

Adult Learning and Education From Perspective of Sustainable Development: Concept, Methodology, Reflections

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Abstract

Sustainable development has become an increasingly important topic in recent years as the world has become more aware of the need to protect the present and the future. Sustainable development is concerned with the improvement of life quality for all. Sustainable development is development that meets the needs of the present without denying the needs of future generations. In general, sustainable development means meeting human needs. The emphasis in the given article is on adult learning and education from the perspective of sustainability in different contexts: formal, non-formal, informal; the eight key competences for sustainability are defined, namely: systematic thinking competence; anticipatory competence; normative competence; strategic competence; collaborative competence; critical thinking competence; self-awareness competence; integrated problem-solving competence and the essence of these sustainability competences is explained. At the same time, some methodological guidelines for the training/development of sustainable competences for adults are proposed. The andragogic model of adult learning and education from the perspective of sustainability is presented schematically and clarified in detail, it focuses on three dominant principles: the principle of centering on the learner; the principle of centering on action and active learning; the principle of construction/reconstruction. Also important are the results of the adults' survey regarding their perception of sustainability, which led to the formulation of relevant conclusions: formal, non-formal and informal education have a determining role in sustainable development, because it is precisely within these forms of education that people can develop the necessary competences for to be part of the sustainable development of humanity, and qualitative adult learning and education must include in itself the purpose, relevance and values of sustainability.

Keywords: adults, adult learning and education, sustainable development, sustainable competences, andragogy.

1. Introduction

Adult learning and education is part of the general education framework and focuses on the same laws, regularities and principles that determine the development and functionality of education systems. At the same time, adult learning and education has specific regularities and principles:

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- the principle of autonomous/self-directed learning priority;
- the principle of situational/contextual learning;
- the principle of freedom and autonomy;
- the principle of valorizing learning needs;
- the principle of focusing on one's own learning and life experiences (Guțu, 2023, p.64-65).

Adult learning and education is exercised on individuals placed in a concrete phase of the life cycle, characterized by autonomy, independence and experience. In this sense, Knowles (1980) highlights the following peculiarities of adult learning and education:

- adults learn only when they know what they are learning for, otherwise their learning is sterile;
- adults learn when they consider new acquisitions important: knowledge, competences, attitudes;
- adults learn with pleasure when they personally participate in the development of training programs or choose certain programs from those offered by the trainer;
- adults learn more effectively when the correlation between personal experience and new knowledge is perfect;
- adults learn effectively when the knowledge provided is meaningful to them;
- adults learn without problems when the learning is based on a life situation for which they do not yet have an adequate response;
- adults learn intrinsically and extrinsically, if they are motivated.

Adult learning and education aims at the adult in his/her multiple statuses and roles generated by the responsibilities, which he/she assumes or must assume. The adult is permanently obliged to act, to positively influence the development of activity field in the case of adults, who are in professional activity. The purpose of adult learning and education is to ensure that adults, throughout their lives, participate fully in social and professional life, while at the same time supporting learning and education for sustainability.

2. Sustainable Development with Reference to Adults: Framework of Formal, Non-Formal and Informal Education

Sustainable development is a global problem, the solution of which requires the involvement of all states, all people, the problem generated by the challenges of the contemporary world: economic, demographic, climatic, social, political, value crises, as well as the regularities of human development. Sustainable development focuses on three key pillars: economic, social and environmental. Although initially, the concept of sustainable development was limited to the relationships between people's aspirations for a better life and the constraints imposed by nature. Castellani & Sala (2010) consider that sustainability is not a universally accepted concept, nor is there a unified regularity designed to allow its equal implementation in all countries and social spheres. The

concept of sustainable development can be shaped and adapted to individual contexts with different values attributed to the three key pillars.

There are several definitions of the notion of “sustainable development”, but the definition given by Gro Bruntland (2015) is more often cited: "sustainable development is development that seeks to meet the needs of the present without compromising the ability of future generations to meet their own needs".

In general, sustainable development means the satisfaction of human needs while preserving the environment so that these needs can be met not only in the present but also in the future by other generations. Sustainable development is a process of change in which resource exploitation, investment, technological development and institutional change are in harmony and enhance both current, present and future potential to meet human needs and aspirations.

Sustainable development also requires that natural systems continue to provide environmental resources and services on which humanity depends. Sustainable development disseminates the totality of human development tools, which focus on ensuring a balance between social, economic, ecological and natural environment aspects.

