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The contribution of quality management to the efficiency of education for sustainable development

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Abstract

Currently, in the education of adults, including through the studies at the university programs of professional master's degrees, there is an emphasis on initiation into quality management. Quality management, in turn, contributes to the efficiency of the educational process as a whole. Our study also includes the variable education for sustainable development, which is improved by advancing quality standards, with specific indicators and descriptors. All managerial functions, from planning to improvement, must be related to the imperatives of sustainable education in local and global contexts. Thus, we aim to sensitize the investigated subjects and potential readers to the interconnection of education for quality and sustainable development as elements of new education. The latter can offer viable solutions to the problems of the contemporary world. We propose to carry out mixed (qualitative and quantitative) research based on a questionnaire applied to a representative batch of master's students from the State University of Moldova, who study the discipline of Quality Management in Education. Representing different types of educational institutions and localities from the Republic of Moldova, the investigated subjects will evaluate the reflection of education for sustainable development in the quality management system of the institution and will analyze the school documentation from the given perspective. We are interested in ascertaining the level of awareness of the problem reported by us and identifying opportunities and solutions for improvement. The hypothesis of our study is: does the quality management in school influences the efficiency of education for sustainable development. The little representation of objectives for sustainable development in school and community policies and practices causes serious ecological problems and perpetuates local and global crises. Insignificant interventions by decision-makers, community, and educational actors perpetuate ecological catastrophes/bombs and enormously affect the well-being of the population.

Keywords: education, quality, management, sustainable development.

1. Introduction

Quality management in education has become an imperative since the second half of the last century, being inspired by the business sphere and promoting internationally valid standards. Thus, since the 1970s, UNESCO has been promoting the paradigm of quality education at the level of education policy, for the critical overcoming of the traditional model of approach to education and its replacement by a new paradigm, based on the direct relationship between education and society (Cf. Cristea, 2015, p.283). In our immediate context, starting with the Education Code of the Republic of Moldova (2014), the significance of the concept of *evaluating the quality of education* is officially

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established, as a *multi-criteria examination of the extent to which the educational institution and its programs meet the national reference educational standards*. In Article 7 of the same document, to the fundamental principles of education, we find the *principle of quality*, based on which *educational activities are related to national reference standards and good national and international practices.*

According to the document cited above, the education system in our country is provided with functional mechanisms (regulations, methodologies) for promoting and ensuring the quality of education at the level of institutions, processes, and results obtained. Thus, in the last 30 years, there have been useful legislations in this chapter, and the public policy system, decision makers of different ranks, and education managers have levers for planning, implementing, monitoring, evaluating, and optimizing quality. We would not like the multi-aspectual use of the concept of quality and all the related notions to become only slogans or statements, but, for real, to *regulate the accounts* on various levels to optimally function the institutions and the maximum satisfaction of the beneficiaries of all ages.

The link between the effective management of education and sustainable development is a direct and functional one, with mutual benefits for both variables. Sustainable development and education for sustainable development prevailed a few decades later than quality management, globally, but its importance is huge, even though often (the immediate reality shows us) the content is neglected or the phrases given are used for free.

To complete the legal basis of our study, we also analyzed the Education Code from the perspective of its sensitivity to sustainable development. Thus, Article 4 (1) refers to state policy in the field of education, which specifies that "education is a national priority and the primary factor of the sustainable development of a knowledge-based society." In Art. 5 a and b of the same document - *the mission of education*- is supposed, among other things, to meet the educational requirements of the individual and society and to develop human potential to ensure the quality of life, *sustainable growth of the economy and the* well-being of the people. Also, in art. 75.- *the mission of higher education* - states that it "is a key factor for the cultural, economic and social development of society increasingly based on knowledge and a *promoter of* human rights, *sustainable development*, democracy, peace, and justice". Therefore, the analyzed document and the introductory arguments presented justify the conjugated and comparative approach of the variable's *quality management in education and sustainable development*, to identify common axiological and praxiological landmarks, and to increase their relevance and functionality *here* and *now*.

2.   Conceptual Landmarks and Regulators

In the Romanian space, including in the Republic of Moldova, policy studies and theoretical and practical studies in the field of education sciences, in terms of quality management in education and education for sustainable development, are quite a few.

Before resorting to some reference sources, we researched the profile page of the National Agency for Quality Assurance in Education and Evaluation (ANACEC) - http://www.cnaa.md/theses/pedagogy/   - and we found that, in the last 10 years, 3 doctoral theses (from approximately 200 theses) have been defended related to the fields investigated by us: Theoretical and methodological landmarks of ecological education in primary education in the Arab sector of Israel (Shalash, 2017) and Theoretical and methodological landmarks for training the competence of climate resilience in adolescents (Damian – Timosenco, 2020). The thesis of doctor habilitate "The theory and methodology of quality management in higher education" comes with an original scientific result that "consists in substantiating, elaborating and validating the Quality Management Paradigm – emerging scientific product, generating new praxiological solutions in the issue of educational management in the Republic of Moldova" (Baciu, 2013, p. 5).

Generally speaking, under the positive connotations of the ancient concept of *education,* "the management of education becomes, by definition, quality management, engaging the functions of *the global-optimal-innovative* leadership of education and their corresponding structures at all levels of the system. Their specificity and interdependence is an objective reality that the decision-maker must know how to fully capitalize, respecting the concrete conditions of design and realization of education and training in the chariot of the education system and process" (Cristea, 2000, p. 232) 15 years later, Prof. S. Cristea approaches in a complex manner, after the work cited above, quality in education, inferring that quality management in education can include "the leap from the pedagogical model of quality in education to the pedagogical reality of quality education, which is possible only by capitalizing on the axiomatic framework promoted by the curriculum paradigm in the postmodern, informational, knowledge-based society, based on the capacity of the system and the educational process, of quality, to evolve in an open pedagogical system, to anticipate the sustainable development of the social-cultural, economic, political, community, natural system (Cristea, 2015, p. 288).

Given the fact that Prof. S. Cristea directly connected the quality of education with sustainable development, which we discovered in the documentation process of the given study and not in the process of elaborating on the issue of the article, we enjoyed and guided more firmly the value orientation of the research. As a 3rd Millennium Goal, which is among the 17 Sustainable Development Goals, *quality education* includes in the International Agenda 2030 "guaranteeing and promoting lifelong learning opportunities for all". To achieve the 17 Sustainable Development Goals (SDGs) and 169 specific objectives or targets, focusing on three main areas of sustainable development: *economy, society, and the environment,* and to measure progress in achieving the SDGs' targets, global monitoring indicators have been approved for each target. SDG 4 underlines that education is the foundation for addressing the social, environmental, and economic challenges facing the world today, the global target being: "by 2030 - ensuring that all students acquire the knowledge and skills necessary to promote sustainable

development, including, inter alia, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and the contribution of culture to sustainable development" (SDGs, p. 9).

Education for sustainable development (ESD), in its turn, also includes an essential component of environmental/ environmental education, which has as its objectives the awareness of the educated "in the line of cultivating respect for the natural environment, the rational use of resources, the accountability about waste management, the aestheticization of the environment, the increase of resources." Ecological illiteracy" generates irresponsible conduct with direct effects in the present and, above all, in perspective (Cucoș, 2002, p.56). Completing education for the environment or extending it to education for society and economic education completes the vision and targets of the much-discussed sustainable development goals.

In the same vein, we adhere to the conclusion that, to practice a quality education, the teacher will resort to "the complex combination of knowledge, capacities, and skills, developed at a high level of performance, we are talking about parameters of professionalism ..., a category that also includes specialized professional training, vocation, pedagogical aptitude, sense of responsibility and the desire for self-improvement, all these acquisitions, capitalized in an integrated manner" (Şerbănescu & al., 2020, p.28). Quality education/education in general cannot exclude from the significance of the component of education for sustainable development.

With the recently approved *Education 2030* Strategy, which is based on the Sustainable Development Goals (Cf. *Sustainable Development Goals...)*, similar to the *Moldova 2030* strategy, quality education is a significant presence, running like a red thread through all the strategic goals, including:

• **Objective 2** - Inclusive education for an inclusive society - is geared towards ensuring access to quality education for all;
• **Objective 3** - Qualified teachers for quality education;
• **Objective 4** - Society, community, and family for quality education;
• **Objective 8** - Scientific research for quality innovation in education.

In the same vein, the Strategy proposes a series of priority lines of action, aimed to increase the performance of our sector, by making the network more efficient, modernizing the infrastructure, and strengthening managerial capacity and quality culture at all levels of the education system. In turn, the optimization of education management will be linked to the promotion and development of participatory, democratic, pupil and student-friendly management, information management, as well as management integrity in the decision-making process, management reform at all levels of the education system from the perspective of strategic leadership, efficient and transparent management, and public accountability.

3. Methodological framework

The research purpose consists of the validation of the working hypothesis: does effective quality management system exist in the educational institution; and how it contributes to the effectiveness of education for sustainable development.

The argues for *research questions* proposed in the questionnaire are based on the following contradictions: Studying the strategic development documents of educational institutions and in particular, the strategic development plans drawn up for the last 5 years, we found that they are not sufficiently linked to the sustainable development goals (proposed in 2015 and becoming key elements of the 2030 Agenda in 2017) nor do they prioritize education quality management, which officially became a political and strategic priority of the education system in 2014, with the promulgation of the Education Code. Another contradiction is that, at the declarative level, the given variables are still sporadically found in certain structural elements of the SDP - for example, quality education as an element of the mission and/or vision; the issue of quality education, but not quality education management - in the SWOT analysis or the issue of environmental/ecological education as a factor influencing the strategic development of the institution in the PESTE analysis. In operational planning, however, these elements can be inferred indirectly and we cannot see that the educational institution has a quality management system or that the planned actions lead directly to quality management to ensure sustainable development.

Research instrument: The praxiological study of the problem we are addressing was conducted with a group of students from the Master's program of professionalization "Educational Management" at the State University of Moldova, in the study year 2022-2023. For the practical validation of the 2 variables - quality management in education and education for sustainable development, we used a questionnaire developed by us, consisting of composed items (see Annex).

Research procedure: Starting from these contradictions, to ascertain the situation in the field, from the practitioners' point of view, we developed the given evaluation sample, which was completed by 26 master students, representing pre-university educational institutions in the Republic of Moldova, starting with kindergartens and ending with technical vocational schools.

Participants: The group of respondents is characterized as 26 women, average age – of 37 years, 73% of them work in urban areas and 27% in rural institutions. The average overall length of teaching experience is 9 years, and managerial experience - 2.5 years.

4. Results and discussions

According to the diagnosis of the sustainable development goals, in general, and quality education, in particular, only one respondent rated the level of reflection of the SDGs in the education policy documents known by the respondents as minimal, not significant,

while the other answers are divided as follows: (30.8% - excellent and very good) and 34.6% - good.
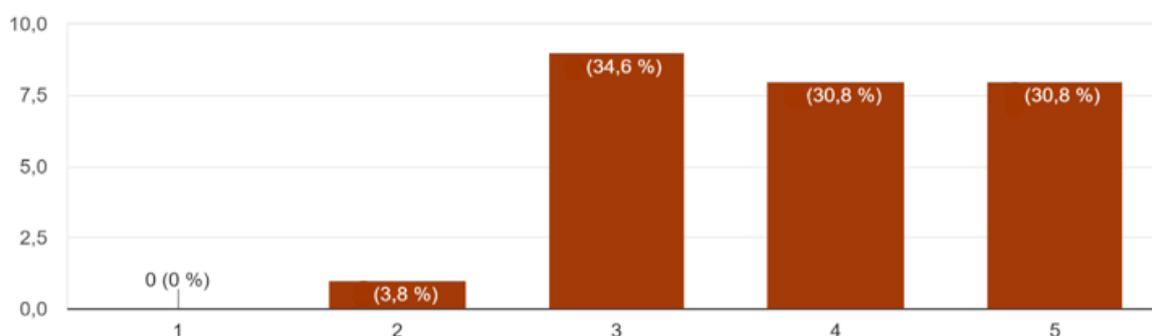
Figure 1. Perception of the level of reflection of the SDGs in education policy documents

The perception of the SDGs' implementation level is characterized in the figure below and we see that the situation is less positive, but traditionally what is "written/planned" is better than what is implemented. The Republic of Moldova, as a country in the process of preparing for European accession, still has a lot of work to do in this area.
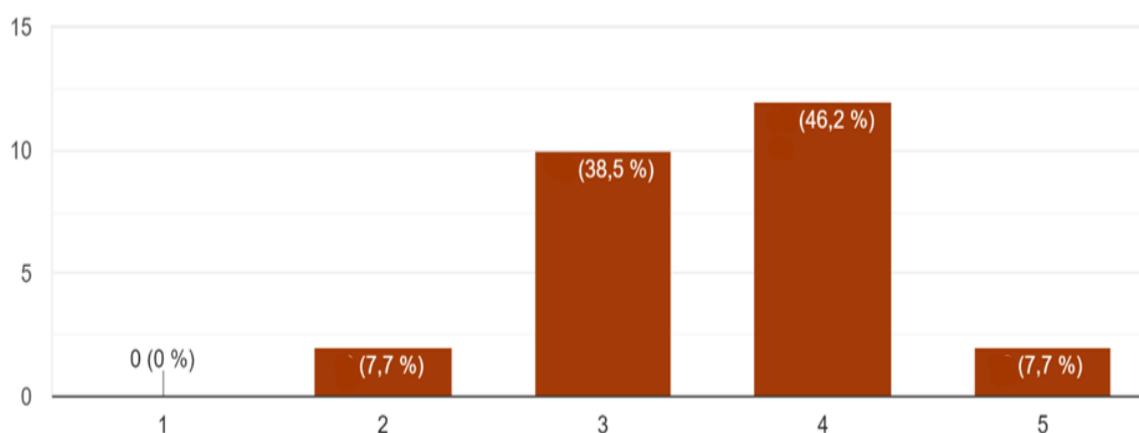
Figure 2. The general perception of the level of implementation of the SDGs

For the item related to the selection of 3 of the SDGs which, according to the respondents, are least addressed in the curriculum, but also in general in other documents, the range of answers, given in order of priority (those with more options), is as follows:

• Peace, justice, and strong institutions
• Life underwater
• Industry, innovation, and infrastructure
• Responsible consumption and production
• Poverty-free
• Climate action
• Sustainable cities and communities
• Zero hunger
• Reduced inequality

The answers obtained and listed above are useful for the designers of curriculum pieces, but also for the managers themselves, who have the freedom to supplement them with curricula at the school's discretion. We also conclude that the situation at the country level in the field we are addressing confirms what the respondents have reported and many changes are to be made, as the SDGs highlighted are very important for our country and each individual, directly influencing the quality management of school education and education for sustainable development.

The next item aimed at selecting 5 SDGs directly reflected in the Strategic Development Plan of your institution, as a basic document reflecting the policy of the institution, but also the implementation of educational policies in general. The situation is very mixed and is shown in Figure 3.
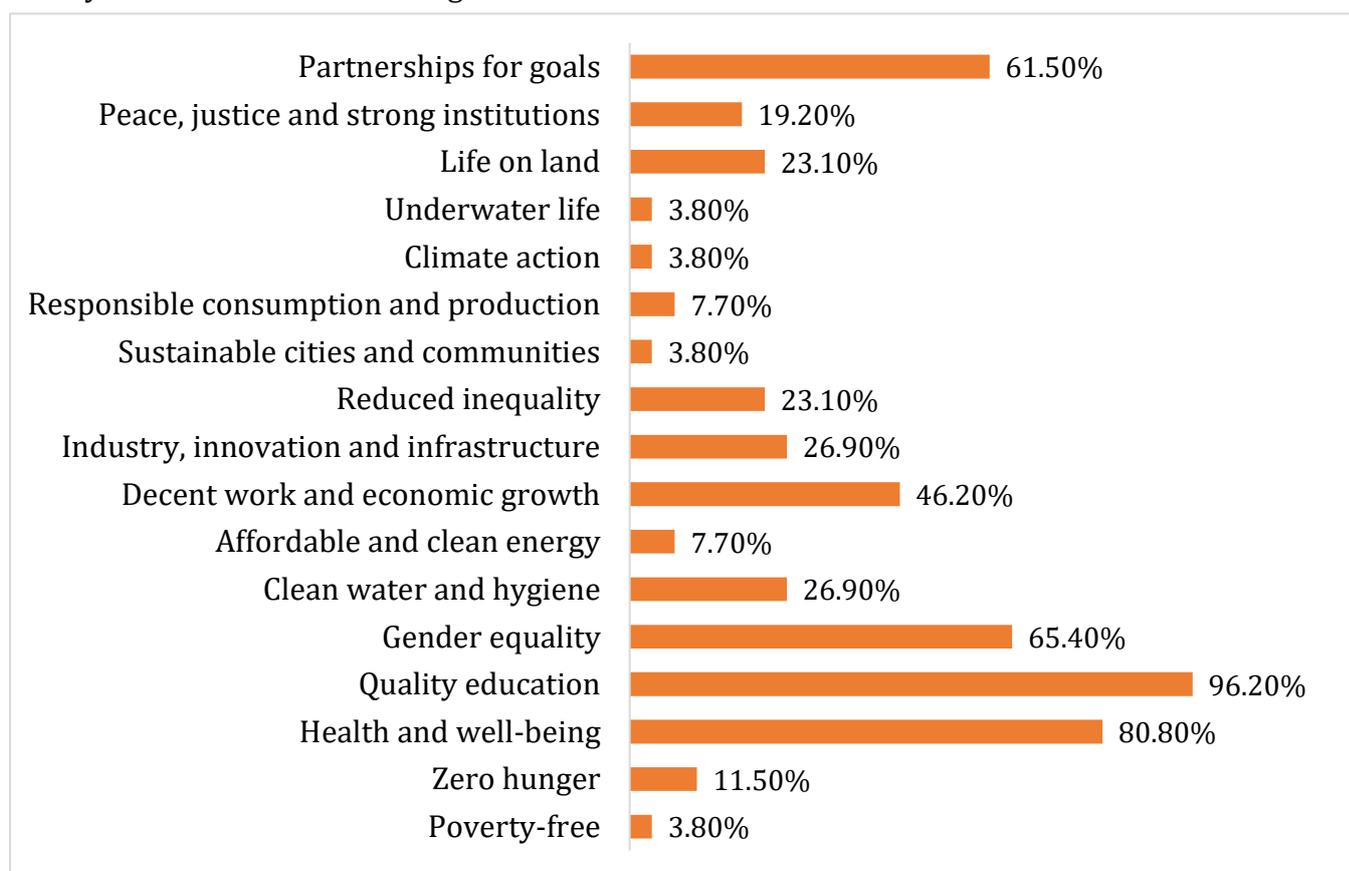
Figure 3. SDGs prioritized in the DDA

Of the SDGs that directly support quality management in education, in the respondents view, the following were logically highlighted in order of priority: quality education (96.2%), followed by health and well-being (80.8%), gender equality (65.4%), partnerships for goals (61.5%), decent work and economic growth (46.2%) and reduced inequalities (34.6%).

Why do you think that your institution has shortcomings in the practical use of certain objectives? These are explicitly shown in the diagram below and we believe that both teacher and management training and teaching material resources could be well expanded and strengthened as important means of implementing the SDGs. Most

initiatives in this regard are taken at the central level, but we point out the need for local initiatives and mobilization to reduce, at least, the causes mentioned by respondents.

Figure 4. Causes of shortcomings in the practical use of the improved SDGs

In the item that aimed to identify solutions *that would be to be found/ proposed to the above problem(s)?* - several were proposed, but these can be summarized in a few basic categories:

a) Training, training of teachers and managers;

b) Inclusion of the given strategies in the curricular contents and revision of the curricula;

c) Motivating teachers with a more motivating salary;

d) Sufficient materials and literature, equipping libraries;

e) Involvement in external projects, identification of donors

involvement in school life

g) Effective communication, active involvement, and collaboration between institutions

h) Cooperation and solidarity between all educational actors. The motivation of employees to work effectively. State support.

The question - *What does education for sustainable development mean, in your view?* – gave us a varied track record of the answers, which can be classified in the following table.

Table 1. The Significance of Education for sustainable development

Educational aspects	**Social aspects**	**Integrative aspects**
- environmental, economic, and social education; - enables each person to acquire knowledge in various fields and produces motivation; - developing present needs for future generations requirements; - development of educational skills;	- to society's standard of living; - to a good and healthy life; - to the future; - quality, well-being, partnership, consistency, efficiency, fairness; - tolerance, and responsibility in the use of resources;	- is the orientation of humanity towards solving the problems facing the whole planet; - a paradigm based on ethics and education for sustainable development and aims to develop skills that help citizens

- ensuring opportunities for all pupils to acquire knowledge, skills, and competencies needed through education; - continuous development of professional skills; - developing career orientation, a flexible, resilient, and responsible personality; - creating goals that will be achieved shortly or will have an impact on the future and will bring about essential changes in the educational process and the perception of the world around us; - the quality of education - acquiring the necessary knowledge in time to reflect on one's actions, taking into account current cultural diversity.	- critical thinking; - responsible action at all levels.	reflect on their actions, taking into account their current and future social, cultural, economic, and environmental impacts; - a process of development that meets the needs of the present without compromising the ability of future generations to enjoy these benefits.

Regarding the self-assessment of the level of information and training on *education for sustainable development and Sustainable Development Goals*, the overall situation is average. The SDGs are nothing new, at the national level things have been going quite well, with the *Education 2030* Strategy recording them and hopefully the related National Strategic Implementation Plan will bring the long-awaited fruits, which, admittedly, do not come overnight, requiring time and resources.
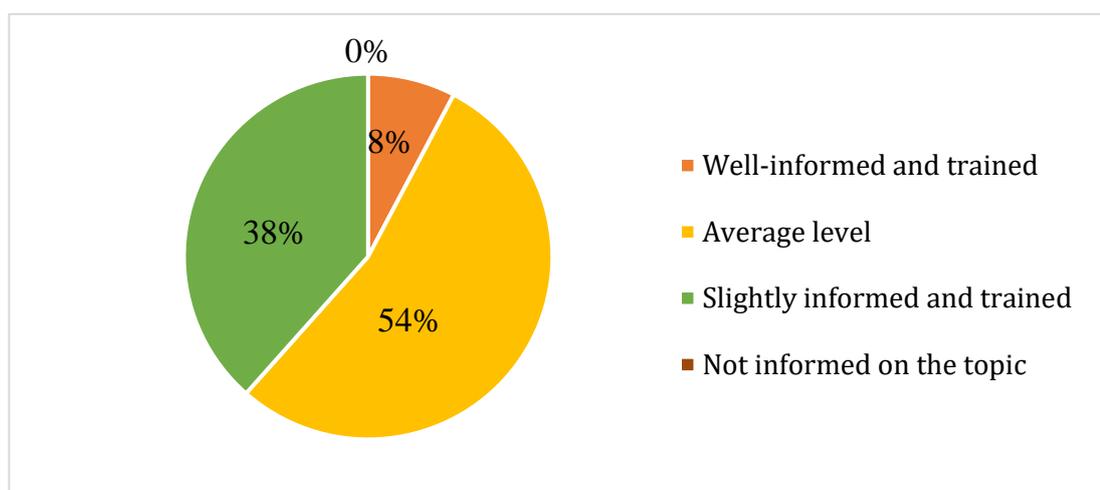
Figure 5. Degree of familiarity and training on SDGs and ESD

Concerning the direct managerial domain, the level of information and training for the application of quality standards and indicators in education, respondents consider

themselves prepared according to the response scale in the following diagram. We confirm in this respect the multitude of information and training programs proposed through various projects, including those initiated by the relevant ministry and the voluntary sector. These do indeed help managers a lot, but the application with visible impact is yet to be extended and noticed.
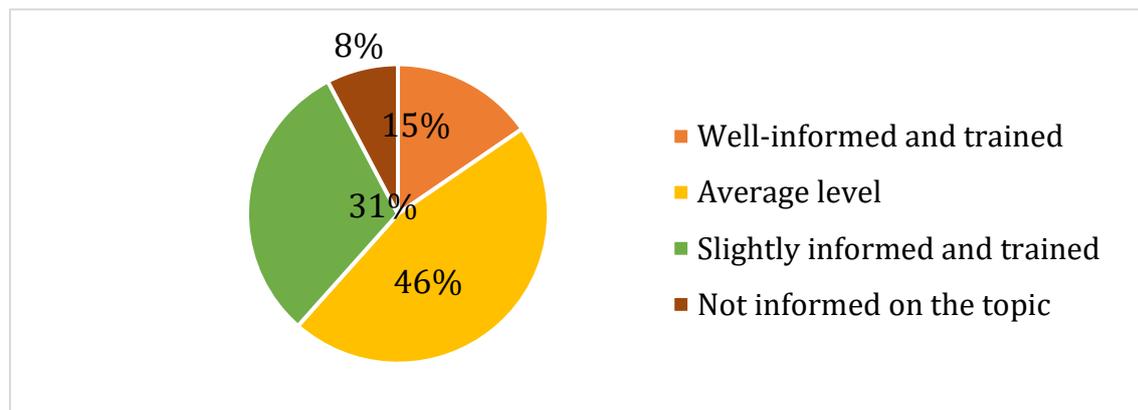
Figure 6. Level of managerial training in the field

Question also of an estimative nature, in the spirit of traditional school evaluations - *What grade would you give, overall, to the management of the quality of education to ensure sustainable development in your institution?* - gave us a generally positive picture of reality. This is because only one respondent chose the answer "minimal", all the others (96.2%) rated the situation as good, very good, and excellent. However, we would like to express some reservations about certain realities, where the problems of sustainable development are quite serious, starting with environmental and continuing with economic and social issues. However, if each institution does its work well in this direction, if its actors' approach sustainable development on the three interlinked levels: environmental, economic, and social, we could have visible results in at least some communities. We are still waiting for good local practices, which could "mollify" and mobilize a growing number of other localities, which are still in a "dangerous" and short-sighted phase.
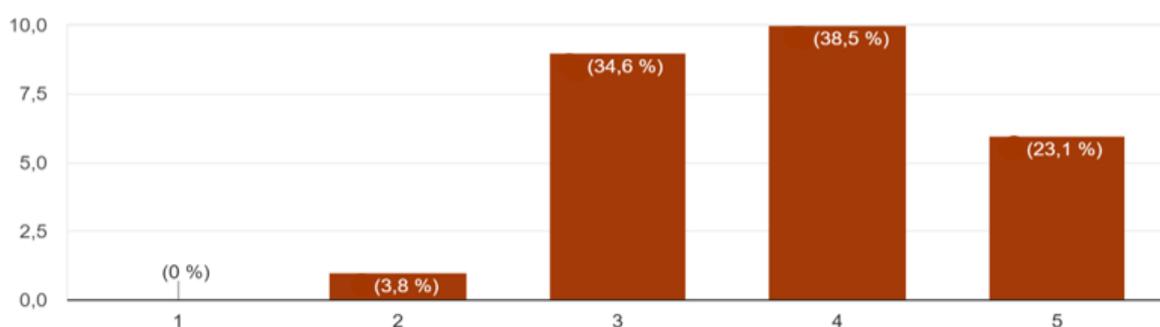
Figure 7. Assessment of the situation at the institutional level

But at the country level, how would you rate the management of education quality to ensure sustainable development? - was the last question in our tool, the situation is shown in the figure below. From this we can see that the perceived picture at the country level differs slightly from that at the institutional level, with which we partly agree, considering that we have good policies but their implementation continues to be flawed. In this context, we adhere to the assertion of the Romanian researcher R. China (2014, p.27), who refers to the fact that "public education policies can play the role of strategic visions, provided that they are thought prospectively, in the long and medium term. Quality management in education means quality management is implemented and developed at the level of the education system.
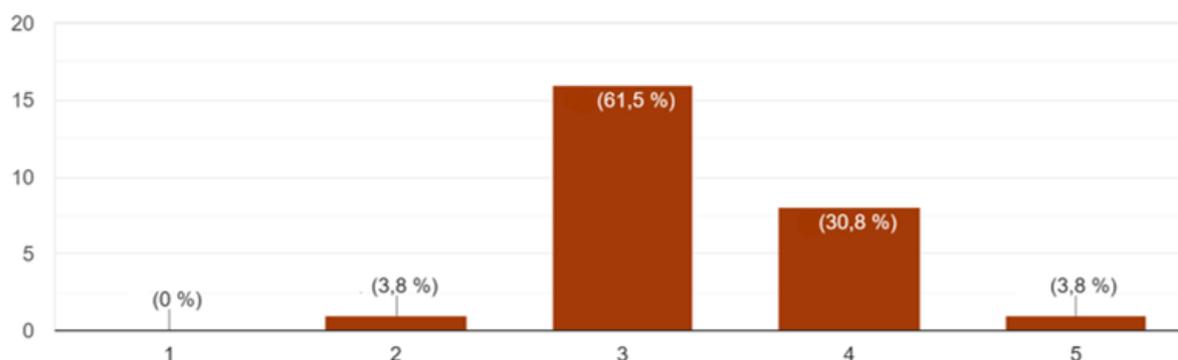
Figure 8. Appraising education quality management to support sustainable development

Conclusions and perspectives

Through the given praxiological research, we have confirmed the hypothesis put forward that if there is effective quality management in educational institutions, it contributes directly to the effectiveness of education for sustainable development. Educational actors at different levels, some of whom are professing managers, and others who have just started their qualification in the given field, have brought different points of view regarding quality education as a goal of sustainable development and education for sustainable development as such. We got to know realities in our educational institutions, discovering a still approximate knowledge and application of the much-discussed SDGs. They also reviewed several problems felt by practitioners which, in their view, could improve the quality of education in our country, but also in each institution, relating quality education directly to all other objectives, obviously to different degrees. Management quality is revealed by the optimal exercise of each managerial function - planning, organization and implementation, monitoring and evaluation, but also continuous improvement. Unless school managers realize this and take full responsibility for it, neither teachers, pupils nor parents will bring the expected added value to the value of the SDGs as a guarantee of a quality present, a prosperous future, and our individual and planetary security (Cf. Sustainability and Bildung). In the context of the Republic of Moldova, making the management of education more efficient to ensure sustainable development remains a permanent prerogative, but the necessary resources do not exist

and have never existed in abundance. Now, however, the efficiency of the management of several types of resources, including resources (human, material, financial, and temporal) is to be aligned with the objectives of sustainable development in general and quality education in particular. The study revealed the need for extensive and in-depth information and training in this field for school managers, but also the need for long-term investment and quality interventions at the national and local levels.

References

Baciu S. (2013) Teoria şi metodologia managementului calităţii în învăţământului superior. Available: https://www.scribd.com/doc/253185570/Sergiu-Baciu-Thesis . Accessed: 23.04.2023.

Baciu S, Mija V. ş.a (2011). Managementul calităţii sistemului educaţional din Republica Moldova: teorie şi metodologie. În: Univers Pedagogic, pag. 43-50, Chişinău. Available: https://www.google.com/search?rlz=1C1GCEA_enMD970MD970&q=Managementul+calitatii+in+educatie+pdf&sa=X&ved=2ahUKEwim9qis6Pv9AhXmhP0HHWDHAH84ChDVAnoECBsQAQ&biw=1366&bih=657&dpr=1 . Accessed: 20.02.2023

Chicu V., Lîsenco S. (2020). *Managementul calităţii versus calitatea managementului*. Chişinău: CE PRO DIDACTICA. 52 p. ISBN 978-9975-3355-9-1

Chină R. (2014) Calitate în educaţie versus calitatea educaţiei (I) Aspecte privind managementul calităţii la nivelul sistemului educaţional şi al organizaţiei şcolare. În: Calitatea. *Acces la succes*. Vol. 15, nr. 139.

Codul   Educaţiei   al   Republicii   Moldova   (2014),   Chişinău.   Available: https://www.legis.md/cautare/getResults?doc_id=110112&lang=ro . Accessed:17.03.2023

Cristea S. (2000). *Dicţionar de pedagogie*. Chişinău-Bucureşti: LITERA INTERNAŢIONAL. 398 p. ISBN 973-9355-51-X.

Cristea S. (2015). *Dicţionar enciclopedic de pedagogie*, vol. 1, A-C. Bucureşti: Didactica Publishing House. 832 p. ISBN 978-606-683-295-3.

Cucoş Const. (2002). *Pedagogie*. Iaşi: POLIROM. 464 p. ISBN 973-681-063-1

Damian-Timosenco G. (2020). Theoretical and methodological framework for development of climate resilience competence in adolescents. Available: http://www.cnaa.md/files/theses/2020/56203/gavbriela_damian-timosenco_abstract_en.pdf   . Accessed: 23.03.2023

Metodologia de evaluare a instituţiilor de învăţământ general (2020). Chişinău: Ministerul Educaţiei şi Cercetării. Available: https://mecc.gov.md/sites/default/files/anexa_1_ord_581_metodologie_evaluare_institutii_invatamant.pdf . Accessed 9.05-2023

Obiectivele de dezvoltare durabilă. Available: https://statistica.gov.md/ro/obiectivele-de-dezvoltare-durabila-183.html. Accessed 23.03.2023

Shalash R. (2017) Theoretical and methodological approaches of environmental education within primary schools in the Israeli Arab sector. Available: http://www.cnaa.md/files/theses/2017/51075/rania_shalash_thesis.pdf / . Accessed 23.03.2023

Strategia de dezvoltare Educaţia 2030 (2022), Available: https://ipp.md/wp-content/uploads/2022/06/Buletin-informativ-aprilie-Educatia-2030.pdf . Accessed 15.03.2023

Şerbănescu L., Bocoş M.-D., Ioja I. (2020). *Managementul programelor de formare continuă a cadrelor didactice. Ghid practic*. Iaşi: POLIROM, 2020, 278 p. ISBN 978-973-46-8245-4

Sustainability and Bildung. Available: https://eaea.org/project/bildung/?pid=19179 . Accessed: 2.03.2023

Sustainability development goals. Available: https://www.undp.org/sustainable-development-goals . Accessed: 20.03.2023

Sustainable Development Goals - Resources for educators. Available: https://en.unesco.org/themes/education/sdgs/material/ . Accessed: 20.03.2023

ANNEX

QUESTIONNAIRE

Dear master students, please answer honestly the questions that follow, which are part of a study in this issue.

• Age:

• Gender: M F

• Workplace in urban areas: urban rural

• Pedagogical work experience: 1-3 years, 4-7 years, more than 10 years, more than 15 years, more than 20 years, more than 30 years.

• Managerial seniority of activity: -3 years, 4-7 years, more than 10 years, more than 15 years, more than 20 years, more than 30 years.

Introduction: The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call for action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 objectives build on the successes of the Millennium Development Goals and now also cover new areas such as climate change, economic inequality, innovations, sustainable consumption, peace and justice, among other priorities. Goals are interlinked – often the key to success in one area will involve addressing issues more frequently associated with another.

• In this context, please note two figures next to each objective:

a) The first to indicate the level of reflection of the actions necessary for implementation in the public policy documents known to you: 1 – insignificant, 2 – minimum, 3 – medium/good, 4 – very good, 5 – excellent.

b) The overall level of implementation of each objective in your institution through the daily educational process of the classes, but also the extra-course and extracurricular one. 1 – insignificant, 2 – minimum, 3 – medium/good, 4 – very good, 5 – excellent.

1. Select 3 of the above objectives, which, in your opinion, are the least addressed in the curriculum, but also, in general, in other educational activities in your institution. Just write down those figures.

2. Select 5 SDGs directly reflected in your institution's SDP.

3. List 5 SDGs that directly support quality management in education.

4. For what reason do you think your institution is not the only one who has been able to do this? is it lacking in the practical use of certain objectives?

a) Poor strategic management
b) Poor operational management
c) Implementation without being trained in the field
d) Insufficient teaching and material resources
e) Other_____

f) All in one place

5. What solutions should be found/proposed to the above problem(s)?

a)

b)

c)

d)

e)

f)

6.   What is sustainable development education about, in your view? Take a brief note.

_____

7.   How familiar and knowledgeable and trained do you consider yourself in the education for sustainable development chapter and the Sustainable Development Goals in general?

Very well informed and trained, Medium, somewhat informed and trained, Not prepared for the given topic

8.   But as a manager, how informed/trained do you consider yourself in order to apply quality standards and indicators in education?

Very well informed and trained, Medium, somewhat informed and trained, Not prepared for the given topic

9.   How would you rate the overall quality management of education to ensure sustainable development in your institution? Circle the figure on the 5-point scale 1-insufficient .... 5 - very good.

1   2   3   4   5

10.   What about at the country level?

1   2   3   4   5

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

Carolina Țurcanu•

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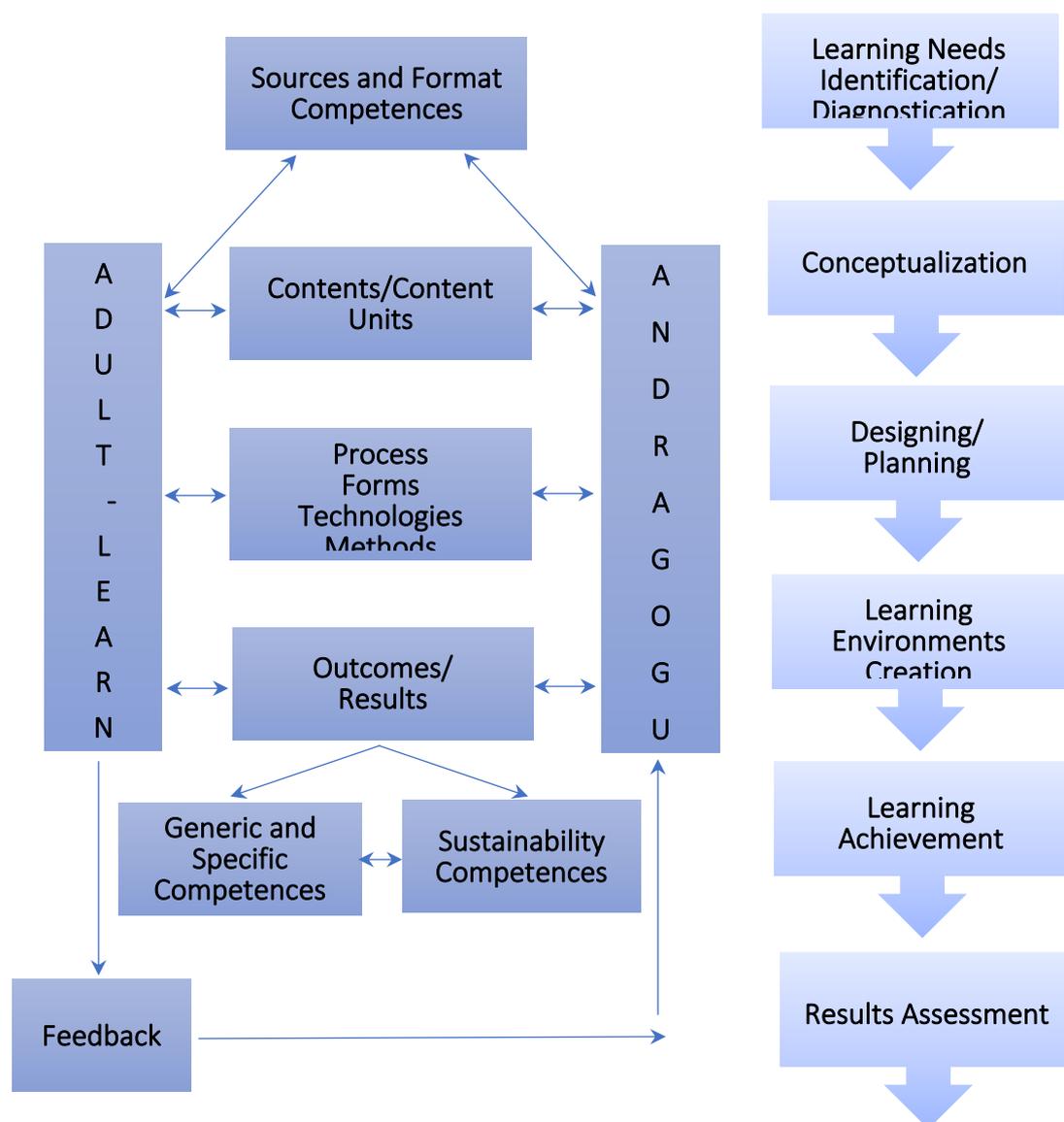
Figure 1. Andragogic Model of Adult Learning (elaborated by the author)

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?	• 10% stated that they understand the essence of ESD • 90% - seem to understand, but cannot explain	• 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?	• at lifelong training courses • from educational policy documents	• from educational policy documents • Education development strategy "EDUCATION 2030", SDG 2030
3.	Can you identify the competences a person needs for sustainability?	• 60% named professional competences • 25% named communication competences • 15% - behavioral competences	• 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.*systemic thinking competence*	100%	100%
	4.2.*anticipatory competence*	100%	100%
	4.3.*normative competence*	90%	80%
	4.4.*strategic competence*	80%	100%
	4.5.*collaboration competence*	70%	70%
	4.6.*critical thinking competence*	100%	90%
	4.7.*self-awareness competence*	100%	90%
	4.8.*problem-solving competence*	100%	100%
5.	Do you know the most efficient methods of training/developing sustainability competences in adults?	• 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.	• 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.

References

ANPCDEFP (2000). Metode și instrumente în cadrul educației nonformale în context TIA [Methods and tools in non-formal education in the TIA context].

Bankolé, R. A., Nouatin G. S., & Gandonou, E. (2023). "Pedagogical transformation" of apprenticeships through a competence-based approach in the Benin crafts sector. In: International Review of Education, 69, 401-423. https://doi.org/10.1007/s11159-023-10023-z

Bruntland, C. (2015) Raportul "Viitorul nostru comun" [The Report "Our Common Future"].

Castellani, V., & Sala, S. (2010). Sustenable Performance Index for Tourism and Management. Tourism Management, 31(6), 871-880. https://doi.org/10.1016/j.tourman.2009.10.001

Cristea, S. (2021). Educație pentru sustenabilitate [Education for sustainability]. Revista de teorie și practica educationala "Didactica Pro...", 1(125), 54-56.

Guțu, Vl. (2023). Andragogie. Monografie [Andragogy. Monograph]. Chisinau: CEP USM.

Guțu, Vl. et al. (2021). Cadrul de referință al educației și învățământului extrașcolar din Republica Moldova [The reference framework of education and extracurricular education in the Republic of Moldova]. Chisinau: CEP USM.

Guțu, Vl. et al. (2022). Curriculum de bază: competențe pentru învățarea și educația adulților [Core Curriculum: Competences for Adult Learning and Education]. Chisinau: CEP USM.

Knowles, M.S. (1980). Informal Adult Education: A Guide for Administrators, Leaders, and Teachers. New York: Association Press.

Kolb, D. (1984). Experiential Learning: Experience as Source of Learning and Development. Publisher: Prentice-Hall.

Mbo, C., & Butnaru, S. (2023). Éducation non formelle des orpailleurs à l'environnement et réduction de l'utilisation du mercure dans l'orpaillage: pour l'adoption de techniques d'extraction aurifère durables [Non-formal education of gold miners about the environment and reduction of the use of mercury in gold panning: for the adoption of sustainable gold mining techniques] In: International Review of Education, 69, 447-465. https://doi.org/10.1007/s11159-023-09999-5

EDUCATIA 2030 (2023). Strategia de dezvoltare „Educaţia 2030" şi Programul de implementare a acesteia pentru anii 2023-2025 [The "Education 2030" development strategy and its implementation program for the years 2023-2025], aprobate prin Hotararea Guvernului RM nr.114 din 07.03.2023. https://www.legis.md/cautare/getResults?doc_id=136600&lang=ro

UNESCO (2017). Educaţie pentru Obiectivele Dezvoltării Durabile: Obiective de învăţare, Educaţia 2030 [Education for the Sustainable Development Goals: Learning Goals, Education 2030].

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Makerspaces as learning spaces for sustainable development. A systematic literature review

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Abstract

Makerspaces have emerged as dynamic environments that foster creativity, innovation, and hands-on learning experiences. This article delves into the function of makerspaces as educational environment fostering sustainable development. The study seeks to emphasize the importance of makerspaces in cultivating the skills and perspectives essential for sustainable development in the 21st century. By performing a systematic literature review, it examines how makerspaces empower individuals to engage with sustainable practices and contribute to broader societal and environmental goals. The article delves into the multifaceted ways in which makerspaces support sustainable development through experiential education, collaborative problem-solving, and the application of emerging technologies. Additionally, it highlights the potential for makerspaces to bridge the gap between formal education and practical sustainability challenges, ultimately promoting a more sustainable and equitable future. The aim of the study is to underscore the significance of makerspaces in nurturing the skills and mindsets needed for sustainable development in the 21st century. In this sense, we performed a systematic literature review of publications from the ERIC and Google Academic databases. 33 articles met the inclusion criteria. Their analysis reveals that makerspaces contribute as learning spaces to sustainable development, in various ways, educating participants about sustainable development, but also fostering innovation, debate and social action towards the global goals of sustainability and justice. Overall, this analysis underscores the significant potential of makerspaces as learning spaces for sustainable development and education for development. They can not only educate students about sustainable development but also inspire innovation, debate, and social action towards global sustainability and justice goals.

