult learning sector and collaboration with labour market stakeholders;

- ➢ Adapting and responding to individual needs – assessment of the upskilling and retraining needs of adults and specific skills demands of individuals;

- ➢ Supporting personalized approaches to learning - examination of learners' individual potential.

10.   Adult learning 4.0: the reflection of Industry 4.0

Industry 4.0 is defined as the "*ongoing automation of traditional manufacturing and industrial practices, using modern smart technology*". It indicates the changes in the industrial/manufacturing sector as a result of digitalisation. Nowadays, the global society is experiencing the 4th Industrial Revolution - the top of a complex four centuries lasting process, encompassing the introduction of mechanical production equipment (end of the 18th Century), through the performance of mass production (end of the 19th Century) and automation exploitation through IT and electronics (the 70's of 20th Century).

Since technology advancements need a relevant educational response, the educational strategies and content have to be adapted to react to the challenges of Industry 4.0. In this context, Adult Education 4.0 can be understood as a reaction to these challenges. It must be regarded as a driver to the transition from an **industry-based society** to a **knowledge-based one**.

This transition is connected with a fundamental reorientation of work and education. The alignment of Education 4.0 to the demands of Industry 4.0. reveals the need for the production of a workforce with advanced digital competence. Although the foundations of the industrialised society are not affected, the workforce must be equipped with new skills that reflect the emergency of Industry 4.0 as a consequence of digitalization. This opens up broad opportunities for adult education that will be able to unburden the threatening rates of unemployment (about 50 and higher percentage) related to the risk from automation. Although industry 4.0 creates new jobs, unemployment at such a high rate is unsustainable. The jobs-lost affects mainly the low-skilled segment of the workforce. As a result, the strategies for re- and up-skilling of the workers must be rethought by the society to offer all its members to participate in shaping the digital revolution.

Adult Education 4.0 could contribute to the adaptation of skills to the requirements of Industry 4.0 and the upgrading of employees' current skills with digital ones that are essential for active participation in society. In addition to this optimization for Industry 4.0 – building skills in dealing

with the internet of things, the acquisition of competencies focused on learning to think, to act on own responsibility, to acquire knowledge autonomously will become the focus of educational concepts of adult learning.

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