In Cristea’s view (2021, p.54-56), “sustainability represents the capacity of a social system and some activities carried out within it for sustainable development, achieved through the effective valorization of existing/ available resources with optimal impact in the short term, but, above all, in the medium and long term, qualitatively and strategically evaluated from the perspective of present and future requirements”.

At the level of an operational sociological concept, sustainability defines the capacity of the global social system for sustainable development, through the optimal utilization of existing resources at the following levels:

- economic (agrarian, industrial, post-industrial, managerial);
- political (governmental, non-governmental, legal, civic, media);
- cultural (scientific, technological, artistic, philosophical, spiritual/ theological);
- community (global, continental/European, territorial, national, local), natural (demographic, ecological, sanitary, climatic, geographical, etc.) (Cristea, 2021).

The reference sphere of sustainability, set in global social plan, is deepened from the specific perspective of different socio-human sciences, which define and analyze sustainable development at the environmental level (economic, political, cultural, community, natural), perspective developed intradisciplinary, interdisciplinary, pluridisciplinary/ multidisciplinary and transdisciplinary, within broad epistemological constructions that promote life sciences, earth sciences, education sciences, medical sciences, etc.

The general function of sustainability aims at the balanced social development of the planet, population and economic production, achieved through the optimal distribution of natural, human and social resources, existing or available in space and time, determined historically (Cristea, 2021).

As most countries try to keep up with the evolution of technologies, but also with globalization processes, they face some new challenges: increasing insecurity, uncertainty of the future, natural and technological dangers, dangers related to different forms of war, etc.

All these challenges require the need to look for new solutions to overcome them. Education, in this sense, is a dominant and determining factor, contributing to the formation of a new concept of sustainable development at the global and national level. “There is a need for a fundamental change in the way we conceptualize the role of education in global development, as it has a catalytic impact on the well-being of individuals and on our planet... Now, more than ever, education has a responsibility to adapt its speed to challenges and aspirations of the 20th century and to promote the right kinds of values and attitudes that will lead to sustainable and inclusive growth and peaceful coexistence” (UNESCO, 2017).

Education for sustainable development aims to develop competences that help individuals reflect on their own actions, taking into account their current and future social, cultural, economic and environmental impacts from a global and local perspective.

In this sense, people need to act in complex and difficult situations to a sustainable extent. Education for sustainable development is an integral part of the quality of education, but also of the concept of lifelong education. Education for sustainable development also permeates adult learning and education in various forms: formal, non-formal and informal. The specifics of adult learning and education for sustainable development relate to the following:

- adults have some sustainable skills previously formed in formal education institutions;
- adults have more life experience, but also experience in different fields; social, professional, political, etc.;
- adults have real and contextual needs for sustainability competences, as active citizens of society to contribute to the sustainable development of the field of activity, as well as for personal achievement;
- at the same time, adults are more resistant to change, it is very difficult to let go of visions, which contradict democratic values, the truth and the objectivity of the subject's perception;
- adults show greater openness to self-training, active and transformational learning with the immediate valorization of new cognitive, behavioral and affective activities.

Namely Adult Pedagogy – Andragogy (Guțu, 2023) is oriented towards action and transposition and supports autonomous, self-directed, participatory, collaborative learning, oriented towards real adult problems, focused on inter- and trans-disciplinarity and the connection between formal, non-formal and informal education. Transformational adult pedagogy (Bankolé, Nouatin & Gandonou, 2023) ensures the development of sustainable competences, which are, at the same time, transversal, multidimensional and context-independent. So competences describe the specific

acquisitions that learners need to act and self-organize in different contexts and complex situations. They include cognitive, affective, motivational, volitional, axiological elements and represent the interconnection between knowledge, capabilities and attitudes.

Therefore, education for sustainable development (UNESCO, 2017) has the following key competences for sustainability as a reference framework:

- **Systematic Thinking Competence:** the ability to recognize and understand relationships; to analyze complex systems; to think about how systems are included in different domains and at different dimensions; and to deal with uncertainty.
- **Anticipatory Competence:** the skills to understand and evaluate multiple futures – possible, probable and desirable; to create your own vision for the future; to apply the precautionary principle; to evaluate the consequences of actions; and to deal with risks and changes.
- **Normative Competence:** the ability to understand and reflect on the norms and values that underline the actions of the respective person; and to negotiate the values, principles, goals and targets of sustainability in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.
- **Strategic Competence:** the skills to collectively develop and implement innovative actions that continue sustainability at the local level and beyond.
- **Collaborative Competence:** the ability to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate problem solving through collaboration and participation.
- **Critical Thinking Competence:** the ability to question norms, practices and opinions; to reflect on one's own values, perceptions and actions; and to take a position in the sustainability discourse.
- **Self-Awareness Competence:** the ability to reflect on one's own role in local communication and in (global) society; to continuously evaluate and further motivate their own actions; and to deal with their own feelings and desires.
- **Integrated Problem-Solving Competence:** general ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the above-mentioned competences.