Keywords: sustainable development, makerspaces, learning spaces, education initiatives, innovation

1. Introduction

Education for development, education for sustainable development, and education for global citizenship are deliberate educational approaches addressing issues of global justice and sustainability (O'Flaherty & Liddy, 2018).

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The global movement towards education reform is eager to establish an innovative ethical groundwork, encouraging improvement through performance incentives (Ball, 2003).

In a context where policy and education intersect, education for global citizenship is gaining increasing attention. It focuses on developing analytical skills, global understanding, empathy, and effectiveness to promote sustainability and justice. The growing interest in education for sustainable development is due, among other factors, to the increasing cultural diversity in society and the efforts of international development organizations (Baily et al., 2017; O'Flaherty et al., 2017). These developments mark a crucial moment in which global inequalities are scrutinized with greater importance, and all individuals are called upon to contribute to the causes or solutions to these inequalities (Liddy, 2013; McMorrow, 2016).

The Sustainable Development Goals (SDGs) set by the United Nations promote the idea that all learners should acquire the knowledge and skills necessary to contribute to sustainable development (UNESCO, 2015), with the objective of improving the quality of life on a global scale (O'Flaherty & Liddy, 2018).

In this perspective, education for development and education for sustainable development (ED/ESD) have become key components in preparing individuals to understand and address global challenges related to sustainability. However, the design and use of appropriate research methods, as well as managing the complexity and diversity of learning resulting from ED/ESD, require continuous research and innovation (O'Flaherty & Liddy, 2018). This aspect becomes particularly important, especially within the framework of Sustainable Development Goal 4.7 (O'Flaherty & Liddy, 2018).

While traditional education has often focused on the environmental aspects of sustainable development, it is observed that makerspaces, as places of innovation and creation, can play a significant role in expanding the appreciation and understanding of sustainable development, including its social and economic aspects, as the SDGs aims and concept encounter.

Makerspaces encourage learners to engage more critically and emotionally, thus contributing to a more comprehensive understanding of the concept of sustainable development (Walshe, 2017). It is important to note that sustainable development is not an inherent concept in makerspaces. However, the maker movement represents an emerging market for providers of tools, materials, and activities that contribute to the formation of essential skills that ensure sustainable development. Thus, makerspaces can become places where sustainable manufacturing practices can be experimented with and cultivated. Through hands-on experience in creating objects, a more responsible culture regarding materials can be promoted, contributing to sustainable development (Thorpe, 2012).

Makerspaces are educational spaces that facilitate the meeting and cross-fertilization of ideas, knowledge, and practices, emphasizing the need for strategies to attract a wide variety of participants (Smith & Light, 2017).

Makerspaces have the potential to transform mindsets and influence sustainable development by stimulating innovation and entrepreneurial practices, while providing a space where even those who are not creators, repairers, or hackers can engage in discussions and actions related to how things are made and their impact on society and the environment (Smith & Light, 2017).

This article will also address the contribution of makerspaces to public debate and partnerships for sustainable development. This is achieved through alliances built around debate topics, the specific contexts of makerspaces, and the resources they can bring to promote sustainability on a global level. Examples of relevant themes include technological citizenship, where rights and responsibilities related to technological advancements are deeply discussed, and ecological citizenship, which explores the connections between humans and the environment within complex ecosystems (Smith & Light, 2017).

The exploration of makerspaces as learning laboratories for sustainable development delves into significant and established themes, elucidating the intricate intersection of makerspaces, learning, and sustainable development. These key themes, such as Educational Impact, Sustainable Practices in Makerspaces, Community Engagement and Collaboration, Empowering Participants, Innovation for Sustainability, Assessment of Learning Outcomes, Teacher Training and Professional Development, Policy Implications, and Global Perspectives, collectively provide a holistic understanding of the multifaceted impact of makerspaces on sustainable development within the educational context.

Strengths associated with each theme contribute to the comprehensive exploration. For instance, the focus on the Educational Impact theme provides clarity on how makerspaces contribute to skill development and a nuanced understanding of sustainable development concepts. The Sustainable Practices in Makerspaces theme emphasizes the integration of eco-friendly materials and technologies, showcasing a commitment to environmental responsibility. Community Engagement and Collaboration recognize the social aspect of sustainable development, while Empowering Participants underscores the transformative potential of makerspaces on both personal and community levels.

Innovation for Sustainability acknowledges makerspaces as hubs for creative solutions to environmental, social, and economic challenges. Assessment of Learning Outcomes introduces crucial methods for evaluating the impact of makerspaces, while Teacher Training and Professional Development recognize the role of educators in guiding sustainable makerspace projects. Policy Implications address broader institutional contexts, advocating for the inclusion of makerspace-related skills in educational policies, and Global Perspectives provide a cross-cultural understanding.

Weaving these themes together enhances our comprehension of makerspaces' impact on sustainable development, offering actionable insights for educators, policymakers, and researchers. The article further explores the global movement

towards education reform, emphasizing an innovative ethical groundwork for improvement through performance incentives. It highlights the rising importance of education for global citizenship and sustainable development, aligning with the United Nations' Sustainable Development Goals (SDGs).

Traditional education's focus on environmental aspects is contrasted with the emerging role of makerspaces as places of innovation and creation. Makerspaces, through hands-on experience, promote a more responsible culture regarding materials, contributing to sustainable development. The potential transformative impact of makerspaces on mindsets, innovation, and civic responsibility is explored, emphasizing their role in public debate and partnerships for sustainable development.

In conclusion, the article aims is to underscore the significance of makerspaces in nurturing the skills and mindsets needed for sustainable development in the 21st century. More than that we will see how makerspaces contribute to sustainable development, addressing innovation, responsibility, and civic engagement. Through an in-depth analysis of relevant literature, case studies, and grounded theory, it endeavors to illustrate makerspaces' crucial role in creating a more sustainable, fair, and inclusive world. The selected sources, including academic journals, books, and research from reputable institutions, ensure the credibility and reliability of the information presented in the article

In this context, it is important to explore how makerspaces can contribute to sustainable development, addressing aspects related to innovation, responsibility, and civic engagement. A deeper analysis is needed to understand how makerspaces can become catalysts for positive changes in sustainable development, both by fostering innovation and promoting values of sustainability and global citizenship. In this article, we will explore how makerspaces contribute to sustainable development through various ways in which these spaces facilitate learning, stimulate innovation, and promote civic responsibility. We will investigate the crucial role that makerspaces can play in sustainable development, in creating an open community, and in generating solutions for global challenges. Through an analysis of relevant literature and case studies, we will attempt to illustrate how makerspaces can contribute to the development of a more sustainable, fairer, and more inclusive world by addressing the research questions: Do makerspaces contribute as learning spaces to sustainable development?

Do makerspaces have a role as learning spaces in sustainable development?

The grounded theory in defining the study's concepts was used based on the research methodology and the study's purpose. Classical theory in defining concepts in terms of essential and non-essential features, for example, to define the concept of makerspace, the essential characteristics would include educational space, a place where sustainable manufacturing practices can be experimented, etc. Grounded theory involves defining concepts through specific procedures and measurements. For example, to define the makerspace and its approaches in ESD, specific codes, concepts and categories have been derived in the systematic analysis of the literature undertaken, in our attempt to match

the two new fields of study, looking at types of technologies offered, potential of contributing to the different aspects the sustainable development addresses etc. Grounded theory approach allows us to define concepts in relation to others, relating to the environment in which the concept is used.

These sources are relevant and reliable for this article because they provide a well-rounded understanding of the topic, combining theoretical perspectives with practical applications and real-world impact. The rigorous review processes associated with academic journals, books by established authors, and research from reputable institutions contribute to the credibility and reliability of the information presented in these sources.

2. Methodology

2.1 Search and Inclusion Methodology

A comprehensive initial search was conducted to locate studies that explored themes related to how makerspaces could be learning spaces for sustainable development. Electronic searches were performed in two educational databases, Google Scholar and ERIC, as they are databases specialised for education (ERIC) and comprehensive in the way that reunites also studies and scientific reports, beside the peer review articles and publications.

The search algorithm included the following terms: "makerspaces," "sustainability development," "learning spaces," "education for sustainable development". In addition to the search algorithm restrictions, we also imposed the condition that the studies searched for should be within the time frame of 2003-2023, as both concepts, ESD and makerspaces are new developments in education mainly growing up in the last 20 years.

To include studies in the subsequent analyses, we considered 3 criteria:
a) the study must address a subject related to education for sustainable development in makerspaces as learning spaces and/or a related concept (e.g., sustainable development, educational creative spaces, etc.);
b) description of the nature of the tools used in the analysis/diagnosis of makerspaces as learning spaces for sustainable development and/or the related concept;
c) the study specifies the basic theory from which it started in defining the concepts.

All for the article aim, to underscore the significance of makerspaces in nurturing the skills and mindsets needed for sustainable development in the 21st century

2.2 Procedure

In the first stage, duplicate studies were removed using Mendeley Desktop reference management software, version Desktop for macOS 10.13 (High Sierra). Subsequently, for each of the two research questions, as no suitable coding example was found for the synthesis of literature, we created our coding and analysis grid, considering the following: the research question or issue addressed by the study; what are the key concepts and

how are they defined?; key theories, models, and methods used; whether the research uses established frameworks or adopts an innovative approach; and how the study contributes to the understanding of the subject, among other aspects. In creating the coding grid, we also took into account the recommendations from AERA for reporting research results in Standards for Reporting in Empirical Research in Social Science Research Publications (American Educational Research Association, 2016). Following this procedure, we identified 18 relevant articles in Google Scholar and 15 articles in ERIC. The coding grid was completed by two independent evaluators.

3. Research Findings

After analyzing the information from the studies identified as relevant, several key aspects and conclusions regarding the contribution of makerspaces as learning spaces for sustainable development can be observed:

1. Relevance of Education for Sustainable Development (ESD):

The information emphasizes that ESD represents deliberate educational approaches that focus on issues of global justice and sustainability. They are responses to challenges related to cultural diversity, inequalities, and sustainable development, with the Sustainable Development Goals promoted by the United Nations supporting them as an integral part of shaping the future for all individuals. In the social sphere, this study aims to contribute to public policy makers, since they can learn about the competences related to the SDGs that can be developed in higher education and its operationalization and propose educational regulations accordingly (Dias et al., 2022). In China educational sectors promoted ESD because sustainable development has been emphasized in the national political strategy (Li et al., 2022). The Sustainable Development Goals set out by the United Nations advocate that all learners will have the knowledge and skills needed to promote sustainable development (O'Flaherty, Liddy, 2018). Also, Education for sustainable development (ESD) persists as an important concept within international policy and yet, despite considerable debate, there remains a lack of consensus as to a pedagogy for ESD in schools (Walshe, 2017). Management education needs to not only embeds sustainability and responsible management throughout, but that plays a crucial and active role on a global stage in moving the SDGs forward (Weybrecht, 2017).

2. Transformation through Education:

There is a global movement in education reform aiming to build a stronger ethical foundation, supported by performance incentives. This involves changes in educational policies to promote the development of critical skills, empathy, and effectiveness, with an emphasis on sustainability and justice. In responding to globalisation, Irish curricula advocate active learning and cooperative groupwork methods in second-level schools but there are many difficulties in implementing them (McMorrow, 2006). Curriculum and education policy makers should take the necessary steps to ensure that the generic skills so characteristic of the TY (transition year) experience become key elements in the learning experience of all students (O'Flaherty, Gleeson, 2017). Thorpe (2012) highlight

five specific methods that designers use in working for social change. Education at a Glance addresses the needs of a range of users, from governments seeking to learn policy lessons to academics requiring data for further analysis to the general public wanting to monitor how its country's schools are progressing in producing world-class students (Indicators, O. E. C. D. 2012).

   3. *Addressing Global Inequalities:*

Inequalities worldwide are being scrutinized with greater importance. ESD plays a crucial role in addressing these inequalities by promoting understanding of each individual's role in causing or preventing them. This involves a reworking of the relationships between individual commitment and action in the organization (Ball, 2003). The higher educational institutions can assume a prominent position in the 2030 Agenda implementation for sustainable development of the United Nations, especially in the Goals 4 and 10, quality education and reduced inequalities, respectively (Daú et al., 2023).

   4. *Direct Contribution of Makerspaces to Sustainable Development:*

Makerspaces are creative and innovative spaces that can significantly contribute to sustainable development. They facilitate the creation of sustainable prototypes and models, the use of renewable energy, stimulate the circular economy, and promote repair and recycling practices. Moreover, these spaces engage people in discussions about how products are produced and used and their impact on the environment, about passion for do (Gurjar, 2021). The makerspace serves as a specialized learning environment (Becker, Jacobsen, 2023) and makerspaces are viewed as epistemic environments beneficial to knowledge-building, of STEM (Falloon et al., 2020).

   5. *Role of Makerspaces in Public Discourse and Partnerships for Sustainable Development:*

Makerspaces can contribute to public debates and build partnerships for sustainable development. By exploring topics related to technological citizenship and ecological citizenship, these spaces can influence decisions and norms related to sustainable development.

   Actors who consciously and visibly strive to enact the espoused Fab Lab ideology, i.e. offering access to empowering, distributed technologies that enable people to meet their own local needs by design, appear better able to identify and tackle the environmental sustainability issues as they arise (Kohtala, 2016). Makerspaces aim to revolutionize the current higher education by providing a means for students to be directly involved in many scientific projects and develop various kinds of skills (Zhan et al., 2022).

   6. *Community Building and Diversity:*

Makerspaces bring together people with diverse interests and skills, promoting a culture of change and sustainable development. This involves efforts to ensure inclusion, diversity, and the building of an open community. Furthermore, the use of creative spaces in educational contexts supports the development of 21st-century skills (Konstantinou, et al., 2021). Economic structure is found to have exerted some influence on the resistance and recoverability of certain regions, in general 'region-specific' or 'competitiveness' effects appear to have played an equally, if not more, significant role

(Martin et al., 2016). Overall, this information suggests that both education for sustainable development and makerspaces play a significant role in promoting sustainable development, encouraging creative and innovative approaches, and bringing people together in a collective effort to address issues related to global justice and sustainability.

7. *Innovation in Makerspaces:*

It is indicated that makerspaces are not just spaces for production but also places of innovation. They can bring together people and unconventional technologies to solve various issues, including those related to sustainable development.

Makerspaces are not only places of manufacture and creation, but also centers of social innovation. They can support innovation in multiple forms, contributing to sustainable development and an innovative democracy. For example, the similarities between sustainable development and an innovative STEM makerspace consist in promoting critical thinking, responsibility, creativity, multidisciplinary collaboration, careful choice of pedagogy, thus contributing to the preparation of young generations to address the complex challenges of the future (Soomro, et al., 2023). Increased enthusiasm with STEM and Arts fields indicates to us the power and potential of makerspaces in the future of education (Jordan et al., 2021). Social innovation is an important instrument for understanding how contemporary societies deal with social change and how social practices and policies intended to combat poverty and social exclusion are developed and implemented effectively (Moulaert, 2013). Also Smith (2017) says that social innovation requires a transformation in innovation practices.

8. *Openness to the Public and Debates:*

The literature emphasizes that makerspaces can be open not only to creators and technicians but to a wider audience. They can organize debates and discussions on subjects like technological citizenship and ecology, contributing to increased awareness and engagement. Thus, establishing a connection with innovative democracy and prioritising DE-related research and reflection (Baily, O'Flaherty, Hogan, 2017). Turkey's Ministry of National Education started to establish makerspaces called Design and Skills Labs (DSLs) in every public school across Turkey by 2023 (Demirata, Sadik, 2023). Double-dividend employment generating and footprint reducing achieve sustainability in ways that enhance well-being (Schor, White, 2010).

9. *Potential of Makerspaces for Social Transformation:*

Makerspaces can have a significant role in transforming society by encouraging sustainable resource use, innovation, and entrepreneurship. They can serve as incubators for solutions to social and environmental issues and Melo & March (2023) highlights the need for deep learning through technology. For example, in Jordan, specific sustainable development activities in makerspaces established as learning spaces significantly contribute to improving higher education, economic development, and laying a solid foundation for the future. Here, makerspaces not only develop skills but also build bridges between academia and industry, contributing to a more prosperous and balanced future echilibrat (Almajali et al., 2023).

Framing the makerspace mindset with platforms for creativity illuminates the potential for making and learning to grow creative, curious individuals who together will form an engaged society of learners at large (Culpepper, Gauntlett, 2020).

Community-based digital fabrication workshops (such as Hackerspaces, FabLabs and Makerspaces) are innovative spaces where people come together to learn about and use versatile digital design and manufacturing technologies and create things in collaborative projects. Some spaces are run voluntarily, whilst others receive institutional support (eg from universities and libraries), but all share an ethos towards providing workshops that can be freely (at least in parts) accessed by the wider public (Hielscher, Smith, 2014). Also, Smith & Light (2017) revealed the need for strategies that counter the incumbent social structures that influence ostensibly 'open' makerspaces, and thereby enable the tools and capacities available to work on more sustainable developments.

Overall, this analysis underscores the significant potential of makerspaces as learning spaces for sustainable development and education for development. They can not only educate students about sustainable development but also inspire innovation, debate, and social action towards global sustainability and justice goals.

4. Discussions

ESD is essential for addressing issues of justice and sustainability on a global scale. The Sustainable Development Goals promoted by the United Nations support ESD as a crucial part of individual formation. It is essential to find ways to support the planet's resources while ensuring the well-being of a growing population (Dias et al., 2022). The way learners think and act will bring significant changes in organizations worldwide (Weybrecht, 2017). In the context of looking for more educational solutions for ensuring a sustainable development in all its complex environmental, societal, economic and inclusive dimensions, the article advanced the solution of makerspaces as creative and integrative learning environments having the potential to contribute to the sustainable development desiderata. The aims was to provide a deep perspective on the contribution of makerspaces to sustainable development, pointing towards:

Transformation through Education:

A global movement to reform education is observed, encouraging the development of critical skills, empathy, and effectiveness, with a focus on sustainability and justice. The ambitious goals for the global community's future., and among them the one of ensuring sustainable development through quality education inclusivity, equity, and lifelong learning opportunities for all (Goal 4) (OECD, 2015), forces looking for new ways of ensuring education of future generations. In the future of education, transformation is also driven by the increased enthusiasm for STEM and arts domains found in makerspaces through the transformative impact of artistic practices (Jordan et al., 2021).

Addressing Global Inequalities:

ESD plays a crucial role in addressing global inequalities, promoting an understanding of each individual's involvement in this issue. The increased emphasis on global

inequalities is an evolution with the growth of cultural diversity in society and the efforts of international development organizations (Baily et al., 2017; O'Flaherty et al., 2017), and all individuals are called to contribute to the causes or solutions of these inequalities (Liddy, 2013; McMorrow, 2016). Markerspaces, as (non/)formal learning spaces, have the potential of being open to everyone, as collaborative spaces.

Beside their inner potential, the studies analysed in the literature review highlight the fact that makerspaces can have a *direct contribution* of to sustainable Development in many ways:

Makerspaces facilitate the development of sustainable prototypes and models, promote a circular economy, and stimulate discussions about the impact of objects on the environment. Makerspaces have the potential to transform mindsets and influence sustainable development by stimulating innovation and entrepreneurial practices, offering a space where even those who are not creators, repairers, or hackers can engage in discussions and actions related to how things are made and their impact on society and the environment (Smith, Light, 2017).

Therefore, makerspaces can and should play a role in the *public discourse and partnerships* for sustainable development:

These spaces can influence decisions and norms related to sustainable development by exploring topics related to technological and ecological citizenship. Makerspaces encourage learners to engage more critically and emotionally, thus contributing to a more comprehensive understanding of the concept of sustainable development (Walshe, 2017). The increase in cultural diversity in society and the efforts of international development organizations (Baily et al., 2017; O'Flaherty et al., 2017) are developments in which global inequalities are analyzed with greater importance, and all individuals are called to contribute to the causes or solutions of these inequalities (Liddy, 2013; McMorrow, 2016). Makerspaces bring together people with diverse interests and skills, promoting a culture of change and sustainable development. Overall, the analysed studied offer arguments for the p*otential of makerspaces for social transformation*: Makerspaces are not only for production but also for social innovation, bringing together people and unusual technologies to solve various problems, including those related to sustainable development. They can play a significant role in transforming society by promoting the sustainable use of resources, innovation, and entrepreneurship, building bridges between the academic world and industry.

The makerspaces are suitable places to foster *innovation*. Innovation actually takes a plurality of specific forms and appears in a variety of spaces for a variety of purposes (Smith, 2017). The dominant image and practice of innovation focus on creating links with technology-based firms working with research institutes and investors, aided by a political environment that facilitates systemic interaction between these institutions, aiming at economic growth (Martin et al., 2016; OECD, 2010). However, innovation can also occur in other situations involving unusual combinations of people and technologies pursuing different purposes. The global current of innovation as a basis for sustainable

development is an example (Smith et al., 2017), and the social innovation agenda is another example (Moulaert et al., 2013).

By synthesising the potential contributions of makerspaces as learning spaces to the sustainable development, the article has the merit of advancing potential solutions of conceptualising education in formal and nonformal contexts, advocating for considering the ways in which the learning environments have the caractheristics of makerspaces. Using the grounded theory approach, the analysis differentiate main ways and arguments for which makerspaces can contribute to ensuring education for sustainable development.

However, the study does not provide insights in how this aspect can be acomodated, further research being needed. The study has also the limit of a relative small number of studies identified in the minimal synthesis of literature undertaken, and a more extensive exploration, in more databases is advicible to be performed, since there may be relevant studies that were not included in our analysis, which could lead to an incomplete perspective on the contribution of makerspaces to sustainable development.

Also, the results of this study are based on a literature analysis and do not capture the variety and specificificy of makerspaces in various contexts or regions. Not all makerspaces may have the same influence on sustainable development, therefore, more research either meant or mapping and surveying patterns, or aimed to provide inspiring study cases should complement this first analytic attempt. This analysis indicates the need for further research to better understand the specific impact of makerspaces on sustainable development in different contexts. Case studies and comparative analyses could shed light on how makerspaces can be optimized to maximize their contribution.

The results pave the way for the development of educational and environmental policies that promote the use of makerspaces for sustainable development. Governments and organizations can explore ways to integrate ESD concepts into their education systems and support makerspaces in their communities.

The implications of this study emphasize the importance of education and training within makerspaces to develop critical skills and promote global and sustainable citizenship. Educational institutions and organizations should develop ESD-centered educational programs and encourage teacher training in this regard.

Makerspaces can become catalysts for innovation and social development, promoting sustainable solutions to societal and environmental issues. Communities and organizations can explore partnerships with makerspaces to develop solutions to current problems.

Cultivation of innovative democracy because public debate and participation can be encouraged through makerspaces, contributing to a more open and inclusive decision-making process regarding sustainable development.

This study highlights the importance of balancing 21st-century skill development with environmental protection. Thus, young generations can be prepared to address the complex challenges of the future in a sustainable way.

Makerspaces can function as bridges between academia and industry, facilitating economic development and promoting a more prosperous and balanced future. These implications suggest that makerspaces have the potential to bring about significant changes in the field of sustainable development, education, and innovation, contributing to the construction of a more equitable and sustainable future.

5.Conclusions

This study was conducted with the rationale that education for development, sustainable development represent an essential educational approach and aspiration addressing global sustainability, necessitating educational solutions that substantially contribute to this aspiration. With its mission to promote understanding and responsibility towards sustainable development, integrative educational interventions have become increasingly relevant in the context of growing cultural diversity and the emphasis on development and justice.

Changes in policies and the Sustainable Development Goals established by the United Nations provide clear evidence of commitment to these ideas. However, to ensure their success, adequate design, appropriate research methods, and innovative approaches are required, considering the complexity and diversity of learning in these areas. In this article, we proposed exploring the contribution of makerspaces to achieving education for sustainable development.

Makerspaces, although not initially focused on sustainable development, have the potential to significantly contribute to this goal. By providing an environment where sustainable prototypes can be created, sustainable energy solutions can be explored, recycling businesses can be supported, and communities interested in sustainable development can be developed, these spaces can play an important role in promoting a more environmentally conscious and material-conscious culture, as studies and publications in the last 20 years have highlighted. The 33 publications analyzed have shown that makerspaces can contribute to ESD and sustainable development in multiple ways: they are multifunctional educational spaces, not just for creators or technologists but can involve participants who are not directly involved in the production process. These spaces can organize activities and events to engage the wider public in discussions about how objects are made and used, with a focus on sustainable development and civic responsibility. Additionally, makerspaces can play an important role in public debates and the creation of alliances for sustainable development. By engaging in these debates and collaborating with other communities, these spaces can contribute to creating the conditions for sustainable development worldwide, with examples of topics related to technological and ecological citizenship.

Furthermore, makerspaces as creative educational spaces with the potential to foster innovation, an essential ingredient in sustainable development, are incubators for economic development, interaction, and social inclusion. Makerspaces are not only beacons of innovative democracy but spaces where participation, deliberation, and the

new community in technology development are open. Therefore, they can be instructive for innovative democracy and the transformation of social innovation Smith (2017).

In conclusion, makerspaces represent fruitful places for exploring the norms, incentives, and practices of complex communities, bringing together technology, resources, and environments in an open and accessible space. These places can be catalysts for social innovation and can provide meaningful learning and education about sustainable development. Thus, in this regard, makerspaces have the potential to significantly contribute to sustainable development, and this analysis emphasized the importance of makerspaces in promoting sustainable development and developing the skills necessary to address the challenges of the future.

References

Almajali, M., Al Afif, R., & Maaith, O. (2023). Makerspace, higher education and technical institutions. *Industry and Higher Education*, *37*(2), 155-164;

Baily, F., O'Flaherty, J., & Hogan, D. (2017). Exploring the nature and implications of student teacher engagement with development education initiatives. *Irish Educational Studies*, *36*(2), 185-201;

Ball, S. J. 2003. "The Teacher's Soul and the Terrors of Performativity." Journal of Education Policy 18 (2): 215–228. doi:10.10 80/0268093022000043065;

Becker, S., & Jacobsen, M. (2023). A year at the improv: the evolution of teacher and student identity in an elementary school makerspace. *Teaching Education*, *34*(1), 1-18;

Culpepper, M. K., & Gauntlett, D. (2020). Making and learning together: Where the makerspace mindset meets platforms for creativity. *Global Studies of Childhood*, *10*(3), 264-274;

Daú, G., Scavarda, A., Rosa Alves, M. T., Santa, R., & Ferrer, M. (2023). An analysis of the Brazilian higher educational opportunity and challenge processes to achieve the 2030 Agenda for the sustainable development. *International Journal of Sustainability in Higher Education*;

Demirata, A., & Sadik, O. (2023). Design and skill labs: Identifying teacher competencies and competency-related needs in Turkey's national makerspace project. *Journal of Research on Technology in Education*, *55*(2), 163-189;

Dias, B. G., da Silva Onevetch, R. T., dos Santos, J. A. R., & da Cunha Lopes, G. (2022). Competences for sustainable development goals: The challenge in business administration education. *Journal of Teacher Education for Sustainability*, *24*(1), 73-86;

Falloon, G., Forbes, A., Stevenson, M., Bower, M., & Hatzigianni, M. (2020). STEM in the making? Investigating STEM learning in junior school makerspaces. *Research in Science Education*, 1-27;

Gurjar, N. (2021). The Italian Makerspace. *Childhood Education*, *97*(3), 48-53;

Hielscher, S., & Smith, A. (2014). Community-Based Digital Fabrication Workshops: A Review of the Research Literature;

Jordan, A., Knochel, A. D., Meisel, N., Reiger, K., & Sinha, S. (2021). Making on the move: Mobility, makerspaces, and art education. *International Journal of Art & Design Education*, *40*(1), 52-65;

Kohtala, C. (2016). *Making sustainability: how Fab Labs address environmental issues*. Aalto University;

Konstantinou, D., Parmaxi, A., & Zaphiris, P. (2021). Mapping research directions on makerspaces in education. *Educational Media International*, *58*(3), 223-247;

Konstantinou, D., Parmaxi, A., & Zaphiris, P. (2021). Mapping research directions on makerspaces in education. *Educational Media International*, *58*(3), 223-247;

Li, G., Xi, Y., & Zhu, Z. (2022). The way to sustainability: Education for sustainable development in China. *Asia Pacific Education Review*, *23*(4), 611-624;

Liddy, M. (2013). Education about, for, as development. *Policy & Practice-A Development Education Review*, (17);

Martin, R., Sunley, P., Gardiner, B., & Tyler, P. (2016). How regions react to recessions: Resilience and the role of economic structure. *Regional studies*, *50*(4), 561-585;

McMorrow, U. (2006). Changing practices for a global society: Voices of students, teachers, principals and university teacher educators on active learning. *Irish Educational Studies*, *25*(3), 321-335;

Melo, M., & March, L. (2023). By the Book: A Pedagogy of Authentic Learning Experiences for Emerging Makerspace Information Professionals. *Journal of Education for Library and Information Science*, *64*(2), 142-158;

Moulaert, F. (Ed.). (2013). *The international handbook on social innovation: collective action, social learning and transdisciplinary research*. Edward Elgar Publishing;

O'Flaherty, J., & Gleeson, J. (2017). Irish student teachers' levels of moral reasoning: Context, comparisons, and contributing influences. *Teachers and Teaching*, *23*(1), 59-77;

O'Flaherty, J., & Liddy, M. (2018). The impact of development education and education for sustainable development interventions: a synthesis of the research. *Environmental education research*, *24*(7), 1031-1049;

Olson, R. (2017). 3-D printing: a boon or a bane?. In *The Environmental Forum*;

Organisation for Economic Co-operation and Development (OECD). (2015). *Education at a glance 2010: OECD indicators*. Paris: Oecd;

Schor, J., & White, K. E. (2010). *Plenitude: The new economics of true wealth*. New York: Penguin Press;

Smith, A. (2017). Social innovation, democracy and makerspaces;

Smith, A., & Light, A. (2017). Cultivating sustainable developments with makerspaces| Cultivando desenvolvimento sustentável com espaços maker. *Liinc em revista*, *13*(1);

Soomro, S. A., Casakin, H., Nanjappan, V., & Georgiev, G. V. (2023). Makerspaces Fostering Creativity: A Systematic Literature Review. *Journal of Science Education and Technology*, 1-19;

Thorpe, A. (2012). *Architecture & design versus consumerism: How design activism confronts growth*. Routledge;

UNESCO. 2015. Sustainable Development Goals (Online). Accessed January 27, 2017. http://en.unesco.org/sdgs1048 J. O'FLAHERTY AND M. LIDDY;

Walshe, N. (2017). An interdisciplinary approach to environmental and sustainability education: Developing geography students' understandings of sustainable development using poetry. *Environmental Education Research*, *23*(8), 1130-1149;

Weybrecht, G. (2017). From challenge to opportunity ñ management educationís crucial role in sustainability and the sustainable development goals ñ an overview and framework. International Journal of Management Education, 15(2), 84ñ92;

Zhan, Q., Chen, X., & Retnawati, E. (2022). Exploring a construct model for university makerspaces beyond curriculum. *Education and Information Technologies*, 1-27.

Digital transformation in adult education: empowering global understanding and sustainable development

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Abstract

In the era of digital transformation, the intersection of adult learning, digital competence, global progress, and sustainable development emerges as a pivotal focus. This article dives into the complex interaction of these factors centering on the pivotal role of digital competence in advancing sustainable development goals through adult education. By exploring the dynamic landscape of technology and education, the paper investigates how enhancing digital competence among adult learners facilitates global understanding and fosters sustainable behaviors. The accessibility afforded by digital education empowers individuals at any life stage or circumstance to actively participate in lifelong learning, upskilling, and reskilling. The research systematically examines literature to capture the essence of the study, emphasizing the vital importance of digital competency for global understanding and sustainable development. It elucidates key concepts, unraveling the intricate relationship between digital transition, adult education, and the overarching pursuit of sustainability. This study posits hypotheses that underscore the critical role of digital competence in sparking global knowledge and catalyzing sustainable development within the dynamic realm of digital change. It contends that digital technologies, through personalized education, contribute significantly to the achievement of global sustainability goals. The findings accentuate how the digital revolution in adult education transcends conventional boundaries, leveraging technology to democratize knowledge and foster global collaboration. Empowered as change agents, learners equipped with both global awareness and sustainable skills have the potential to propel society towards a more interconnected and sustainable future. The study concludes with insights underscoring the profound link between digital competency, global awareness, adult education, and sustainable development, offering valuable guidance for educators, policymakers, and academics.

Keywords: digital learning; technology; adults; education; sustainability.

Introduction

As cultures grow more networked and technologically dependent, the capacity to manage digital tools and engage in cross-cultural dialogue becomes increasingly important. The objective of this paper is to investigate the critical role of digital competence in adult education, as well as its significant influence on building global understanding and

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supporting sustainable development. The research intends to highlight how increased digital competence among adult learners might empower them as catalysts for good global change by navigating the dynamic convergence of technology and education.

This study delves into three key themes, each framed as a theoretical research exploration:

1. Impact of digital competence on adult learners' global knowledge and international cooperation: the exploration for this first area is uncovering the ways in which enhanced digital competence influences adults, fostering a global perspective, and encouraging active involvement in international collaborations. The theoretical framework for this statement is that improving adult learners' digital proficiency leads to enhanced cross-cultural understanding and collaboration, hence contributing to a more integrated global society.

2.Impact of adult learners' digital competence on participation in sustainable development projects and practices, hence the exploration for this affirmation is probing into the role of digital competence in inspiring adult learners to actively participate in sustainable development initiatives and cultivate eco-friendly habits. The most plausible hypothesis derived from this statement is as it follows: the application of digital technology in adult education encourages learners to participate in environmentally conscious activities, supporting sustainable behaviors and contributing to the attainment of sustainable development goals.

3.The third statement would be trends and issues in integrating digital competence into adult education, so here, the exploration is about investigating the current dynamics and challenges involved in infusing digital competence into adult education, offering insights into the ever-evolving educational landscape. Therefore, the most reasonable assumption determined by this assertion is that collaboration initiatives among educators, policymakers, and academics to solve the problems of integrating digital competence in adult education result in enhanced digital inclusion and equitable access to education, resulting in more informed and empowered learners.

Moreover, this research employs a theoretical research framework to investigate the complex influence of digitalization on adult education. The research focuses on essential factors such as cultural and environmental awareness via critical analysis. Within the context of adult education, the theoretical lens incorporates the larger elements of globalization, collaboration, and sustainability. This study intends to give a detailed view of how digitalization affects these crucial areas by merging previous literature and theoretical concepts.

Theoretical research

For this study, the main purpose has been to undertake a theoretical research inquiry to provide a critical analysis and full synthesis of the impacts of digitalization on adult education. The attention was focused on important themes including globalization,

sustainability, cultural and environmental awareness. The goal of this theoretical research paper is to provide significant insights to the academic sphere by exploring the complex interactions that exist between adult learning, digital competency, and sustainable development. The integration and transformational influence of digital technology on the learning landscape is referred to as digitalization in adult education. It entails utilizing digital technology, platforms, and resources to enhance the educational experiences of adult learners.

The synergistic combination of adult education and digital technologies not only imparts tangible skills for today's workforce, but also fosters a broader understanding of diverse global perspectives, ultimately equipping learners with the knowledge to address complex challenges in an increasingly interconnected world. Digital technologies emerge as powerful weapons for adult learners to impact good change in the quest of sustainable development. Adult learners may use digital platforms to generate meaningful materials such as blogs, films, and podcasts that teach and inspire their communities about sustainable practices, education, economy, and environmental stewardship (Lee & Tak, 2022). The incorporation of technology into the life of the elderly has become an increasingly important concern in the modern day. As technology advances at an unparalleled rate, its effect extends across generations, including the elderly. While some older people may have difficulty adapting to new digital tools and platforms at first, technology provides a plethora of benefits that may dramatically improve their quality of life. Technology opens doors to opportunities that promote social connectivity, mental engagement, and overall well-being, from staying connected with distant family members via video calls to accessing online health resources, managing finances, and engaging in lifelong learning through online courses. Instructors must evaluate how technology might offer techniques more suited to adult learning to maximize learners' experiences and the efficacy of learning outcomes (Lambert, et al., 2014). Fostering digital competence in adult education has emerged as a critical requirement in an era where digital revolution is redefining the boundaries of information distribution and connectedness. This journey through the complexities of digital competency, global understanding, and sustainable development has shown the revolutionary potential that exists at their crossroads. Adult learners' capacity to harness digital technologies and critically engage with digital information becomes increasingly important as they traverse a complex and linked environment.

The goal for Europe is to secure digital sovereignty by providing equal benefits that are consistent with our values and way of life, which necessitates extensive efforts in the digital revolution and artificial intelligence, encompassing infrastructure, connection, data, legislation, and investment; thus, developing the service economy and incorporating digital services are both critical to this quest (European Council, 2019). Digital competence equips adult learners to be active contributors to a more inclusive, connected, and sustainable global community, from facilitating cross-cultural discourse to encouraging sustainable habits. In this quickly changing digital age, the need of

prioritizing digital competency in adult education is emphasized as a transformational force that may overcome the digital divide. According to the first statement from earlier, the investigation on the impact of expanded digital competence on adults is intended to provide light on paths that create a global perspective and encourage active participation in international partnerships. According to the theoretical paradigm, increasing adult learners' digital competency improves cross-cultural understanding and collaboration, hence contributing significantly to a more integrated global society.

In the pursuit of sustainable development, digital tools provide a formidable arsenal for adult learners to contribute to ecologically sensitive activities. Adults can develop sustainable lifestyles by using online resources ranging from interactive environmental courses to webinars on eco-friendly practices. Environmental awareness is gamified through mobile applications, which encourage people to track their carbon footprints and participate in challenges that promote healthy ecological habits. Furthermore, internet channels make it easier to spread information about local conservation activities, allowing adults to participate in grassroots campaigns and fight for environmental policies. Adult learners may take an active part in tackling global environmental concerns and crafting a more sustainable future for future generations by leveraging the possibilities of digital platforms. Technology may bridge generational barriers and allow older people to remain active participants in an increasingly digital world, enhancing their lives and benefiting the competence has emerged as a vital skill set for individuals to efficiently traverse the difficulties of the digital age in an era dominated by digital landscapes. Beyond sheer technical proficiency, digital competence comprises a wide range of abilities that enable people to engage, assess, and create in digital contexts.

According to *Open Educational Resource* (OER) some of the most important key policies shaping adult`s education at both the European Union and international levels are (Bahnaru, 2021):

1. *The ET 2020 Working Group on Adult Learning*, established by the EC, involves experts, social partners, and civil society members to promote Adult Learning through the EPALE Platform and National Coordinators.

2. 2. *The Digital Education Action Plan 2021-2027* aims for inclusive digital education, aligning with the skills Agenda's goal of boosting digital skills.

3. *The EU's New Strategic Agenda (2019-2024)* emphasizes investing in skills, education, innovation, and research.

4. *The 2016 Recommendation on Upskilling Pathways* which targets literacy, numeracy, and digital skills for adults.

5. *The 2011 European Council Resolution* emphasizes increased adult learning participation.

6. *The Belém Framework for Action* guides global adult literacy and lifelong learning.

Integrating digital competence into adult education is fraught with difficulties that necessitate careful analysis and smart methods, based on the fact that one of the most significant difficulties is bridging the digital divide, which occurs when discrepancies in

access to technology impede equitable learning opportunities for distinct demographic groups (European Commission, 2020). To address this, educators, policy sphere, and stakeholders must work together to offer inexpensive and widespread access to digital resources, hence closing the digital literacy gap between digitally literate and marginalized people. Furthermore, due to the rapid evolution of technology, educators must undergo ongoing training to stay current with the latest tools and approaches. Policymakers have a critical role in developing policies that encourage and promote educator professional development. Researchers, too, have a role in defining best practices and discovering effective techniques for integrating digital competence into curriculum. Ultimately, a collaborative effort between educators, policymakers, and researchers, partnerships, allocating resources and creating new sustainable strategies could overcome these challenges and pave the way for a digitally inclusive adult education landscape (United Nations Economic Commission for Europe Strategy for Education for Sustainable Development, 2012). According to the second statement from upper, this investigation focuses on the significance of digital competence in inspiring adult learners to actively participate in sustainable development activities and acquire environmentally friendly behaviors. The most plausible hypothesis emerging from this investigation is that the use of digital technology in adult education encourages learners to engage in environmentally conscious activities, promoting sustainable practices and significantly contributing to the achievement of sustainable development goals.

One of the most important book in the field aims that "*Radical environmental adult education interlinks environment, society economics, politics, and culture and offers participatory learning process, including critical thinking and community oriented learning*" (Filho, Azul, Brandli, Özuyar, & Wall, 2020), so this approach emphasizes active learning by encouraging individuals to think critically and connect with their communities in order to create a greater awareness of environmental concerns and potential solutions. Going forward, a vital question to be analyzed is why is the adult education in a digital world a global sustainability matter? The answer seems to be simple, but deep down, is way more complex than that. So, providing an answer, can be called that, because of its ability to solve multiple difficulties and support fair, long-term development on a global scale, adult education in a digital environment is a global sustainability issue. The digital revolution of adult education crosses geographical boundaries, giving people from all walks of life access to information, skills, and opportunities that are critical for their personal development and contributions to society. Adult education can effectively disseminate information on sustainable practices, environmental stewardship, and social responsibility by leveraging digital platforms, empowering learners to make informed choices that contribute to the preservation of our planet's resources and the mitigation of climate change. Moreover, the digital sphere fosters cross-cultural contacts and collaborative learning experiences, developing a feeling of shared responsibility for global concerns and encouraging collective action toward solutions. Because of the malleability of digital education, learners may customize

their learning paths, allowing them to gain knowledge in domains that directly affect sustainability, such as renewable energy, conservation, and circular economy activities. In essence, integrating adult education into the digital landscape not only provides individuals with the tools they require to be successful in an ever-changing job market, but it also fosters a collective consciousness that is critical for driving sustainable practices, fostering social cohesion, and ensuring generations to come live in harmony with our world.

On the other hand, a negative side of the technology integration is that adults and children alike are subject to cyberbullying and harassment, predatory behavior, and unsettling internet information. Everyday exposure to digital data, partly controlled by incomprehensible algorithms, raises evident concerns, and necessitates more critical thinking and the capacity to participate constructively and professionally in the digital world than ever before. Humankind faces an ever-changing demand for media literacy and a diverse set of digital skills and competencies, including safety, security, and privacy, but reaching the public and more sophisticated professions and industries remains a great struggle (European Commission, 2018). According to the last statement from the introduction, this investigation provides insights into the ever-changing educational landscape by investigating current dynamics and issues surrounding the incorporation of digital competence into adult education. The most logical assumption that can be drawn from this remark is that collaborative actions among educators, policymakers, and researchers targeted at overcoming obstacles in integrating digital competence result in increased digital inclusion and equal access to education. As a result of this joint effort, learners are more informed and empowered.

Digital revolution in education

The Digital Revolution, a transformative force reshaping the educational landscape, offers dynamic and inclusive learning environments that transcend traditional boundaries. To offer readers a comprehensive grasp of the disruptive tsunami spreading across educational fields, this section is explaining the core principles driving the digital revolution. The *Digital Revolution* is defined as the convergence of digital technologies, multimedia resources, and online platforms that democratizes access to education. It has not only reshaped traditional classroom environments, but it has also revolutionized the basic nature of how knowledge is acquired and transmitted. Technology in education is the most major educational revolution that the world has ever seen. The digital revolution emphasizes the crucial necessity of digital competence in adult education (Haleem , Javaid, Qadri, & Suman, 2023). It goes beyond simply knowing how to use digital tools and includes essential abilities like critical thinking, ethical online behavior, and adaptation to new technology. These skills are required for active participation in a linked digital society. The relationship between education, connectivity, and economic success is increasingly evident, particularly during the COVID-19 pandemic, therefore the

global access to digital technology can aid in crisis response, recovery planning, and enhancing education system resilience (UNESCO, 2020).

Moving ahead, to hypothesis validation and theoretical approach, the theoretical approach is designed to validate and reinforce the assumptions developed in this study. As the paper investigates the influence of the digital revolution on adult education, it will be analyzed how digital competence has arisen as a requirement for full participation in modern society. In the long run, the digital revolution's implications brought about profound changes in almost every element of modern life, including education. However, in addition to the enormous potential, difficulties such as guaranteeing equitable access, developing digital literacy, and fostering diversity must be addressed. The convergence of digital tools, multimedia resources, and online platforms not only democratizes access to education but also allows students, including adult learners, to actively engage with a wide range of information and opinions. Adult learners, with their different life experiences and origins, are particularly positioned to use digital technologies to deepen their awareness of global challenges and foster a global mindset.

The tremendous rate of digital revolution has transformed the way civilizations throughout the world function, influencing sectors such as communication, trade, economics, politics, and education. This transformational wave has spread to adult education, where digital competency has emerged as a critical requirement. As individuals navigate an increasingly linked environment, having digital skills has become a key need for full engagement in modern society. Digital competence includes not just the technical capacity to utilize digital tools but also critical thinking abilities to successfully analyze and use information, engage in ethical online conduct, and adapt to emerging technology. This convergence of technology and learning highlights the critical need for education systems to prioritize digital competence, providing adult learners with the tools they need to flourish in a digital-centric environment.

Despite the incredible potential provided by digital technology, this change also poses obstacles, such as ensuring fair access, encouraging digital literacy, and fostering inclusivity. Flexible and remote learning has been facilitated via online platforms, virtual classrooms, and interactive multimedia materials, democratizing education access and reaching learners beyond geographical barriers. With the introduction of digital textbooks, immersive simulations, and augmented reality technologies, pedagogical techniques have been transformed, providing learners with tailored and engaging educational experiences.

Digital competence for adult learners in the era of digital revolution

As the digital revolution reshapes the educational landscape, adult learners must be equipped with digital competence. Adult learners from various cultural and educational backgrounds traverse the digital world to fully participate in today's educational landscape. Digital competence, or the capacity to use, interpret, and evaluate digital

technology, is emerging as an essential talent for both personal and professional purposes. There are two characteristics of digital skills that are both vital for European nations' future social cohesion and prosperity. The first is the ability to simply function within the economy and society considering the pervasiveness of digital technology, while the second is the specific digital skills required by European enterprises to stay up with digital innovation and the constant disruption of work organization and procedures (Eit Digital, 2022). The misconception that prevails in our society claims that older people are unable to use technology and they are incapable of breaking into the newest cell phone or music player, dislike browsing online, and have never maintained a blog (González & Morales, 2019). Here, it can be added that all those stereotypes of younger and older learners should be rejected by policymakers and practitioners, because whatever their age, today's students see the usage of digital technology as an essential component of their higher education experience (Jelfs & Richardson, 2012). Excluded from the internet, these people have few options for obtaining a variety of information about events occurring in their nation and around the world and are forced to rely on local mass media, which can occasionally be biased and one-sided. Quality education must be inclusive and egalitarian, and it must enhance learning opportunities for all students (Glavič, 2020). In our current digital age of mobile and digital technology usage, adult learners' increasing use and dependence on these technologies has important implications for organizational and workplace policies that either support or impede successful self-directed learning processes (Curran, și alții, 2019). Conversely, giving older individuals IT skills helps them battle the issue of uneven access to information sources, loneliness, and gives them new opportunities for social inclusion, moreover they could have the chance to stay informed and receive a variety of information about events taking place across the world, as well as to communicate with their family members and kids (DVV International, 2016).

As individuals traverse the digital domain, developing digital competence becomes essential to participating effectively in a linked society. Adopting a lifespan perspective brings us back to the issue of the learning needs that must be met at each stage of human development, as well as the shifting priorities of individuals and communities (local, national, and global) in which they live, particularly those important in addressing issues of poverty and sustainable development (Power & Maclean, 2011). Incorporating digital competency into adult education has substantial policy implications. Governments play a vital role at the worldwide level in creating an environment favorable to the smooth integration of digital technology into educational curriculum. Policymakers may encourage the development of digital education technologies, invest in educator professional development, and guarantee that all students have equal access to technology. Governments can also use digital platforms to disseminate information about conservation efforts, climate regulations, and green projects. The digital revolution has eliminated traditional educational hurdles, particularly for adult learners. Online platforms, courses, and resources give people all over the world access to high-quality

educational information, supporting lifelong learning regardless of geography, socioeconomic background, or time restrictions. Many adults with minimal education in most countries lacked fundamental proficiency in the use of ICT, but these skills were practically ubiquitous among adults with tertiary education. In terms of age, the ICT skills of the sample's people over 30 declines steadily (European Court of Auditors, 2021).

Adult learners may develop sustainable habits, environmental awareness, and social responsibility through digital education. Students obtain knowledge about sustainable living from online resources and participate in environmental situations through digital simulations. Global talks about social and environmental issues are facilitated by digital platforms, which build empathy, widen viewpoints, and inculcate a feeling of global citizenship. The merging of digital education with sustainability education enables adult learners to make informed decisions and accept responsibility for the well-being of the world.

Digital competence unleashed: navigating the modern era

Digital competency is now a necessary skill set that enables people to successfully manage the difficulties presented by the digital age that is consuming our modern world. The complexity of digital competence is explained in this part, which goes beyond technical expertise to include critical analysis, responsible digital involvement, and the capacity to discern truth from lie. Defining digital competence could be called that digital literacy gives people power in their personal and professional lives. Adults who are digitally competent are adept at utilizing online tools and courses for lifelong learning, navigating the digital world, and seeking employment possibilities. Digital competence encompasses a wide range of capabilities in addition to technical proficiency, allowing people to interact, evaluate, and produce in digital environments. For instance, it has been aimed that tablets and computers have the potential to become vital in linking older persons to health information, communication, and a sense of belonging to the outside world (Tsai, Shillair, Cotten, Winstead, & Yost, 2015). Furthermore, as remote work and internet collaboration grow more popular, digital competence is pivotal for adults seeking to actively participate in a digitally interconnected world, where it can be added the idea of civic participation of elderly, for instance, which can lead to an active ageing and more cohesive society.

Adding to that, digital learning is emerging as a catalyst for environmental sustainability, enabling creative approaches to raise awareness, modify behavior, and create a sense of environmental stewardship. Learners participate in sustainable habits and investigate a wide range of environmental concerns through interactive online classes and gamification approaches, developing responsibility and active advocacy for environmental sustainability. The integration of digital resources into conventional learning situations marks the educational transformation. Recent study highlights the transformative potential of digital technology in education, giving new routes for

information intake and skill development, from individualized learning experiences to global knowledge-sharing. Digital competence extends beyond technical capabilities in the context of adult education, because it covers digital literacy, information literacy, critical thinking, as well as the social and ethical dimensions of digital interactions. As technology advances, adult learners must be skilled not just in using digital devices, but also in selecting reliable content and engaging in acceptable online activities. While the digital revolution has erased traditional educational boundaries, difficulties remain, so physical infrastructure, age, and educational level all have a big impact on digital abilities. The growth of information and communication technologies (ICTs) has helped to bridge geographical gaps and stimulate international dialogue. The COVID-19 crisis, on the other hand, has worsened digital disparities, emphasizing the need for comprehensive solutions to promote fair access to digital learning. The COVID-19 pandemic aggravated this trend, because during the peak of the COVID-19 crisis in 2020, at least one-third of students worldwide did not have access to distant education (United Nations Educational, Scientific and Cultural Organization, 2022). Because of that global lockdown, e-learning has been used not just in higher education but also at lower levels and eventually e-learning in higher education has the potential to increase the quantity and quality of educational options available to college students, so the students will have easier and more accessible access to the educational process if e-learning is adopted in higher education (Gonzáles, Castillo, Pauca, & Chávez, 2022).

ICT can really encourage the participation of student categories that would not often interact in physical settings, while also favoring the development of individualized learning pathways based, for instance, on the beginning competences of various learner groupings. The ability to recognize competencies through the simulation of workplace scenarios made possible by ICT and, in particular, the promotion of digital literacy, which is a crucial transversal skill for occupations in the twenty-first century, has increased the relevance of learning (International Training Centre of the International Labour Organization, 2021). According to Søby, the following are the domains of digital competence: digital information, communication, material creation, security, and problem-solving (Søby, 2013). The author described categories of digital competence that represent a thorough awareness of the various talents required to properly traverse the digital realm, striving to provide individuals with the skills needed to survive in an increasingly linked and technologically driven society by stressing these sorts of competences. This paradigm goes beyond a simple list of technical abilities, diving into the complexities of responsible digital citizenship, critical thinking, and adaptation. Søby approach emphasizes the need of not simply adopting digital technologies, but of using them wisely and creatively to fully realize adults` potential for personal, professional, and social advancement.

Sustainable horizons: nurturing global connectivity through digital education

The potential for transformation towards a more inclusive, connected, and sustainable society is both hopeful and deep in the evolving environment of digital education. As we investigate this horizon, it becomes critical to clarify the principles behind this shift and frame our theoretical approach to confirm hypotheses with sound scientific reasoning. Digital education is a paradigm change brought about by technological improvements, opening the way for immersive virtual experiences, collaborative online platforms, and readily available instructional materials. It is a revolutionary force that offers immense potential for learners of all ages and backgrounds, shattering traditional educational barriers. Both development and sustainability are dynamic concepts and processes. Meanings and practices change as the world changes, as our abilities, knowledge, and capacities expand, and as communication and conversation improve. Different interests will collide and occasionally clash at every geographical scale, from the local to the global, but consensus and action can and will emerge only through discussion, debate, critical reflection, learning, and communication (Blewitt, 2008). The building of digital competence is at the heart of sustainable development project; hence this includes not just technical capacity to use digital technologies, but also the ability to bridge cultural barriers, promote empathy, respect, and engage in cross-cultural discourse. Individuals with digital competency may collaborate across geographical borders to address major sustainability concerns with a wide range of peers. Virtual platforms that promote information transmission, collaborative problem-solving, and resource pooling increase the possibilities of global collaboration. Individuals participating in debates, sharing best practices, and exploring novel solutions to global challenges through digital networks make transnational activities possible. Global competency education helps enhance cultural understanding and courteous relationships in increasingly varied communities (OECD, 2018).

The potential of global cooperation magnifies the collective efficacy of sustainability programs, bringing together a worldwide community devoted to achieving a more sustainable future. One of these is the new European Union policy called *The Digital Education Action Plan 2021-2027* initiative which identifies two key goals and fourteen supporting actions: priority number one is to create a high-performing digital education environment; and the priority number two is to improve digital skills and competences in readiness for digital transformation (European Commission, 2023). The digital revolution's democratization and enhanced accessibility provide persuasive evidence for its relevance. Adult learners across the world may now have access to high-quality educational content, breaking down old boundaries and enabling upskilling, reskilling, and lifelong learning. Individualized learning experiences are provided via digital platforms powered by adaptive algorithms and tailored material. This not only accommodates to a variety of learning capacities, but it also encourages inclusion, allowing learners from all walks of life to actively engage in the learning process. By

providing specialized training in areas such as renewable energy, environmental conservation, and social entrepreneurship, digital education becomes a catalyst for sustainable development. It promotes the notion of lifelong learning, allowing individuals to adjust their skills to changing social demands.

Digital competence in adult education: pioneering sustainable practices for global connectivity

Digital competence in adult education refers to a comprehensive set of abilities, knowledge, and attitudes that enable adult learners to navigate and use digital technology effectively for learning, communication, and involvement in a global society. It includes not just technical ability in using digital tools, but also critical thinking skills in evaluating online material, engaging ethically in digital settings, and adapting to changing technology. The focus of this subchapter is on how digital competence may pave the path for sustainable practices and create global connectedness in adult education.

In terms of adult education, digital skills, and keeping up with the modernity of rapid human growth, there are examples of incredibly effective techniques throughout the world, and this might serve as an example for other nations to emulate. Starting with South Korea, it is frequently mentioned as a country with high levels of digital competency. Its excellent technology infrastructure and extensive digital literacy have aided the economy's growth. Because of the country's emphasis on digital education and innovation, the number of tech people who actively participate in various digital activities and contribute to economic success has increased (Kring & Elder, 2022). Sweden is well-known for its strong digital infrastructure and dedication to digital inclusion. The Swedish government has made significant efforts in digital literacy and education projects. As a result, the population is well-equipped to engage in the digital economy and actively participate in civic discussions through digital platforms (OECD, 2018). Singapore is well-known for its digital readiness and the efforts for digital inclusion of vulnerable people. The government's efforts to promote digital literacy and education have resulted in a technologically aware population that contributes to the country's economic success. Citizens' participation in digital governance and civic projects demonstrates Singapore's emphasis on both digital proficiency and civic participation (Ministry of Communications and Information, 2018). *SkillsFuture* - a government-led effort aimed at preparing Singaporeans' mindsets and capacities for the automated economy - collaborates with higher education institutions but also operates the *Institute of Lifelong Learning*, where Singaporeans of all levels can attend specialized courses to learn new skills. As a result, labor interruption will be less socially disturbing and economically difficult. Furthermore, Singaporeans will be better equipped for the automated economy, which will benefit both people and the country's economy (Gleason, 2018).

Finland's education system places a high value on digital literacy and technology integration (UNESCO, 2023). This concentration has resulted in a digitally literate population that actively contributes to the knowledge-based economy of the country. Furthermore, digital tools are enhancing the Finnish heritage of participatory democracy by allowing citizens to participate in policy discussions and decision-making (Søby, 2015). Norway's robust economy and civic participation are inextricably tied to its high degree of digital proficiency. Investments in digital infrastructure and education in the country have resulted in a digitally proficient workforce that contributes to many areas of the economy, and the most important aspect is that the Norwegian citizens also take an active role in digital democracy, participating to policymaking processes (OECD, 2017). When it comes to Estonia, it is an excellent example of a country that has used digital competence to fuel economic growth and civic involvement. In the following some data will be presented that can create an overview of the level of development in terms of technology and digitalization at country level for Estonia. The government's "*e-Estonia*" effort has digitalized many governmental services, and the population's familiarity with digital technologies has resulted in increasing involvement in both economic and civic activities. A significant difficulty is developing computer literacy among the elderly, with many people over the age of sixty suffering because they do not have basic digital abilities, and here the cooperation and reciprocity have been critical to Estonia's e-revolution's success. By the late 1990s, all Estonian schools had gone online thanks to Tiger Leap (Tiger Leap Foundation is a government-backed technological investment organization), and significant expenditures had been made in computer networking and infrastructure, based on that, it is also well-known the joke "*E-stonia*" (UNESCO, 2023). According to the Digital Economy and Society Index (DESI), Estonia is ranked eighth in terms of human capital, 56% of the population has basic digital abilities, while 28% has advanced digital skills, it is also at the cutting edge of digital democracy and the country`s health system was already highly digitalized prior to the outbreak (European Commission, 2022).

The Netherlands is well-known for having a high percentage of internet penetration and digital literacy. Its residents actively participate in the digital economy, and its technologically sophisticated population adds to the country's strong economic success. Digital platforms are also widely utilized for civic involvement and public debate. Flexibility is also an important future element in the Netherlands, since individuals are expected to be able to balance learning with other activities such as employment, family care, and leisure time, implying that flexible education is required, but unfortunately, public educational institutions are still relatively underequipped to organize customized adult programs, so there is opportunity for development on this front (European Association for Education of Adults, 2011). The Dutch government wishes to enable a significant adult population of functional illiterates to pursue adult education and training. As a result, towns provide classes to assist individuals improve their reading, numeracy, and (basic) digital abilities. Municipalities decide whether the education is free or requires a donation and the municipalities often reimburse the costs of

participants for courses in reading, numeracy, and digital skills; students must pay a fee for Nt2 (Dutch as a second language) tests (Eurydice, 2023).

Canada`s emphasis on digital education and innovation has resulted in a workforce that is digitally proficient. A robust tech industry supports the country's economic growth, and Canadian residents are actively engaged in digital civic engagement, using online platforms to voice their ideas and participate in public debates. Uneven access to internet infrastructure and digital skills training in Canada's north, Indigenous, and other rural communities, as well as enterprises' persistent dependence on legacy technology, are all barriers to Canada's growth in the digital skills environment and employers should foster a culture of continuous learning and development in which their employees may continually update and maintain their digital abilities; and digital skills training in post-secondary education should be required and integrated into current curriculum (The Future Skills Centre, 2023). Into the bargain, another report from 2017 aims that due to a lack of uniform public sector education in digital literacy, a slew of commercial and non-profit groups has sprung up to provide courses for both children and adults, hence there is no standard for training or upskilling workers in digital skills and in 2010, Industry Canada said ("Digital Literacy and Essential Skills") that Canada falls behind in adult education, including workforce training and retraining (Brooksfield Institute, 2017).

Conclusions

Integrating digital transformation into adult education appears as a transformational force with far-reaching impacts in a period of rapid technological advancement. As a result, the goal of this study is to comprehensively analyze the complicated interplay between adult education, digital competence, and long-term growth. This research intends to provide important insights into the changing environment of adult education in the digital age by fostering a thorough understanding of the impact of digital competency on global awareness, international collaboration, and participation in sustainable practices. The main goal is to shine light on digital competence's revolutionary potential, directing educators, politicians, and academics toward informed methods for promoting a more connected, sustainable, and inclusive society. The research of digital competence in adult education reveals a transformational environment that goes well beyond technical capability. Several recommendations arise from the present research as the world traverse the intersections of technology, education, and sustainability.

As good-practices examples and recommendations it could be mentioned the investment in lifelong learning platforms where governments and educational institutions should prioritize investment into all of those. These platforms should be user-friendly, including a varied range of material, and be accessible to people of all ages and backgrounds. When it comes to integration of digital literacy programs it can be said that

policymakers should prioritize the integration of digital literacy programs at all levels of educational curriculum. This encompasses critical thinking, information literacy, and ethical issues in the digital domain, in addition to technical abilities. If we talk about collaborative programs then should be promoted the industry leaders, educational institutions, and policymakers should work together to establish programs that bridge the digital divide, ensuring equitable access to digital education resources for all demographics. Bringing the implications for theory into discussion, delving into the theoretical implications of this research reveals that digital competence in adult education serves as a foundation for larger theoretical conversations. More than that, the transformative potential of digital competence lights on up that the research stresses the transformative potential of digital competence as a catalyst for personal, professional, and social growth, rather than just a set of technical abilities. This transformational feature should be included in discussions of educational paradigms in theoretical frameworks. It also can be outlined that the theoretical implications highlight the significance of digital competence in breaking down conventional barriers to education, making it a potential equalizer in society. This calls into question existing theoretical models that fail to account for the influence of digital skills on social fairness. Regarding the dynamic interaction of digital competence and global understanding, the study opens possibilities for further research into the dynamic interaction of digital competence and global awareness. Future theoretical conversations should investigate how these notions interact to shape not just individual viewpoints, but also an increasingly integrated global society.

When all was said and done, the path to global understanding and sustainable development demands a determined effort to improve digital competency in adult education. The present theoretical study of digital competence in adult education reveals a diverse terrain with practical recommendations and significant theoretical consequences. As our world becomes more interconnected via digital platforms, developing digital competence becomes a critical step toward establishing a more peaceful and successful global society. In the future, acknowledging the transformational potential of digital competence will be critical in developing theoretical frameworks that effectively represent the dynamic character of education in the digital era.

References

Bahnaru, A. (2021). *OER: Adult Learning and Sustainability*. Retrieved 08 19, 2023, from EPALE:
     https://epale.ec.europa.eu/en/blog/oer-adult-learning-and-sustainability
Blewitt, J. (2008). *Understanding Sustainable Development.* London: Earthscan.
Brooksfield Institute. (2017). *The state of digital literacy in Canada - A literature review.* Retrieved 07 30,
     2023, from https://brookfieldinstitute.ca/wp-content/uploads/BrookfieldInstitute_State-of-Digital-
     Literacy-in-Canada_Literature_WorkingPaper.pdf
Curran, V., Gustafson, D., Wetsch, L., Simmons, K., Lannon, H., Garmsiri, M., . . . Wetsch, L. (2019). Adult
     learners' perceptions of self-directed learning and digital technology usage in continuing

professional education: An update for the digital age. *Journal of Adult and Continuing Education*. Retrieved 08 28, 2023, from https://journals.sagepub.com/doi/full/10.1177/1477971419827318

DVV International. (2016). *Digital Adult Education – A Key to Global Development?* Retrieved 08 02, 2023, from https://www.dvv-international.de/fileadmin/files/Inhalte_Bilder_und_Dokumente/Materialien/IPE/IPE_73_web.pdf

Eit Digital. (2022). *The future of education for digital skills.* Retrieved 11 24, 2023, from https://www.eitdigital.eu/fileadmin/2022/ecosystem/makers-shapers/reports/EIT-Digital_Report_The-Future-of-Education-for-Digital-Skills.pdf

European Association for Education of Adults. (2011). *Country Report on Adult Education in the Netherlands.* Retrieved 08 25, 2023, from https://eaea.org/wp-content/uploads/2018/01/netherlands_country-report-on-adult-education-in-the-netherlands.pdf

European Commission. (2018). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.* Retrieved 07 28, 2023, from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0022&from=EN

European Commission. (2020). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.* Retrieved 08 11, 2023, from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0624

European Commission. (2022). *Digital Economy and Society Index (DESI) 2022.* Retrieved 08 11, 2023, from https://digital-strategy.ec.europa.eu/en/policies/desi-estonia

European Commission. (2023, 07 30). *https://education.ec.europa.eu/focus-topics/digital-education/action-plan*. Retrieved from European Education Area: https://education.ec.europa.eu/focus-topics/digital-education/action-plan

European Council. (2019). *A new Strategic Agenda 2019-2024.* Retrieved 08 27, 2023, from https://www.consilium.europa.eu/media/39914/a-new-strategic-agenda-2019-2024.pdf#27

European Court of Auditors. (2021). *EU actions to address low digital skills.* Retrieved 08 29, 2023, from https://www.eca.europa.eu/Lists/ECADocuments/RW21_02/RW_Digital_skills_EN.pdf

Eurydice. (2023). *Adult education and training funding*. Retrieved 08 20, 2023, from Eurydice: https://eurydice.eacea.ec.europa.eu/national-education-systems/netherlands/adult-education-and-training-funding

Filho, W., Azul, A., Brandli, L., Özuyar, P., & Wall, T. (2020). *Encyclopedia of the UN Sustainable.* Retrieved 08 06, 2023, from https://sci-hub.se/https://doi.org/10.1007/978-3-319-95870-5_1

Glavič, P. (2020). Identifying Key Issues of Education for Sustainable Development. *Innovation in Engineering Education for Sustainable Development*. doi:https://doi.org/10.3390/su12166500

Gleason, N. W. (2018). *Higher education in the era of the fourth industrial revolution.* (N. W. Gleason, Ed.) Singapore: Springer Nature Singapore Pte Ltd. Retrieved 11 24, 2023, from https://library.oapen.org/bitstream/handle/20.500.12657/23279/1/1006877.pdf#page=216

Gonzáles, J., Castillo, B., Pauca, M., & Chávez, M. (2022). Educational technology applied to adult education. *Research Gate*, 145. doi:10.53730/ijhs.v6nS1.4758

González, J., & Morales, L. (2019). Digital adult literacy in virtual learning environments. *ACM*, 4. Retrieved 07 29, 2023, from http://relace.org/wp-content/uploads/Digital-adult-literacy-in-virtual-learning-environments-the-case-of-xMOOCs-in-energy-sustainability-ACM-Version.pdf

Haleem , A., Javaid, M., Qadri, M., & Suman, R. (2023). Understanding the role of digital technologies in education: A review. *Science Direct, 3*, 275-285. Retrieved 11 19, 2023, from https://doi.org/10.1016/j.susoc.2022.05.004

International Training Centre of the International Labour Organization. (2021). *Digital Inclusion in Adult Learning.* Retrieved 08 05, 2023, from https://www.itcilo.org/sites/default/files/2021-04/Digital%20Inclusion%20publication_Final_0.pdf

Jelfs , A., & Richardson, J. T. (2012). The use of digital technologies across the adult life span in distance education_1308 1..14. *British Journal of Educational Technology*, 2. doi:10.1111/j.1467-8535.2012.01308.x

Kring, S., & Elder, S. (2022). *Digital solutions and formalization.* International Labour Organization. Retrieved 08 22, 2023, from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_839000.pdf

Lambert, C., Erickson, L., Alhramelah, A., Rhoton, D., Lindbeck, R., & Sammons, D. (2014). Technology and Adult Students In Higher Education: A Review of the Literature. *Issues and Trends in Educational Technology*, 2. Retrieved 07 21, 2023, from https://www.researchgate.net/publication/265684332_Technology_and_Adult_Students_In_Higher_Education_A_Review_of_the_Literature

Lee, J., & Tak, S. (2022). Factors associated with eHealth literacy focusing on digital literacy components: A cross-sectional study of middle-aged adults in South Korea. *Sage Journals*. doi:https://doi.org/10.1177/2055207622110276

Ministry of Communications and Information. (2018). *Digital Readiness Blue Print.* Retrieved 08 15, 2023, from https://www.google.ro/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjkmOTa0fKAAxVxiv0HHQigAEIQFnoECCgQAQ&url=https%3A%2F%2Fwww.mci.gov.sg%2F-%2Fmedia%2FMciCorp%2FDoc%2FMCI_Blueprint-Report_FINAL.ashx&usg=AOvVaw0dOmxvv1YF_LjwTZblZgL9&op

OECD. (2017). *Digital Government Review of Norway.* Retrieved 08 26, 2023, from https://www.oecd.org/gov/digital-government/digital-government-review-norway-recommendations.pdf

OECD. (2018). *Digital Government Review of Sweden.* Retrieved 08 23, 2023, from https://www.oecd.org/gov/digital-government/digital-government-review-of-sweden-2018.pdf

OECD. (2018). *Global Competency for an inclusive world.* Retrieved 11 20, 2023, from https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf

Power, C., & Maclean, R. (2011). Lifelong learning for poverty alleviation and sustainable development1. In I. S. Asia-Pacific (Ed.), *Hong Kong Institute of Education*, (p. 16). Hong Kong. Retrieved 11 22, 2023, from https://www.eduhk.hk/isll/Download%20Files/Lifelong%20Learning%20Symposium%20-%20Background%20Concept%20Paper.pdf

Seifert, A. (2020). The Digital Exclusion of Older Adults during the COVID-19 Pandemic. *Journal of Gerontological Social Work*, 2. Retrieved 07 28, 2023, from https://www.tandfonline.com/doi/abs/10.1080/01634372.2020.1764687?journalCode=wger20

Søby, M. (2013). EDITORIALLearning to Be: Developing andUnderstanding Digital Competence. *Nordic Journal of Digital Literacy*, 135-136. doi:10.18261/ISSN1891-943X-2013-03-01

Søby, M. (2015). Finnish education system. *Nordin Journal of Digital Literacy*. doi:https://doi.org/10.18261/ISSN1891-943X-2015-02-01

The Future Skills Centre. (2023). *Building a Digitally Skilled Workforce.* Retrieved 08 26, 2023, from https://fsc-ccf.ca/wp-content/uploads/2023/03/fsc_digitally-skilled-workforce_2023-dgn8kz.pdf

Tsai, H.-y., Shillair, R., Cotten, S., Winstead, V., & Yost, E. (2015). Getting Grandma Online: Are Tablets the Answer for Increasing Digital Inclusion for Older Adults in the U.S.? *Educational Gerontology*, 20. Retrieved 07 20, 2023, from https://www.tandfonline.com/doi/abs/10.1080/03601277.2015.1048165

UNESCO. (2020). *The DigitalTransformation of Education:Connecting Schools,Empowering Learners.* Retrieved 11 18, 2023, from https://unesdoc.unesco.org/ark:/48223/pf0000374309/PDF/374309eng.pdf.multi

UNESCO. (2023, 08 11). *Finland*. Retrieved from UNESCO: https://education-profiles.org/europe-and-northern-america/finland/~technology

UNESCO. (2023, 08 03). *Global lessons from Estonia's tech-savvy government*. Retrieved from UNESCO Courier: https://en.unesco.org/courier/2017-april-june/global-lessons-estonia-s-tech-savvy-government

United Nations Economic Commission for Europe Strategy for Education for Sustainable Development. (2012). *Learning for the future.* Retrieved 08 27, 2023, from https://unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf#

United Nations Educational, Scientific and Cultural Organization. (2022). *Guidelines for ICT in education policies and masterplans.* Retrieved 08 07, 2023, from https://unesdoc.unesco.org/in/documentViewer.xhtml?v=2.1.196&id=p::usmarcdef_0000380926&file=/in/rest/annotationSVC/DownloadWatermarkedAttachment/attach_import_d47e94e4-daa9-425c-b3c9-3ca7dad2c7bd%3F_%3D380926eng.pdf&locale=en&multi=true&ark=/ark:/48223/p

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The wisdom of the fairy tale in building skills for sustainable living

Maria Ungureanu•

Abstract

According to UNESCO, education for sustainable development (ESD) is characterized by the concern for training the skills necessary for a human individual to relate responsibly to the natural, economic and socio-cultural environment in which he lives, minimizing or completely avoiding the negative effects of actions on the quality of his life and that of others. This finality of education for sustainable development requires the prioritization of moral education and shifts the focus to the development of moral consciousness and the formation of a value system agreed and assumed by all members of a community. Because it essentializes human values, the fairy tale constitutes an ideal learning content in relation to the objectives of moral education. The wide and varied symbolism of the heroes who evolve in the fairy tale world, the situations they go through and the key tools in overcoming some crises turn the fairy tale into a source of learning with a safe and deep impact on the student, both cognitively and affective and volitional. Knowing the interdependence between the professional skills of the teacher and the training of the student's skills (Ceobanu et al., 2020, p. 277), a teacher has the duty to know what are the sources and contents of learning that optimally respond to the educational needs and interests of those whom he guides. Therefore, the teachers' conception of the educational potential of the fairy tale is a determining factor in the application or exclusion of this content from the instructive-educational/school activities. The study we are carrying out aims to determine the level of knowledge of the educational potential of the fairy tale by teachers from schools on both banks of the Prut and provides valuable data about their beliefs regarding the effectiveness of the fairy tale in training and educating the younger generations.

Keywords: fairy tale, education, sustainable development, sustainability

1. Introduction

Based on the experimental results obtained in our research, we analyze in this article the conditions under which the fairy tale, considered as learning content, could be effective in relation to the objectives of education for sustainable development. In this analysis, we capitalize on data collected in a pedagogical experiment, in which we aimed to determine the general conception of teachers regarding the educational potential of fairy tales. We will pay increased attention to the discussion about the efficiency of the fairy tale in training skills specific to education for sustainable development. The motivation for this

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analysis lies in our concern to identify all the ways in which the fairy tale could be effectively harnessed within formal education.

To be competent from the point of view of adopting and developing a sustainable lifestyle implies showing at any moment of life a correct, disciplined, balanced conduct, so that the relationship with the natural physical world, with the economic environment and with human society does not present damages of any kind. Such behavior is acquired especially in the context of education through and for values, a component that the postmodern paradigm of education, under which education is carried out today in Romania and the Republic of Moldova, prioritizes. The educational context thus created is favorable to the achievement of Objective 4 (Quality education) of the 2030 Agenda for Sustainable Development adopted in 2015 by the member states of the United Nations Organization. Peace, ethics and responsibility, gender equality, cultural diversity, tolerance, respect are themes addressed transversally at the level of formal and non-formal pre-university education in Romania, through which the goal of quality education is mainly pursued. When we talk about the quality of education, we have to admit that its most fundamental measure is given by the human, moral and professional quality of the school graduate. This is reflected in the protective and constructive conduct of the individual manifested in relation to everything around him. To the development of the skills that describe this time of conduct, the formation of which is followed throughout the schooling period, the contents of the learning whose selection and didactic processing require increased attention contribute significantly.

Over time, starting from the appearance (in 1812) of the first collection of fairy tales collected by the Brothers Grimm, specialized literature in fields such as folkloristics, aesthetics, linguistics, psychology abounds with direct statements or suggestions regarding the educational valences of fairy tales. Considered the storehouse of perennial human values, the fairy tale could be perceived as an ideal learning content for the formation of moral conduct claimed by the specific framework of a lifestyle based on the principles of sustainable development. But the decision that this literary species becomes one of the contents that enjoys a generous space in school programs must be based on empirical studies carried out in the specific framework of formal education. An important role in the selection of learning contents is presented by teachers' beliefs regarding the effectiveness of the learning contents on the basis of which they organize their teaching intervention. These beliefs represent a strong motivational factor in the direction of the trainers' option for capitalizing on any learning content, implicitly the fairy tale, in the instructive-educational activities.

2. **The teacher's role in selecting learning contents. Theoretical framework**

According to the French philosopher and sociologist E. Durkheim (apud Nicola, 2003, p. 39) „education is the action of adult generations on young ones, with the aim of forming

them, to the latter, certain physical, intellectual and mental states necessary for social life and the special environment for which they are intended."

As we can see, the philosopher emphasizes the role of the trainer (represented in his definition by the *adult generations*) in the process of the learner's development, up to his perfection as a human being. The first teachers are the parents, from whom we take what and how much we need for a long time, because the duty to learn starts from the first day. (Şoitu, 2019, p 229). They are joined by their older brothers through their successes and, above all, through their mistakes (Şoitu, 2019, p 101), grandparents, neighbors, the priest, the community in their hometown and, later, the specialized people in the school premises. Of all the agents which can have the role of a trainer, we will consider only the teacher. In the Durkenian definition of education, the emphasized aspect is related to the effects of his action on the learner. These must be formative. Therefore,

Development is a complex process, determined and enhanced by certain factors whose action is exerted from the inside or outside on the organism or the evolving phenomenon. When we refer to the ontogenetic development of the human individual, we have in mind its progressive growth from a physical, psychological, intellectual, spiritual point of view. This process is determined and stimulated by education in general and school education in particular. In the school space, the one responsible for the development of all dimensions of the human being is, depending on the level of schooling, the educator/teacher/teacher. His roles, within the school and outside it, are multiple. We recall the inventory made by Anita Woolfolk (apud Nicola, 2003 p.562), which includes the most frequent poses of the teacher: expert of the teaching-learning act; motivating agent; leader; guidance counselor; model; reflective professional; manager. Professor Ioan Nicola adds the role of social pedagogue, exercised when the child left the school space, but continues to be an educator for his people, actively taking part and understanding its social-cultural turmoil (Nicola, 2003, p.563). In a volume (from 1999) of school psychology, coordinated by A. Cosmovici and L. Ivan, the pedagogue A. Neculau lists and describes four functions of the teacher in the school: a) organizer of the educational process; b) educator; c) partner in education and d) member of the teaching staff. The last two functions refer to other roles of the teacher, which we can describe as: *mediator of the school-family relationship* and *mentor / learning partner* or even *model of moral integrity* for the professional community to which he belongs.

We find that the role of the teacher is not limited to the relationship with the student to mediate knowledge, but this role is defining for the profession of educator. In essence, the teacher is the leader of the didactic activity that is carried out in order to achieve the objectives provided in the school documents (Nicola, 2003, p. 562). In the absence of its intervention in order to make knowledge accessible, the information contained in school programs and textbooks remains outside the formative effect. They acquire educational value only as a result of their processing and transmission by the teacher within the instructional-educational activity in which the students participate. J. Hattie shows in his study (Visible Learning) that the most important educational contribution is that brought

by quality teaching (Hattie, 2014, p.303), but this aspect depends essentially on the general culture, the specialized culture and the psycho-pedagogical training of the teacher. The three components of the teacher's culture [Nicola, 2003, p.563] will allow him to interact effectively with all learning contents in the direction of their selection and processing, facilitating the student's conscious and thorough appropriation.

According to Ioan Nicola (2003), the selection of learning contents is based on philosophical, scientific, psychological, pedagogical criteria. Knowledge of these criteria by the tutor is the condition for a responsible and correct choice for approaching or rejecting a learning content that can have positive or negative effects on the student's development. In addition, to the fundamental theoretical knowledge in his field of expertise, the teacher has the obligation to have a good psycho-pedagogical training, so that he is able to effectively associate the learning content with the appropriate teaching-learning method, aware at every moment of the changes on which his didactic intervention must produce in the formation of the student.

Taking into account the important role of the teacher in selecting learning contents, we included in our experimental research a component aimed at defining the *current conception of teachers in Romania and the Republic of Moldova about the educational effects of the fairy tale.* We believe that the study we propose is one of the few references in the literature on teachers' *attitudes* towards the *learning contents* they teach students. Although in the last five decades, the study of attitudes in the school environment has enjoyed an increased interest from researchers, the vast body of studies to which we have had access totals research on teachers' attitudes towards new elements that define the school framework (for example: the use of technology, open educational resources), towards new legislative provisions (integration of students with special educational needs into mainstream school) or towards students and their parents. A considerable number of studies concern teachers' attitudes towards new learning techniques or modern methods of teaching and/or assessment. Our searches were directed specifically to previous works, in the field of educational sciences, describing the conception, attitude or interest of teachers in integrating the fairy tale into the series of learning contents, and what we could see was their absence.

For the Romanian space, the situation found could be related to the fact that the current curricula of language and literature Romanian for the level of primary education do not make clear references to the fairy tale, in the sense of having been integrated into the series of literary species recommended to be studied at this level of schooling. As a result, the fairy tale is missing from some school textbooks for the primary level or occupies a space reduced to 1-6 pages in a textbook of about 150 pages. The described situation was found following the content analysis of 9 (alternative) textbooks of Romanian language and literature for the third grade, analysis integrated into our research. In the Republic of Moldova, the fairy tale is mentioned in the school curriculum (by the equivalent term *story),* but in textbooks it occupies the same limited space as in the Romanian ones. In the (unique) textbook of Romanian language and literature for the

third grade, there appear two fragments of fairy tales belonging to world literature, but do not total more than 3 pages. The data obtained from the content analysis of the mentioned curricula and textbooks justify advancing the idea that the integration of fairy tales into instructive-educational activities largely depends on the teacher's conception of the educational efficiency of this literary species.

3. Methodology

The pedagogical experiment we carried out between February and June 2023 integrated two components: *teacher training* and evaluation and *student training and evaluation.* In this article, we will refer only to the first component.

The training of the teaching staff assumed the empowerment of the participants in the segment of designing and supporting instructional-educational activities based on the dramatization of the fairy tale. The training course integrated 30 hours of instructional activities (14 hours- theoretical course, 16 hours- applications) and 10 hours of applications supported by each teacher with his students. After the theoretical training hours, the participants practiced, in teams, applications consisting in dramatizing sequences from Romanian folk tales and cults, an exercise in which they had the opportunity to intuit both the feelings, reactions, possible awareness among students, as well as the teacher's actions that were able to produce these effects. Then, daily, for two weeks, they carried out teaching-learning activities centered on the valorization of the fairy tale as learning content, a pretext for deepening or evaluating some knowledge or preparing some artistic moments for extracurricular activities.

The evaluation of teaching staff was carried out by applying an own tool, which I designed taking into account the possibility that the teachers in the research group may *disapprove*, *be reluctant* or *agree* with the idea of integrating the fairy tale into instructive-educational activities. The evaluation test was applied in three distinct moments of the pedagogical experiment: *initially* (at the beginning of the training course); *intermediate* (at the end of the teachers' training, before the period in which classroom activities were carried out with the students), *final* (after the lesson-type applications were carried out, at the level of the students' class).

The evaluation tool integrated 14 items of different types: 4 items with built answer (open/free) and 10 items with selected answer, as follows:

1. After the time allotted to dramatize the fairy tale, it can be useful for: (Select only one answer!)

a) a teaching unit; (b) a chapter; c) one school year; d) all life.

2. For the previously chosen variant, give only three arguments in favor of using the fairy tale in school. So why do you think the fairy tale makes the lesson more effective?

3. If you are or would become an educational policy maker/school principal/methodist, would you advocate the use of fairy tales?

a) Yes; b) No.

4. If YES, offer three arguments in favor of using the fairy tale!

5. Do you appreciate that in class work you can use the fairy tale?

a) Yes; b)No

6. If YES, how often:

a) weekly; b) monthly; c) half-yearly; d) annually

7. If you were forced to use the fairy tale, you would use it for:

a) learning; b) education.

8. For which content layout do you choose the fairy tale in your activities:

a) symbolism of characters; b) antagonistic situations; c) novel tests imposed on the hero; d) similarities with real life.

9. Do you use fairy tales to exemplify virtues/values/vices/behaviors/professions/models/conflicts/well-being/love of others/love of nature/suffering/wisdom/modesty, etc.?

1. Yes; b) No.

10. Give three examples of heroes who embody certain values.

11. Give three examples of characters who embody certain nonvalues.

12. Most often, you encourage your students:

a) read fairy tales; b) to tell fairy tales; c) write fairy tales; d) dramatize fairy tales.

13. By using dramatization as a method of study, the student succeeds:

a) differentiate between real and unreal; b) discover the consequences of good and bad deeds; c) to become aware of the cause-effect relationship between events/states/ emotions/reactions; d) understand the role and effect of well-chosen words; e) memorize replicas of characters; f) find out the difference between truth and falsehood; g) to be aware of which defects are most common in people; h) learn behaviors specific to dangerous situations (lived by heroes); i) to find motivations for the effort in defense of the good.

14. Role play and dramatization are methods by which participants:

a) experiences positive emotions and negative emotions during performance; b) is aware of the role of paraverbal and nonverbal language; c) build their own value system; d) issue value judgments; e)live situations similar to real life; f) become heroes, heroes of their future lives.

The calibration of the items allowed the calculation of a score for each participant. Depending on the integration of the score in a certain interval, each participant was given a descriptive level (of accepting the action of integrating the fairy tale into instructive-educational activities):

-minimal level- score below 20 p- indicates an attitude against the study of fairy tales in school;

- average level- score between 21-30 p- shows reluctance towards the idea of studying fairy tales in school;

- optimal level- score between 30-40 p - indicates a favorable attitude to studying fairy tales in school.

The scores obtained in the three tests were compared to identify the differences recorded from one stage of the training to another.

The batch consisted of 36 teachers for primary and secondary education, 23 from Romania and 13 from the Republic of Moldova; 19 participants work in urban schools, and 17 in rural schools. Regarding the training level, there were 4 beginners in the batch; 4 teaching staff with permanent qualifications; 5 with teaching grade II; 22 with teaching degree I and 1 doctoral student.

4. Results

To describe current conception of teachers about the effectiveness of studying fairy tales in school, we were interested in the following categories of information:

- information that reflects theoretical knowledge about the fairy tale;

- information that reflects the knowledge regarding the methodology of studying the fairy tale at the level of primary classes;

- information that reflects the level of awareness by the participants of the formative effects of didactic interventions focused on the reception of the fairy tale;

- information describing the attitude (opposed, reluctant or favorable) towards the practice of studying fairy tales in school.

These were reported to the descriptors of the three levels (minimal, medium, optimal) related to the three attitudes (disagreement, reluctance, agreement) of the teaching staff towards the degree of integration of the fairy tale in instructive and/or educational activities.

The analysis of the scores obtained by the participants indicated that all scored above 20p, so none could be assigned the minimum level.

Differences were recorded from one assessment to another, in terms of the number of participants who proved the skills that describe the optimal level of reporting to the idea of introducing the fairy tale into the series of learning contents.

Table 1. Results of repeated testing of teaching staff

LEVEL	INITIAL TEST	INTERMEDIATE TEST	FINAL TEST
OPTIMUM	15	18	19
MEDIUM	21	18	17
TOTAL	**36**	**36**	**36**

The statistical analysis was carried out by applying the Wilcoxon test and indicated that there are no significant differences from the initial to the intermediate test, or from the intermediate to the final evaluation, but there are such differences between the results of the initial and the final test.

The qualitative analysis of the answers of the teaching staff from the research group reveals significant information with the help of which we can describe the current perspective of teachers and professors in Romania and the Republic of Moldova regarding the effectiveness of fairy tales in education.

We will first appreciate the fact that none of the participants showed an attitude against the action of including the fairy tale in the current lessons. On the contrary, they claim that monthly and/or weekly contact of students with the fairy-tale world is beneficial. The option is marked, at the initial test, by 44.5% of the participants, at the intermediate test, by 63.9%, and at the final evaluation, by 72.2%. The other options that the participants could have opted for are: semesterly (which they opted for: initially 36.1%, at the intermediate test 30.6% and at the final 25% of the teaching staff) and annually, the option with the lowest percentage ((19.4%, 5.5%, 2.8%, respectively) in teachers' options in all three tests.

All teachers in the research group would use fairy tales more in educational activities (63.9% -initial, 69.4% intermediate, 66.7% -final) than instructive (36.1%, 30.6%, 33 ,3%). But the percentage values show that about a third of the participants would use the fairy tale in learning activities as well.