Sustainability competences are what learners, including adults, need to face complex current and situational challenges.

The concept of integrating education for sustainable development into adult educational policies and programs involves the development and application of the Core Curriculum: Competences for Adult Learning and Education (Guțu et al., 2022), which includes in its structure, along with key competences for lifelong learning, specific competences in areas of adult activity and key sustainability competences. It should be noted that all categories of competences are interconnected and complementary. The teaching staff in the process of developing concrete study programs for adults and

identifying methodological tools; it also establishes the goals of learning, dictated by the competences system, as well as the needs of the learner, including from the perspective of sustainability. Curriculum must ensure that adults develop not only basic skills, professional skills, but also transferable ones such as critical thinking, problem solving, communication, solving risk situations, conflict resolution, etc.

It is important to consider the diversity of categories of adults (are in professional activity, have abandoned professional activity; unemployed; retired, etc.). The diversity of their learning needs, dictated by the labor market, the social sphere, but also by the needs of sustainable development – this function falls to those who think and promote adult education, in general, and on the dimension of adult sustainability competences training.

3. Forms of Education for Sustainable Development: Formal Education, Non-Formal Education, Informal Education

Education and, in particular, education for sustainable development is carried out in three basic forms: formal, non-formal and informal.

Formal Education can be described as any education that takes place in a structured environment such as school, college, university or other formalized structures. Namely, within the framework of formal education, the basic skills of those who learn are formed and developed, including those of sustainability. Adults participate in educational processes within formal education institutions only in the case of retraining, obtaining high school education (in case the adult for various reasons did not complete high school education), qualification, lifelong professional training, etc. In this case, the results of adult learning, obtained formally, include knowledge, capacities, attitudes as cognitive, affective, social, professional acquisitions, but also those of a sustainable nature, important for the sustainable development of the respective field.

Non-Formal Education is defined as any personal or social education program, designed to improve certain competences outside the formal curriculum, or to carry out certain educational activities organized outside the compulsory education system, respectively proposed by various educational institutions. Non-formal education aims, among other things, to broaden the knowledge horizon of the population, to create optimal conditions for the personal and/or professional perfection of the individual, or his/ her initiation into a new field of knowledge, to contribute to the recreation and relaxation of the person, such as and spending free time in an organized and pleasant manner, to ensure an adequate framework for the formation of skills and the manifestation of talents, etc. (Mbo, & Butnaru, 2023).

The basic characteristics of non-formal education: flexibility and greater openness in relation to formal education; informal pedagogical design, open to interdisciplinarity and permanent education, to innovation and experiment; optional, informal evaluation with emphasis on stimulation; lower costs compared to formal education.

Through these characteristics, non-formal education is placed outside the formal education system, but in close correlation with it, being intended to offer its services to children and young people and to achieve the expected/ identifiable educational objectives. Non-formal education is part of the concept of lifelong education and is seen as a strategy for the creation/ establishment of the knowledge-based society.

Non-formal education is a valuable way of learning for sustainable development because it can be tailored to the specific needs of adults and can be more flexible than formal education issues. An advantage of non-formal education is the opportunity to involve a wide range of adults. This is important because sustainable development is an issue that needs to be addressed by people of all ages and backgrounds. Non-formal education programs can be designed to target specific categories of adults, such as those working in certain fields or living in certain geographic areas. This means adults can shape sustainable purchasing in a way that is relevant to their lives and work.

Informal Education Provides: an awareness of contact with the environment; the moment of triggering an interest in knowledge for the subject; the possibility of moving from a circumstantial interest to a more comprehensive integration; the possibility of a personal exploration, without obligations or firm prescriptions; a margin of freedom of action for developing a personal project; the possibility of managing your own training process (Guțu et al., 2021).

Informal education is often more open to creativity and flexibility than formal education and can respond to more needs of adults. Informal education has opportunities and potential to be a powerful tool for building sustainability competences.