Even if in the role of educational policy makers, initially 11.1% of the respondents would not have advocated the use of fairy tales in school education, at the end of the experiment their percentage was reduced to 2.8%. This dynamic shows the fact that, as a result of the theoretical and practical activities within the training course, the teaching staff became aware of the formative effects that exposing children to the ideational content of the fairy tale can have. This awareness motivated the unanimous affirmative answer given by the participants in the final evaluation to the question related to the use of the fairy tale in the classroom ("Do you appreciate that you can use the fairy tale in the classroom activity?").

The methods of receiving fairy tales, which teachers and teachers recommend to students, are reading, telling and dramatizing fairy tales. But 47.2% declare, in the final evaluation, that they also recommend the exercise of writing fairy tales to students. The choice of teachers to dramatize fairy tales is based on the numerous benefits that this method offers to students. In their series, the first three places are: 1) discover the consequences of good and bad deeds; 2) becomes aware of the cause-effect relationship between events/states/emotions/reactions; 3) learn behaviors specific to dangerous situations (experienced by heroes). Another set of benefits for students of receiving fairy tales through role play/drama consists of the following acquisitions: *becomes aware of the role of paraverbal and nonverbal language; they build their own value system; they experience situations similar to real life.*

The content elements that encourage teachers to use the fairy tale for educational purposes are the similarities with real life and the rich symbolism of the characters, and the context in which they feel they can use the fairy tale in the lessons is the one in which they have to exemplify values, virtues, models, behaviours, love towards others, love

towards nature, but also conflicts and ways to solve them. In this way, the fairy tale becomes useful to the student for life, as claimed (in the final evaluation) by 41.7% of the participants (while 25% of them believe that the usefulness of the fairy tale would be limited to a learning unit, 19.4% to a chapter, and 13.9%, indicate the period of one school year).

The formative effects that teachers attribute to the fairy tale are multiple and varied:

➢ the development of thinking, imagination, the spirit of observation, curiosity, intelligence, the ability to express freely or to logically present some events; emotional development;

➢ formation of critical behavior; of one's own value system;

➢ adopting the winner's mentality.

Also, teachers believe that, helped by the fairy tale, the child:

➢ differentiate between good and bad, distinguish between real and unreal, truth and falsehood, qualities and defects;

➢ learn rules of conduct in society; acquires decision-making and decision-making techniques;

➢ he sense the process of permanent change to which the material world is subject and discovers its ephemerality;

➢ discover that deeds have consequences, that good is always victorious, but to acquire it, it is necessary to fight both with one's own weaknesses and with external obstacles;

➢ acquire models of moral conduct;

➢ is encouraged to choose the good, to always remain optimistic;

➢ experience the satisfaction of being victorious over evil;

➢ get familiar with different human types;

➢ intuit the need to acquire values that can guide one's life in order to be happy;

➢ discover who he is as an individual and where he fits into the world around him.

In addition, the fairy tale facilitates the child:

➢ self-knowledge.

➢ his motivation to choose the good is stimulated;

➢ his inventiveness is encouraged.

As characteristics of the fairy tale, which can have a formative impact on the student, the teachers list:

➢ the fairy tale offers a moral/teaching about the triumph of good;

➢ provides behavioral models;

➢ it mirrors the real world; provides models for dealing with difficult situations;

➢ antagonism facilitates the reception of values;

➢ presents an easy-to-remember narrative structure;

➢ the presence of the fantastic is fascinating to children;

➢ it offers the image of an ideal world where human values have a place of honor;

➢ the narrative is timeless, which makes its meanings always valid;

➢ the language of the fairy tale is accessible to children;

➢ collective characters illustrate team spirit;

➢ provides models of independence and encourages the child to become autonomous;

➢ responds to man's need for "story/fabulous";

➢ it is a literary species approved by children, which offers parables and teachings in their meaning;

➢ values traditional aspects in opposition to the wave of modern attitudes;

➢ it is an imaginary world in which the student feels safe, to experience various behaviors and experiences;

➢ it can function as a moral grid;

➢ positively influences the emotional state;

➢ illustrates problem solving and ways to differentiate between right and wrong;

➢ it values well-being, love for nature and fellow human beings.

In a structure with a conclusive aspect, one of the teachers participating in the experiment appreciates that, by reading fairy tales, students experience enthusiasm, love and respect for life.

In the view of the teaching staff in the research group, male heroes with a considerable power to illustrate various poses of good are Harap-Alb[1], Prince Charming[2] and Praslea[3], and the female models are found in: old man's girl[4], the clever poor girl[5] and Cinderella[6]. Antiheroes have the role of highlighting, by contrast, the values embodied by the positive characters. Thus, the sparrow, the kites and the wolf or the grandmother's girl, the stepmother (the teacher) and the Mummy of the Forest are embodiments of human defects against which man must learn to take a stand in order to curb their manifestation or diminish them.

5. Discussions

Looking at the diversity of the educational effects of the fairy tale affirmed by the teaching staff participating in the experiment following the support, for two weeks, of some instructive-educational activities of receiving the fairy tale through dramatization, we can affirm the compatibility of this learning content with the objectives of education for sustainable development.

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[1] The protagonist of the fairy tale "Povestea lui harap-Alb", written by Ion Creangă.

[2] The hero of several Romanian folk tales and cults.

[3] The protagonist of the Romanian folk tale, "The Brave Sparrow and the Golden Apples", collected by Petre Ispirescu.

[4] Main female character from the fairy tale "The grandmother's girl and the old man's girl", written by Ion Creangă.

[5] Main female character from the Romanian folk fairy tale, "The poor girl who is clever", collected by Petre Ispirescu

[6] The main female character from the popular fairy tale Cinderella, (in fr. Cendrillon) whose variant is very well known in the European space is the one written by Charles Perrault.

A first aspect that deserves to be pointed out in this direction is the fact that the fairy tale offers the model of a world where moral values are in the place of honor. The antagonism contributes to highlighting them and makes it easier for the child or adult to understand the need to develop a moral conduct in relation to the world around him. The fairy tale "The grandmother's girl and the Old Man's Girl" (Ion Creangă) masterfully capitalizes on this valuable function of antagonism. The actions of the old man's daughter are opposed by those of the grandmother's girl, and from the contrast thus created a strong message is born that urges the adoption of a conduct in the spirit of all moral values. Through the systematic exercise of applying values, man comes to the conviction that doing good is defining his being, and in this awareness will be the motivation of his choice to serve good in all its forms of manifestation. An attitude defined by respect for the natural environment and for people definitely leads to a decrease in the potential for conflicts to occur, to deplete goods and resources, to affect the quality of people's lives now and in the future. The fairy tale "The Story of Harap-Alb" (Ion Creangă) can be used to illustrate this attitude. When he encounters a wedding of ants on a bridge, Harap-Alb turns around and crosses the river through water to protect them. The bees are built shelter from a piece of dry trunk, and with Setila, Ochila, Flamanzila, Gerila and Pasari-Lati-Lungila they form a close friendship, although each is different in his own way. Acceptance of diversity, tolerance, empathy are other essential values for a sustainable life, which the fairy tale generously cultivates.

Another aspect as valuable as the one presented previously is the rich symbolism of the elements that define the world of the fairy tale. The characters, the hero's tests, the magical items, the unique spaces where the action takes placethey are symbolic and can carry rich meanings, relevant according to the objectives of the educational situation. Similarities with the real world are easy to notice, the teachings are obvious, and their appropriation does not require additional effort because they are realized through affective reception. In this regard, we mention the situation in which a child or a young lecturer of the folk fairy tale "Prâslea the mighty and the golden apples", impressed by the hero's gesture of forgiving his brothers who planned to kill him, understands that forgiveness is the unique way to form a culture of peace and collaboration, important objective of education for sustainable development.

In addition, the conflicts present in the fairy tale world or the violent confrontations are themselves modelsof attitude towards all forms of evil. Because the entire action of the fairy tale is under the sign of the symbolic convention, the violent episodes in the fairy tale are also understood as exemplary situations and not as truthful facts. Therefore, the concern that the fairy tale might negatively influence the behavior of the receiver is not justified.

Conclusions

The wisdom of the fairy tale can be successfully harnessed in the context of formal education, and not only, to develop skills, a conduct and a mentality in accordance with the principles of sustainable development. Those who develop educational programs and projects focused on achieving the goals of ESD could find in fairy tales ways to materialize the values in which humanity is intended to live in this century.

The receptive attitude of teachers from Romania and the Republic of Moldova towards the capitalization of fairy tales in school education encourages authors of curriculum and school textbooks to expand the space allocated to this literary species among learning contents. The reluctance of some teachers can be discouraged by integrating into the curriculum of the psychopedagogy discipline a module dedicated to fairy tale and its efficiency in education.

In general, studies of teachers' beliefs about the effectiveness of learning contents in relation to some educational objectives are beneficial because they provide arguments for a more rigorous selection of them.

References

Ceobanu, C., Cucoş, C., Istrate, O., & Panişoara, I.O. (2020). *Digital education*. Iasi: Polirom;

Cosmovici, A., & Jacob, L. (1999). *School psychology*. Iasi: Polirom;

Cretu, E. (1999). *School psychopedagogy for primary education*. Bucharest: Aramis;

Cucos, C. (2006). *Pedagogy*. Second Edition Revised and Added. Iasi: Polirom.

Golu, P., Verza, E., & Zlate, M. (1997). *Child psychology*. Bucharest: Didactic and Pedagogical Publishing House;

Hattie, J. (2014). *Visible learning. Guide for teachers.* Bucharest: Three;

Labăr, A.V. (2008). *SPSS for educational sciences. Methodology of data analysis in pedagogical research*, Iași: Polirom;

Nicholas, I. (2003). *Treatise on school pedagogy*. Bucharest: Aramis;

Popescu-Neveanu, P. (coordinator), & Cretu, T. (1990). *Psychology. Manual for high schools*. Bucharest: Didactic and Pedagogical Publishing House;

Şoitu, L. (2019). *Together growth*. Iasi: Junimea.

Ungureanu, M., (2021), *Basmul, conținut al educației morale*, în volumul Conferinței „Integrare prin cercetare și inovare", Chișinău.

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Programa școlară pentru disciplina Limba și literatura română, *clasele a III-a și a IV-a,* Anexa nr. 2 la ordinul ministrului educației naționale nr. 5003/ 02.12.2014; act normativ aplicat în România.

Curriculum național. Învățământul primar, document Aprobat la Consiliul Național pentru Curriculum (Ordinul Ministerului Educației, Culturii și Cercetării nr. 1124 din 20 iulie 2018); act normativ aplicat în Republica Moldova

Promoting adult education for a sustainable future: fostering healthy lifestyles

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Abstract

As an integral part of the concept of lifelong learning, non-formal learning enables adults to acquire the necessary skills to adapt more easily to the ever-changing social life.Concerned with these values, through the lens of the ODD, with reference to Health and well-being, which indicates "ensuring a healthy life and promoting well-being for all ages", we wanted to investigate a group of teachers who followed a training program aimed at the healthy lifestyle of the educable. Healthy lifestyle education can play a significant role in changing health behaviors and attitudes towards our own health, as well as those we educate. Teachers become not only mentors for children, but also role models. Starting from this concept, we want to find out if the learners are able to include health-promoting behaviors in their daily routine and if they implement strategies that promote health, well-being, for themselves, including the learners. A number of N=63 teaching staff from Iași county, located in the north-eastern part of Romania, participated in this study. Of these, a number of N=35 respondents teach at the preschool education level and a number of N=28 at the primary education level. All respondents are female, of whom N=49 teach in urban areas, and N=14 in rural areas. The research tools were applied in electronic version, using Google forms. The obtained data were statistically analyzed using IBM SPSS software. Findings indicate significant effects of the training program on all target variables. The results of this research will be used to add to our knowledge of behavioral change and learning in adulthood.

Keywords: teacher training; healh promoting behaviors; obesity; sustenable educational interventions.

1. Introduction

1.1. *Folk wisdom – the basis of sustainable development*

An unwritten commandment, referring to the milestones of a fulfilled life, says that in life you must "Make children, build a house and plant a tree! This being your purpose as a HUMAN!" This popular wisdom anticipated the public policies and strategies that are today on the sustainable development agendas of the countries in the consortia. Building

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the three pillars during life – social (family/children), economic (shelter/assets) and environmental (the tree) is seen as the pinnacle of a successful life. It is indisputable that societal values and principles have faded in the face of the whirlwind of change in everyday life, and globalization has placed us in front of several challenges. We need a new approach, a new way to preserve our assets, develop ourselves and create a better future for the generations that will last on Earth.

The concept of sustainable development took shape over time, primarily aiming at the continuous improvement of the quality of life for future generations. Today, we are talking about 17 Sustainable Development Goals (SDGs) of the 2030 Agenda that can be found in the public policies of EU countries and beyond. With a new vision, involving 193 signatory countries to the agreement at the UN General Assembly (2015), the Agenda calls for action from all countries, regardless of economic status. Under the banner of *Transforming our world*, the plan undertaken by the decision-makers of the participating countries comes and pursues long-term economic growth, climate change and environmental protection, a series of social needs with reference to jobs, education and last but not least to health.

Ensuring a healthy life and promoting well-being for all at all ages is foreseen in the 3rd SDG *Health and well-being*, within the framework of the Sustainable Development Strategy. This objective aims at a number of strategic targets, including *The promotion of health education, prevention and a healthy lifestyle.* (Romania's Sustainable Development Strategy, 2018)

1.2. *Obesity - major problem in meeting the sustainable development goal with reference to Health and well-being.*
Today we are facing an expansion of obesity and overweight among adults and children all over the world. It is necessary to intervene urgently, because of the adverse long-term impact that this disease of the 21st century has on the health of individuals. Over time, it has been found that obesity is linked to a number of diseases and is responsible for the occurrence of type 2 diabetes, heart disease and cancer, including musculoskeletal complications, etc. "*Across the WHO European Region, obesity is likely to be directly responsible for at least 200 000 new cancer cases annually, with this figure projected to rise in the coming decades. For some countries within the Region, it is predicted that obesity will overtake smoking as the main risk factor for preventable cancer in the coming decades.*" (World Health Organization, 2022, p.11)

In terms of statistics, the same report (WHO European Regional Obesity Report 2022) presents data on overweight, recorded among the population, which have reached epidemic proportions, affecting a segment of 60% of adults, 7.9% of children aged less than 5 years old, and one out of three school-age children is registered as overweight or

obese. (World Health Organization, 2022, p.10) The 2023 Atlas of the World Obesity Federation warns us of alarming figures, which estimate that the number of obese or overweight people in the next 12 years will be more than 4 billion, which represents a percentage of 51% of the world's population. As for childhood obesity, its increasing prevalence is expected to be more pronounced among children and adolescents, increasing globally in the period 2020-2035 from 10% to 20% among boys and from 8% to 18% among girls. (World Obesity Federation, 2023)

In addition to the physical suffering and medical problems it causes, obesity is also a global economic problem. The impact of obesity on health systems is a major one. It has reached 20% of total health spending, according to the McKisey Global Institute study, and is expected to exceed $4 trillion annually by 2035, equivalent to 3% of global GDP. These are annual economic impacts, and the numbers are comparable to the data that caused the world economy to shrink by 3% of GDP in 2020, the worst year of the COVID-19 pandemic. (World Obesity Federation, 2023)

The hope of an action to recover the "epidemic" of obesity, in addition to the decision-making steps regarding the socio-political-economic dimensions of health and well-being, also lies in the creation of more favorable environments for educating certain behaviors, beliefs and attitudes at the earliest possible ages, as well as the reevaluation of behaviors, beliefs in adulthood, through the prism of a bio-psycho-social-spiritual well-being.

1.3. *Lifestyle in defining the individual's health*
The World Health Organization defines health as "that state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity." Thus, knowing the fact that health is based on the three big dimensions: biological, psychological and social, we want to have a relationship of unity between them, with a protective role on the well-being of the individual. Among the factors influencing health dimensions is lifestyle. *William Cockerham*, chairman of the research committee on the sociology of health at the *International Sociological Association,* attributes a very important role to lifestyles in maintaining positive health: *"Medicine cannot cure chronic diseases, and a person's lifestyle can cause them or prevent the occurrence. Consequently, health is seen as an achievement - a goal for which people must "work", otherwise they risk losing the "game"*. (Cockerham, 2007, apud Vasile, 2010, p.67) As shown by American epidemiologists, in A. Restian's analysis, approximately 30% of human pathology is determined by genetic factors, 30% by environmental factors and 40% by lifestyle. (Restian, 2010) It is in vain that we have a man who is born healthy and lives in a favorable environment, if he has an improper lifestyle. Other researchers show that human pathology depends 20% on biological factors, 19% on environmental factors, 10%

on health systems and 51% on lifestyle. This means that human health depends more on his lifestyle than on biological factors and the activity of health systems, even in the conditions where medicine has made undeniable progress.

Thus, health risk behaviors have negative consequences both in the short term and in the long term, considerably reducing the quality of life and well-being of the person. Lifestyle is a determined fact, but it also determines in turn. The consequence of the individual's adherence to a certain lifestyle segment becomes like an existential pattern, being reinforced by voluntary decisions and actions, which ultimately affect our health or not.

1.4. *Education - premise in the prevention of obesity*
According to Downie & Tannahill's health model, health promotion is located on three interrelated dimensions: prevention, health protection and health education, where the subject (individual) becomes a receiver in the first two, changing into an actor when we are talking about the sphere of health education. (Pommier & Jourdan, 2013)

Health literacy is defined by the WHO (1998) as that cognitive and social skills which determine "the motivation and ability of individuals to gain access to understand and use information in ways that promote and maintain good health". (Sørensen, Van den Broucke, Fullam, *et al.*, 2012)

When we talk about prevention activities, this fact also implicitly refers to the educational perspective. It is known that *"Education is that reconstruction or reorganization of experience that adds to the meaning of the previous experience and that seeks the ability to direct the evolution of the one that follows".* (World Obesity Federation, 2023, p.12) Education is the bridge that connects us and our future, connects us to the past through the present. Today education is approached in close connection with the problems of the contemporary world. Alongside government policies, the school is the ideal place to promote health by reinforcing education about nutrition, physical activity and changing behaviors towards a new, healthy lifestyle.

The promotion and maintenance of health, *of a healthy lifestyle,* can only be achieved by educating citizens, forming their beliefs and behaviors starting from the youngest age in order to strengthen health and harmonious development.

1.5. *Learning and non-formal education of adults from the perspective of the need of developing a healthy lifestyle*
In agreement with the UN and EU recommendations, Romania set out within the National Strategy for Sustainable Development 2030 to develop skills "that help individuals to reflect on their own actions, taking into account their current and future social, cultural, economic and environmental impacts. This education must become a component part of

the quality of education, inherent in the concept of continuous learning." (Romania's Sustainable Development Strategy, 2018, p.38)

Non-formal education comes to complement the formal educational process. The legislation of non-formal education by the Parliamentary Assembly of the Council of Europe (2000) through the Recommendation on "Non-formal Education" underlines its importance in the strategy of lifelong education, reflected in the educational programs and policies assumed: "*L'Assemblée constate que les systèmes d'éducation formalle ne peuvent à eux seuls faire face à l'évolution technologique, sociale et économique rapide et constante de la société, et qu ils très très être renforceur par des pratiques educatives non formales."* . (Assemblée parlementaire, 2020)

The fields of action of non-formal education are diverse and they meet the current problems. They fill existing gaps and focus on a palette of modern contents, targeting goals and messages in line with the needs of the modern world. The list of these contents is always open and is supplemented as new social phenomena become educational objectives. As responses to the imperatives of the contemporary world of a political, economic, ecological, sanitary, etc. nature areas of involvement emerged that can be summarized as follows: emotions and social relations; physical development and bodily health; language, communication, media; creativity, art and aesthetics; natural sciences, environment, technology; values, participation and democracy. (Coulet, 2011, pp.1-4)

As an integrant part of the lifelong learning concept, non-formal learning enables adults to acquire the necessary skills to adapt more easily to the ever-changing social life. This can take the form of various individual or collective learning activities that are organized outside the formal education system: vocational skills acquisition programs, on-the-job training courses, structured online learning, adult literacy activities or programs of basic education of early school leavers. These non-formal education interventions allow the accumulation of experiences that can be compared to formal professional experience and deserve to be recognized as such.

In this context, there was a need to train the necessary skills of teaching staff in the innovation of didactic strategies for teaching-learning-evaluation of the optional subject, which aims at the formation of a healthy lifestyle during early childhood. The professional training course "Treasure from the bag with health - Methodological strategies for increasing the quality of children's lives" aimed at empowering the participating teachers in order to carry out teaching-learning-evaluation activities through the active involvement of children, providing both correct, structured and accessible knowledge about the healthy lifestyle, as well as ways of designing, organizing, implementing and evaluating modern strategies.

In response to the problem of the expansion of obesity and overweight among children in all age groups, the teaching of an optional subject aimed at the formation of a

healthy lifestyle during childhood creates the prerequisites for the acquisition of healthy habits, which will be practiced throughout life the person, favoring the maintenance of good health for as long as possible.

The promotion and maintenance of health, of a healthy lifestyle, can only be achieved through education, with the aim of assimilating truthful knowledge, developing healthy habits and changing behaviors into a new, healthy lifestyle, regardless of age.

1.6. *The teacher - a role model in learning*
Pedagogical practice has progressed over time, changing the teaching approach.

The child is an active participant in the learning process and develops according to the opportunities provided.

Acquiring healthy eating habits, as well as practicing physical activity at an early age, is based on sustainable and representative change at the level of individual behavior, including at the level of perception, thinking or observable responses to environmental demands.

Cockerham, in developing the healthy lifestyle model (Cockerham 2005, 2016) shows that the basis of appropriate health behavior is the transformation that takes place during the socialization interaction of the economic environment and the contextual social culture of the individual. Thus, social theories and models (Burdette Amy M., Needham Belinda L., Taylor Miles G. and Hill Terrence D.. 2017) approach the individual's behavior in a social and cultural context. They focus on changes at the community level, where subcultures have a great influence, and members of a restricted environment will exert a significant influence on the individual's behavior.

From this perspective, the child in the school environment becomes the core of the pedagogical effort, and this implies the continuous revision of pedagogical theories and practices due to the various generations of children.

Therefore, the continuous participation of teachers in training courses is necessary to improve their practices, in trend with the evolution of society, to be adapted to the needs and interests of the children they guide. In this process of professional development there is a need for more and more people equipped with critical thinking, with skills to adjust learning contents and willing to adapt to a changing world. Teachers will become not only mentors for children, but also role models, and the evolution and becoming of the future citizen depends on the quality of the teaching act.

The formative-educational effects of learning are directly related to the level of engagement and individual and collective participation of individuals in the training process. In this sense, we wanted to focus in our approach on the behavioral component with a protective role on the health of teachers who attended the professional training course "Treasure from the traista with health - Methodological strategies for increasing

the quality of children's lives", to see if there has been a change and if this has determined the promotion of a healthy lifestyle among children, by carrying out the optional activity.

We hope that our research will make practitioners aware of the importance of their own development and pay more attention to the didactic act centered on the skills of identifying the factors that influence health and the components of a healthy lifestyle, avoiding the problem caused by obesity.

2. Materials and Methods

2.1. *Research Design*

Our research aims to demonstrate that the teachers' own health-protective changes in their lifestyle, from the perspective of behavioral modification theories, will determine the decision to promote a healthy lifestyle among children, thus preventing the problem of obesity.

In our approach, we planned to investigate whether among the teachers who attended the professional training course "Treasure from the health bag - Methodological strategies for increasing the quality of children's life" there were changes in attitude, beliefs and behaviors in their own lifestyle .

The investigative approach is a quantitative one (questionnaire-based survey) and contains a set of concrete questions, focused on a goal and a hypothesis, on which we want to shed light for the benefit of practitioners and implicitly of children and their families, in order to adopt a healthy lifestyle.

2.1.1. *Purpose*

The purpose of this questionnaire is to collect information about the inclusion of health protection and to promote behaviors in the trained teachers' own daily routine. We also want to determine whether health-promoting strategies are implemented for one's own lifestyle, including for the formation of healthy behaviors among children.

2.1.2. *Research Objectives*

O1. To determine the existence of changes in attitude, beliefs and behaviors in the daily routine of teachers who participated in the professional training course.

O2. To identify whether the changes in the teachers' own lifestyle, which have a protective role on health, determined the decision to carry out the optional course for educating a healthy lifestyle for children.

2.1.3. *Research Hypothesis*

The changes in attitude, beliefs of the teachers, as well as the inclusion in their daily routine of the behaviors with a protective role on their own health, following the professional training activity, determine the application in the classroom of the optional program for educating the healthy lifestyle among children.

2.1.4. *Dependent variables*

Independent variable - professional training activities based on the development of the capital of professional skills regarding the healthy lifestyle.

Dependent variables

– The attitudes, beliefs and behaviors with a protective role on the health of teaching staff, adopted in daily routine.

- Teachers' interest in carrying out educational activities aimed at adopting a healthy lifestyle among children.

2.2. *Participants*

The target group involved in our investigative approach consisted of 63 teachers employed in educational institutions that offer early childhood education and primary education services in Iași County, located in the north-eastern part of Romania. A survey was applied and responses were collected at the end of August 2023. All the teachers who participated in the research study were female, of different ages and educational levels, coming from both urban and rural backgrounds. The mandatory criterion for participation in the research was to have completed the professional training course "Treasure from the bag with health - Methodological strategies for increasing the quality of children's lives", which aimed at empowering teaching staff to carry out teaching-learning-evaluation activities within the optional subject that aims to form a healthy lifestyle during childhood. Before the start of the study, aspects of the General Data Protection Regulation were considered, and teachers were informed about the purpose and duration of the study and gave their consent, according to EU regulations.

The quantitative method (opinion survey analysis) was used in the research. The survey was used to identify the changes experienced by the teachers who participated in the professional training course. This research method, according to Cohen *et al.* (Cohen, Manion, and Morrison, 2000) collects standardized information using the same instruments and questions for all participants and gather data that can be statistically processed. We have chosen this working tool because we believe it is significant for the purpose, objectives, questions and hypothesis of our research.

2.3. *Instrument*

In this study, the survey was used as a tool for quantitative research with qualitative implications and was delivered in Google Forms. The data were collected between August 12 and 24, 2023, during which the online survey took place. In addition to the data referring to the years of teaching in education, the level of education and the background of the respondents, the questionnaire contained 25 questions, structured in five sections, which included items with one answer, dual and multiple choice items and scaled questions, so as to respond to the methodological, thematic requirements and the characteristics of the investigated group.

The questionnaire covered several dimensions: data regarding the respondents, habits and behaviors, attitudes and beliefs, sleep and movement, weight and nutrition, lifestyle improvement practices.

The 25 items were distributed in such a way as to provide information both about the teachers' opinions regarding the efficiency, practical-applied activities and teaching-learning models of the contents of the training course, as well as about their concrete actions that they undertake in relation to the mode of feeding and resting, of practicing daily movement, of attitudes in managing daily situations as well as their perception of their own behaviors that contribute to the prevention of obesity and the adoption of a healthy lifestyle.

This questionnaire was structured in:

• an introductory section in which some personal information was requested related to: gender, education, seniority in education, place of residence and the cycle of teaching (primary, preschool) in which the teacher teaches;

• the questionnaire itself, which included 25 questions.

The indicators tracked in the questionnaire concerned the following dimensions: attitudes/beliefs; perception of own behaviors; sleep and movement; weight and nutrition; lifestyle improvement practices.

It was also investigated the desire of the participants to carry out the optional for children, which includes essential topics for the development of a healthy lifestyle "Live with health", following the completion of the professional training.

2.4. *Demographic Data*

The demographic data of the 63 teaching staff who participated in the survey are as follows: all participants in the study completed the professional training course "Treasure from the bag with health - Methodological strategies for increasing the quality of children's lives". They had a seniority in education between 2 years and over 20 years. Among the teachers, 1.6% had a seniority between 2-5 years; 22.8% between 5-10 years; 20.6% between 10-15 years; 11.1% between 15-20 years; 44.4% were over 20 years old,

the mean being M = 3.75 and SD = 1.282. Regarding the last level of education completed, 1.6% had high school education, 50.8% bachelor's education, 47.6% master's education.

A percentage of 55.6% of the responding teachers teach at the preschool education level and 44.6% at the primary education level. 77.8% of respondents teach in urban areas, and 22.2% in rural areas.

All the respondents to the survey participated in the professional training course "Treasure in the bag with health - Methodological strategies to increase the quality of life of children".

3. Results

The results of the questionnaire were entered into the database and analyzed with the SPSS program. The participants of the study considered that the professional training "Treasure from the bag with health - Methodological strategies for increasing the quality of life of children" was effective. This opinion was measured with a Likert scale from 1 to 5, where "1" meant "to the least extent" and "5" meant "to the greatest extent". As can be seen in *Table 1*, 77.8% of the respondents considered that for them the training program was effective "to the greatest extent"; 11.1% "to a great extent"; 11.1% "to some extent", with no answer for "to a small extent" and "to the smallest extent".

Table 1. Teachers` opinion on the effectiveness of the training course

Assessments on the development of the training course		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To some extent	7	11,1	11,1	11,1
	To a great extent	7	11,1	11,1	22,2
	To the greatest extent	49	77,8	77,8	100,0
	Total	63	100,0	100,0	

Part of the survey was designed to measure the level of change in teachers' lifestyle behaviors and attitudes following the training course and how these changes may influence the decision to take the healthy lifestyle education elective course, addressed to preschool and primary school children.

Data on change in beliefs and attitudes were measured on a Likert scale from "1" to "6", where "1" means "to the least extent" and "6" means "to a very large extent".

To the question "Do you consider that your attitude and beliefs have changed as a result of acquiring knowledge about healthy behavior and identifying the main health threats caused by an unhealthy lifestyle?" the measured results were presented as follows: 38.1% of the respondents stated that they changed "to a great extent" their

attitudes and beliefs regarding their own way of life after completing the training course; 39.68% "to a great extent"; 15.87% "to a suitable extent"; 1.58% "to some extent"; 4.76% "to a small extent"; "in the smallest degree" there being no answer.

Regarding the teachers' perceptions of their own behavioral changes after completing the training course, they were reflected in the quantification of the answers for the following dimensions: physical health status; mental state; daily movement activity; concern for health; adopting a new healthy lifestyle. As noted in *Table 2*, the respondents declared on a Likert scale from "1" to "6", where "1" means "to the smallest extent" and "6" means "to a very large extent", that they have largely succeeded in adopting behaviors that are conducive to good health.

Table 2 . Behavioral changes following the participation in the training course to promote health education

Changes related to:	a lot of changes	many changes	important changes	some change	unimportant changes	no change
physical health	22,2%	41,3%	17,5%	15,9%	3,2%	-
mental health	31,7%	42,9%	15,9%	9,5%	-	-
daily physical activity	15,9%	23,8%	34,9%	19,0%	4,8%	1,6%
attention to health	36,5%	33,3%	22,2%	7,9%	-	-
adopting a healthy lifestyle	27,0%	33,3%	25,4%	14,3%	-	-

To the question "To what extent are you able to go through the seven steps of emotion management" almost all respondents recognize the emotion they feel "to a very large extent", "to a large extent", identifying the cause and the thoughts that accompany the emotion, managing to anchor themselves in the present, acting appropriately, even though 29 respondents stated that they did not know this technique before taking the training course.

The questions in the section devoted to the adoption of physical activity and rest to the standardized recommendations, accumulated positive answers with reference to the success of sleeping according to the instructions (7-8 hours per night) in proportion of 74.7% and 25.4% negative answers. Of the respondents, 90.5% learned during the training course that insufficient sleep is one of the causes of obesity.

Regarding the assessment of daily physical activity in the last five months (with a minimum duration of 30 minutes per day) a dual response scale was applied. More than half of the respondents, as shown in *Table 3*, failed to exercise daily after the training course.

Table 3. Achieving more dailyphysical exercises in the last 5 months, N=63

		Sample n =63	*Percentage*
Achieving more daily physicalexercise in the last 5 months	Failing to domore dailyphysical exercise	36	57,1%
	Succeeding todo more daily exercises	27	42,9%

We exploratoryly investigated the reasons why survey participants were not successful in achieving optimal daily physical activity. Among the causes mentioned in the questionnaire, the respondents chose the following multiple answers presented in *Table 4*.

Table 4. Reasons for failing to have a regular physical activity, N=63

		Sample n =63	*Percentage*
Reasons for failing to have a regular physical activity	Time spent at work/studying	26	41,1%
	Family and household activities	46	78%
	Body-related complexes	4	6,8%
	Permanent or temporary physical incapacity	2	3,4%
	Limited access to sports facilities	13	22%

We were also interested in whether the respondents had information before completing the training course related to the fact that practicing sports/movement activities results in increased self-esteem. A percentage of 68.3% (N=43) declared that they had this knowledge, and 31.7% (N=20) acquired it following the completion of the training course. In the section for weight and nutrition questions, 39.7% (N=25) of the respondents stated that they eat regularly (3 times a day), 46% (N=29) of the

respondents fail to eat regularly every day, and 14.3% (N=9) usually do not have a meal schedule.

Confidence in the ability to choose healthy food was also measured after respondents attended the vocational training course. As can be seen in *Table 5,* the result of 44.4% is for "to a very large extent confident" in their ability to choose a healthy menu; 28.6% "to a great extent"; 20.6% "to a suitable extent"; 6.3% "to some extent"; "to a small extent" and "to a very small extent" no response was recorded.

Table 5. Confidence in the ability to choose healthy food

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
	To some extent	4	6,3	6,3	6,3
	To a suitable extent	13	20,6	20,6	27,0
Valid	To great extent	18	28,6	28,6	55,6
	To a very large extent	28	44,4	44,4	100,0
	Total	63	100,0	100,0	

Regarding the desire to improve their own lifestyle, the surveyed teachers selected the targeted objectives from the question that contained multiple answers "What are your objectives in relation to improving your lifestyle?", as presented in *Table 6.*

Table 6. The motivations for a lifestyle improvement, N=63

		Sample n = 63	*Percentage*
The motivations for a lifestyle improvement	Adopting a healthy lifestyle	41	65,1%
	Getting more exercises	47	74,6%
	Eating more vegetables and fruits	32	50,8%
	Maintaining the current weight	18	28,6%
	Losing weight	26	41,3%
	Having a more quality sleep	31	49,2%

It was also investigated how these behavioral and attitudinal changes of the teachers following the training course can influence the decision to carry out the optional course with reference to educating a healthy lifestyle, addressed to preschool and primary school children. For this we used the Spearman correlation which evaluated the associations between the hypothesis variables. This statistical analysis, described in *Table 7,* demonstrated that there is a positive correlation between the behavioral and

attitudinal changes of teachers after completing the training course and their decision to carry out the optional course for children, r = 0.449, p = 0.000. In addition, the two variables also mentioned in the table were in a medium positive correlation.

Table 7. Spearman correlation between the teachers` behavioral and attitudinal changes after completing the training course and their decision to carry out the optional course for children

		Correlations	*Their own behavioral changes influenced the development of the activities of the optional course*	*Changed attitudes - beliefs*
Spearman's rho	Their own behavioral changes influenced the development of the activities of the optional course	Correlation Coefficient	1,000	,449**
		Sig. (2-tailed)	.	,000
		N	63	63
	Changed attitudes - beliefs	Correlation Coefficient	,449**	1,000
		Sig. (2-tailed)	,000	.
		N	63	63

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation described in *Table 7* highlights the fact that the decision to carry out optional activities for children at early ages, aimed at forming a healthy lifestyle, increases with the changes in teachers' attitudes, beliefs and behaviors.

4. Discussion

The results of our research show that study participants believe that professional development is essential in acquiring teaching skills to promote a healthy lifestyle among children.

Our study found that there are important changes in attitudes, beliefs and behavior towards health, on several investigated dimensions, following the completion of the training course, which are included in the teachers' own daily routine. They are due to the acquisition of the capital of professional skills regarding the healthy lifestyle and the valid scientific information of the content of the professional training program. The competence to identify factors that influence health, the ability to understand, evaluate

and use information to improve or maintain health (Rootman, Gordon-El-Bihbety, 2008) led a large part of the study participants to change their their own behavior in relation to the way they eat, rest and exercise and to improve their own lifestyle.

Furthermore, our research highlights that teachers who have changed their attitudes, beliefs and behaviors after completing the professional training will experience a significant increase in the skills needed in educational activities aimed at developing healthy attitudes regarding nutrition, physical activity, hygiene and traits of character, as elements of a healthy lifestyle.

The level of health literacy will lead to the change in health behaviors (Kickbusch., 2004) that we consider fundamental in our concern for understanding and predicting health behavior at early ages. This training can be produced under the guidance of teachers who wish to assume the roles of trainers and facilitators of the child's harmonious development and higher quality of life, thus combating childhood obesity.

The study also has limitations in terms of data fidelity due to the fact that the questionnaire was administered only after the training and not before, to track the progress of trainees' attitudes and skills.

In the context of the major and accelerated changes of the contemporary world, we believe that ensuring a healthy state of children should represent one of the priority directions of the educational strategy.

5. Conclusions

We want to raise the alarm to all decision-makers involved in the education of young children to note the benefit in terms of maintaining and protecting children's health if we provide them with educational models and form healthy behaviors, while emphasizing the likelihood of facing the consequences related to overweight and obesity, if there are no immediate competent educational interventions.

The results of this study can bring major changes in educational practices in early and primary education. In this study, we find that the role of the teacher in facilitating and expanding learning through the development of didactic planning and design documents that promote the development of students` skills, with the aim of maintaining health, is very important, especially since there is no official curriculum developed for primary and preschool cycle. This fact, in the long term, is beneficial in the development of cognitive, social and emotional skills, with a protective role on the child's health and the development of a healthy lifestyle, which will be maintained later.

A new direction of action is thus opened, laying the foundations for future professional training courses, which will have a considerable number of hours and be accredited at the national level, with the aim of promoting health education as a goal value among the educable. We hope that in the future existing curriculum policies will take our

findings into account and more emphasis will be placed on maintaining and promoting a healthy lifestyle among children from an early age as a premise in stopping obesity.

References

Anton-Păduraru, D.; Oltean, C. (2015). *Obesity in children and adolescents: epidemiological data and diagnostic criteria*. In: Mocanu, V., (2015), Prevenţia obezităţii la vârsta copilăriei-obezitatea la vârsta copilăriei: factor de risc pentru sănătate de-a lungul vieţii. Iaşi. Editura Gr. T. Popa

Assemblée parlementaire, (2000). *Recommandation 1437*, Discussion par l'Assemblée le 24 janvier 2000 (1re séance), (voir Doc. 8595, rapport de la commission de la culture et de l'éducation, rapporteur: M. Dumitrescu). https://pace.coe.int/fr/files/16762/html

Cockerham, W. C. (2007). In: Vasile, M. (2010). *Stiluri de viaţă în România postcomunistă*, Iaşi: Ed. Lumen

Cockerham, W. C. (2005). *Health Lifestyle Theory and the Convergence of Agency and Structure*. Journal of Health and Social Behavior, 46(1), 51-67. https://doi.org/10.1177/002214650504600105

Cockerham, W. C. (Ed.). (2016). *The new Blackwell companion to medical sociology*. John Wiley & Sons.

Cohen, L., Manion, L., & Morrison, K. (2000). Research Methods in Education (5th ed.). Routledge. https://doi.org/10.4324/9780203224342

Coulet J.-C., (2011). *La notion de compétence: un modèle pour décrire, évaluer et développer les compétences*. In: Le travail humain, 2011, Vol. 74 (nº 1), pp. 1-4. DOI:https://doi.org/10.3917/th.741.0001

Darlington, E., Masson, J. (2020). *Promotion de la santé et réussite scolaire*. Dunod. https://doi.org/10.3917/dunod.darli.2020.01

Huidumac, C., Brînduşe, L. (2017). *Raport naţional - Evaluarea stării de nutriţie a copiilor din ciclul primar prin participarea la proiectul „European childhood obesity surveillance initiative (COSI)"*

Kickbusch I. The Leavell Lecture-The end of Public Health as we Know it: Constructing Global Public Health in the 21st Century. *Promotion & Education*. 2004;11(4):206-210. doi:10.1177/175797590401100402

Mocanu, V. (2015). *Prevenţia obezităţii la vârsta copilăriei-obezitatea la vârsta copilăriei: factor de risc pentru sănătate de-a lungul vieţii*. Editura Gr. T. Popa

Pommier, J., & Jourdan, D. (2013). *La promotion de la santé selon le modèle de Downie &Tannahill.* In a Santé Publique S2(HS2):111, july 2013, DOI:10.3917/spub.133.0111

Restian, A. (2010). *Lifestyle as pathogen factor*, In Practica Medicală – Vol. V, Nr. 2 (18). https://rjmp.com.ro/articles/2010.2/PM_Nr-2_2010_Art-0.pdf

Rootman, I., & Gordon-El-Bihbety, D. (2008). A vision for a health literate Canada. *Ottawa, ON: Canadian Public Health Association*. [Google Scholar]

Romania's Sustainable Development Strategy 2030. (2018). Bucureşti: Paideia. https://dezvoltaredurabila.gov.ro/files/public/10000001/Romania-Sustainable-Development-Strategy-2030-en.pdf

Sørensen, K., Van den Broucke, S., Fullam, J. *et al.* (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health* 12, 80. https://doi.org/10.1186/1471-2458-12-80

World Health Organization. Regional Office for Europe. (2022). WHO European Regional Obesity Report 2022. World Health Organization. Regional Office for Europe. License: CC BY-NC-SA 3.0 IGO. https://apps.who.int/iris/handle/10665/353747.

World Obesity Federation, World Obesity Atlas 2023. Compiled by Tim Lobstein, Rachel Jackson-Leach, Jaynaide Powis, Hannah Brinsden and Maggie Gray. https://data.worldobesity.org/publications/?cat=19

Fostering sustainable public speaking skills: a logos-centric perspective for pre-service teachers

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Abstract

This article is intended for both the teachers involved in the professional training of pre-service teachers, as well as the pre-service teachers. The professionalism of the teacher is determined by several factors. An essential factor in this context is the competence of public speaking. The efficiency of public speaking is determined by the quality of the three dimensions: ethos, pathos, logos. This article reflects epistemological landmarks in the development of logos. The Logos appeals to the rational part of the public mind and provides support for assimilating the essence of the subject expounded by argument. Therefore, the development of the Logos is a continuous process that involves the elaboration of oratorical speeches based on arguments. In this context, the purpose of the research is testing the students' level of logos on the development of the skills to build arguments in oratory speeches based on a logical structure. The sample consisted of 50 pre-service teachers from the Faculty of Psychology, Educational Sciences, Sociology, and Social Work at Moldova State University. The students filled a questionnaire consisting of 10 items that cover some basic aspects of logos. The data reveals that the respondents are partially aware of the structure of a public speech. At the same time, students are convinced of the necessity to use arguments in discourse but are unaware of or incorrectly identify the elements of argumentation in a text. Thus, we infer the necessity to develop argument-building skills in public speaking based on a logical argumentative structure for students.

Keywords: public speaking, ethos, pathos, logos, pre-service teachers.

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1. Introduction

Human beings are social creatures, therefore, to live and coexist with their peers in society, they need communication to convey their thoughts and leverage the ideas of others. In this regard, communication involves an exchange of intentions.

Human cohesion is primarily achieved via communication in general and through speech in particular. The art of giving a speech, known as the art of oratory, is the art of speaking, however, not in any way, by anyone, or anywhere, but by an orator in front of an audience, adhering to certain requirements and having a specific purpose. In this context, logos, the art of composing speeches and delivering them convincingly and beautifully in public, is essential to successful oratorical communications.

Related to the professionalism of the teachers the development of students' logo is essential, in that, it contributes to build an effective communication relationship based on facts, examples, evidence, presented in the arguments of the discourse – the essential elements in building a qualitative discourse.

In this context, the purpose of the research is testing the students' level of logos on the development of the skills to build arguments in oratory speeches based on a logical structure.

BACKGROUND

The Concept of Public Speaking

Public speaking has been and remains an essential skill, appreciated by the society since ancient times, with applicability in various fields: politics, business, education, and others.

Platon (apud Sălăvăstru, 2010) treats the oratory/rhetoric as "the art of conquering the soul through discourse".

Cicero (apud Rudd, 2008) describes oratory as "the art of speaking in public to persuade the listeners".

According to Aristotle (apud Furley & Nehamas, 1994), "oratory is the use of all available means of persuasion".

Padron (2012) defines oratory as "the art of speaking in public with clarity and eloquence; the ability to excite and persuade".

According to various authors (Edwards & Reid, 2004; Henrik, 2021), oratory is the "practice of public speaking" and rhetoric is "a principle of persuasion described by theorists of public speech and promulgated by teachers in work of instruction".