Therefore, sustainable development is a global challenge that requires the involvement of all people, of all ages, including the elderly.

In this aspect, formal, non-formal and informal education plays a decisive role in ensuring the sustainable development of society. Formal education lays the foundation for sustainable development. Non-formal education complements, expands the acquisitions accumulated in formal education and offers new opportunities to develop sustainability competences. Informal education is unplanned and offers more general opportunities for development, it is more flexible and closer to the needs of adults.

4. Methodological Guidelines for Training/ Developing Sustainable Competences of Adults

Education for sustainable development is part of the concept of lifelong learning and must be integrated into adult learning and education programmes. Education for sustainable development should not be seen as an addition to existing educational programs, but as an integral part of them in terms of content, process and outcome.

Adult learning and education programs must be oriented not only to the satisfaction of adult learning needs, dictated by the labor market, social changes, etc., but also to the development of critical thinking, solving problems and case situations, solving conflicts,

self-training, etc., which is included in the essence of sustainability competences. An andragogic approach (the pedagogical perspective of adults) to the process of training/developing competences for sustainability involves a methodology oriented towards action, participation, the development of creative and innovative thinking, towards the valorization and expansion of one's own experiences: the organization of learning and education process of adults from the perspective of sustainability focuses on a system of regularities and principles, a system of forms, strategies, technologies and methods of learning and includes seven consecutive stages: identification of learning needs in adults (diagnosis), conceptualization (identification of andragogic learning paradigm), design/planning of curriculum and process, the creation of learning environment, the implementation of teaching-learning, the evaluation of learning outcomes, the implementation of reverse connection/correction of the learning process (see Figure 1.)

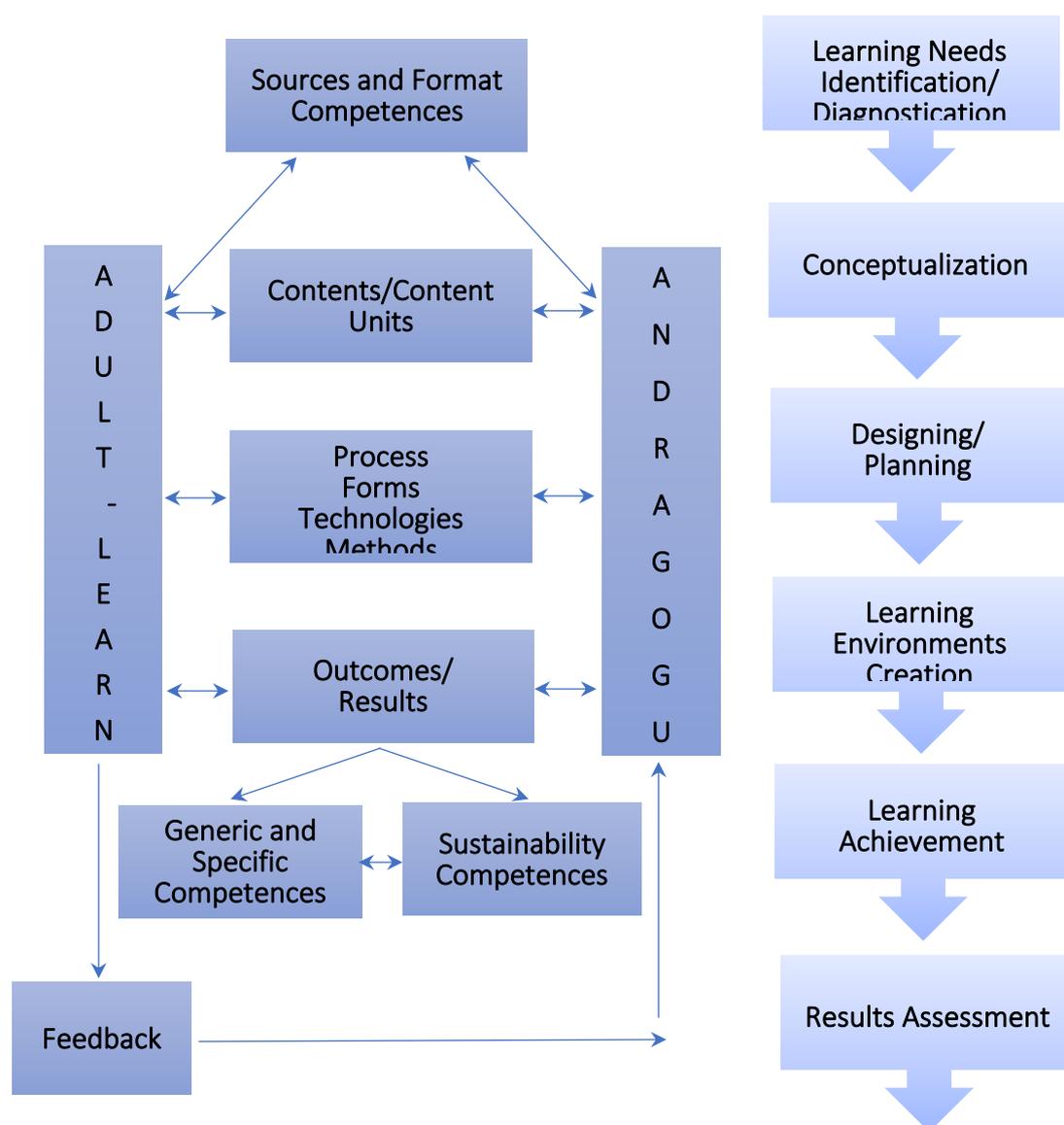


Figure 1. Andragogic Model of Adult Learning (elaborated by the author)

The proposed **andragogic model** integrates the dimension of sustainability in all its components, first of all, in contents and purposes. In this sense, the contents will be developed with the units/themes oriented towards education for sustainable development (health and well-being, decent work, etc.), and the general and specific competences will be correlated with those of sustainability: systematic thinking, strategic thinking, critical thinking, problem solving, etc. It should be noted that the substance of sustainability competences is largely in line with the needs and expectations of adults regarding learning. Most of the adults involved in the learning activity claim that in order to integrate more effectively in the labor market, in different communities or for their own achievement, they need problem-solving competences, collaboration, creative and critical thinking, etc., sustainable competences, which are at the same time transversal, transdisciplinary.

There are several pedagogical approaches to adult learning and education, including for sustainable development education as a component of lifelong education. The andragogic model of adult learning and education from a sustainability perspective focuses on three dominant principles:

- The principle of focusing on the learner;
- The principle of focusing on the action and active learning;
- The principle of construction/ reconstruction.

The principle of centering on adult learner has the following benchmarks regarding the organization and stimulation of learning processes: focusing on previous experiences and knowledge; focusing on own learning needs generated by different contexts and factors; reflection on own purchases; the andragogue is also a facilitator of adult learning. It is important for the adult to learn at his own pace, to be an active participant in establishing learning goals and strategies.

The principle of centering on the action and active learning engages adults to be actively involved in the learning process and to reflect on their own experiences in carrying out projects, case studies, moderating a workshop, etc.

Action-oriented learning refers to Theory regarding learning cubes: (1) a concrete experience; (2) observation and reflection; (3) formation of abstract concepts for generalization; (4) their application to new situations (Kolb, 1984).

The learning and education of adults through action creates conditions for the satisfaction of personal learning needs, ensures the development of competences, including those of sustainability, ensures the development of value orientations by correlating the acquisitions formed with the personal experience and life of the adult.

This principle generates the application of several learning methods and techniques, oriented towards action and constructive activity: modeling sustainable situations; solving problem situations; solving the case study; real projects; the storm of ideas, etc.

In our view, the most effective for the development of sustainability competences are those that moderate situations, in which the adult must demonstrate the ability to solve the problem, to plan events, etc.

The principle of construction/ reconstruction is the closest to the learning needs of an adult, dictated by the dynamism of processual and social change, it is the need to promote innovations, to produce innovations at the workplace. To understand the world more deeply, adults must change the ways they perceive the past, present and future. This principle generates the application of specific methods: debates, the method of denial, the method of construction/reconstruction of social, professional, behavioral models, the creation of utopian scenarios, exercises to build the vision of the future, etc.

5. Reflections of Adults on Needs for Developing Sustainability Competences

Although the Republic of Moldova is committed to achieving the Sustainable Development Goals "EDUCATION 2030", many issues, in this sense, are still not up for debate and, first of all, those of the fusion/ integration of the key sustainability competences in the educational curricula at all levels of the education system, including the dimension of adult learning and education. First of all, it is required to carry out an extensive study at the national level on the state of promoting education for sustainable development. We tried to carry out an express study on adults' perception of their needs for training sustainability competences and training , teachers, andragogues, trainers to carry out adult education for sustainable development.