The analysis of these meanings highlights the complexity of rhetoric, which, over time, has structured itself into a three-dimensional construct - the rhetorical triangle, consisting of ethos, logos, and pathos (Figure 1).
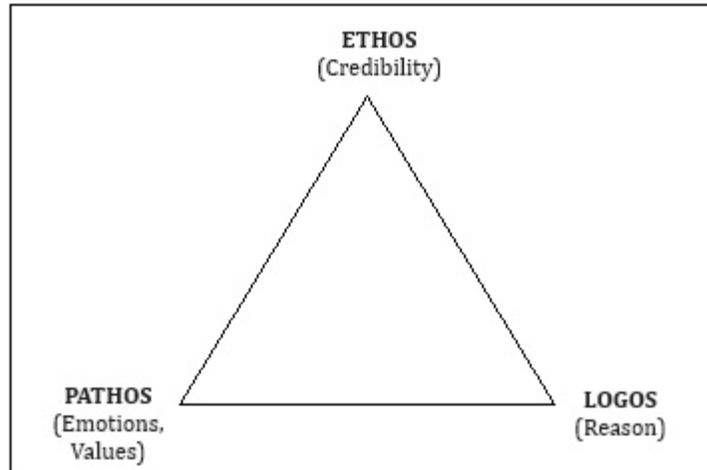
Figure 1. The Rhetorical Triangle (Freese, 1926)

Ethos reflects the speaker's intelligence, virtue, morals, and self-confidence by highlighting their professional experience in a particular field. In Dlugan's opinion (2010), ethos includes qualities such as credibility, authority, reputation, and similarity to the audience. *Credibility* encompasses the speaker's personal qualities, such as kindness and punctuality, and abilities of conveying positive energy, using personal life examples, handling questions during the speech, and more. *Similarity* reflects the speaker's actions in establishing a harmonious connection with the audience. These actions may include adapting language to the audience, displaying appropriate manners for the context, dressing appropriately, sharing firsthand experiences, presenting examples tailored to the audience's interests, using data from reliable sources, and being available for post-speech interaction and communication. *Authority* and *reputation* are similar dimensions and pertain to individuals with expertise in a field, having knowledge and skills to deliver their message. This aspect differentiates one speaker from another.

Pathos involves establishing an emotional connection with the audience, tapping into their deep emotions and beliefs to integrate them into the subject matter. Pathos often makes the audience feel like they have a personal stake in the information provided and is often the catalyst that guides the audience into action. The characteristics of pathos comprise emotions and feelings, sensation, and motivation.

Logos employs logic, reasoning, evidence, and necessary facts to support an argument. Logos appeals to the rational part of the audience's mind and supports the assimilation of the essence of the subject at hand. Logos strategies are often used to reinforce the impact of pathos on the audience. Logos elements include evidence, proof, statistical data, universal truths, and more.

Thus, based on the relationship between self (*ethos*) and others (*pathos*) via *logos*, we synthesize the profile of the orator (Figure 2).
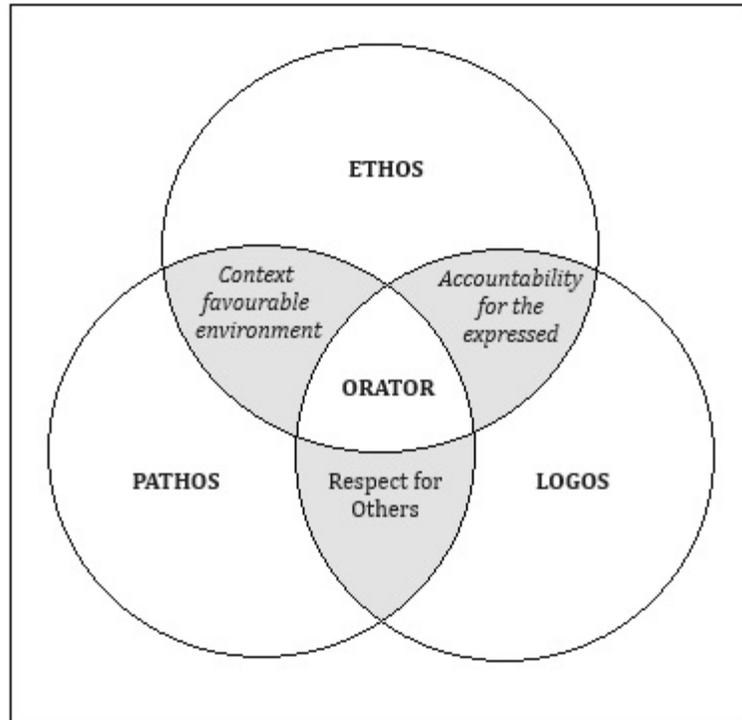
Figure 2. The Profile of the Orator
Source: Author's own conception

In this way, oratory communication is a skill demonstrated in practice by effectively conveying messages to an audience through spoken discourse.

The Role of Logos in Public Speaking
Logos concerns the way a discourse is constructed. The logic and expressiveness in public discourse can influence the audience to a greater or lesser degree. An important aspect of discourse that influences the audience is the logical order of arguments. In this context, an essential characteristic of the orator is persuasiveness – the ability to convince the audience through arguments, thus encouraging the audience to adopt a particular behaviour (Nedelea, 2006).

Examining the etymology of the term "persuasion," we find ourselves going back to the time of the Romans, during the era of the *suasoriae*, a period when students engaged in exercises at rhetoric schools to learn how to compose deliberative speeches. This practice was not based on specific situations but rather on poetic scenarios related to historical or mythological characters. Thus, persuasion is closely tied to the realm of deliberative discourse, meant to persuade a specific audience about the utility and wisdom of making a particular decision of public significance (Druță, 2010).

Logos represents one of the three components of persuasion, alongside ethos (the

credibility of the speaker) and pathos (the emotional aspect of the discourse), and it pertains to the rational and logical arguments presented in a speech to persuade the audience.

Therefore, in public speaking, logos is essential in building a solid and coherent argument based on facts and concrete evidence. To use logos effectively, the orator must be well-informed and have an in-depth understanding of the speech topic, allowing them to provide relevant examples and persuasive arguments.

The structure of the logos in a public speech can vary depending on the subject and the target audience. However, several common elements are necessary to draft a coherent and persuasive presentation, including *the premise, the argument, concrete examples, and the conclusion*.

The *premise* entails the initial/introductory statements of an argument. It is paramount for a discourse to begin with a definite premise that forms the basis of the argument. Thus, the premise could be a statement, a thesis, a question, a piece of news, or a declaration meant to capture the audience's attention and provide an idea about the topic of the speech.

The *argument* consists of expert opinions, evidence, analogies, and values that support the ideas or concepts stated in the premise and might be used to influence and persuade the audience to accept a particular position.

Bieltz (2012) claims that an argument is: "an idea, behaviour, or gesture intended to impose an opinion or action by claiming an assertion or attitude". Therefore, the argument is the most important means of intellectual justification or support for an idea or theory.

Golu (2002) interprets an argument as "the highest and most elaborate intellectual function specific to human thinking".

To craft a compelling and convincing speech, it is essential to present well-structured, logically organized arguments grounded in factual and objective information.

In this context, counterarguments also play a significant role. Addressing potential counterarguments can anticipate the audience's objections. This can assist in strengthening the speaker's arguments and reducing any doubts or scepticism from the audience.

Concrete examples - using concrete examples can help illustrate the arguments and shed light on the subject of the speech. This might help the audience better understand the topic and establish a stronger connection with the speaker's message.

The *conclusion* implies summarizing the arguments at the end of the speech and formulating coherent conclusions that emphasize the speaker's main point of view and encourage the audience to act or consider the speaker's message.

The efficient design and delivery of a public speech by an orator is made possible using connectors indicative of the type of logical relationship between argumentative sentences.

Thus, in the work *"Text Theory: Key Terms"*, the authors (Constantinovici et. al., 2011), classify connectors based on their functions: those that mark the thesis: *our opinion is that we will show that, it is worth noting that;* those that introduce premises: *considering that, as,*

because, in fact, proof that, thus, also; those that introduce the argument: *we will demonstrate why, to put it more clearly, the reasoning is as follows;* those that introduce a premise or data (justifiers)*: because, in order that, in fact, as a matter of fact, given that, how, proof that etc.;* those that introduce the first argument or premise: *first of all, firstly, let us begin with..., it should be noted first that..., the first point refers to..., let's start with...;* those that introduce the following arguments or premises: *in addition, secondly, furthermore, likewise, on the other hand, not only, but also...;* those that introduce the last argument*: finally, lastly, but not least;* those that introduce the general rule *(generalizers): based on the rule highlighting that..., given that..., it is valid that../ then..., it is known that..., assuming that..., considering that..., then etc.;* those that introduce the manner or qualifier *(modals): as it seems, in my opinion etc.;* those that introduce the source or the authority *(guarantors): as the author mentions...;* those that introduce reservations (relativizers): *only if not, except for etc.;* those that introduce a counter-opinion *(alternatives): I do not believe that I would not agree when you state that, it does not seem to me that..., the thesis does not convince me;* those that link the arguments together: *and, but, yet, however, or;* those that introduce the thesis or conclusion *(conclusive): therefore, thus, hence, this is why etc.*

Thus, connectors underpin the orator's argumentative strategy, aiming at providing acceptable grounds for the audience to be convinced of the truth of the thesis (Șatravca, 2020). Therefore, as stated by Larson (2003), through these connectors, the argumentative process can be constructed, in which the "persuasive agent" seeks to exert influence on the "persuaded agent" to convince them to adhere to their opinion and the theses they support. So, argumentation is a set of discursive techniques aimed at eliciting or increasing the adherence of those present to the ideas/theories presented (Șatravca, 2020).

Argumentation is a *logical practice* highlighting the dynamic aspect of reasoning. Its goal is to provide a concrete utility to various forms of reasoning, which materializes in the justification (grounding) of a proposition within a dialogical relationship. In this context, argumentation is the organization of propositions by means of reasoning with the purpose of justifying (proving) another proposition so as to persuade the interlocutor about the truth or falseness of that proposition (Sălăvăstru, 2002).

The proposition that is thus justified is called the *thesis/claim* of the argument. The statements justifying the thesis are termed the *grounds* of the argument. The principle, law, or norm by which the grounds constitute the sufficient condition of the thesis, and the thesis, in turn, is the necessary consequence of the grounds, is called the *foundation/backing* of the argument (Sălăvăstru, 2002).

The thesis/claim, grounds and foundation/backing are elements of the Toulmin Model (1993), a logical structure used to write an argumentative text.

Considering the Toulmin Model, we propose an argumentative text based on Balzac's statement: *"Moral suffering, before which physical suffering pales, nevertheless*

excites less pity, because it is not seen" (Table 1).

Table 1. *An Example of an Argumentative Text Based on the Toulmin Model*

Elements of argumentation	Examples
The thesis/claim of the argument	Moral suffering excites less pity
The grounds of the argument (Reasoning, evidence, proof)	Moral suffering is not seen
The foundation/backing of the argument	The moral suffering that is not seen excite less pity

(Toulmin, 1993)

The breadth of argumentation can vary from a single ground (reasoning) capable of proving a thesis to multiple reasonings serving the same purpose. Regardless of how broad an argument may be, it can be reduced to the minimal sequences of argumentation, those in which we deal with a single ground or reasoning of the thesis. In fact, the thesis of the argument does not encompass the entire argumentative process; on the contrary, the entire argumentative process is set in motion to prove it, to establish it. The essential role in this complex process belongs to the other two elements: the *ground* and the *foundation of the argument* (Sălăvăstru, 2002).

Another recognized model of argumentation used in public debates is the SExI argument model (Table 2):

Table 2. *The SExI Argument Model*

The elements of the SExI argument model	The essence of the SExI argument model	An example of SExI argument model
Statement (S)	The assertion or claim comprising the premise/thesis/idea to be demonstrated, as well as the expression of one's opinion about it.	Homework assignments hinder students from developing in their areas of talent.
Explanation (Ex)	A set of logical judgments constructed based on one or more premises/statements, which lead to a conclusion.	Pupils' free time should be free/unrestricted. That is, it should allow pupils to engage in activities they cannot do during their study hours. The time for school-type study is the time spent at school, while the free time overlaps with the time spent outside of school. If a child is musically gifted, they are unlikely to develop the skill in music education classes. They are more likely to develop this talent outside of school. However, this will only happen if their extracurricular time is not taken up with something else, such as homework.
Illustration (I)	Examples, evidence, or specific instances that further clarify and strengthen the argument	Numerous scholarly studies, most notably by Ken Robinson (2015), prove that schools do not sufficiently foster creativity in students, with the only available time for creativity development being time spent at home. Countries that encourage creativity among students through their education systems are precisely those that have removed homework

		from the teaching practices (Finland, the United Kingdom, the Netherlands, etc.).
Impact (I)	The consequences of adopting one point of view or another, which emphasise the significance or relevance of the argument.	We are not only considering these pieces of evidence but also the consequences of this practice of assigning a lot of homework to pupils. The most unfortunate consequence is that most students with a dominant talent are put in a position of giving up on developing it to its full potential. This is why homework should be banned.

(Cerchez et. al., 2016)

Thus, argumentation is a complex process consisting of several elements, especially the argument, used in the discourse to influence and persuade the audience to accept a particular position.

Diagnosing logos in pre-service teachers

Research purpose

Testing the students' logos on the development of the skills to build arguments in oratory speeches based on a logical structure.

Participants

The sample involved in the questionnaires consisted of 50 pre-service teachers from the Faculty of Psychology, Educational Sciences, Sociology, and Social Work at Moldova State University in their first and second years of study.

Research instrument

To assess the students' understanding of logos in public speaking, we drafted and implemented a questionnaire consisting of 10 items that cover some basic aspects of logos: the structure and content of discourse, the use of rational arguments in drafting a speech, and the ability to identify arguments within a text/discourse.

Results

The results from the questionnaire applied to the experimental sample are presented further.

Thus, the responses to Item 1, in which respondents were asked if they have ever delivered a speech in public, highlight that:

- 50% of students rarely delivered a speech in public;
- 28% of students delivered a public speech only once;
- 18% of students often delivered a speech in public;
- 4% of students never delivered a public speech (Figure 3).
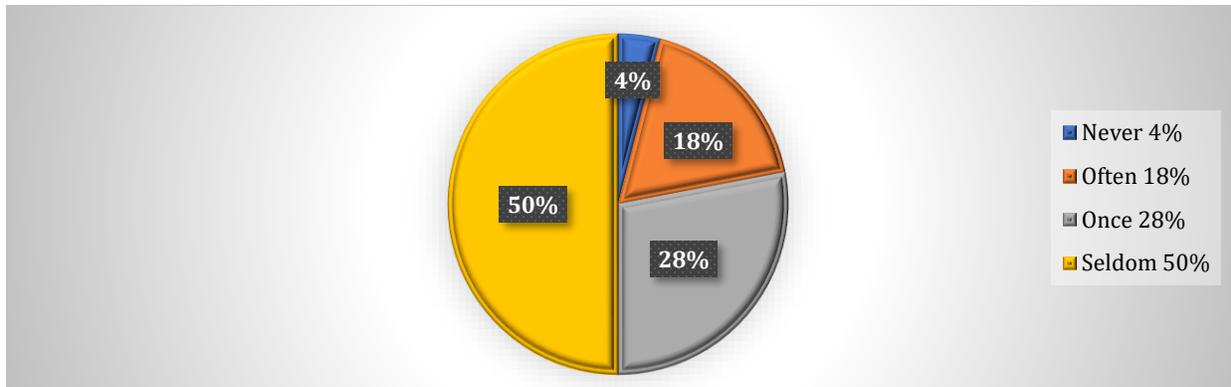
Figure 3. The level of student engagement in public speaking

Source: Author's own conception

For Item 2, students were asked to assess whether they currently consider themselves good orators holding public credibility. Therefore, the following results are registered:

- 76% of the students do not consider themselves good orators with public credibility;
- 24% of the students consider themselves good orators with public credibility (Figure 4).
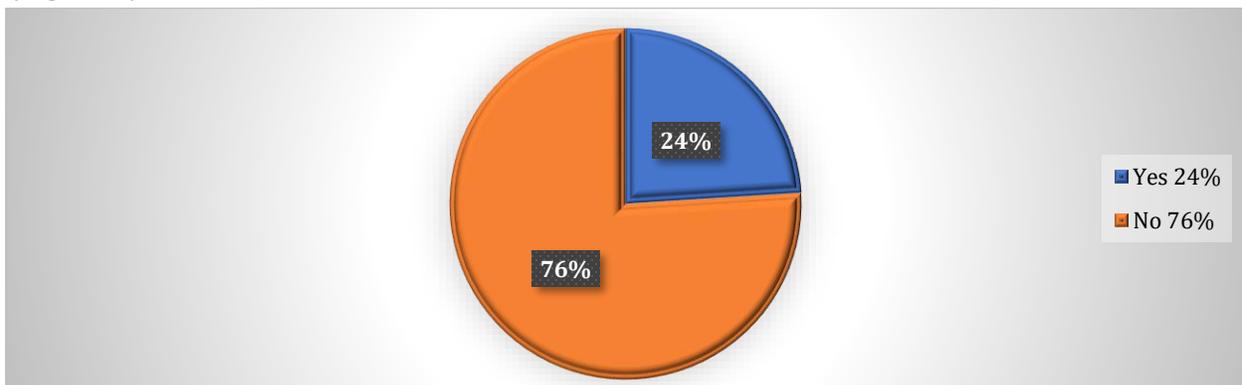
Figure 4. The students' opinions regarding their public credibility

Source: Author's own conception

For Item 3, students who responded affirmatively to the previous item were asked to list the qualities they possess that give them credibility in the eyes of the public. Thus, we highlight the following:

- 67% of the students believe that effective non-verbal and para-verbal communication, especially appropriate body posture and tone, as well as managing emotions during the speech, provide them with credibility in front of the audience;
- 17% of the students consider the ability to argue as a fundamental quality that grants them public credibility;
- 8% of the students believe that having an extensive vocabulary is a quality related to public credibility;

- 8% of the students consider that they have credibility in front of the public due to self-confidence (Figure 5).
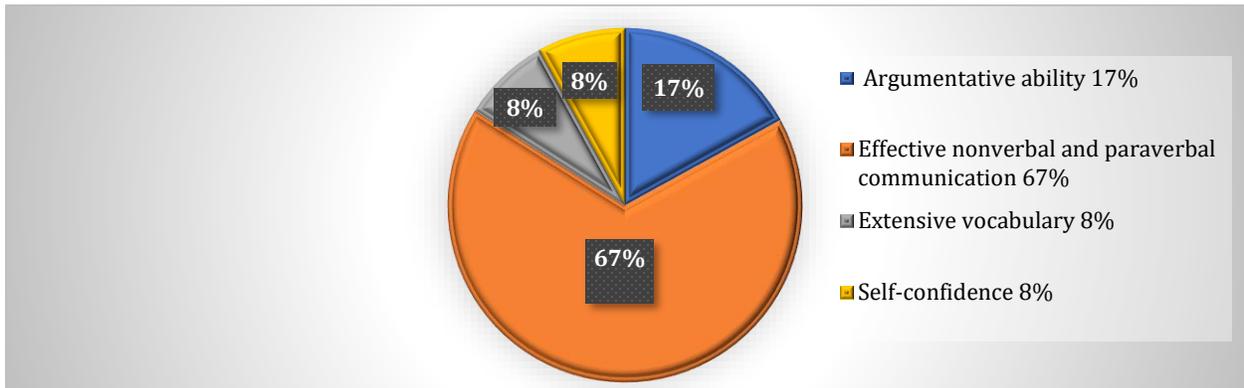
Figure 5. Students' qualities that grant public credibility
Source: Author's own conception

Based on the responses provided in Item 4, in which respondents were asked if they have ever written a discourse, we find the following:

- the majority of students (60%) have written the text of a public speech;
- 40% of the students have never written the text of a public speech (Figure 6).
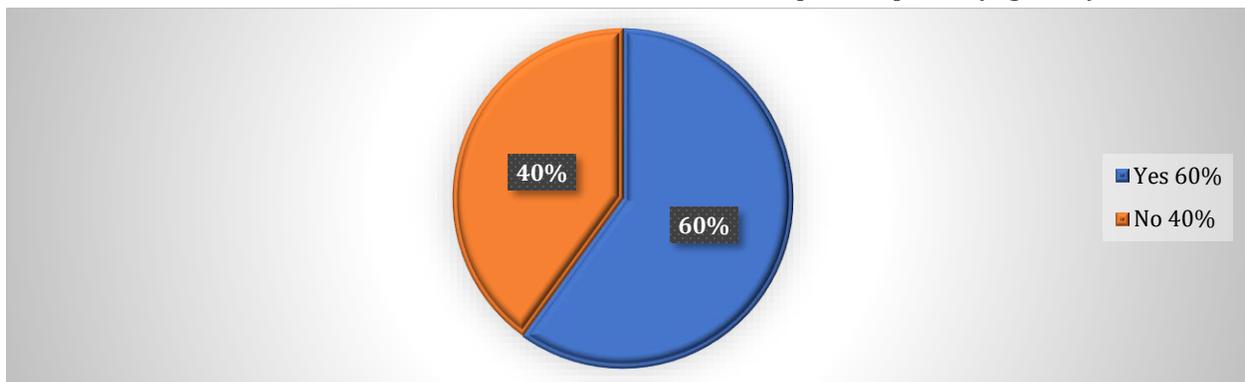
Figure 6. The students' experience of writing a discourse
Source: Author's own conception

For Item 5, students who responded affirmatively to the previous item were asked to mention the structural elements of a discourse. Therefore, we highlight the following:

- 36% of the students responded that they do not know the structural elements of a discourse;
- 34% of the students provide abstract responses;
- 30% of the students mention three structural elements of a speech: the introduction, the body, and the conclusion (Figure 7).

Introduction, Body, Conclusion 30%
Abstract responses 34%
Do not know 36%
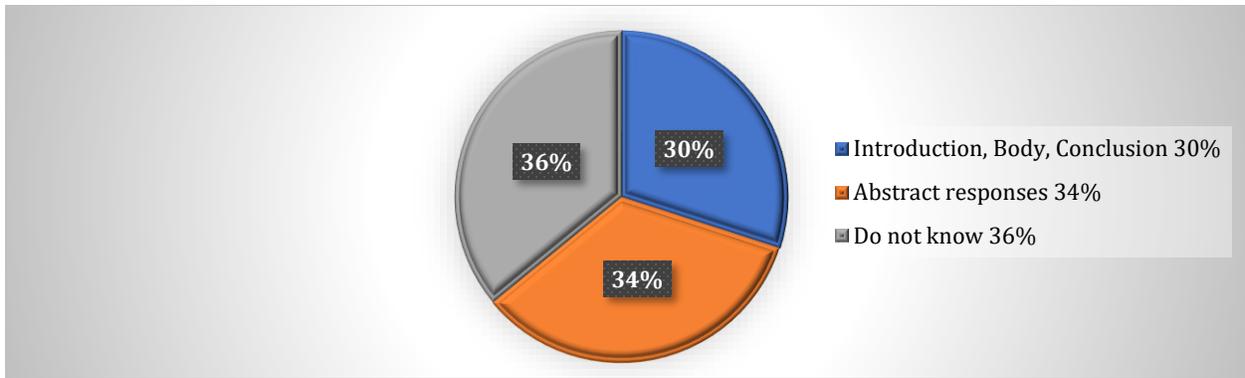
Figure 7. The structural elements of a speech according to the students' perspectives
Source: Author's own conception

For Item 6, students were asked whether they managed to capture and hold the audience's attention. Therefore, the following results are registered:
- 98% of the students managed to capture and hold the audience's attention;
- 2% of the students failed to capture and hold the audience's attention (Figure 8).

Yes 98%
No 2%
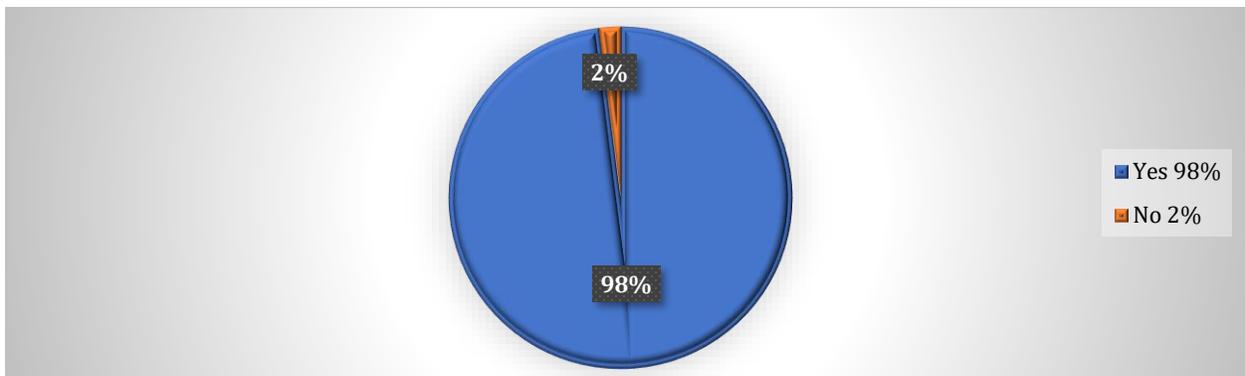
Figure 8. The students' opinion on capturing and holding the audience's attention
Source: Author's own conception

For item 7, the respondents who answered affirmatively to the previous item highlighted the following ways of capturing and holding the audience's attention:
- 28% of the respondents - appropriate facial expressions and gestures;
- 20% of the respondents - concise and structured delivery of the speech with examples;
- 18% of the respondents - addressing the topic in an interesting and persuasive manner;
- 16% of the respondents - using expressive and audience-friendly language;
- 10% of the respondents - assertive communication with the audience, especially by showing respect to the listeners and asking clarifying questions;
- 8% of the respondents - presenting useful and up-to-date information (Figure 9).
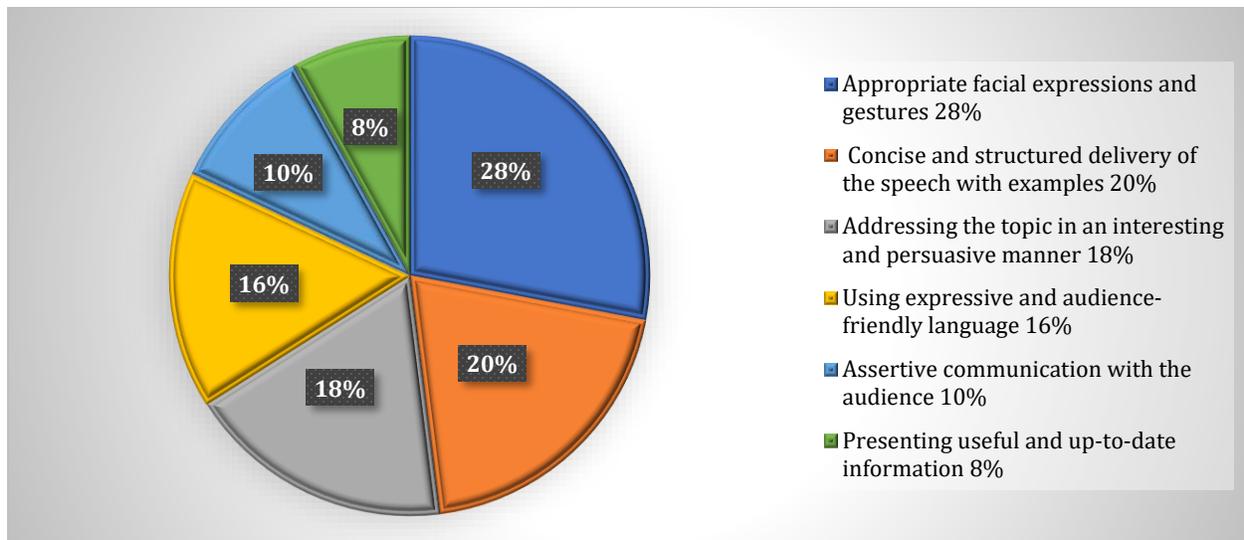
Figure 9. Ways to capture and hold the audience's attention
Source: Author's own conception

Item 8 asked students to assess the importance of convincing the audience with the use of arguments in the discourse. Thus, the results are as follows:

- 76% of the students consider it important to persuade the audience through the presentation of arguments in the speech;
- 24% of the students do not consider it important to persuade the audience through the presentation of arguments in the speech (Figure 10).
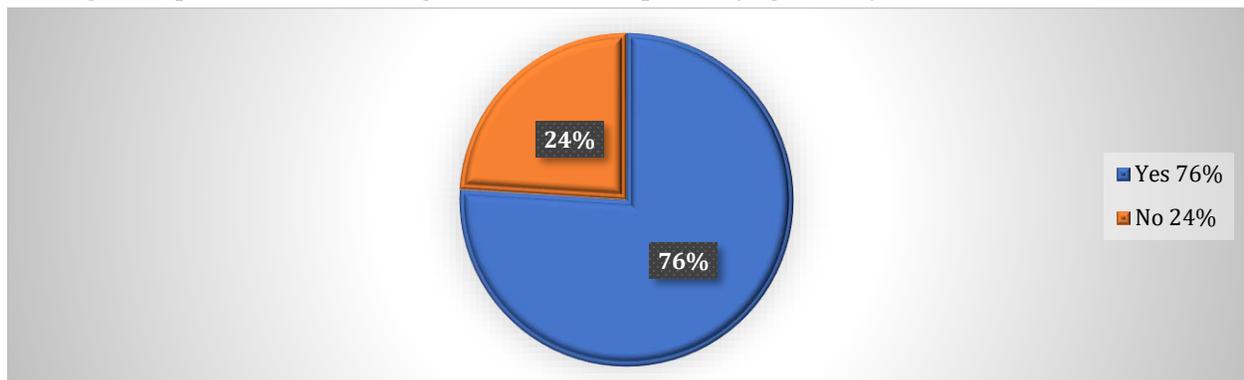
Figure 10. Students' opinion on the importance of convincing the audience through the presentation of arguments in the context of the speech
Source: Author's own conception

At Item 9, students who answered affirmatively to the previous item were asked to mention the constituent elements of an argument. In this context, we highlight the following:

- 60% of the students mention the premise/statement/thesis/idea, evidence, example(s), and conclusion as constituent elements of an argument;
- 40% of the students provide abstract responses (Figure 11).
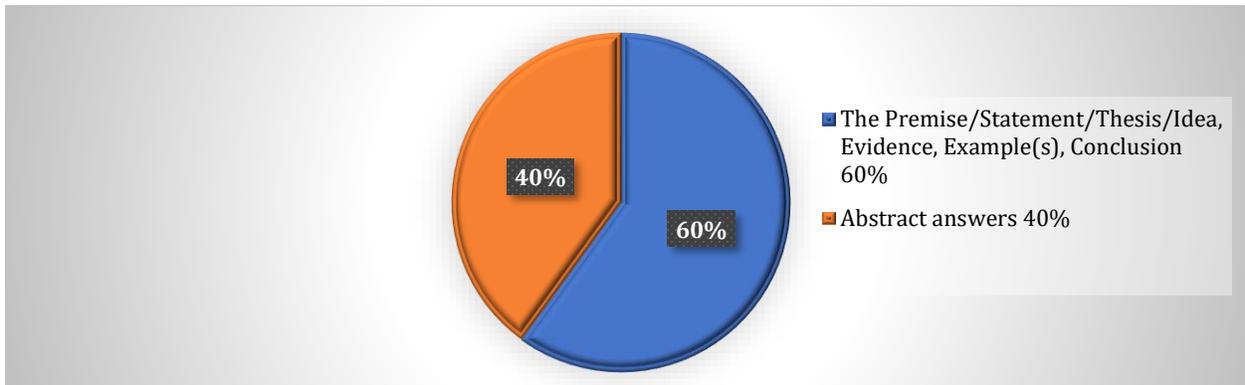
Figure 11. The students' view on the constituent elements of an argument
Source: Author's own conception

At Item 10, students were asked to underline (using distinct types of lines) the constituent elements in the three arguments below, then to explain in the caption which component and which type of line they used:

1. *...if you call me the fairest of all, you will receive power, glory in war and the most beautiful mortal...*
2. *My colleague is always criticized by his teachers because he always forgets to write his name on the paper.*
3. *Greenhouse gas emissions must be reduced because they are destroying the ozone layer.*

The results for this Item (Figure 12) are as follows:

• for *Argument 1,* the majority of respondents (36%) provided partially correct answers, 8% of respondents provided correct answers, 8% of respondents provided incorrect answers, and 32% of respondents did not provide an answer;

• for *Argument 2,* the majority of respondents either answered somewhat correctly (32%) or did not provide any response (32%). Additionally, 20% of respondents provided correct answers, and 16% provided incorrect answers;

• for *Argument 3,* the results are similar to Argument 2, with the majority of respondents either answering somewhat correctly (32%) or not providing any response (32%). Additionally, 20% of respondents provided correct answers, and 16% provided incorrect answers.
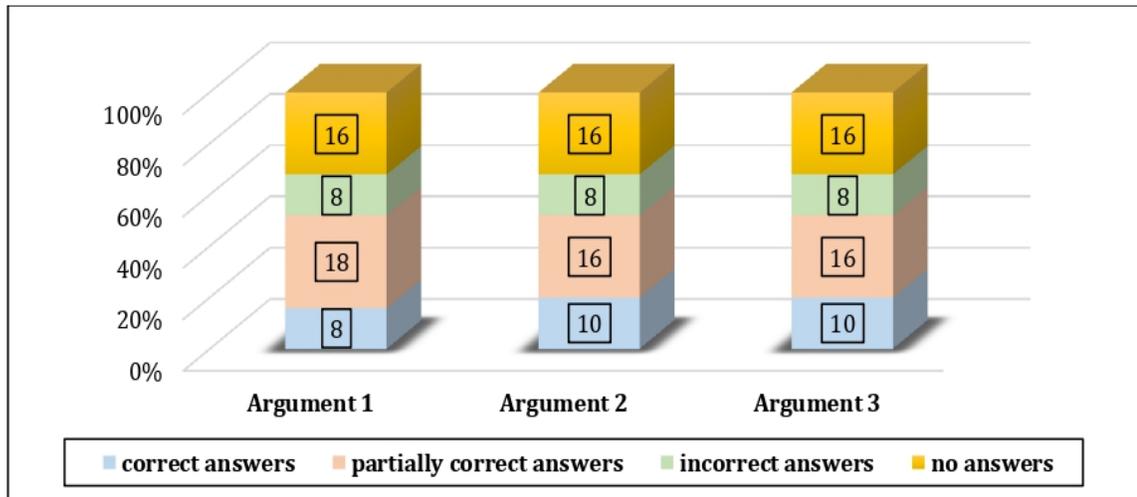
Figure 12. The assessment of students' ability to identify the elements of an argument
Source: Author's own conception

The data from the qualitative analysis of logos reveals that the respondents are partially aware of the structure of a public speech. At the same time, students are convinced of the necessity to use arguments in discourse but are unaware of or incorrectly identify the elements of argumentation in a text.

Generalizing the survey data on logos in oratory communication in students, we infer the necessity to develop argument-building skills in public speaking based on a logical argumentative structure for students.

Discussions and Limits

The research at hand provides insights into the role of logos in public speaking. Logos refers to rational thinking, and the development of rational thinking in pre-service teachers is essential for designing and carrying out an educational process oriented toward the development of critical thinking based on argumentation. Although there are studies referring to oratorical communication in general, the aspect of logos development in pre-service teachers is less researched. In this context, we evaluated the level of logos in oratorical communication in pre-service teachers, which highlights the need to develop skills to elaborate arguments in discourse.

Nevertheless, we would like to mention the limits encountered during this research, the handling of which could streamline further research on this topic. Our study presents a limit due to the difficulty in generalizing the results at a transdiciplinary level, because the sample consists only from students from the Faculty of Psychology, Educational Sciences, Sociology and Social Work with a certain specific regarding the communication style, so it is possible that the results differ in faculties of real science that have a technical communication

style and faculties of humanities that have a belletristic communication style. Thus, it is opportune to extend the research in other faculties, in order to streamline the manifestation of logos during discourse. Another limit is due to the type of present study, a transversal study, and for robust conclusions it will be useful to have a longitudinal approach.

Conclusions

In summary, the role of logos in public speaking is essential in terms of ways of drafting and structuring a discourse. Logos is one of the three components of persuasion, along with ethos and pathos, influencing the process of logical, thorough, and well-founded argumentation based on facts and concrete evidence. In this context, the speaker is required to have a deep understanding of the speech topic so they can provide relevant examples and argue them convincingly. The results obtained from testing the students' logos on the development of the skills to build arguments in oratory speeches based on a logical structure, reveals that the respondents are partially aware of the structure of a public speech and of the necessity to use arguments in discourse. These findings highlight the need to develop skills in making speeches based on arguments in transdisciplinary curricular context: addressing this topic both in specialized courses in the educational field and in courses in various academic fields.

References

Bieltz, P. (2012). *Bazele gândirii critice* [The basics of critical thinking]. Romanian Academy Publishing House.

Cerchez, G. et. al. (2016). *Dezbateri academice* [Academic debates]. ARDOR. https://www.scribd.com/document/461373137/Manual-de-dezbateri-academice-pdf

Constantinovici, E., Varzari, E. et. al. (2011). *Teoria textului: termeni-cheie* [Text Theory: Key Terms]. Typography "Professional Service".

Dlugan, A. (2010). *Ethos, Pathos, Logos: 3 Pillars of Public speaking.* http://sixminutes.dlugan.com/ethos-pathos-logos/

Druță, A. C. (2010). Funcția persuasivă a artei oratorice. Sfântul Dionisie Areopagitul și cunoașterea ierarhiei cerești cu ajutorul simbolurilor (The persuasive function of oratory. Saint Dionysius the Areopagite and the knowledge of the heavenly hierarchy with the help of symbols). In A. Gafton, S. Guia & I. Milică I. (Eds.), *Proceedings of the National Conference „Religious text and discourse",* 13-14 November, Iasi (pp. 251-260). „Alexandru Ioan Cuza" University Publishing House. https://www.academia.edu/5009875/Text_%C8%99i_discurs_religios_nr_2_2010

Edwards, M., Reid, C. (2004). *Oratory in action.* Manchester University Press.

Freese, J. H. (1926). *Aristotle.* Harvard University Press.

Furley, D. J., Nehamas, A. (1994). *Aristotle's „Rhetoric". Philosophical Essays.* Princeton University Press.

Golu, M. (2002). *Bazele psihologiei generale* [Basics of general psychology]. University of Bucharest Publishing House.

Henrik, J. (2021). The Need for Oratory Skills in the Digital Age: A Phenomenological Approach to Teaching Speech Today. *Nordicum - Mediterraneum, 16*(1), Article 3. https://rucforsk.ruc.dk/ws/portalfiles/portal/78231762/The_Need_for_Oratory_Skills_in_the_Digital_Age._A_Phenomenological_Approach_to_Teaching_Speech_Today.pdf

Larson, C. U. (2003). *Persuasiune. Responsabilitate și receptare* [Persuasion. Responsibility and acceptance]. Polirom.

Nedelea, C. (2006). *Argumentul ca forță de convingere* [Argument as persuasive force]. *Journal Didactica Pro...,* (*5-6)*39-40. https://ibn.idsi.md/sites/default/files/imag_file/Argumentul%20ca%20forta%20de%20convingere.pdf

Padron, P. (2012). *Cum să vorbim în public: Exerciții de oratorie* [How to Speak in Public: Oratory Exercises]. University of Bucharest Publishing House.

Robinson, K. (2015). *Creative schools: the grassroots revolution that is transforming education*. Viking.

Rudd, N. (2008). *Cicero on The Republic and the Laws Paperback.* Oxford University Press.

Sălăvăstru, C. (2002). Patologia discursului jurnalistic: sofismele (Pathology of journalistic discourse: sophistry). In: *Communication, argumentation, media discourse. Publication of the Seminar in Discursive Logic, Argumentation Theory and Rhetoric* (pp. 51-97*).* Academic Foundation Publishing House AXIS. https://www.fssp.uaic.ro/argumentum/numarul%201/ARGUMENTUM_NR.1.pdf

Sălăvăstru, C. (2010). *Mic Tratat de oratorie* [Little Treatise on Oratory]. „Alexandru Ioan Cuza" University Publishing House.

Șatravca, L. (2020). Text, context și discurs academic (Text, context and academic discourse). *Proceedings of the International Conference "Problems of social sciences and modernization of education"* 8-9 October, Chisinau (pp. 217-223). Typography of „Ion Creangă" University. http://dir.upsc.md:8080/xmlui/bitstream/handle/123456789/2363/Conf_UPSC_2020_Vol_III_p217-223.pdf?sequence=1&isAllowed=y

Toulmin, S. (1993). *Les usages de l'argumentation.* Presses Universitaires France.

The Role of the Zakarpattia Institute of Postgraduate Pedagogical Education in Adult Education During Martial Law: A Case Study from Ukraine

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Abstract

In the context of martial law in Ukraine, the educational sector has faced unprecedented challenges, particularly in the realm of preschool education. This paper presents a case study of the Zakarpattia Institute of Postgraduate Pedagogical Education and its rapid response to transform its curriculum to support preschool educators in these trying times. Through a comprehensive review of the curriculum changes, the study documents how the Institute has tailored its educational offerings to foster peace, cultivate a culture of peace and tolerance, and empower educators with critical thinking skills necessary for decision-making in crisis conditions. The paper explores the significant shifts in teaching strategies, content delivery, and psychological support mechanisms that have been implemented to address the pressing needs of educators. These adaptations are crucial not only for immediate conflict resolution but also for the long-term objective of building a peaceful society. By enhancing the quality of education for teachers, the study underscores the Institute's role in shaping a future that is resilient, educated, and peace-oriented for Ukraine and beyond.

Keywords: martial law, preschool education, educator training, curriculum transformation, culture of peace, Ukraine

1. Introduction

The essence of any country's existence lies in the citizens' welfare development, economic and social progress, peace preservation, conflict prevention, and international security strengthening. The development of peace, the skills of reconciliation and mutual understanding, intercultural dialogue, the formation of international solidarity, identity, and social cohesion, potential, local, inclusive, and sustainable development, and the revival of cities and regions are the priorities of the leaders, political parties, conscious citizens. The above is grounds for the formation of a culture of peace in modern society.

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In the face of martial law and the ongoing conflict within Ukraine, the role of education in fostering peace assumes a critical dimension. The traditional paradigms of 'education for peace' in non-conflict settings, which advocate for the development of peace skills as a means to maintain and promote peace, are challenged by the immediate realities of war. The urgent need to adapt educational strategies to effectively address and mitigate the psychological and social impacts of conflict on young learners demands a reevaluation of how peace education is conceptualized and delivered. This paper examines the efforts of the Zakarpattia Institute of Postgraduate Pedagogical Education to recalibrate its pedagogical approaches and curriculum, aiming to equip preschool educators with the tools necessary to navigate through the complexities of teaching in a war-torn region. Recognizing the limitations and potential of such educational interventions, the study seeks to contribute to the discourse on the feasibility and scope of achieving peace through educational means in a war context.

2. Theoretical grounds

The idea of a "culture of peace" has gained momentum in recent years as a way to address the root causes of conflict and violence in society. As defined by Schwebel (2001), a culture of peace involves a set of values, attitudes, and behaviors that promote non-violent behavior and respect for human rights. Important behaviors that emerge from this approach are a commitment to dialogue, cooperation and mutual understanding, and the promotion of social justice and equity. As advocates of a culture of peace claim, it is important to understand that violence and conflict are inevitable, they are the result of social, economic, and political factors that can be resolved peacefully.

Although relatively new, the concept of a culture of peace has the potential to be a powerful tool in promoting peace and preventing conflict in communities around the world. By developing this culture, individuals and communities can work together to create a more just and peaceful world.

As widely believed, education affects the peace in the country, promotes tolerance and understanding, economic stability, and the reduction of conflicts. A study by A. Lee on the correlation between education and violence showed that education plays a critical role in reducing violent behavior among people. According to Lee (2011), educated people are more likely to engage in non-violent behavior compared to less educated individuals. This is because education gives people purpose and helps to direct their energy toward constructive activities rather than violent behavior. In addition, education provides a person with the necessary skills and knowledge to navigate difficult situations, which reduces the likelihood of engaging in violent behavior, it also promotes a culture of peace and tolerance. We agree with this opinion since education can change the way people think and behave, which can ultimately have a positive impact on the social and economic well-being of the country.

According to V. Kremen, one of the main ways to overcome the crisis problems generated by globalization, namely, raising the level of the intellectual culture of society and the individual, is to improve the education system, the growth of knowledge, and at the same time the spirituality of citizens (Kremen, 2007).