In the study we identified the following variables:

- Knowledge and demonstration of sustainability competences by adults in professional and social/ community activity.
- The needs of adults in order to develop sustainability competences within lifelong professional training.
- Knowledge and application of methods for developing sustainability competences in adults.

The questionnaire was submitted to 85 teaching staff, who are in lifelong training and 15 teaching staff - andragogues, organizers of the learning process and education of adults.

Within the Moldova State University operates the Department of Continual Training of Teaching Staff, which throughout the year organizes training courses with different categories of teachers. This process is carried out by university teachers with the functions of trainers, also called andragogues. It is these people who constituted the target group of respondents. Their questioning was carried out during the months of March-April 2023. The variables and questions of the questionnaire were determined by the authors in relation to the issue addressed in the article.

In relation to the given variables, three questionnaires were developed, which included the following questions:

1. *Do you know the Concept of Education for Sustainable Development?*
2. *How did you learn about Education for Sustainable Development?*
3. *Can you identify the competences a person needs for sustainability?*

4. From the list of competences presented, which one do you need?
5. Do you know the most effective methods of training/ developing sustainability competences in adults?

The survey results are presented in Table 1.

Table 1. Results of Questioning Adults Regarding Problem of Sustainable Development Education (elaborated by the author)

Nr. crt.	Question	Results	
		Teachers	Andragogues (Teachers for adults)
1.	Do you know the Concept of Education for Sustainable Development?	<ul style="list-style-type: none"> • 10% stated that they understand the essence of ESD • 90% - seem to understand, but cannot explain 	<ul style="list-style-type: none"> • 40% stated that they know the essence of ESD • 50% know a small measure • 10% do not know the essence of ESD
2.	How did you hear about Education for Sustainable Development?	<ul style="list-style-type: none"> • at lifelong training courses • from educational policy documents 	<ul style="list-style-type: none"> • from educational policy documents • Education development strategy "EDUCATION 2030", SDG 2030
3.	Can you identify the competences a person needs for sustainability?	<ul style="list-style-type: none"> • 60% named professional competences • 25% named communication competences • 15% - behavioral competences 	<ul style="list-style-type: none"> • 70% named professional competences • 10% named constructive thinking competences • 20% - strategic development competences
4.	From the list of competences presented, which one do you need?		
	4.1. <i>systemic thinking competence</i>	100%	100%
	4.2. <i>anticipatory competence</i>	100%	100%
	4.3. <i>normative competence</i>	90%	80%
	4.4. <i>strategic competence</i>	80%	100%
	4.5. <i>collaboration competence</i>	70%	70%
	4.6. <i>critical thinking competence</i>	100%	90%
	4.7. <i>self-awareness competence</i>	100%	90%
	4.8. <i>problem-solving competence</i>	100%	100%
5.	Do you know the most efficient methods of training/developing sustainability competences in adults?	<ul style="list-style-type: none"> • 55% stated that they do not know, but think that the following methods can be applied for this course: brainstorming; Case Study; problem-solving situations; projects etc. 	<ul style="list-style-type: none"> • 80% consider that traditional methods can be applied • 20% - do not know what the specific methods are.

Analyzing the results obtained from the questioning of the respective respondents, we can find the following:

- General education teachers and andragogic teachers, for the most part, do not know the essence of the Concept of Education for Sustainable Development (ESD) and do not consciously and systematically promote it.
- Although the issue of education for sustainable development is a priority in the Education Development Strategy "EDUCATION 2030" and in the Implementation Program of this strategy (EDUCATIA 2030, 2023), it was not sufficiently transferred into operational documents for the development of education, including for adults.

- None of the respondents consciously noted that they know and apply the specific methods in order to train/ develop sustainability competences. But many have intuited and named some of these methods.
- Practically 80-100% of respondents noted that they need to develop all eight key sustainability competences, realizing that they possess some of them at an insufficient level.

In conclusion, we can affirm that there is a need to integrate education for sustainable development in all learning contexts: formal, non-formal and informal, in the given case, taking into account the particularities of learning and education of different categories of adults.

6. General Conclusions

Sustainable development is a global, regional and national challenge that requires the involvement of all structures and all citizens. Formal, non-formal and informal education have a decisive role in sustainable development. It is within these forms of education that people can develop the necessary competences to be part of the sustainable development of humanity. Sustainable development is a process that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Therefore, quality adult learning and education must include purpose, relevance and values of sustainability.

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