In today's globalized world, education plays a vital role in promoting tolerance and understanding among people of different cultural backgrounds. According to Zimmerman (2001), education can create an environment that promotes intercultural understanding and fosters a sense of respect for diversity. In educational institutions, students are introduced to different cultures, opinions, and belief systems, which can help them develop a more subtle understanding of the world, and break down stereotypes and prejudices, leading to greater empathy and mutual understanding between representatives of different cultures and create a more harmonious society. Educational institutions also provide a platform for dialogue and discussion to learn to appreciate different points of view and engage in constructive conversations promoting tolerance and mutual understanding. As Justino (2014) argues, education promotes tolerance and understanding among people of different backgrounds, cultures, and religions and can help reduce poverty, which is often the root cause of conflict.

In the current Ukrainian reality, where everyday life is intricately interwoven with the threads of conflict, the concept of 'peace' transcends its traditional boundaries to encompass a broader spectrum of social resilience, psychological well-being, and community solidarity. Consequently, education for peace in this context is not merely about teaching non-violence and tolerance; it is about actively engaging learners in the process of critical reflection on the causes and consequences of conflict, fostering in them the skills of empathy, and equipping them with the capabilities to rebuild and sustain a society deeply affected by war. This paper, thus, argues for a dynamic and context-responsive framework of peace education that is attuned to the complex layers of a society striving for peace amid the echoes of conflict.

3.Methodology

The opinion about the development of a personality in the learning process was probably born simultaneously with pedagogy and is clearly traced in the history of pedagogical thought J. A. Komenský (1935), J. J. Rousseau (2011), J. H. Pestalozzi (2022), A. Diesterweg (1857), N. Pirogov (Kusnir, 2012), K. Ushinsky (1983) and others. The role of education in shaping the behavior of citizens is widely discussed by scientists: V. Andrushchenko (2014), A. Bazulyk (2010), I. Bekh (2019), I. Zhadan (2021), K. Zhurba (2019). V. Kremen (2022), O. Kikinezhdi (2019), A. Kozmenko (2022), M. Morar (2018), S. Riabov (2004), S. Sysoieva (2022), I. Sokolova (2012), M. Shved (2014), M. Shulha (2019), N. Yukhymenko (2010) and others. The definition of the concept of peace was the sphere of scientific interests of B. Brock-Utne (2000), H. Grotius (2012), I.Harris (2004), T. Swee-Hin (1993), and others. The

culture of peace as a problem of education attracted the attention of Wintersteiner, V. (2013), S. Guetta (2013), B. Reardon (1988, 2001), and others.

In the development of this study, we employed an action research approach, situated within the university setting of the Zakarpattia Institute of Postgraduate Pedagogical Education, to adapt our educational practices to the emergent needs posed by the imposition of martial law. This methodological framework allowed us to engage in a cyclic process of planning, acting, observing, and reflecting with the aim to improve the educational strategies and curriculum offered to preschool educators.

Data were collected through a participatory process, wherein the authors, who are part of the academic and administrative staff of the institute, collaborated closely with educators and other stakeholders in setting up the curriculum. Decisions were made based on a consensus-driven approach that considered the contemporary challenges faced by educators in the region. Reflective practice was integral to our methodology, enabling us to assess the effectiveness of the curriculum changes and their impact on the educators' professional development.

The analysis of data was carried out through qualitative methods, including thematic analysis of feedback from educators, observations of teaching practices, and evaluations of educators' engagement with the modified curriculum. Through this analysis, we were able to identify key themes and patterns that emerged from the educators' experiences, which informed subsequent iterations of curriculum development.

Reflecting on these decisions, this paper discusses the anticipated impact of our methodological choices, specifically how they contribute to equipping educators with the competencies to foster a culture of peace and resilience among young learners in a context marked by conflict and uncertainty.

4.Results

As noted in the article by S. Sysoieva (2010) "The Role of Education in the Modern World": "Each society creates an education system in accordance with its essence and level of socio-economic development." (p.10) Since the education system reflects the difficulties and needs of society in a given historical period, education transforms and directs the life of society, preserving in it everything that is of value to a person; determines the strategy and conditions for the development of society, transforming it from a "society today" into a "society tomorrow", forms a new way of thinking of citizens and vision of the meaning of life. In this context, education acts as one of the means of managing the development of society.

Even though the development of the modern education system is influenced by four interrelated factors: the rapid change and flow of the processes of social development; socio-economic transformations, which led to the emergence of a fundamentally new phenomenon - the labor market; processes of globalization that have responded with integration trends

in the world; information "explosion", due to the emergence of new information technologies and multimedia, the common thing is people, in their uniqueness (Sysoieva, 2010). That is why the personal development should be considered as an integral part of the modern educational process.

Since a personality is raised by a personality, the effectiveness of the educator's pedagogical influence is largely determined by the moral values of the educators and the philosophy of their worldview. The negative phenomena of the global, information society can only be resisted by the personality of the Teacher - spiritual and moral, whose philosophy is filled with child-centrism, humanity, and passion for work.

According to Justino (2014), education is also a decisive factor in achieving economic stability and reducing conflicts in society, providing the necessary skills and knowledge to participate in work, which in turn contributes to economic growth and development. In addition, education contributes to the formation of a skilled and knowledgeable workforce, essential for the development of a sustainable economy. This is because educated people are more likely to be employed, earn higher incomes, and contribute to the growth of their countries.

To introduce successful collective efforts to change social structures and patterns of thought in order to eliminate social injustice, and non-violence (Reardon, 1988), education can become the grounds for the formation of a culture of peace in the younger generation. "To support long-term change in the thoughts and actions of future generations... the best contribution will be the introduction of peace education in educational institutions" (Navarro-Castro, 2010). The general introduction of peace education into the educational process will give some hope that we can move towards a critical mass that will require and comply with the necessary changes.

The main goal of preschool education is to educate a mature person who has formed a child's worldview, the desire to succeed, self-confidence, self-esteem, emotional susceptibility, and strong-willed character. The tasks of education at each stage of preschool childhood have their own specifics. In infancy and early childhood - to form qualities that determine the development of purely human abilities and skills (communication, walking upright, actions with objects, etc.). At preschool age, the task becomes much more complicated, since qualities that determine the further development of the child and their attitude to the world are formed. Parents and educators should focus on in raising a child is the development of a culture of peace, in particular: compassion, cooperation, and respect for others. To achieve this goal, it is necessary to teach children to understand the very concept of "peace", equip them with conflict resolution skills (to be able to resolve problems peacefully), cultivate empathy and kindness to help them develop positive relationships with other people and contribute to the creation of a harmonious society.

The concept of peace is complex and difficult to be defined and achieved. In Wikipedia, it is interpreted as "a state of peace and harmony, the period between wars. The term "peace" is used both in the sense of peace in the soul of a person and peace between groups of people, peoples, and states. In the latter sense, peace does not mean the absence of conflicts, but an agreement to resolve conflicts without the use of violence leading to war" ("Peace," 2023). According to His Eminence Archbishop Emeritus Liubomyr, "peace is the desire to communicate with someone fairly, honestly, positively, kindly…" ("Community Services," 2023, Parish of St. John the Theologian section) . The traditional view of the world means the absence of war or conflict, but this definition is limited and does not cover the whole essence of the world. Ohlson (2008) defines peace as "a state of being in which individuals and groups are free from physical, social, economic and psychological harm or violence and in which they can develop their full human potential" (p. 29). This definition emphasizes that peace is not only the absence of violence but also the existence of positive conditions that allow people to thrive.

Today in Ukraine the problem of peace is the most urgent. As never before, Ukrainians understand the full meaning of the word "peace". Peace is freedom based on the recognition of the rights of any person. Peace is the virtue of civilization, war is its crime. It takes a century to restore what was destroyed by a day of war. Peace is a multi-dimensional concept covering various aspects of human life, including political, economic, social, and cultural spheres. Therefore, understanding the concept of peace requires a holistic and comprehensive approach that goes beyond the traditional view of peace as the absence of war or conflict.

In order to help an individual manage interpersonal conflict effectively in the future, conflict resolution skills should be acquired in preschool age, which, according to Raider, Coleman, and Gerson (2000), can be taught through mediation, negotiation, and communication. Mediation involves the involvement of an intermediary (mediator), who helps the parties to the conflict to establish a communication process and analyze the conflict situation in such a way that they themselves can choose the solution that would satisfy the interests and needs of all participants in the conflict. Negotiation is a process of exchanging information and commitments in which two or more parties, having common and diverging interests try to reach an agreement. Effective communication is critical in both mediation and negotiations as it helps parties understand each other's perspectives and needs. The researchers claim that teaching children conflict resolution skills can positively influence their future personal and professional relationships, and increase their ability to solve problems.

According to Vestal and Jones (2004), conflicts are inevitable, which is why conflict resolution is a vital skill that needs to be developed as early as preschool and primary school age. Children often conflict with their peers and they need to learn how to resolve conflicts

through communication, negotiation, and compromise. By learning these skills, children are less aggressive and able to build positive relationships with their peers. By teaching conflict resolution skills in educational institutions, one can help create a more peaceful and harmonious society, reducing the likelihood of violence and aggression.

Conflict resolution skills also help children develop empathy and understanding - important components of healthy social and emotional development. According to Faver (2010), the promotion of empathy and kindness in children can be achieved in a variety of ways, including modeling, socialization, and education. Adults, by modeling situations where they show empathy and kindness, encourage children to do the same. Due to socialization, children from different cultures and communities are more likely to develop empathy for others. However, by incorporating themes of empathy and kindness into the educational process, children can be taught the importance of treating others with respect and kindness and hence we can achieve a more compassionate and understanding society. We should not forget about creating a safe and positive environment at home and in an educational institution.

That is why the formation of a culture of peace among educators, in particular those involved in the education of preschoolers, is extremely important. This requires educators to understand the concept of a culture of peace, the strategies for educating a culture of peace, and the importance of their involvement in promoting peace.

Involving educators in promoting peace is critical as they have a significant impact on children's attitudes and behavior. Educators can create a positive learning environment by promoting inclusiveness, respect, and cooperation among children (Johnson and Johnson 277). A study has shown that when educators actively promote peace, children are more likely to engage in prosocial behaviors such as helping others and expressing concern for the welfare of others (Johnson and Johnson 278). Conversely, if educators do not resolve conflicts or resolve them in a negative way, children may become more aggressive or dismissive of the opinions of others (Johnson and Johnson 280).

According to Kanan et al. (2022), one of the strategies for fostering a culture of peace among educators is to provide opportunities for professional development that focus on conflict resolution, communication skills, and cultural competence. The necessary knowledge and skills can develop the educators' ability to better manage conflict and understand the diverse needs of their pupils.

Another strategy is to create a supportive work environment that encourages open communication and teamwork. Educators who feel valued and supported are more likely to foster positive relationships with their colleagues, children, and parents, which leads to a more peaceful environment in the preschool setting. It is important to encourage educators to help themselves by providing them with resources and support to manage their stress

levels. This way they are better prepared to deal with difficult situations and contribute to creating a culture of peace in their groups.

Thus, fostering a culture of peace among educators requires a multifaceted approach that includes professional development, a supportive work environment, and training in self-help practices. It is possible to implement these strategies in preschool education institutions at advanced training courses for educators and heads of educational institutions at institutes of postgraduate pedagogical education.

Institutes of postgraduate education play a vital role in fostering a culture of peace among educators. They have the potential to expand the capabilities of teachers through their programs and courses contributing to the formation of a culture of peace among educators in the region. Educators with the necessary skills and knowledge can promote peace in their groups, classrooms, and communities, creating a ripple effect that can promote a more peaceful world.

According to J. Lave (2021), Institutes of postgraduate pedagogical education play a critical role in fostering a society's culture by providing the attendees with higher levels of education and training to become experts in their respective fields and gain a deeper understanding of social and cultural phenomena. Participation in research and advanced coursework cultivates a broader perspective and critical thinking skills that enable attendees to analyze and solve complex problems. In addition, institutes of postgraduate education provide a platform for the exchange of ideas and knowledge contributing to the creation of a diverse and inclusive culture. This fosters a community of scientists and researchers committed to advancing knowledge and contributing to their fields. The impact of these institutes extends beyond the academic world as attendees often hold managing positions in various organizations and industries. In this way, they have the opportunity to shape culture by applying their experience and knowledge to the challenges facing society.

The quality of education largely depends on the quality of knowledge, skills, and abilities of educators. As Goodwin, Lowe, and Darling-Hammond (2017) note, institutes of postgraduate education offer educators a range of courses and programs aimed at developing their skills and knowledge in a variety of areas, particularly pedagogy, curriculum development, and assessment. These courses and programs are designed to follow the latest developments in education and apply them in teaching practice. In addition, such institutes provide opportunities to engage in scientific research, which helps attendees better understand educational challenges and develop innovative solutions.

According to De Rivera (2008), institutes of postgraduate education can "promote cultural understanding and tolerance between different communities" (p. 135). This is important because cultural understanding and tolerance are the basis of peaceful coexistence. If people understand and appreciate the values and traditions of others, they are more likely to avoid conflict and work toward a peaceful resolution. In addition, during

advanced training courses, attendees have the opportunity to participate in dialogue and discussions on issues of global development. This can help them develop critical thinking skills and understand the causes of conflict, and hence contribute to the development of peaceful solutions.

The introduction of martial law in Ukraine affects all areas of human life, including education.

Zakarpattia Institute of Postgraduate Pedagogical Education (ZIPPE)*[1] kept track of events in order to promptly manage the advanced training of teachers who are now in a difficult situation. According to the recommendations of the Ministry of Education and Science of Ukraine [2] dated 14 March 2022, in regions allowed by the security situation, in particular in Zakarpattia, the educational process began to resume. Preschool educational institutions that hosted temporarily displaced persons on their premises or were unable to ensure the safe stay of children during air raids organized the educational process remotely, consulted parents, etc. However, most of the institutions have started working as usual.

In a state of war, preschoolers are among the most vulnerable category of the population, so adults must have the necessary knowledge of how to provide a preschooler in danger, or in a long-term stressful state, with normal conditions for development and education. Being in new social conditions, children who were forced to move from the zone of active hostilities face the problem of social adaptation. Therefore, the educator must know how to remove the feelings of anxiety, tension, fear, and uncertainty and establish the process of proper socialization of the child. Educators play a crucial role in shaping the consciousness of the younger generation and modeling peaceful behavior. By promoting conflict resolution, empathy, and understanding, educators can create a culture of peace that extends into the community. Working with parents of preschoolers fosters a peaceful and inclusive environment that promotes respect and tolerance. Providing proper information support to educators of the region became one of the main activities of ZIPPE[7].

About 200,000 internally displaced persons have been received by Zakarpattia Oblast since 24 February. This was announced on 14 March at a briefing by the head of Oblast Military Administration - Viktor Mykyta. According to him, daily up to 3,000 displaced persons went from our region to Hungary and Slovakia. There is also an agreement already with other countries - Bulgaria, Italy, Austria, and Germany (Romaniuk, 2022). In Zakarpattia, 110,000 internally displaced persons were officially registered, in total there are about 380,000 internally displaced persons in the oblast (Ukrinform, 2023). It is difficult to tell exactly how many internally displaced persons have been received by Zakarpattia, but almost a third of them are children.

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[7] Zakarpattia Institute of Postgraduate Pedagogical Education hereinafter - ZIPPE

Taking into account the letter of the Ministry of Education and Science of Ukraine dated 2 April 2022 No. 1 / 3845-22 "On Recommendations for Employees of Preschool Educational Institutions during the Period of Martial Law in Ukraine" (Ministry of Education and Science of Ukraine, 2022, Letter No. 1/3845-22), scientific and pedagogical employees of the ZIPPE, in particular, those who lecture to educators and heads of preschool educational institutions (PEI) focus on the idea of humanistic pedagogy, aimed at a humane attitude towards the child; the theory of natural conformity, according to which the child needs to develop potential and skills, preserving their nature; ideas about patriotic and civic education, the use of fairy tales and play in the harmonious development of personality, etc. The topics of empathy and kindness, mastering conflict resolution skills and non-violent communication skills, strategies for cultivating a culture of peace, and the importance of their participation in promoting peace, etc. were included in the curriculum.

To promote understanding, solidarity, and tolerance among individuals ethnic, social, cultural, and religious groups, and sovereign nations; teaching knowledge, values, attitudes, and skills that promote respect for human rights, an active commitment to the protection of such rights and the development of a culture of peace and democracy; developing the ability to non-violent conflict resolution; promoting the development of inner peace in the minds of preschoolers so that they can strengthen the qualities of tolerance, compassion, exchange and care, the course *"Culture of Good Neighborhood"* is being held. Teaching the values of tolerance, understanding, and respect for diversity within the framework of the course "Culture of Good Neighborhood" is carried out through acquaintance with various nationalities living in our region, with their history and culture. Also, the course includes knowledge of human rights, international law, the United Nations Charter, the goals of a global organization, sustainable development, and other issues of peace. In advanced training courses for educators and heads of educational institutions, it is taught how to make an informed choice, based on their judgments and actions, not only on the analysis of current situations but also on the vision of the desired future.

Attendees positively reacted to the *"Formation of One's Own Identity and Intercultural Sensitivity"* training, which deals with self-esteem as a sense of one's own value and a sense of pride in one's own value, a special social, cultural, and family background, as well as their sense of their own strength to contribute to positive change. Respect for others, which gives a sense of the value and dignity of other people, including those with social, religious, cultural, and familial backgrounds different from their own.

Openness/tolerance to the processes of growth and change, as well as a willingness to approach and perceive the ideas, beliefs, and experiences of others with a critical but open mind, is important in relating to the wide diversity of spiritual traditions, cultures and forms of expression of our world; justice in relation to others, observance of the principle of equality (in dignity and rights) and the rejection of all forms of exploitation and oppression

are formed by educators when listening to the lecture *"The Influence of Attitudes and Stereotypes on the Personality of an Educator"*. During the lecture "*Principles of Professional Cooperation with the Parent Community and the Public*", educators learn the processes of cooperation and the principle of working together to achieve common goals.

Despert (1944) studied the psychological impact of the Spanish Civil War on children from three to five years in Catalonia (Spain) in his study "Effects of War on Children's Mental Health". He noted that the children showed signs of anxiety, fear, and depression, with the greatest impact seen in three- and four-year-olds. Research also showed that these psychological manifestations persisted for a long time after the war (Despert, 1944). Therefore, it is important to provide war-affected children with assistance aimed at both physical and emotional health, as well as psychological support.

To this end, since February 2023, a special course "*The Well-Being of Children and Educators: Effective Tools and Practices of Psychosocial Support"* has been held. It is a part of the integral system training of Ukrainian educators of preschool and general secondary education developed by the LEGO Foundation partner - MHPSS Collaborative, a global hub for research, innovation, curricula, and communication campaigns to support children's and adults' mental health. The uniqueness of the program is the use of the play and the activity approach as key mechanisms for the psychosocial support of children and educators, and their well-being in an educational institution in emergency situations. The main topics covered throughout the course are the following:

- children's well-being and learning in emergencies;
- psychological support and play;
- impact of stress on children's well-being and learning;
- role of an educator in children's well-being support: six key strategies;
- creation of a safe educational environment;
- support of positive behavior;
- promoting a socially interactive environment;
- development of socio-emotional skills and the ability to overcome stress through play;
- wellbeing of educators.

At lectures and practical classes, trainings, seminars and conferences, attendees develop reflective thinking or reasoning, leading to deepening their understanding of themselves and their connection with others; critical thinking and analysis (to approach problems critically, knowing how to examine, question, evaluate and interpret evidence); the ability to recognize and challenge prejudices and unfounded claims, and to change opinions in the face of evidence and rational arguments; decision making (problem analysis, alternative solutions development and analysis); creativity and imagination - creation of new paradigms and new desired ways of living and communicating, in particular, attentive listening and empathy, the

ability to clearly and non-aggressively express one's own ideas and needs; conflict resolution and communication skills (to prevent and analyze conflicts in an objective and systematic way, proposing a range of tolerant solutions); empathy, due to the ability to see the point of view of another person/group and feel what that person/group is experiencing; teamwork (cooperation with each other to achieve common goals, the creation of a joint team).

Within the Moodle program, educators taking advanced training courses can find materials for organizing psychological and methodological support for pedagogical staff. In particular, how to organize the educational process with children of early and preschool age; to establish relations between educators and parents, representatives of territorial communities; recommendations for providing various types of psychological and pedagogical support to children and parents in difficult situations; psychological and pedagogical support for children, including those with special educational needs, teaching children the importance of treating others with respect and kindness, etc.

At the advanced training courses for educators and heads of the PEI, we provide information on the formation of awareness of the realities, causes, and consequences of violence, as well as the formation of awareness of the foundations of peace; caring, and developing empathy, compassion, hope, and social responsibility and call for action that begins with the determination to change personal thinking and attitudes and to do something specific about situations of violence, in particular, to teach children to find non-aggressive means of communication with each other, which is the main goal of education of peace.

In general, war is an extremely difficult experience for people of all ages, especially preschoolers. War destroys their normal, safe environment and can cause significant physical, emotional, and psychological damage. Although the effects of war vary depending on the severity of the event and the experiences of individual children, they will certainly be felt throughout their lives. Therefore, it is important to protect preschoolers during conflicts, minimize their impact on security, and provide them with long-term psychological and emotional support.

Due to the efforts of Zakarpattia Institute of Postgraduate Pedagogical Education, there is a constant dialogue between practitioners, scientists, founders of preschool education institutions, and representatives of communities, allowing them to evaluate and determine measures in the institutions' activity organization in wartime and predict an action plan in the post-war period.

On the website, the institute disseminates information about changes in legislation under martial law, advice on psychological first aid to people having survived a crisis event, advice from UNICEF experts, and experts in preschool education. Information about participation in various events (seminars, webinars, conferences) for the professional

training of educators, pedagogical staff, heads of preschool education institutions, and practicing psychologists working with preschoolers is constantly updated.

Within the specified period, the Department of Preschool, Primary, and Inclusive Education, together with the Department of Pedagogy and Psychology and the Curriculum Office of Preschool and Primary Education of ZIPPE, carried out a number of activities to inform the educators of the region, in particular, a workshop "Adaptation of Preschoolers of Internally Displaced Persons to the Conditions of PEI", "The Use of Online Technologies in Cooperation between Educators and Families of PEI Pupils under Martial Law", "New Professional Roles and Tasks of a PEI Educator in the Context of the Introduction of an Updated Basic Component of Preschool Education", a practical seminar on the development of an internal system for ensuring the quality of education in preschool education institutions, an online seminar "A Confident Start: a Methodical Dialogue", etc.

From 15 April to 7 May 2022, the leading Estonian analytical center International Center for Defense and Security (ICDS), within the framework of the Stance Ukraine program on the basis of ZIPPE, conducted training for practical psychologists and social workers on psychosocial assistance in a crisis, crisis management, and communication. The Office of Practical Psychology and Social Work of the ZIPPE holds a weekly online meeting of psychological service workers to share experiences in providing social and psychological assistance to participants in the educational process of educational institutions of Zakarpattia and internally displaced persons during hostilities.

Within the framework of the joint Ukrainian-Austrian project "Leadership and Management in War", launched on 12 April 2023 by the Attache for Education of the Embassy of the Republic of Austria in Ukraine, the Commissioner for Education of the Ministry of Education, Science and Research of Austria Dominik Eisenmann and the OeAD (Austrian Agency for International Cooperation in Education and Research) on the premises of Zakarpattia Institute of Postgraduate Pedagogical Education, a two-day seminar "Leadership in Times of Crisis" was held (Zakarpattia Institute of Postgraduate Pedagogical Education, 2023, Seminar Section).

At ZIPPE, within the framework of the "Development of Inclusive Education in Zakarpattia Oblast" project and the cooperation of the Institute with the Project of the Bureau of the Austrian Service for International Cooperation in Education and Research OeAD, a meeting of specialists and directors of inclusive resource centers, teachers and methodologists of the ZIPPE resource center, directors of preschool educational institutions and general education institutions, educators, teachers of inclusive classes with Eva Prammer-Semmler (University of Education, Upper Austria) and Irmgard Thanhäuser (principal of the primary school in Ottensheim). The main message of the meeting was the idea that the pedagogy of democracy and the pedagogy of peace are essential content

components of the educational process (Zakarpattia Institute of Postgraduate Pedagogical Education, 2023, Inclusive Education Section).

Zakarpattia Institute of Postgraduate Pedagogical Education is aimed at organizing advanced training and professional support for educators in the context of modern realities.

Advanced training courses were held and continue to be held online. It can be noted that over the past two years, course instructors have mastered various forms and means of such work.

Zakarpattia Institute of Postgraduate Pedagogical Education, together with the Methodology and Pedagogy Center in Prešov, on a volunteer basis, began a number of joint projects that promote the teaching in native languages of Ukrainian children who found themselves abroad due to the war in Ukraine. On 3 March 2022, within the framework of the joint program, a project was launched, its purpose was to train Slovak teachers, in particular educators, to work with children from Ukraine. Thus, Slovak colleagues got the opportunity to take an express course on learning Ukrainian.

5.Conclusions

Consequently, education emerges as a pivotal, yet nuanced, contributor to fostering peace, equipping individuals with not only knowledge and skills but also enhancing their understanding of diverse cultures, beliefs, and values, which in turn nurtures critical thinking and informed decision-making that may progressively lead towards a society less burdened by conflict and inequality.

Institutes of postgraduate education shape the culture by providing in-depth education and training to attendees and fostering a community of scholars and researchers, and graduates who can positively impact society.

So, Zakarpattia Institute of Postgraduate Pedagogical Education plays an important role in the formation of a culture of peace among the teachers of Zakarpattia. Providing professional development and training on conflict resolution, communication, and peace development, it equips educators with the necessary skills and knowledge to create a peaceful and inclusive learning environment.

In addition, Zakarpattia Institute of Postgraduate Pedagogical Education contributes to the development of a culture of cooperation, respect, and empathy - critical components of a peaceful society. Because educators are powerful agents of change, their ability to pass on positive values and behaviors to the next generation can have a profound impact on the future of our world.

While the Zakarpattia Institute of Postgraduate Pedagogical Education strives to contribute actively to the cultivation of peace and to mitigate the impact of ongoing conflict on children, it is understood that these goals are ambitious in the context of war. This program seeks not only to educate but also to instill hope and resilience in a generation

facing unprecedented challenges. The institute's initiatives are steps towards peace, yet it is recognized that education is but one of many factors in the broader peace-building process. The complex interplay of educational outcomes and societal peace requires ongoing investigation, and the results presented here should be viewed as preliminary observations in a rapidly changing landscape.

References

Andrushchenko, V. P. (2014). *Osvita yak chynnyk formuvannia demokratychnoho svitohliadu studentiv* [Education as a factor in the formation of a democratic worldview of students]. [In Ukrainian]

Bazaluk, O. O., & Yukhymenko, N. F. (2010). *Filosofiia osvity v systemi kultury informatsiinoho suspilstva* [Philosophy of education in the culture system of the information society]. [In Ukrainian]

Brock-Utne, B. (2000). Peace education in the era of globalization. *Peace Review*, 12 (1), 131-138.

De Rivera, J. (Ed.). (2008). Guide to building a culture of peace. *Springer* Science & Business Media.

Despert, JL (1944). The impact of war on the mental health of children. *Journal of Consulting Psychology,* 8 (4), 206.

Diesterweg, A. (1857). Pädagogisches Wollen-und-Sollen: Dargestellt für Leute, die nicht fertig sind, und eben darum Lust haben, nachzudenken. Baensch.

Faver, C. (2010). School-based humane education as a violence prevention strategy: review and recommendations. *Review of Services for Children and Youth*, 32 (3), 365-370.

Goodwin, AL, Lowe, EL, & Darling-Hammond, L. (2017). Empowered Educators in Singapore: How High Performance Systems Impact Teaching Quality. John Wiley and Sons.

Grotius H. (2012). Hugo Grotius on the law of war and peace. Cambridge University Pres

Guetta, S. (2013). From peace education to a culture of peace: contexts and challenges., 167-179.

Harris, I. M. (2004). The theory of peace education. *Journal of Peace Education*, 1 (1), 5-20.

Johnson, D. W., & Johnson, R. T. (2006). Peace education for consensual peace: The essential role of conflict resolution. *Journal of Peace Education*, *3*(2), 147-174.

Justino, P. (2014). Barriers to education in conflict-affected countries and policy opportunities. *Paper commissioned for fixing the broken promise of education for all: findings from the global initiative on out-of-school children (UIS/UNICEF, 2015).* Montreal: UNESCO Institute for Statistics (UIS).

Kanan, A. S., Bloom, L. C., Gerstein, L. H., Hankemeier, D., Shurigar, B., Ciosek, S. J., & Kroot, A. (2022). A follow-up qualitative study: The lived experiences & perceptions of SDP trained youth sport coaches and teachers from Jordan and Tajikistan with using sports to foster a culture for peace. *Journal of Sport for Development*.

Kikinezhdi, O. M., & Shulga, I. M. (2019). *Etyka nenasylstva v natsionalnii pedahohichnii spadshchyni ta sohodenni* [The ethics of nonviolence in the national pedagogical heritage and the present]. [In Ukrainian]

Komenský, J. A., Radice, G. L., & Gualtieri, V. (1935). *Didattica magna*.

Kozmenko, O. (2022). *Osvita yak zasib formuvannia kultury myru* [Education as a means of forming a culture of peace]. Personal spirituality: methodology, theory and practice, 1(1 (103)), 109-118.

Kremen V.G. (2007) *Filosofiia natsionalnoi idei.* [Philosophy of the state idea]. Liudyna. Osvita. Sotsium. K.: Hramota 576p. [In Ukrainian]

Kremen, V. G., Sysoeva, S. O., Beh, I. D., Voznesenska, O. L., Havrysh, N. V., Gonchar, L. V., ... & Shahray, V. M. (2022). *Kontseptsiia vykhovannia ditei ta molodi v tsyfrovomu prostori* [The concept of raising children and youth in the digital space]. *Visnyk Natsionalnoi akademii pedahohichnykh nauk Ukrainy*, 4(2), 1-30. [In Ukrain]

Kushnir, V. (2012). *Mykola Pyrohov pro klasychnu i realnu osvitu* [Mykola Pirogov about classical and real education] Psykholoho-pedahohichni problemy silskoi shkoly, (40), 270-276. [In Ukrainian]

Lave, J. (2021). Culture of acquisition and practice of understanding 1. *In situational cognition (p. 17-35). Routledge.*

Lee, A. (2011). Who becomes a terrorist?: Poverty, education, and the origins of political violence. *World politics*, *63*(2), 203-245.

Morar, M. V. (2018). *Politychna osvita yak faktor formuvannia politychnoi kultury ukrainskoho suspilstva* [Political education as a factor in the formation of the political culture of Ukrainian society]. Hileia: naukovyi visnyk. Vyp. 132. p. 356-359. [In Ukrainian]

Navarro-Castro, L., & Nario-Galace, J. (2010). *Peace education: A pathway to the culture of peace*.

Olson, T. (2008). Understanding the causes of war and peace. *European Journal of International Relations*, 14 (1), 133-160.

Pestalozzi, J. H. (2022). *The education of man: Aphorisms*. Open Road Media.

Raider, E., Coleman, S., & Gerson, J. (2006). Teaching conflict resolution skills in a workshop. *The handbook of conflict resolution: Theory and practice*, *2*, 695-725.

Reardon, B. A. (1988). *Comprehensive peace education: Educating for global responsibility*. Teachers College Press, 1234 Amsterdam Avenue, New York, NY 10027.

Reardon, BA (2001). Education for a culture of peace in a gender perspective. UNESCO, 7, place de Fontenoy 75352 Paris 07 SP, France.

Russo, J. J. (2011). Discourse on the origin and foundations of inequality between people. New York: Bedford/St. Martins.

Ryabov, S. (2004). *Osoblyvosti hromadianskoi osvity u formuvanni politychnoi kultury perekhidnoho suspilstva* [Peculiarities of civic education in the formation of the political culture of a transitional society]. [In Ukrainian]

Schwebel, M. (2001). Formation of a culture of peace in children. Peace and Conflict: *Journal of Peace Psychology,* 7 (1), 1-3.

Shulga M. (2019). *Pro korysnist tekstiv z heopolityky* [On geopolitics texts usefulness]. [In Ukrainian]

Shved, M. (2014). Vplyv osvity i kultury na rozvytok suspilstva [The influence of education and culture on the development of society]. [In Ukrainian]

Sokolova, I. V. (2012). Formuvannia sotsiokulturnoi identychnosti u polikulturnii osviti [Formation of sociocultural identity in multicultural education]. *Pedagogical discourse,* (11), 294-299. [In Ukrainian]

Swee-Hin, T. (1993). Education for Justice, Environmental Care and Cultural Solidarity: A Holistic Concept of Peace Education. Education of peace Minidruka No. 46.

Sysoeva S. O. (2010). *Osvita u suchasnomu sviti* [Education in the modern world]. pp. 10-15. [In Ukrainian]

Sysoieva S. A., Sokolova I. V. (2003) *Narysy istorii rozvytku pedahohichnoi dumky* [Essays on the history of the development of pedagogical thought] Navch. K.: Tsentr uchbovoi literatury, 308 p. [In Ukrainian]

Ushinsky, K. D. (1983). *Liudyna yak subiekt vykhovannia* [Human as a subject of education] Vybrani pedahohichni pratsi,. Selected pedagogical works, 1. [In Ukrainian]

Verbytska, P., Voytenko, O., Demyanchuk, O., Dubrovskyi, V., Zhadan, I., Zyazyun, I., ... & Slivka, O. (2021). *Hromadianska osvita v systemi osvity Ukrainy* [Civic education in the education system of Ukraine] [In Ukrainian]

Vestal, A., & Jones, N. A. (2004). Peace building and conflict resolution in preschool children. *Journal of research in childhood education*, *19*(2), 131-142.

Wintersteiner, V. (2013). Building a Global Community for a Culture of Peace: The Hague Appeal for Peace's Global Peace Education Campaign (1999–2006). Journal of Peace Education, 10 (2), 138-156.

Zhurba, K. O., Beh, I. D., Dokukina, O. M., Fedorenko, S. V., & Shkilna, I. M. (2019). Natsionalno-kulturna identychnist u stanovlenni pidlitka. [National and cultural identity in the formation of a teenager]. [In Ukrain]

Zimmerman, E. (2001). Intercultural art education offers a means to promote tolerance and understanding. *Journal of Cultural Research in Art Education*, *19*, 68.

Webography

Ministry of Education and Science of Ukraine. (2022, April 2). About recommendations for employees of preschool education institutions during the period of martial law in Ukraine [Letter No. 1/3845-22]. Retrieved from https://mon.gov.ua/ua/npa/pro-rekomendaciyi-dlya-pracivnikiv-zakladiv-doshkilnoyi-osviti-na-period-diyi-voyennogo-stanu-v-ukrayini [In Ukrainian]

Zakarpattia Institute of Postgraduate Pedagogical Education. (2023). Inclusive education as a manifestation of democracy. Retrieved from https://old.zakinppo.org.ua/kabineti/oblasnij-resursnij-centr-z-pidtrimki-inkljuzivnoi-osviti/zagalni-materiali/7466-inkljuzivna-osvita-jak-projav-demokratii [In Ukrainian]

Zakarpattia Institute of Postgraduate Pedagogical Education. (2023). Seminar: Leadership in times of crisis [Seminar "Leadership in times of crisis"]. Retrieved from https://old.zakinppo.org.ua/zagalni-novini/7477-seminar-liderstvo-v-chasi-kriz [In Ukrainian]

Romaniuk, L. (2022). Almost 200,000 forced migrants have been accepted by Transcarpathia since the beginning of the war [Maizhe 200 tysiach vymushenykh pereselentsiv pryinialo Zakarpattia z pochatku viiny]. Suspilne Media. Retrieved from https://suspilne.media/217439-majze-200-tisac-vimusenih-pereselenciv-prijnalo-zakarpatta-z-pocatku-vijni/ [In Ukrainian]

surl.li. (2023). Parish of St. John the Theologian [Parafiia sviatoho Ivana Bohoslova]. Retrieved from http://surl.li/klnuq [In Ukrainian]

surl.li. (2023). Peace [Myr]. Retrieved from http://surl.li/klnvt [In Ukrainian]

Ukrinform. (2023). Multimedia platform of foreign language of Ukraine [Multymediina platforma inomovlennia Ukrainy]. Retrieved from https://www.ukrinform.ua/rubric-regions/3444376-na-zakarpatti-oficijno-zareestruvali-110-tisac-pereselenciv.html [In Ukrainian]

The impact of digital transformation on the continuing training of Hungarian teachers – Peculiarities of distance education -

András Benedek•

Abstract

One of the specific areas of the global digital transformation in education is the continuing professional training of teachers. In this formal adult training that has taken place alongside work in the last 30 years, the impact of digital transformation can be considered a process suitable for general conclusions. About 25,000 students have graduated from the teacher leadership training program of the Budapest University of Technology and Economics (BME) in the past three decades. This paper presents the content and organizational development process of this training program from the point of view of digitization transformation .The analysis of the theoretical and practical connections of the process analyzes the new kind of adult education characteristics of the function realized between 1993-2023 in parallel with the Digital Transformation. One aspect was based on a comparative study with international trends analysis), which resulted in the developing a new distance education model. From a methodological point of view, our innovation being described was essentially action research. Network structures were significantly created: teachers working in small and development groups comprising senior consultants."Distance education," which initially used classic correspondence solutions, was significantly transformed after the turn of the millennium precisely due to Digital Transformation. Learning Management Systems (LMS) and online solutions that make network communication continuous were developed between 2006-2018. This form of training proves with data that ways and opportunities can be created for quality training alongside work within the lifelong learning framework. The continuously detectable high level of student satisfaction indicates that, in addition to the many tensions of our current way of life and the confinement caused by the pandemic between 2020 and 2022 in the last few years, the prominence of online communication solutions can give a realistic chance of realizing the adult education goals by networking.

Keywords: Adult Education, Countiuning Training, Digital Transition, Networking

1.Introduction

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The digital transformation (Beetham & Harp, 2019; Bell, 2011) is an innovative process suitable for general conclusions in the formal adult training networking that has been taking place alongside this work for the past 30 years. In terms of modeling the effects of digital transformation, we selected a subsystem of the teacher training system that is characteristic of the process. This population is 1.5-2 percent of the total employed teaching staff annually. At the same time, in the case of the rich selection of training programs, it is the program employing the most significant number of students in which the digital transformation process can be illustrated relatively well.

The theoretical and methodological frameworks of the research were shaped by the new educational theoretical insights linked to digital transformation and the innovative efforts of connectivist teaching and learning. According to the researchers, the primary purpose of collaborative teaching is to activate the students with the tasks. This trend has to open been increasing over the last decade, and the primary reasons are the use of communication technologies and collaborative tasks. Our research also pointed out that the depth and dynamics of teacher attitude change are significantly related to cultural factors, among which the preparation of teachers and the development of their competence related to collaborative methodological procedures in the online environment play a decisive role. In this way, we can not only examine the knowledge transfer related to collaborative learning in practice, but we can also intervene in a preventive way in the quality improvement of teacher support in the vocational training system. Today's modern e-learning teaching materials OER (Open Education Resources) are also looking for the answer to the fundamental question of how we can make the content of education open and the subject matter be mastered and convey them in structures that are also open to the students.

The author's methodological approach was based on the history of the training, which was characterized by synchronous presence within the framework of the university during the entire period. This gave us a way to interpret the specific topic – digital transformation – as action research, with particular attention to the stories of the pandemic period. A formal analytical and evaluation research carried out in entrepreneurial university frameworks provided the opportunity to analyze and characterize the three-decade history of the training (Benedek, 2023).

The paper, in four subsections, presents the content and organizational development process of this training program from the point of view of digitization transformation. Firstly, briefly refer to the antecedents since the past three decades are a significant period from the point of view of digital transformation. However, the traditions of management training are significantly older than this. The nature and impact of the digital transformation on specialized continuing education is precisely the new form and content of the training, which we set out to systematize during the research. Our research question, which was raised from the point of view of the analysis of the three-decade process, was how they can be described,

what are the model elements of this process, and how they affect teacher training, mainly specialized further training. By presenting the antecedents, our analysis graphically illustrates the complex system of the formation of the model, the phases of its development, and the results of the research is summarized in the Conclusions section.

2. About the antecedents

Hungary's continuing education system for teachers was also created due to a nearly century-long development process.[8] The accreditation documentation has been submitted for the Head of Public Education operation as a specialized continuing education course in distance learning. The BME received the accreditation license for this. The professional qualification for the head of the institution and, at the same time, the teacher's professional examination requirement was formulated at the legislative level in 1997[9]. It was then that the purpose of the training was defined[10]: For the current and future leaders of the public education system (professionals working in leadership roles of educational institutions and in various fields and levels of educational management), such modern, theoretically grounded, and at the same time practice-oriented management and organizational theory, management psychology, education systems, -planning, -management, -economic, legal knowledge, and the development of managerial skills, which provides preparation for the professional performance of school principals and other public education managers, as well as expert tasks related to educational management.

Different forms of management training have developed in different sectors of the Hungarian public sector. In the case of the education sector, the knowledge required for management can typically be acquired not as part of primary education but as part of further education in a higher education institution. About 25,000 students have graduated from the BME teacher leadership training program, which is committed to digital transformation, in the last three decades. This form of training was established in the field of education in 1993. From 2002, the completion of further training was given priority among those applying for

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[8] LXXIX of 1993 law on public education - 1993. évi LXXIX. törvény a közoktatásról
URL: https://njt.hu/jogszabaly/1993-79-00-00.72 (23.11.23)

[9] 8/1997. (II.18.) MKM decree - 8/1997. (II.18.) MKM rendelet
URL: https://jogkodex.hu/jsz/1997_8_mkm_rendelet_9379467 (23.11.23)

[10] Annex to 8/1997. (II.18.) to MKM decree: Qualification requirements of the specialized continuing education program for the head of public education
URL: https://jogiportal.hu/index.php?id=1vhkb6na19xzvnkiw&state=20061003&menu=view (23.11.23)

the position of director of the educational institution, then from 2005, it was a condition for re-appointment. In 2013, it was also a condition for the first management assignment.

Theoretical initiatives worldwide have turned into significant experiments in the last two decades, so it is essential to highlight the practical aspects. Such can be considered the striking appearance of the representatives of the connectivist learning theory, initially strengthening the openness of higher education (Siemens, 2005), MOOC (Massive Open Online Courses) expansion in the leading higher education institutions. All this meant an exciting orientation. From the point of view of our research, it was essential to realize that it is advisable to ensure flexibility in the organization of learning activities. Looking back to the spring of 2020, to the crisis management, as a result of the consistent developments of the previous period, a well-functioning, stable educational framework was already available to the institution during the digital transition. Instructions, information, and feedback can be sent quickly and purposefully in a group e-mail. Subject messages can be easily handled in framework systems (such as Moodle). The "distribution," archiving, and documentation of teaching materials available to everyone, tasks developed by individuals, and student work can be solved much more efficiently than traditional forms and can usually be directly linked to statistical analyses, complex group and individual evaluations.

At the level of history, in terms of its content, training structure, and applied methods, it is justified to highlight three factors of the creation of modern specialized teacher training, which presumably laid the foundation for the success of the next three decades. First of all, it is justified to point out that the importance of leadership training was recognized in the innovation process of the institutional development and management system. The other and the institutional aspects of the thirty-year history also confirm this, that the historical commitment of the given university to the development of the education system meant an organizational background and a personal decision-making situation, especially in the first decade of the system change, which led to professional initiatives, the new model of domestic public education leadership training it also provided policy support for its development.

3. The nature of digital transformation and its impact on the training

In Hungary, the continuing education system for teachers was also created due to a nearly century-long development process. This system has sectorial solid management functions regarding its goals, operation, and legal regulation; the regulation and recognition framework is usually linked to a ministry. In the past 50 years, this has specifically meant regulatory regulation, which is coordinated at the level of implementation by school administrators (currently school districts) and local governments (in the case of kindergartens).

Within the framework of the present analysis, within the further education system of the teacher, we organize the peculiarities of the further education system of the institution managers that took place in the last three decades. By definition, the teacher training system is linked to the higher education institutions in which the teachers obtained their diplomas. This system was characterized by centralization even before the system changed. At the same time, in the last decades, adult training companies have appeared, which primarily offer various programs to teacher training participants within the adult education framework. It is a significant feature, and this applies in the same way as international trends, that most institution managers come from ambitious teachers who show an interest in organizational leadership. Professional continuing education programs are vital in this professional mobilization and developing further career paths. Figure 1 shows the system elements, highlighting the primary connections characteristic of the teacher continuing education system that has developed in recent decades and is still operating.
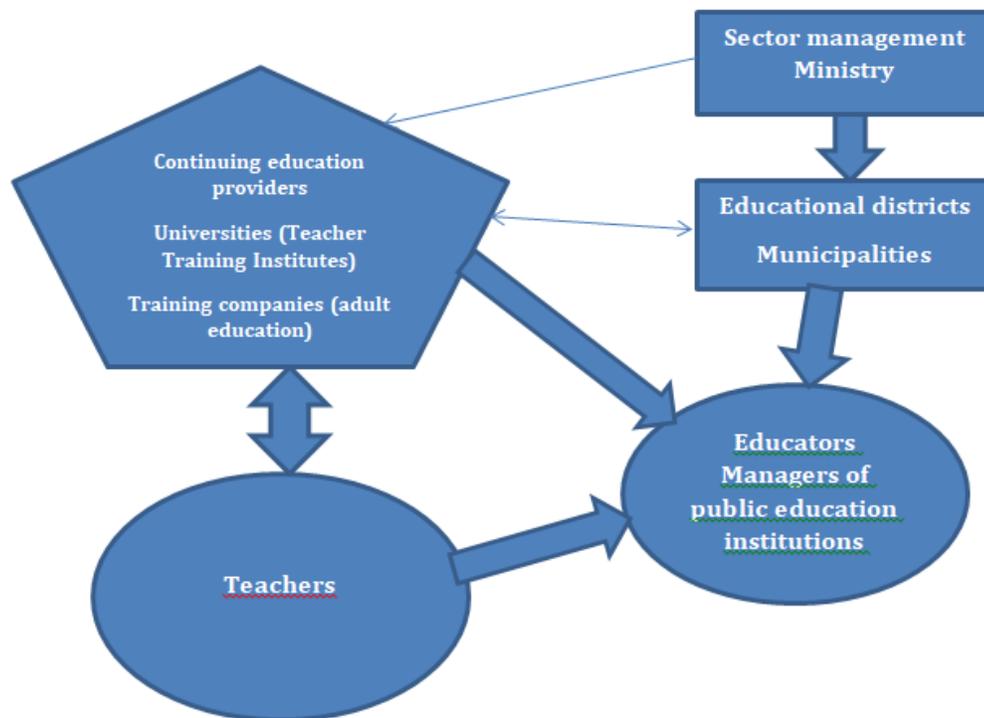
Figure 1. System elements of continuing training of teachers in Hungary.

In education, especially in institutional frameworks, such as classically in schools, the roles (instructor-student) and the actors (teachers and students) are relatively well defined. Based on their age and their already acquired and recognized qualifications (teachers), teachers were also formally positioned in the organization created historically to create the

conditions for teaching and learning. The traditional elements of the education system - schools that educate and educate young people - were already established in ancient times and have slowly developed over the past centuries while respecting traditions.

Educational institutions perform many tasks related to preserving, transmitting, and renewing knowledge. In addition to preserving knowledge and archiving its valuable elements, it is essential to participate in the renewal of knowledge, which is possible and has good traditions if education is closely connected to knowledge development and research. The mission of higher education is critical in this respect (Schratz, 2009). However, at the same time, the quality of teaching and learning is also essential in the beginning and middle stages of education. In this respect, in addition to the classical actors – instructor and student – in the initial stages of schooling, when the role of informal learning is taken over by formal education, the supportive direct and indirect presence of parents is significant. Especially during the period of obtaining the funds, the actors thus form three poles, in which contexts their role and weight vary over time and based on specific situations.

The changes of the last decades in the digital transformation process perfectly demonstrate that the world of learning has also changed in the case of teacher training. In the case of this training, the distance learning solutions can significantly facilitate the learning-consultation process due to the peculiarities of their leading work, their considerable busyness, and the national nature of the training. The university background and the adaptation of the technological environment to training functions also created a unique opportunity in this respect, which resulted in the formation of a "humanistic distance education."

It was perceptible that after the adoption of the education laws legitimizing the actual system change, programs supporting the development of teacher competencies in an increasingly complex manner appeared in the school world, and continuous further training became not only an expectation but a real possibility for teachers. In the past three decades, the most significant number of distance education students in Hungary - about 2,500 students on average per academic year - was associated with the professional further education of teachers at the BME. As a result of continuous developments, since 2010, distance education supported by ICT tools has operated exclusively in a modern educational framework with innovative educational forms and methods. The essential feature of our humanized distance education was the use of modern electronic educational frameworks and the direct personal, professional relationship established with the consultants, which was supplemented with contact training and exercises in a manner recognized by student feedback and external references in order to reduce the risks of distance education becoming impersonal. This blended learning form of education was developed over many years, and its acceptance is characterized by the fact that approximately 80 percent of those who

graduated from public education leadership training chose this form of education and our institution in the last decade as well.

In mid-March 2020, the Technical Pedagogy Department of BME was among the first to decide on the immediate transition to online education. In the training, students were introduced to the framework (MOODLE) that has been used for more than a decade, and distance digital education was fully introduced. The preparation of the decision was not without controversy; there were reservations, partiality, and several counterarguments formulated to defend already proven solutions. After the decision, the sessions, the training, and the training programs in the exercises took place exclusively online. Undoubtedly, there were minor, temporary technical difficulties. However, in about two weeks, the system was established that effectively supported the training and individual learning of the students until the end of the academic year. In the meantime, we paid close attention to the world and the domestic environment and built on our previous experience.

Suppose we want to systematize the elements of the model that can be seen in specialized further training, which is particularly characteristic of management training. In that case, the diagram links the following main characteristics. For the successful completion of management tasks and the associated official recognition and social position, it is essential that a high-level quality management system operates in higher education (universities) linked to state recognition and remuneration references. From the point of view of our analysis, four functions of the distinguished development model can be highlighted in this relational system, which is as follows:

• Flexible driving services for training participants

• The organization of the distance education area, in which the innovative application of coaching methods takes place

• The creation and adaptation of particular learning frameworks depend on the training goals

• Integration of professional content development and financial organization processes

These functions also raise sensitive questions in higher education, which is operated in a more rigid organizational framework based on traditional time. Because of their complex nature, at the same time, they can be closely related to management activity and its modern forms. In the case of successful solutions, they offer specialized further training programs attractive to managers.
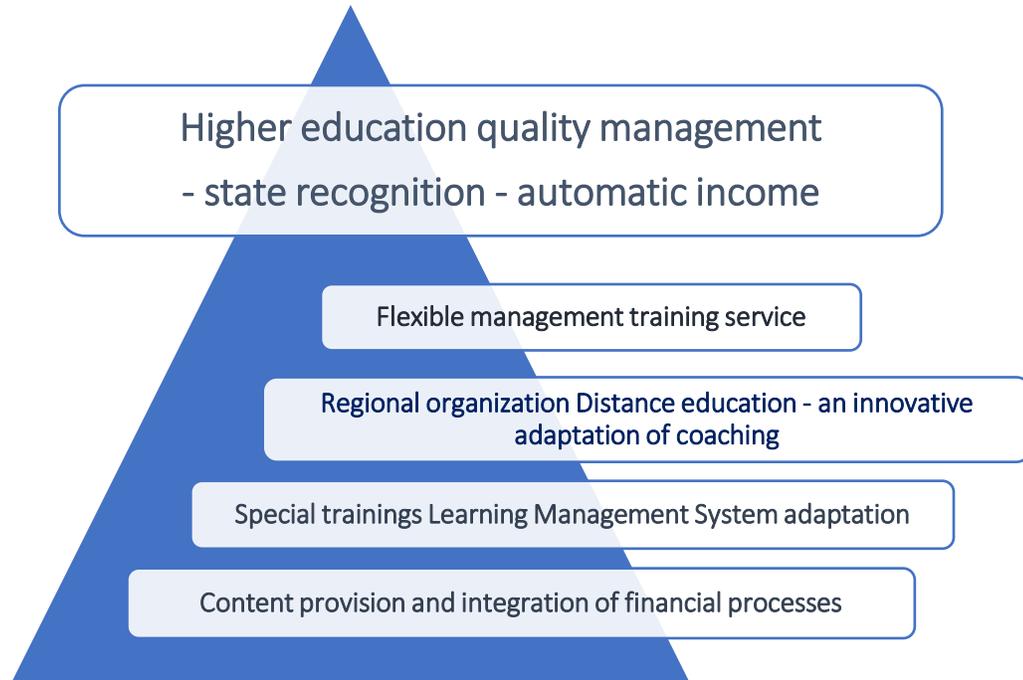
Figure 2. The essential features of the development model.

The participiants play a crucial role in our training model, a potential or currently practicing manager who defines innovative methodological construction tasks when organizing his activities. These constructions are suitable for active interpersonal interactive communication. However, at the same time, individuals and groups aim to create new content constructions (these can be published and professionally analyzed as micro-contents in the most direct way). In principle, the starting point is the learning result. However, the environment that reflects the needs of the labor market in connection with the training is essential. Professional practice prevails in this environment, and in the case of dual education, the company culture, professional (project) tasks, career opportunities, and technological capabilities are essential. All this occurs in a continuously developing online environment, where the above factors act complexly; the applied solutions enable the students to provide feedback, formulate, and send their questions. [1]

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[1] The experiences of student feedback are detailed in a study published in a volume summarizing three decades of training experience: Benedek, A. (2023) Szakirányú pedagógus-továbbképzés a Budapesti Műszaki és Gazdaságtudományi Egyetemen 1993-2023, három évtized: új képzési forma, koncepciók és eredmények (Professional teacher training at the Budapest University of Technology and Economics 1993-2023, three decades: new training form, concepts and results) (Benedek, 2023; 6-52.)

It is also a communication option provided by the framework system, which allows for a virtual reception hour if needed, ensuring communication availability within a given time slot (max. 2 hours) by phone, Skype, or other mutually available chat channel. Undoubtedly, we could rely on other precedents as well, such as the fact that several electronic materials were prepared within the framework of our projects implemented at the BME a few years ago, which meet the modern e-learning requirements: content descriptions were sufficiently segmented, and video recordings were also connected to the materials. , their control questions also enabled interactive testing.

As we have already mentioned, the original feature of this course was that as a "humanized distance education," it opened up a new world for students who learned the "art" of management in addition to work, which expanded the more resolved arenas of consultations, promoting "horizontal learning," and the educational packages, then, thanks to electronic learning support systems, he made the curriculum available and learnable in a different way than usual.

This innovation is undoubtedly one of the main reasons for the success so far. In the case of this form of distance education (Kovács, 2014), content-centeredness dominates, which is suitable for mass education which is supported by a framework supplemented by direct control and activity-centeredness implemented in exercises and training and continuously supported by consulting work. Although only three years have passed since the analysis, which also included constructive suggestions, was made known, many elements of the story have changed significantly. We can talk about the framework systems in the plural since Moodle, which supports education, and the Neptun (learning administration) systems, which organize study questions, including tasks related to financing, are available to students together and in an integrated manner. In addition to the positive fact of this, it should be mentioned that the majority of the students had not encountered such systems when obtaining their previous diploma, and knowledge of the management and use of systems that exclusively deal with academic, educational administration, and the management of academic tasks is essential when organizing courses. A new risk factor has also appeared, the importance of which cannot be neglected shortly: system shutdowns and malfunctions can have a severe impact on professional prestige. Therefore, the issue of functionality and data protection security has become essential. Despite all these risks, it can be stated that there is no alternative to expanding distance education/online type services in the case of further specialized training. Up-to-date content in a flexible form, with increased consideration of the students' living and working conditions, can only be solved by effectively operating these solutions.

> **Phase 1 (1993-2000)**
>
> **Development of new electronic forms of content development**

> **Phase 2 (2000-2005)**
>
> **Development of the framework and methodology for communication between teachers and students(Procedure system - differentiation according to groups)**

> **Phase 3 (2006-2014)**
>
> **Introduction of an open source LMS system and its use in content provision and interpersonal communication**

> **Phase 4 (2015-2019)**
>
> **Integrated IT development of the entire training and financial system**

> **Phase 5 (2020-2023)**
>
> **Rapid switch to online operation, then slow, contradictory "return" (MS Teams implementation, hybrid solutions) - search for new stability (?)**

Figure 3. Implementation stages of digital transformation in the continuing training.

Based on the historical analysis of the development of the model works described above, the following phases of the digital transformation can be distinguished:

• In the first phase of the development of the continuing education model of the new specialization, the innovation was aimed at the development of electronic forms of content development and the full support of the distance education forms typical of the given period with content elements. Initially, this meant educational packages (video cassettes, printed materials delivered by mail, traditional notes), but at the same time, high IT support appeared in their development processes.

• After the turn of the millennium, between 2000 and 2005, the frameworks between instructors and students were formed, in which the elements of group work and collaborative learning appeared. The next phase was when the elementary systems (MOODLE) were built between 2006 and 2014, which required a modern IT infrastructure

and the preparation of exceptional specialists (IT specialists, e-learning specialists) and trainers and consultants in the specialized continuing education program.

• Between 2015 and 2019, the education organization and administration system (Neptune), which initially developed in parallel, and the financial financing system were also integrated step by step, which greatly facilitated the organization of training and the development of effective forms of financing.

• In the spring of 2020, due to the well-known world crisis, it was necessary to switch to full-scale online operation, which was done extremely quickly and successfully based on history. It was then that the implementation of the MS Teams communication software was introduced and has been continuously used ever since. Despite the initial successes, the subsequent period also brought to the surface many contradictions: the problem of returning from the total online operation, the limitations of hybrid solutions, and the unanswerability of quality assurance questions related to online solutions.

When analyzing the theoretical and practical connections of the process, it is advisable to analyze the adult education characteristics of the process taking place between 1993-2023 in parallel with the digital transformation. One aspect was based on a comparative study with international trends analysis, which resulted in the development of a new distance education model. From a methodological point of view, the research and development being described was essentially action research. Significant is that network structures were created, consisting of development groups consisting of teachers working in small groups and senior consultants. "Distance education," which initially used classic correspondence solutions, was significantly transformed after the turn of the millennium precisely due to digital transformation. Education framework systems (LMS) and online solutions that make network communication continuous were developed between 2010-2018. Thus, at the beginning of the pandemic, the transition to online teaching and learning was relatively smooth for this course. At the same time, a new risk factor has appeared, the importance of which cannot be neglected shortly: System shutdowns and malfunctions can severely impact professional prestige, so the issue of operational capability and data protection security is unavoidable. Despite all these risks, there is no alternative to the further expansion of distance education/online type services in the case of further specialized training. Up-to-date content in a flexible form, with increased consideration of the students' living and working conditions, can only be solved with the effective operation of these solutions.
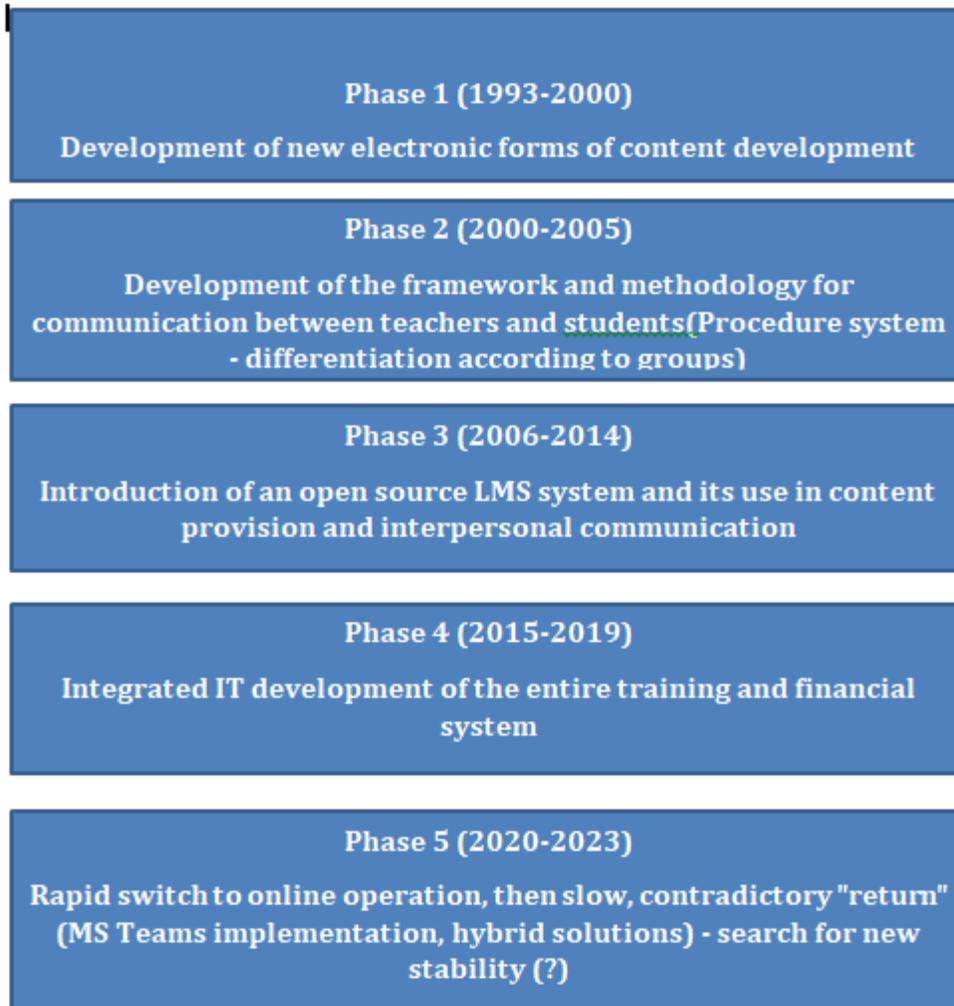
4. Conclusion

Among the many stories of the digital transition, it is presumably symbolic that this training improves the knowledge of school principals and heads of institutions in the success story

presented above. We can also put it as a constraint and an opportunity for innovation when we can understand the paradigm-changing challenges of the digital age and face them constructively. That is why the fundamental question of educational science is the following: How can we manage the changes?

This form of training also proves with data that ways and opportunities can be created for quality training alongside work within the lifelong learning framework. The continuously perceptible high level of student satisfaction indicates that, in addition to the many tensions of our current way of life, the busyness that is more significant than average, and the confinement caused by the pandemic between 2020 and 2022 in the last few years, the prominence of online communication solutions can give a realistic chance of realizing the training goals.

In the current state, considered by many to be temporary, we have a way to look back and look ahead to prepare for the next period. There are professionally based arguments that draw attention to the fact that crises create favorable conditions for innovation. Richard Sharpe (Sharp, 2020) drew attention to the innovation experiences of education in dramatic circumstances, stating that during the pandemic, innovative activity in dealing with problems increased significantly. However, remote working did not mean work performance had deteriorated. Creative solutions came to the fore, and new communication techniques also helped to strengthen social relations. In addition to these changes affecting the innovation potential, the cautious passivity of large systems can also be detected. Many have already established that returning to the same systems and procedures is impossible. The presence of risks and the fear of them are perceptibly present, as many people do not want to use traditional solutions in the future due to the risks associated with them.

Presumably, thorough consideration is required as to what can become an essential element of continuous operation after successful application (for example, asynchronous learning and the use of social portals related to it) and which ones, in the case of which practice contradicts further application. In the past weeks and months, it was noticeable that traditional regulation can often become a barrier to innovation, especially the rigid management of financial processes, as well as the delay in decision-making, the lack of synchronization between professional solutions and the provision of their conditions, in some cases significantly limited the sustainability of new solutions. It seems that the "steepness" of technology transfer enables quick reactions. However, simultaneously, the "danger" of checks and balances, of returning to old solutions, is closely related to the human factor, which once again makes it essential to renew the pedagogical approach and consistently apply new pedagogical values.

Unfortunately only few comprehensive analyzes are available on the latest developments in the digital approach of higher education in the Central-Eastern European region, particularly with regard to the period of the pandemic. Therefore, scientific debates

and critical characterizations are ahead of us in this regard. This paper intends to make a contribution by illustrating the difference in the relatively longer period of the digitalization process by presenting the history of the development of teacher training and distance education. The new frameworks created by the digital transformation can be an innovation result that has the characteristics of the general application of online frameworks in the new ICT environment due to the capabilities of the technical tools used there. However, at the same time, the acquisition of experiential knowledge in the collaborative work process significantly reduces the risk that newer and newer elements of common knowledge carry verification risks. Content sharing and data security are characteristics that we consider essential in the current experimental educational environment. Cloud services provide users with more significant and differentiated archiving capacities and combination options than before so that data security requirements can be consistently enforced.

References

Beetham, H., & Sharpe, R. (Eds.) (2019). Rethinking Pedagogy for a Digital Age: Designing for 21st Century Learning. New York, Routledge.

Bell, F. (2011). Connectivism. Its place in theory-informed research and innovation in technology-enabled learning. The International Review of Research in Open and Distance Learning, 12(3), 98–118.

Benedek, A. (ed.) (2013). *Digitális Pedagógia 2.0.* Budapest, Typotex Kiadó, BME GTK,

Benedek, A. (2021). New Paths to Online Teaching – How Can We Manage Knowledge Transfer and Make the Learning More Enjoyable? *Central European Journal of Educational Research,* 3(3), 55-62.

Benedek, A. (Ed.) (2023). *A BME Műszaki Pedagógia Tanszék pedagógus szakirányú tovább-képzéseinek három évtizede.* Imre Sándor Szakmai Peadagógusképzés Sorozat 23., Budapest, BME.

Colons, A., & Halverson, R. (2009). Rethinking Education in the Age of Technology. Teacher College Press.) https://doi.org/10.1007/s11423-010-9159-0 (23.11.23)

Kovács, I. (2014). Távoktatás a BME Műszaki Pedagógia Tanszékén. *Opus et Educatio*, Vol. 1, No: 1, 21-31.

Schratz, M. et al. (2009). The Role of School Leadership in the Improvement of Learning. Country Reports and Case Studies of a Central-European Project. Budapest: Tempus Public Foundation

Sharpe, R. (2020). *Leading and learning through uncertainty.* University World News, online: https://www.universityworldnews.com/post.php?story=20200708171028609 (23.11.23)

Siemens, G. (2005). Connectivism A learning theory for the digital age. *Int. J. Instr. Technol. Distance Learn.* 2(1), online: http://www.itdl.org/Journal/Jan_05/article01.htm (23.11.23)

Vereckei, J. & Benedek, A. (2022). Development of Institutional Leadership in the Hungarian Education System, *Opus et Educatio,* 9 : 2, 167-177.

Factors Triggering Adult Learning and Education Needs

Vladimir Guțu•

Abstract

In adult learning and education the need is defined as the discrepancy between the current stage of development of professional competences, as well as those of general culture, and the desired (possible to be achieved) stage. The need reflects the existence of a problem that requires intervention, a problem that needs to be dealt with, but also a motivational drive for lifelong learning. As a rule, the learning and education needs of adults are determined from the perspective of the appearance of some changes, the dynamics of developing the areas of adults' interest. In the given study we will try to establish the learning and education needs of adults from the perspective of internal and external factors: a) pandemics, conflicts and violence, polarization and division of society, economic inequality, misinformation and propaganda; b) psychological, social and andragogic. The focus is on the systemic analysis of the learning and education needs of adults, which is followed by several further processes: data collection using methods and tools; identifying priorities and establishing mechanisms for solving problems; needs satisfaction actions; establishing needs assessment criteria and tools. Identifying the learning and education needs of adults is a two-dimensional process: assessment of needs by service providers and assessment/self-assessment of needs by adult learners. Each of the above-mentioned factors generates different needs for learning and formal, non-formal or informal education of adults, including on the professional, social and individual dimensions. Addressing complex factors from the perspective of adult learning and education will essentially contribute to their more efficient integration into society, but will also contribute to reducing the influence of these factors by meeting the learning and education needs of adults.

Keywords: Adults, learning and education of adults, education need, challenges of contemporary world.

1. Introduction

Adult education has as subject and object the individuals in a concrete phase of the life cycle, characterized by autonomy, independence, experience. Adult education aims at them in their multiple statuses, roles, generated by contexts, needs and responsibilities, which

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they assume or must assume. Adults are constantly forced to make decisions, propose solutions, develop action strategies and, above all, act. Adult education involves the formation of personality, first of all, through self-instruction and self-education, which requires the ability to work independently and decide autonomously. Self-knowledge, creative spirit, self-control are features of the adult that have their origin (diligence) at this stage of life.

Adult learning is self-directed, self-tracked, and represents a process in which individuals take the initiative, with or without the help of others (Knowles, 1980).

In the view of researcher Simona Sava (2001, p.48), adult education is "higher education at the pre- and post-graduation level, as a continual professional development and as any other form of knowledge renewal during life in alternation with other activities, mainly with work, but also with recreational activities...".

Adult education, on the one hand, is a process that contributes to the change and development of society, on the other hand, it is a process determined by societal changes, with the priority being those on the labor market. Through adult education, thinking and behavior techniques necessary for adults in various professional and non-professional situations are transmitted.

Adult education opens up new opportunities for solving life problems, acquiring new knowledge about the world, about oneself.

The concept of "learning to learn" remains a dominant one even at this age: acquiring and valorizing on the means of fast and efficient search for information, the ability to verify information and its use in the educational process, but also in professional activity; the ability to work in a team and individually.

Another aspect of adult learning and education relates to the rapid change in factors that generate new needs for learning and education, training and self-training for adults: *computerization* of all spheres of society; *internationalization; disinformation; propaganda,* etc.

In other words, adults need to orient themselves correctly and show their resilience to the challenges of contemporary world.

In this context, the problem of identifying the learning needs of adults becomes a priority. Namely, the cognition and awareness of own learning needs guides the adult towards choosing one or another type of education. As a rule, most adults do not have mechanisms to identify their own learning needs. Very often adults make decisions to attend one or another educational activity, intuitively or strictly contextually.

2. **System of Factors Triggering Adult Learning and Education Needs: Variable and Invariable**

In the specialized literature, we do not find a unique approach and a unique classification of

the factors that generate the emergence of learning needs in adults. We believe that the cause of this situation is related to the complexity of the problem: a great diversity of the respective factors; the dynamics of factors, generated by permanent changes in society; individual manifestations of adult learning and education needs, etc.

In this context, we try to argue and build a taxonomy of the factors that trigger the emergence of adult learning and education needs: internal and external factors; psychological, social and andragogic factors; invariable and variable factors; objective and subjective factors (see Fig.1.).
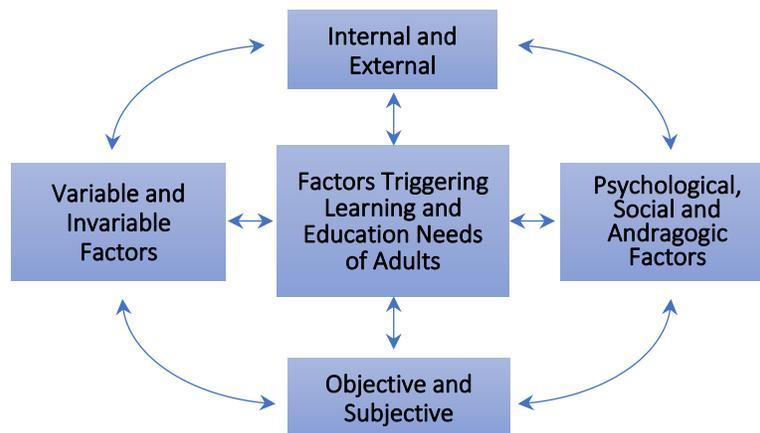
Figure 1. Factors Triggering Adult Learning and Education Needs
(elaborated by the author)

It should be noted that among the listed factors there are a lot of interactions, interconnections, which generate the emergence of learning needs in concrete adults. At the same time, only one factor, which can be dominant, can influence the emergence of learning needs of adults. Knowing and characterizing these factors creates contextual conditions for establishing the learning and education needs of adults, as well as a mechanism for self-assessment of own learning needs (see Table 1.)

Table 1. Factors Triggering Adult Learning and Education Needs Versus Learning Needs
(elaborated by the author)

Triggers of Adult Learning and Education	Typology of Adult Learning and Education Needs
Global External Factors	• The need to know and orient oneself in the essence of global challenges: *globalization, computerization, internationalization, europeanization, etc.*
National External Factors	• The need to know and properly orient oneself in state policies and policies in the field of activity and involvement in various processes in this regard.
External Institutional Factors	• The need to know and understand institutional policies and involvement in institutional development processes.
Intrinsic Factors	• The need to acquire new knowledge, experiences and competences. • The need to obtain new qualifications. • The need for career growth. • The need for personal development: *skills, interests*, etc.
Psychological Factors	• The need for self-development, self-realization. • The need to realize own motives. • The need to realize own potential. • The need to form resilience skills and appropriate behavior in crisis situations, etc.
Social Factors	• The need to develop and valorize social experiences. • The need to strengthen social status. • The need to participate in various social actions and the realization of social functions. • The need to know and promote social and cultural values, etc.
Andragogic Factors	• The need to know and use knowledge in a practical way. • The need to possess and apply adult-specific learning tools. • The need to engage in cognitive activity. • The need to design own career path. • The need to collaborate with others in the andragogic process, etc.
Objective Factors (Psychological, Social, Andragogic)	• The need for lifelong professional training. • The need for lifelong non-professional/social development.
Subjective Factors (Psychological, Social, Andragogic)	• The need for self-training/self-development. • The need to develop own skills in different fields.
Invariable Factors	• The need to learn to learn throughout life. • The need to grow in the career during the professional activity. • The need for self-training and self-development, etc.
Variable Factors	• The need to obtain a new qualification. • The need to obtain higher degrees in professional activity. • The need to develop some specific skills (e.g.: in arts, sports).

The influence of these factors on the identification of adult learning and education needs largely depends on the category of adults: adults involved in professional activity, adults temporarily not involved in professional activity, unemployed adults, adults in the risk group, retired adults (involved and not involved in professional activity). In other words, the status of these categories of adults also determines the specificity of learning needs in the context of respective factors.

3. Concept of "Need" Regarding Adult Learning And Education

The Explanatory Dictionary of the Romanian Language (DEX, 2016) explains the notion of "need", as what is required, must be done; need, necessity, requirement; issue, situation, business, the solution of which has an urgent, pressing character. The need reflects the existence of a problem that requires intervention, a problem that needs to be treated/ solved, an impediment in carrying out a process, a professional/ non-professional activity. The "need" can also be explained from the perspective of motivational theory and self-actualization by Abraham Maslow, who proposed a hierarchy of needs, which goes from primary biological needs to complex psychological motivations, such as the need for self-actualization and valorization of own potential (Guțu, 2022).
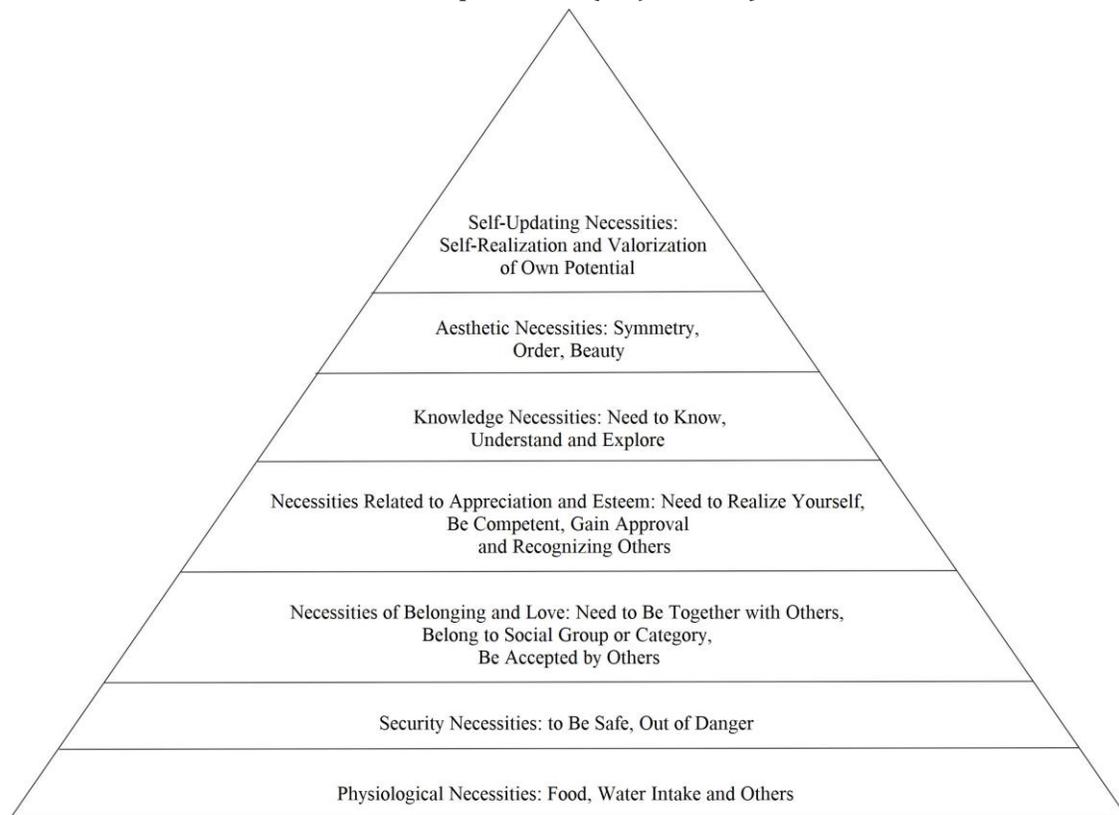
Figure 2. Pyramid of Needs - According to A. Maslow (2007)

Approaching needs according to A. Maslow (2007) assumes an order of priority; the needs of one level must be at least partially satisfied, so that those from the next level can manifest and become important motivational factors of the individual's actions.

This approach has specific implications in the education system and, in particular, in the adult learning and education system. If in the process of educating students, it should be known that the higher needs of the educables, such as those of knowledge and understanding, cannot be activated, if the lower needs in the hierarchy of needs have not

been satisfied, then in the process of learning and education of adults, for the most part, this condition disappears, because the basic needs of adults are met. In this sense, higher needs (developmental, the adult's desire to be successful, to know, to valorize their cognitive, aesthetic and self-actualization skills and capacities) are dominant in adult learning and education. Without resorting to criticism of A. Maslow's theory (2007), it is certain that there are numerous individual differences regarding the order of appearance and satisfaction of needs.

However, the methodology proposed by A. Maslow (2007) remains an effective mechanism for organizing the learning environment in a way that stimulates the active participation of adults in the learning process, satisfying their needs.

In this context, we note that there are several studies and research on the issue of learning needs, including adults (Knowles, 1980; Hinzen, 2018; Văiculescu, 2004; Bertea, 2020).

M. Knowles (1980) structures the learning and education needs of adults into several types: *the need to know; previous experience; willingness to learn; learning orientation and motivation to learn*.

Andragogues can value the learning and education of adults by causing them to become aware of their need to know and develop themselves. At the same time, the andragogue's function is to create learning environments where adults will develop their general social and personal competences. Orientation towards learning constitutes the fact that adults are focused on solving the problems they face in different contexts. M. Knowles (1980) believes that the dominant need of adults for learning is to solve various tasks related to real life.

Adults' willingness to learn as a motivational approach is generated by their ability to learn to learn, to produce new knowledge and experiences, which is the most effective source of learning. The learning motivation of adults is a processual-situational one, determined by experiences and social-professional requirements, by external factors (professional growth, higher salaries, etc.) and internal factors (job satisfaction, improvement of self-esteem, etc.).

Therefore, the motivation of adults for learning is formed during the whole life by virtue of the person's development regularities, the ontological stages and the psychosocial processes of forming the motives of human activity, including the learning activity. And the structure of motivation in pedagogical situations includes, at the same time, actualized and latent factors.
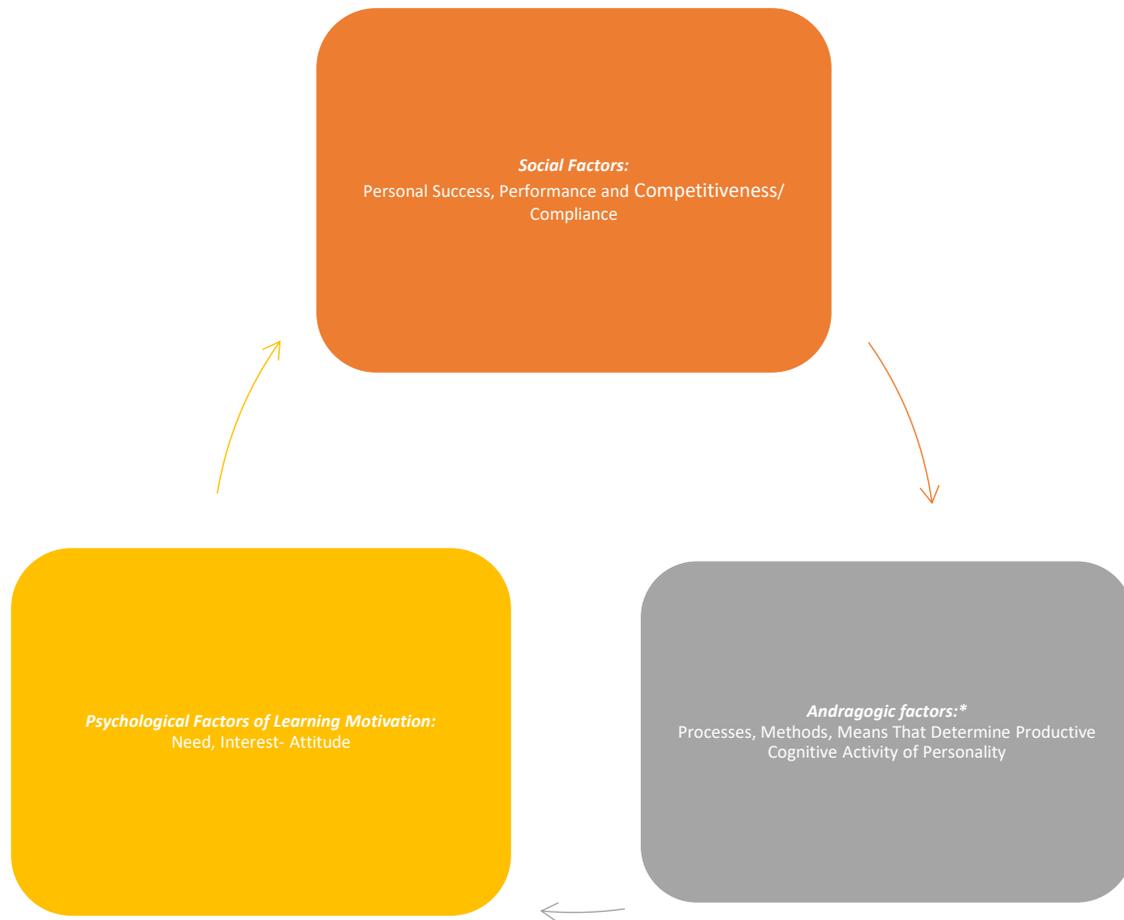
Figure 3. Factors of Adult Learning Motivation (elaborated by the author)

There is a belief that learning abilities in adults decline with age. But the results of several researchers (Knowles, 1980; Hinzen, 2018; Văiculescu, 2004; Bertea, 2020) dispute this opinion. Adults are not inferior to other ages in terms of learning ability, also having individual manifestations.

Crețu (2009, p.341-342) compared the way of adult learning with that of younger people and formulated the following postulates: the adult can often more easily realize the unity between the more abstract and the concrete analysis of some problems, he/she can move more easily between these planes, having a more varied and extensive professional experience; often manages to extract more quickly what is important and meaningful from a material to be learned; those with a longer schooling manage to orient themselves successfully in various sources of information; distinguish more quickly the applicative aspects of the knowledge they acquire; tend to take advantage, within the learning program, of those sequences that help them acquire new methods and procedures to face the demands of the profession; more emphasisingly than others demand rigor and precision in what they are asked to learn and tend to refuse what is not too clear.

On the other hand, there are also some peculiarities of the involvement of adults in the learning program that is proposed to them and which must always be taken into account, in order not to prevent the achievement of the expected results, namely:

- those with less education can enter new learning programs without having formed some necessary skills, and in this case this aspect must be solved first. Even during the activities, forms of support must be found for the development of learning processes;

- there are enough people who hesitate to enter these learning programs, if they have to interrupt their work for a while, and are even tempted to minimize their importance. Therefore, the advantage of going through the learning stages must be revealed to them more insistently;

- after getting involved in learning activities, the latters may seem to them too difficult and too long and, thus, block their active participation;

- if the learning periods involve evaluation of the results, they can be very stressed because of this and obtain results below the expected ones;

- in the face of new knowledge, they can resort to stereotyped and poorly suited thinking strategies and, thus, greatly reduce the gains of completing these new learning stages. Many of the reported shortcomings can be overcome even by discussing them directly with the beneficiaries of the learning programs. Also, they must be taken into account in establishing the content of training for adults (Crețu, 2009).

It is important for the construction of adult learning and education to know the manifestation of affectivity, the rates of which are higher than for young people.

In this sense, the adult is characterized by: greater richness and diversification of affective experiences; stabilization of professional attachment; professional satisfaction/ dissatisfaction; self acceptance; the manifestation of personal feelings, etc.

Understanding training needs in andragogy prepares facilitators to create successful programs for adult learners. In order to develop the quality of adult education and to facilitate socio-professional integration, emphasis will be placed on the training and development for learners of a set of competences with general and specific functions. Determining a need for education, in the opinion of Voiculescu (2004, p.13-14), means answering the question "why and for whom we organize a certain educational process or system and why we organize it this way and not otherwise". In other words, the identification of educational needs is the action by which we determine what are the requirements, needs, necessities that justify the design and support of a process, a program, an educational structure or action. Also, the author insists on the idea that organizing an educational process or system without explicitly orienting it towards satisfying certain needs means placing it in the sphere of voluntarism, random subjective projection and, obviously, lacking rationality and social utility. Even if an educational action is based on strictly determined objectives, this, the author states, does not mean that the action is necessary. While the goal is a
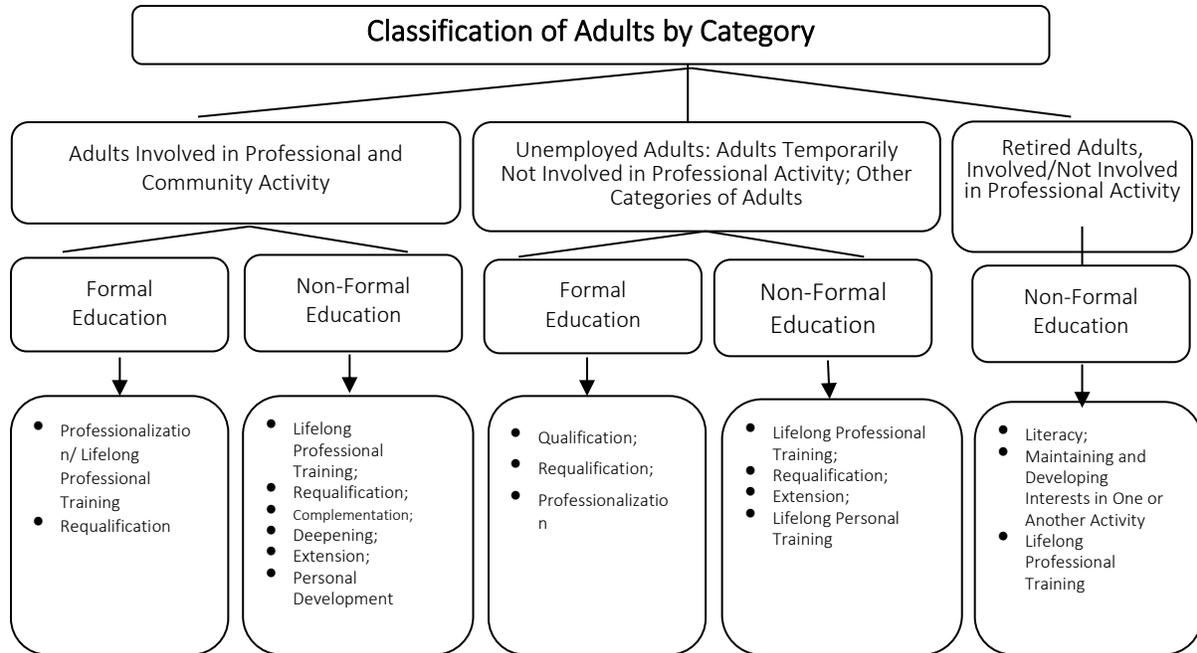
Figure 4. Categories of Adults in Relation to Their Learning and Education Needs
(elaborated by the author)
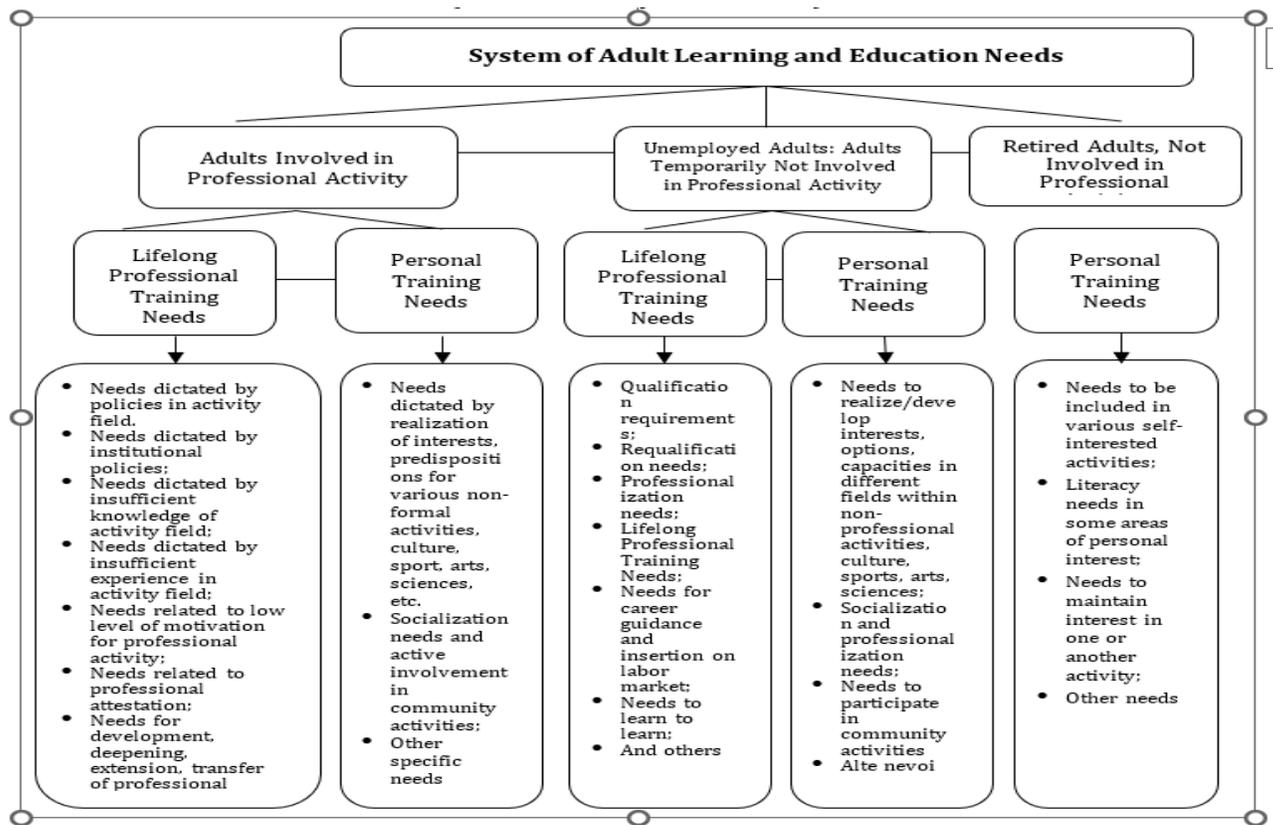
Figure 5. System of Adult Learning and Education Needs (elaborated by the author)

prediction, a projection or a pre-figuration that always involves a part of subjective construction, including the risk of error, the need for education is a reality, it acts as a fact, as a given situation that imposes itself with a a certain intensity and a certain urgency.One of the key aspects of adult learning and education is to know their training needs in relation to different factors: social, professional, personal.

In relation to the learning needs of adults, categories of adults can also be established. It is worth noting that there may be a large number of needs and a large number of categories of adults arising from the complexity of phenomena (*see* Figures 4 and 5).

Further, we present the classification of learning and education needs on the dimension of professionalization according to the typological groups of adults.

Adult Group: Lifelong Vocational Training	*Adult Group:* Obtaining a Qualification	*Adult Group:* Obtaining Requalification/ Recognition
Specific Needs	Specific Needs	Specific Needs
• need to establish problems in one's own professional activity; • need to establish the weaknesses in one's own activity; • need to establish priorities in the profession; • need to identify the form, tools of lifelong vocational training; • need to focus on the market for lifelong learning services; • need for career growth; • need to obtain performance, etc.	• need to establish the attractiveness and opportunity of the profession; • need to obtain namely that qualification; • need to know if that qualification is required on labor market; • need to choose correctly institution/structure of education, etc.	• need to understand requalification need; • need to understand correct choice of new qualification; • need to know whether that qualification is required on labor market; • need to choose correctly institution that offers requalification services, etc.

Figure 6. Learning and Education Needs in Relation to Typological Categories of Adults (elaborated by the author)

Otherwise, the framework of adult learning and education needs is presented from the perspective of their personal development (general culture).

On the one hand, identifying the learning and education needs of this group of people is a simple procedure, because the basic criteria represent the skills and capacities that adults have formed and are aware of and that they want to develop (here comes the question of *where*? and *how*?). On the other hand, identifying the learning and education needs of this

group of people is a complicated procedure (practically unaddressed in theory and practice), if adults do not have a predisposition (attitude) for one or another field/activity profile, but they want to participate in non-professional trainings.

It should be noted that there are at least two aspects of identifying the learning and education needs of adults. The *first aspect* relates to external factors: andragogues, adult education service providers, experts, counselors, managers apply a respective tool to identify the learning and education needs of specific groups of adults. The *second aspect* is related to the internal factor: the adult can determine his/her own learning needs, having the respective tools at his/ her disposal, or identify his/her own needs strictly intuitively, contextually, motivationally.

The clear establishment of the adult learning and education needs is a condition and an essential factor in ensuring the quality of education and the satisfaction of these needs.

It should be noted that managing the process of identifying the learning and education needs of adults is a complex and complicated act.

In order to establish a methodology and tools for identifying the learning and education needs of adults, the vertical approach to needs is also of interest, first of all, with reference to formal and non-formal lifelong professional training. In this context, **four categories of needs** are established:

1. The needs that are generated by educational policies, by possible changes in the education system at the national level.
2. The needs that are generated by the regional/district policies, the possible changes in education at the district level.
3. The institutional needs related to the possible changes generated by educational institutions.
4. Individual/ personal needs generated by problems, gaps, weak parts on the professional dimension or generated by the desire to obtain a teaching degree or higher performances (Gutu, 2022, 2023).

4. **Methodology and Tools for Identifying Adult Learning and Education Needs**

The diversity of target groups of adults, the diversity of fields and profiles of adult education, the diversity of learning and education needs of adults create great obstacles in the development of a methodology and tools for identifying the needs of learning and education of adults. In what follows, we will try to substantiate a core methodology, regarding the identification of learning and education needs of adults that can be modified, adapted in relation to one or another context.

Therefore, the methodology for identifying the learning and education needs of adults represents a system of principles, methods, tools for establishing and analyzing needs, structuring needs, evaluating needs, processing the data obtained and predicting the

satisfaction of these needs.

The proposed methodology mainly focuses on formal and non-formal lifelong professional training of adults. In this context, the *need* represents the discrepancy between the current stage of professional development of one or more persons and the desired (possible to be achieved) stage. The *need* reflects the existence of a problem with reference to a person or a group of persons, generated by several factors, including national and institutional educational policies.

The methodology for identifying the learning and education needs of adults focuses on the following ***principles*** and ***provisions***:

- Diagnosing the learning and education needs of adults must be systematic and systemic.
- Diagnosing the individual learning and education needs of adults must be autonomous and secure.
- Diagnosing the needs of a group of people must be transparent for making the right decisions.
- The analysis of learning and education needs of diagnosed adults must be cyclical with the involvement of stakeholders to establish priorities and how to satisfy them.
- Analysis of the sources that directly and indirectly generate the emergence of needs regarding adult learning and education: educational policy documents, curriculum documents, institutional development strategies and programs, etc.
- Identification of the mechanisms/tools for identifying the learning and education needs of adults in relation to individual, institutional, regional and national options.

Therefore, the needs for training/lifelong professional development are identified at different levels: individual, institutional, national, international. Through the analysis of these needs, individual, institutional, district, national lifelong professional development projects are developed.

It should be mentioned that the identification of needs of lifelong professional development of adults within different professional fields has its own specificity, determined by the particularities of these fields: structure, types of activities, etc. (Guțu, 2023).

In this context, we can present the needs of lifelong professional development of adults as follows (*see* Table 2).

Table 2. Possible Lifelong Professional Training Needs of Adults, Dictated by Real Contexts
(elaborated by the author)

Category of Needs			
At Individual Level	*At Institutional Level (in addition to individual ones)*	*At District Level (in addition to individual and institutional ones)*	*At National/International System Level*
• of conceptualization; • of designing; • of implementation; • of teaching; • of evaluation/ monitorization; • of communication; • of networking; • of research; etc.	• of creating new institutional experiences; • of valorizing institutional policies; • of promoting institution's specifics/educational orientations; • of group activity; • of communication with parents; • of activity in community; • of activity in institutional projects; etc.	• of promoting district policies; • of promoting teachers' experiences at district level; etc.	• of applying national/international educational policies; • of applying changes at system level; • of participation in national/international projects; • of obtaining teaching/managerial degrees; etc.

It is important to establish the ways and structures involved in the satisfaction of these needs. In this sense, the determinants become the categories of needs (*see* Table 3).

Table 3. Ways and Structures Involved in Meeting Needs of Lifelong Professional Training of Adults (elaborated by the author)

Category of Needs			
At Individual Level	*At Institutional Level*	*At District Level*	*At National/International System Level*
• self-training; • institutional seminars; • individual projects, etc.	• institutional seminars; • round tables; • exchange of experiences; • presentation of open lessons; etc.	• district seminars; • round tables; • district conferences; • thematic district conferences; etc.	• long-term and short-term lifelong professional training courses (carried out by Lifelong Training Centers); • national/international conferences; • specialized lifelong training courses; • national/international projects; etc.

Another approach to identifying the learning and education needs of adults is related to their personal development/general culture development. In this regard, we highlight three important aspects:

1. The adult identifies his/her personal development needs in relation to the skills, interests, abilities already formed and acknowledged. The choice for one or another educational activity the adult chooses consciously, in order to satisfy these interests and in elderly age. Usually, this process is spontaneous and unmanaged from the outside.

2. The adult does not have concrete predispositions for one or another learning activity in a certain field, but he/she wants to participate in different training activities. In this case, the adult uses acquaintances, Internet sources, etc. The analysis of different

options, for example, can arouse interest for choreographic, musical, sports, etc. activities. In this case, we can talk about interests, hidden options.

3. Service providers in the field of adults' personal development come with offers for adults, using different forms: conversations, advertising of different activities, involvement of adults in pre-program activities, etc. (Guțu, 2022).

5. Tools for Identifying/Assessing Adult Learning and Education Needs

Different tools are used to identify/self-assess the learning and education needs of adults and, first of all, the needs of lifelong professional training, each one having advantages and disadvantages.

The determination of respective tools also depends on the category, the typology of adults, the way of manifesting the need (*see* Table 4.)

Table 4. Tools for Identifying Adult Learning and Education Needs in Relation to Their Category (regarding teachers) (elaborated by the author)

Category of Needs			
At Individual Level	*At Institutional Level*	*At Regional/District Level*	*At National/ System Level*
Self-assessment based on: • questionnaire; • needs assessment sheet; • opinion of colleagues, methodologists; etc.	Evaluation by administration: • questionnaires; • interview; • assessment form; • observation; • brainstorming; • case study; etc.	Assessment by education department: • questionnaires; • interview; • focus group; • assessment form; • brainstorming; • case study; etc.	Evaluation by MER [Ministry of Education and Research] or lifelong training institutions: • focus group; • questionnaires at national level; • analytical study; • study of policy documents; • study of reform documents; etc.

It should be noted that the proposed tools are mainly focused on establishing the learning and education needs of adults in the field of lifelong professional training, in this case of managers and teachers. However, this tools can be adapted to other professional fields, as well as to the lifelong non-professional training of adults (professional development).

Regardless of the methods and tools selected in each individual case, it is important to obtain clear evidence to substantiate, justify the findings and formulate valid conclusions. (Guțu, 2022).

6. Express-Study of Learning and Education Needs of Different Adult Groups

The purpose of study was to identify the learning and education needs of different groups of adults. The target groups of adults were made up of adults who participated in continual education courses, including adults of the third age (the special group) in the university framework of the Moldova State University, but also from arbitrarily selected unemployed

adults. The study was carried out during the months of March-July 2023. The tools developed by the author were applied. It should be noted that the study does not claim to be exhaustive. Respondents were selected and grouped into the following categories: adults involved in professional activity; adults not involved in professional activity, including the unemployed; retired adults not involved in professional activity. In order to obtain some generalizing outcomes and to establish some trends regarding the option of different groups of adults, we grouped the possible learning needs into several categories: needs related to professionalization on the cognitive-social dimension and needs related to personal development on the cognitive, social, artistic dimension, sports, etc. From the list of possible needs, the respondents had to choose the dominant ones. Respondents could expand the list of needs with other characteristics of the person.

Table 5. Learning Needs of Different Groups of Adults: Study Results (elaborated by the author)

Nr. crt.	Categories of Needs	Categories of Adults		
		involved in professional activity	not involved in professional activity	retired
1.	Needs dictated by external factors/challenges: globalization, internationalization, computerization, crises, etc.	60 %	40 %	30 %
2.	Needs of obtaining new knowledge, new experiences	80 %	60 %	10 %
3.	Needs of professional growth, career growth	70 %	80 %	5 %
4.	Needs of obtaining new qualifications/requalifications	30 %	80 %	5 %
5.	Needs of socialization, effective communication	40 %	60 %	70 %
6.	Needs of extension and compensation of knowledge and skills	50 %	30 %	30 %
7.	Needs of valorization of own skills and interests in different fields (arts, sports, technologies)	20 %	10 %	40 %
8.	Needs to learn to learn	90 %	60 %	5 %
9.	Need to achieve performance	60 %	10 %	5 %

The results presented in Table 5 were obtained by questioning/interviewing the respective respondents, which were organized in different forms: face to face; online; by phone. About 120 respondents participated.

The analysis of the obtained results allows us to state the following:

- All groups of adults, including retirees not involved in professional activity, show the desire to learn, to develop in relation to the categories of needs, having different degrees of involvement.

- Adults involved in professional activity (in the given case, mainly teachers) showed a higher degree of learning needs in relation to other groups of adults. Specifically, this group of adults marked that they need new knowledge, new experiences (70%), they need professional growth (80%), they need the development of competences to learn to learn (90%). We also appreciate the interest of this group of adults towards external factors that directly or indirectly influence their lives. It is that they want to know more about global processes, the causes of crises, wars, etc. At the same time, the worrisome

factor concerns the attitude of respondents from this group of adults towards personal, non-professional development (art, sports, technologies, community, etc.).

- The results obtained by the group of adults temporarily not involved in professional activity, primarily the unemployed, deserve attention. This group of adults shows interest in learning related to insertion in the labor market (60%), obtaining a new qualification (80%), socializing (60%). Like adults involved in professional activity, this group of adults shows no interest in personal development (10%).

- The responses of the group of retired adults, who are not involved in professional activity, also deserve attention. On the one hand, they show interest in global issues, socialization, communication (70%), but also in realizing their own interests in different fields of activity. On the other hand, 90% of them identified that they no longer need to learn, they do not see the point of getting involved in this process.

- Following discussions with adults from various groups, we deduced some of their characteristics:
  - a large part of those who indicated that they have different learning needs, in reality do not plan to get involved in this process, both formally and non-formally;
  - a large part of those surveyed noted that they do not have opportunities to complete their studies, but they also indicated the lack of opportunities to learn and, first of all, on the dimension of non-formal personal training, some of the respondents noted that they do not know the existing options for learning and education;
  - it is important to mention that the adults in the group who are not involved in professional activity indicated that they urgently need to obtain a concrete qualification/job, because they have been offered a job; here we can talk about the existence of dominant learning needs in adults;
  - retired adults from the urban area indicated that they would like to learn the computer better, that they need to use social networks to communicate with relatives or use the Internet to pay for conveniences; others indicated that they would like to join various language study clubs, arts, sports, etc.

7. **General Conclusions**

Establishing a conceptual and methodological framework for identifying and assessing/ self-assessing the learning and education needs of adults and, where appropriate, teachers' lifelong education is part of the modern paradigm of lifelong learning. The proposed approach can be adapted and applied in order to establish the formal and non-formal learning and education needs of adults in different fields and professional profiles.

Therefore, identifying the learning and education needs of adults, prioritizing these needs is a frame of reference for ensuring the quality of formal and non-formal vocational

training of adults, but also for the elaboration of strategies for the development of this educational field.

References:

Bertea, I.C. (2020). Adult Education as a Factor of Professionalism. *Conferința Științifică Națională cu Participare Internațională „Formarea Inițială și Continuă a Cadrelor Didactice din Perspectiva Conceptului Clasei Viitorului" [National Scientific Conference with International Participation "Initial and Continuous Training of Teaching Staff from the Perspective of the Future Class Concept"]*, Chisinau, November, 27, 2020, 165-175.

Crețu, T. (2009). *Psihologia vârstelor [The psychology of ages.]*. Iasi: Polirom.

DEX – Dicționarul explicativ al limbii române (2016) [DEX – Explanatory Dictionary of the Romanian Language]. Academia Romana, Institutul de Lingvistica „Iorgu Iordan": Editura Univers Enciclopedic Gold.

Guțu, Vl. (2022). Conceptual and Methodological Framework of Identifying Adult's Learning and Education Needs. *Studia Universitatis Moldaviae. Seria Stiinte ale Educatiei, 9*(159). https://doi.org/10.5281/zenodo.7405341

Guțu, Vl. (2023). *Andragogie. Monografie [Andragogy. Monograph].* Chisinau: CEP USM.

Hinzen, H. (2018). Skills and values in adult education and lifelong learning. Comparing commitments, documents and recommendations at global level. In: Ungureanu, R., Mocanu, M. (Eds.). Proceedings of CIAE 2018. The Fifth International Conference onAdult Education. Education for values – continuity and context. Chisinau (Moldova), April 27th-28th, Iasi (Romania), April 25th-27th, 2018. EdLearning.it, 175-184. http://www.edlearning.it/proceedings/moreinfo/20180425.htm

Knowles, M.S. (1980). *Informal Adult Education: A Guide for Administrators, Leaders, and Teachers*. New York: Association Press.

Maslow, A. (2007). *Motivație și personalitate [Motivation and personality]*. Bucuresti: Editura Trei.

Sava, S. (2001). *Politici educaționale, culturale și sociale [Educational, cultural and social policies].* Timișoara: Editura Almanahul Banatului.

Sălăvăstru, D. (2009). *Psihologia învățării. Teorii și aplicații educaționale [The psychology of learning. Educational theories and applications]*. Iasi: Polirom.

Voiculescu, F. (2004). *Analiza resurse-nevoi și managementul strategic în învățământ [Resource-needs analysis and strategic management in education]*. Bucuresti: Aramis.

General Issue

Methods of development of conflictological culture in older adolescence

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Abstract

The relevance of our study is related to the need to help adolescents effectively cope with the challenges of modern society, which is characterised by increased tension, aggressiveness and conflict. The lack of social skills and demonstration of violent ways of overcoming contradictions by adults leads to an increase in conflicts among adolescents. The purpose of our study is the development of conflictological culture in older adolescents. We adhere to Shcherbakova's definition (2010), according to which conflictological culture is an integrative quality of personality, which is based on humanistic values. Its structure is represented by the culture of feelings and thinking as well as behavioural and communicative culture. The sample consisted of 307 adolescents, 16-18 years old, living in Chisinau. To identify the level of development of conflict culture, we used the method developed by Shcherbakova (2011). Based on the obtained data, we developed the program of conflictological culture development. The cognitive-behavioural approach of A. Beck (2017) acts as a methodological basis of the psychological training program. Twelve adolescents, with a low level of conflictological culture development, participated in the training. The following changes were obtained in the study sample: adolescents demonstrate a greater ability to prevent and manage conflicts at all stages; they show a greater readiness for dialogue, the ability to adequately verbalize their own and other people's experiences; and to a greater extent they possess the techniques of assertive communication compared to adolescents from the control group. The obtained results confirm the effectiveness of the program developed by us and the validity of the hypothesis of the study. The novelty and practical significance of our study is determined by the fact that conflictological culture is studied for the first time in our country. Our proposed program for the development of conflictological culture can serve as a basis for educational programs that develop skills to prevent and overcome conflict situations among adolescents.

Keywords: conflictological culture, conflict, adolescent, competence in communication, psychological training.

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1. Introduction

Modern society is characterised by continuous and rapid changes and transformations, increased level of competitiveness, and a complex and contradictory process of social interaction. All this inevitably leads to an increase in the number of conflicts. Recognition of conflict as an everyday, inevitable and frequent phenomenon, actualises the issue of educating a person who is able to live in peace, harmony and tolerance - a person who navigates the cultural environment and builds a decent life. In this regard, the idea of "educated person" is replaced by the idea of "person of culture" (Androva N.A.). Many researchers point to the necessity of forming the psychological culture of personality (Bukhanevich T.H., Ilinykh Y.V., Orlov A.B., Dubrovina I.V., Semikin V.V.) as a component of the basic culture of personality, a systemic characteristic of a person necessary to meet the challenges of modern society with dignity. One of the most important components of such culture is the conflictological culture of personality (Shcherbakova O.I., 2011).

Many works are devoted to the study of conflictological culture. A lot of scientists have conducted research on this issue, which is reflected in numerous publications. Heigl P. (2003) believes that a well-developed conflictological culture contributes to "fair and just conflict". The researcher distinguishes between Streitkultur (dispute culture) and Konfliktkultur (conflictological culture). From the point of view of Kurray M.R. (2008), conflictological culture should be considered not separately, but in combination with other components of corporate culture, in particular communication culture. Noa Davenport considers "conflict culture" as a component of school culture. She identifies "Konfliktkultur" (conflictological culture) with "peace education" of adolescents. The author believes that the development of "conflictological culture" will contribute to the reduction of aggression and violence in schools. Many authors such as Samsonova N.V. (2002), Markova A.K., Chernyaeva T.N., Kukleva N.V. as cited in Shurygina O.V. (2017), Yarychev N.U. (2011) etc. consider conflictological culture as part of the general culture of a specialist. We share the position of Shcherbakova O.I., who understands the conflictological culture of personality as cited: "an integrative quality based on existential-humanistic values, including the culture of thinking, culture of feelings, communicative culture and behavioural culture, and manifested in optimal, context-appropriate strategies of interaction in conflicts, providing constructive problem solving".

Despite some differences in the understanding of the essence of the concept of "conflictological culture" and its content aspects, all authors without exception advocate the importance of developing conflictological culture. This is especially important in teenage years, as it is these teenagers who will enter adulthood and will have to respond with dignity to the challenges of modern society.

In the process of formation and development of conflictological culture, it is important to rely on the particularities of age and the difficulties faced by older adolescents. Along with social factors and lack of competence in communication, the conflict behaviour of older adolescents is determined by the specifics of the age crisis. Despite the differences in approaches to the content of older adolescence, psychologists are unanimous in believing that the conflict behaviour of this period and its resolution has a significant impact on the formation of personality and its socialization.

Erikson E. (1996) also assigned society an important role in the development of adolescence, since the atmosphere in which their personality develops is subject to dictated values, rules and laws characteristic of the society which they are part of.

According to Elkonin D.B. (2001), older adolescence is associated with the ongoing changes and distinctive characteristics of this period. Features of the psychological development of personality at this age segment allow us to talk about certain predictors of conflict situations, and the relevance of the development of a conflictological culture of personality at this age. It is dictated by the adolescent's adaptation, the characteristics of their relationships in the family, as well as intrapersonal processes. The specificity itself has a protest form, associated with the duality of the adolescent's position and their own inconsistency.

Kulagina I.Yu. and Kolyutsky V.N. (2001) note that older adolescents can be differentiated according to their personal orientation, on the basis of which conflict in adolescents will be different. As such, in the first group there are those adolescents who are distinguished by selfishness and immorality, who do not fulfill any needs other than the basic ones. Their indifference towards themselves is extrapolated to their attitude towards others, when they demonstrate aggressive reactions, rudeness in treatment, hostility and anger towards the whole world. The second group differs from the first in a pronounced deformation of moral values; they receive satisfaction from the oppression of other, weaker individuals. They are also impulsive, often hypocritical, and characterized by changeable moods. The adolescents following them cannot decide between positive and negative views and attitudes. They tend to show apathy and are often hostile. The last group consists of weak-willed adolescents, also apathetic, without expressed interests, and a large number of friends or acquaintances for communication, but suspicious, vindictive, fawning over stronger peers.

According to Bozhovich L.I. (2008), for older adolescents, a sensitive moment is the attitude of an adult when they want to communicate with the teenager confidentially, on equal terms, with unshakable faith in them on the part of the adult. Increased conflict is aggravated by ineffective ways of communicating with the adolescent, usually either too authoritarian or too permissive, as well as by the personality of the parent, which manifests itself in conflict situations, that is, the conflictological culture of the parent.

Kapustina V.A., Karmanova V.V (2018), and Skutina T.V. (2008) say that parents one way or another demonstrate their attitude to conflicts, ways of behaviour in conflict situations, according to the level of social interaction at which this conflict is realized. As part of the diverse communication of older adolescents, patterns of such behaviour can be replenished with quite contradictory strategies, both constructive and negative, as their experience of being in conflict expands.

Summarizing the data from studies of strategies in conflict among adolescents conducted by Khudaeva M.Yu. (2007), Skutina T.V. (2008), Isaeva N.I. (2012), and Karimova L. (2015), it should be noted that they use both avoidance strategies and cooperation, compromise, devaluation and competition. The methods that older adolescents choose in a conflict situation also directly depend on the development of their conflict competence.

According to Grebenkin E.V. (2013), family is not the only place where a teenager learns the concept of conflict and all its accompanying components. This experience is greatly enriched by educational institutions where older adolescents spend quite a lot of time. On the one hand, school can contribute to the positive development of the conflict culture of adolescents; on the other hand, violence among students, forms of conflict mediation, and anti-bullying programs become a separate link in pedagogical and social research. It should be noted that the conflict behaviour of older adolescents involves academic performance, problems associated with socialization, the age of the students (the older, the greater the severity of conflicts), as well as the specifics of the interaction of schoolchildren with teachers and among themselves. Schoolchildren nowadays are more open and confident in confrontation, express their position more freely, and more actively demand democratic relations from the teacher, therefore conflict management knowledge in matters of interaction with students is also important for the latter.

Among national studies, the concept associated with conflict culture is the social intelligence of an adolescent, which is an integral part of the development and maintenance of social relationships, in the absence of conflicts (Platon I., 2019). The opportunity to establish constructive and effective relationships in line with modern prospects for the development of society is seen through the flexible behaviour of an individual open to change, where social intelligence performs the function of harmonizing relationships, predicting behaviour, communication, self-knowledge and self-learning throughout life. That is, social intelligence is an essential factor that ensures the success of an individual in life,

and has an adaptive role in transforming the social environment and the success of social interaction.

Thus, we can conclude that the characteristics of the psychological development of older adolescents form the integrity of value orientations, inclinations, their attitude towards others and the world, and awareness of themselves as a unique and integral personality. On the other hand, they are dictated by the inconsistency and complexity of these processes, which increases the likelihood of conflict behaviour among older adolescents, but at the same time, offers an excellent basis for the development of a conflict culture, the purpose of which is to understand the conflict in the direction of positive changes, foster tolerance and emotional volitional self-regulation, as well as prevention and constructive resolution of emerging contradictions.

2. Material and methods

The purpose of this stage of the study is to develop conflictological culture in adolescents by using the program developed by us. After participation, we expect the development of constructive communication skills, the development of the ability to understand one's emotions; expression of feelings; coping with negative experiences and standstills; and teaching strategies for behaviour in conflict situations. All of the above contribute to the formation of conflictological culture in older adolescents.

Research hypothesis: The level of conflictological culture of the adolescents, who participated in a specific Training Program, will significantly increase after the training completion.

Methodological and conceptual basis of the development program. In order to diagnose the level of conflictological culture development, we used the method developed by Shcherbakova O.I. (2011). The technique contains 12 pairs of polar judgments that reflect different components of conflictological culture. The judgments relate to human behaviour in situations of conflict, self-regulation of emotional state, desire for cooperation or competition, communication skills, etc. and correspond to 4 scales of the methodology: culture of feelings, culture of thinking, communicative and behavioural culture. Let us present a brief description of the scales:

- *culture of feelings*: the ability to subdue negative emotional manifestations, to keep an optimistic attitude, to be stable in affective reactions, empathetic and tolerant in situations of conflict;
- *culture of thinking*: the ability to critically approach the process of solving situations of interpersonal contradictions, to see the root of the problem, to apply such thinking operations as analysis, synthesis, comparison and abstraction;
- *communicative culture*: possession and readiness to use certain communicative techniques related to effective communication, adequacy of manifestation and

reading of verbal and non-verbal signals of the interlocutor and one's own (assertiveness, active listening, etc.);

- *behavioural culture:* the ability to act in a certain way in a conflict, applying constructive strategies of conflict behaviour in a way that prevents the conflict from developing and resolves it to the benefit of all parties to the conflict.

In developing our program, we relied on a cognitive-behavioural approach which allows us to form a conscious attitude towards the interaction of adolescents with other people, and practice behavioural and communication skills. The theory of cognitive behavioural psychotherapy (Beck A., 2017) is based on the correction of irrational cognitive structures (beliefs, attributions, etc.) that have a destructive impact on a person's experiences and behaviour. These structures are very stable due to the mechanism of self-reinforcing feedback. Awareness of and overcoming one's automatic irrational beliefs and judgments that cause negative experiences help one cope with them by changing their feelings and behaviour.

Psychological training is built considering age characteristics (Vygotsky L.S., 2021; Elkonin D.B., 2001), the basic needs of a teenager (Sukhomlinsky V.A., 1981) and technologies of training work (Fopel K., 2016; Liders A.G., 2001). The cognitive-behavioural approach is focused on the psychological preparation of adolescents for various unforeseen circumstances, the opportunity to master new forms/strategies of behaviour in conflict situations, overcome difficulties in expressing their own opinions, reduce the level of negative reactions, and improve the culture of communication. The training program takes into account the individual characteristics of the formation of social competence and social competence of adolescents. The advantage of group work is the opportunity to practice independent behaviour in a safe environment, and receive feedback and support from other participants. The thematic richness of the training program allows one to develop diverse ways to change the negative perception of conflict, express negative states and feelings, develop control over destructive emotions and manifestations of aggressiveness, as well as modify and replace maladaptive forms of behaviour with adapted models and consolidate positive behavioural reactions, thus promoting the development of conflictological culture. During classes, students demonstrated adequate forms of behaviour in a situation of social interaction ("I will do this…"), positive psychological attitudes are transmitted ("I will succeed"), and developed algorithms/behaviour strategies aimed at laying the foundations of social values and conflictological culture.

In psychological training, the following cognitive behavioural therapy techniques were used, conditionally divided into 4 groups, each of which solves specific problems:

Group 1 - track destructive cognitions and become aware of them: keeping a personal diary in which thoughts and actions are recorded throughout the day; consider one's thoughts from the perspective of an outside observer;

Group 2 - challenge irrational thoughts: give arguments for and against; weigh the pros and cons; conduct an experiment: experience first-hand how others react to a specific emotion; go back in time to question a fictitious witness to events; switch roles with the therapist and convince them that their thoughts are irrational;

Group 3 - activate the imagination: repetition of positive attitudes gradually changes the way of thinking, making it more productive; through the use of metaphors, sayings, parables, quotes includes figurative thinking, the explanation becomes more understandable; modify images, first changing negative perception to neutral, and then to positive;

Group 4 - minimize resistance: repeatedly testing oneself with positive instructions; detection of hidden motives for unproductive behaviour.

The total duration of the personal resources development program was 12 sessions of 120 minutes each (with a 10-minute break), once a week.

The sample consisted of 12 adolescents aged 16 to 18 years. Each lesson was structured according to a specific scheme, which included several elements: group members greeting each other, warm-up exercise, and reflection on the previous lesson, main exercise or block of information, homework, and farewell.

To determine the effectiveness of the training program for older adolescents, we used the same diagnostic material as in the ascertaining stage of the experiment.

The statistical analysis of the indicators for the studied parameters using the nonparametric method of the Mann-Whitney U test showed that the control and experimental groups were not statistically different, therefore we can state that the condition of homogeneity of groups during the experiment was met.

3. Results

The results of diagnosing of the conflictological culture level before and after the experiment in the experimental group are presented below in Figure 1.

Analysing the results presented in Figure 1, we can note an increase in the overall level (50.42 average indicators) of conflict culture among adolescents who participated in the formative experiment. In addition, a significant increase in indicators can be noted on such scales as "Behavioural culture" (15.17 average indicators) and "Communicative culture" (17 average indicators).
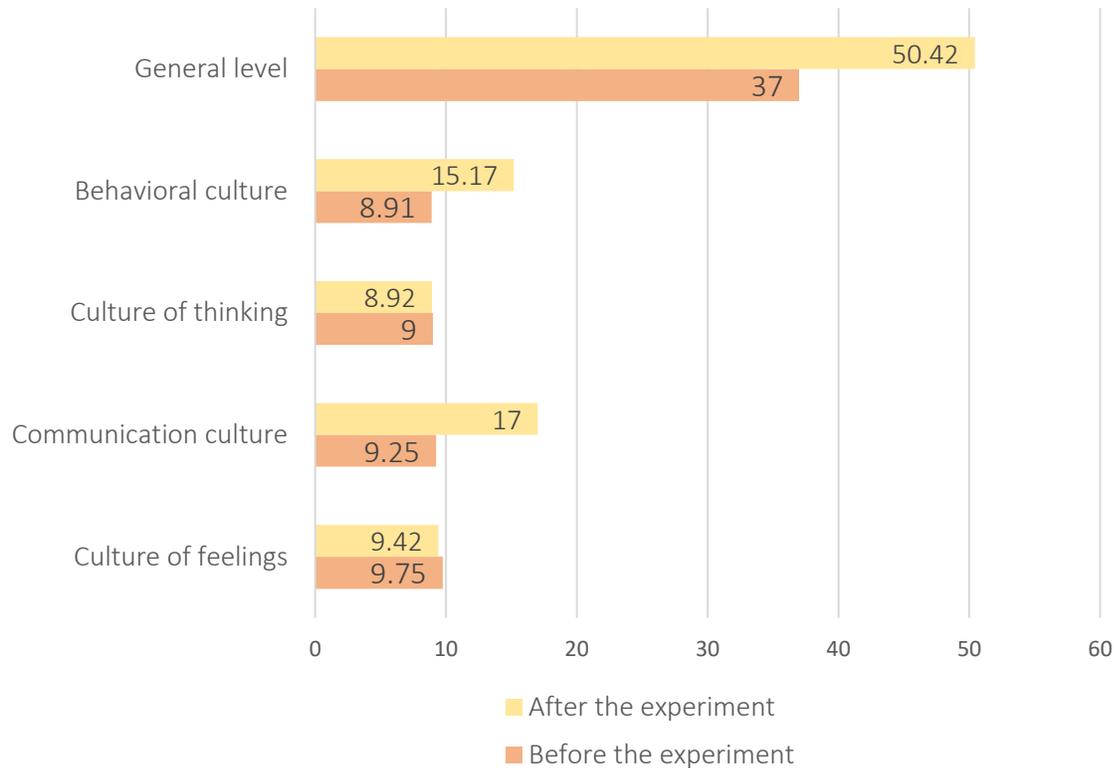
Figure 1. Average indicators according to the method "Level of development of a person's conflictological culture" before and after the experiment (experimental group)

The statistical analysis carried out using the Wilcoxon T-test for dependent samples confirmed the trends we noted. According to the results obtained, there are significant differences in the results of primary and secondary diagnostics in terms of the General level of conflict culture ($z = -3.59$, $p = 0.000$), which indicates that the general level of the property being studied increased after participation in the formative experiment. In addition, significant differences were identified on the "Behavioural Culture" scale ($z = -3.29$, $p = 0.001$), which indicates an increase in its level after the formative experiment. There are also significant differences on the "Communicative Culture" scale ($z = -3.69$, $p = 0.000$), which also indicates the effectiveness of the formative experiment program. We found similar results in Pochekaeva I.S. (2010), who considers it necessary and effective to develop and implement programmes for the development of conflictological culture of high school students in the general education process.

Figure 2 clearly shows the ratio of indicators in the groups participating in the study during posttest.

Figure 2. Results of secondary diagnostics using the method "Level of development of one's conflict culture" in the control and experimental groups (average indicators)
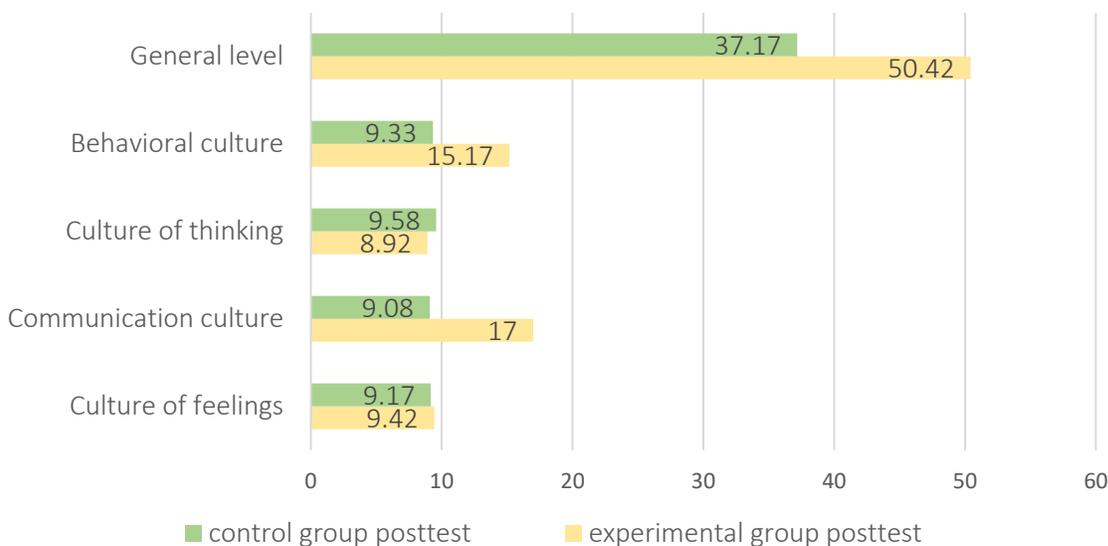
Analysing the results presented in Figure 2, one can note the same trend that was observed when comparing the results before and after the formative experiment in the experimental group. We see that in the experimental group there were positive changes in the general level of conflict culture (U=0.0 at p=0.000), as well as on the "Behavioural culture" scale (U=4.0 at p=0.000) and "Communicative culture" (U=0.0 at p=0.000). It is worth noting that the culture of thinking (U=63.000 at p=0.596) and the culture of feelings (U=53.000 at p=0.260) did not change significantly, neither in the control group nor in the experimental group. The absence of significant changes, presumably, can be explained by age particularities: the emotional sphere of older adolescents has a contradictory character. They are characterised by high emotional excitability; stability of emotional feelings, especially negative ones; and inconsistency of feelings, impulsiveness, high level of anxiety. Thinking becomes more systematic, but is characterised by polarity and is highly susceptible to emotions and feelings (Alexandrova Y.V., 2010). Perhaps, to influence these mental structures in adolescence, other psychological tools, conditions or time of intervention are needed.

Next, we present the results of diagnosing the level of conflict in the personality of adolescents before and after the formative experiment (Fig. 3.).

Figure 3. Diagnostic results using the "Level of Personality Conflict" method before and after the experiment in the experimental group
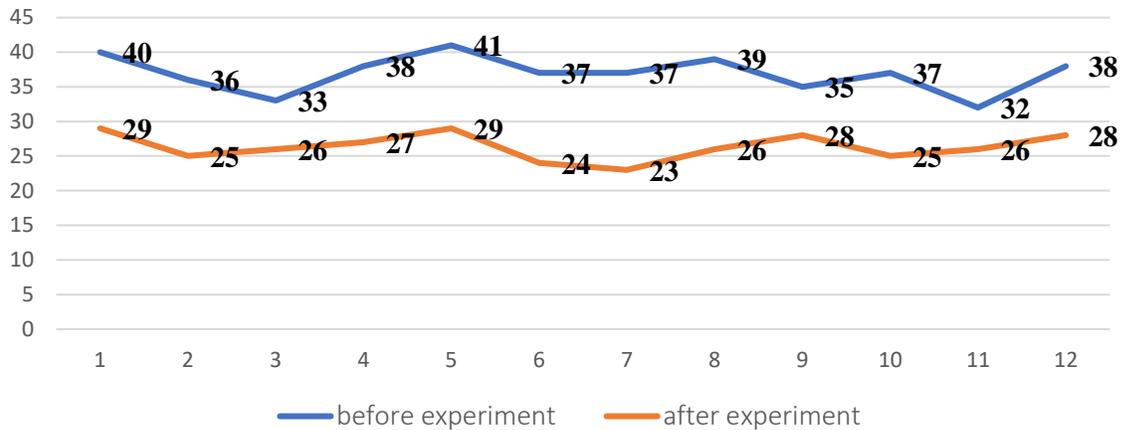
The graph clearly shows the difference in the level of conflict among adolescents before and after the experiment; after the training, the level of conflict among adolescents apparently decreased, which is confirmed by statistical calculations using the Wilcoxon T-test, which indicate that there are significant differences in the level of the trait being studied ($z = -2.99$, $p = 0.003$), namely a decrease in the level of conflict after the experiment. The results obtained show that increasing the level of conflictological culture, which is expressed in the deepening of knowledge in the field of understanding the essence and causes of conflicts; expanding the role repertoire in overcoming conflicts; and mastering the skills of assertive behaviour in communication has a positive impact on the level of conflict in adolescents, leading to its reduction. Noa Davenport (2008) comes to similar conclusions. The author considers the development of conflict culture in adolescents as one of the most important conditions for reducing aggression and violence in schools.

In Figure 4. we see that in the control group no changes in the level of conflict occurred over time.

Figure 4. Results of secondary diagnostics using the "Level of Personality Conflict" method in the control and experimental groups
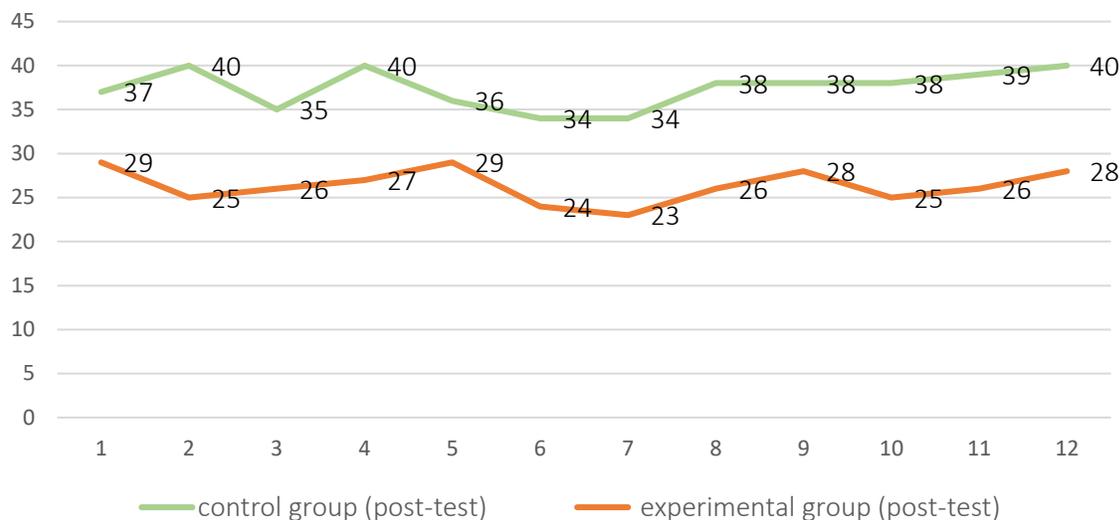
The effectiveness of our program in relation to personality conflicts is confirmed by the results of comparing the control and experimental groups after conducting a formative experiment. In Figure 4, we can also observe a decrease in the level of conflict in adolescents who participated in the training compared to adolescents from the control group (U=0.0 at p=0.000). The comparison of the results obtained in the experimental and control groups allows us to assert that the reduction of the level of conflict in adolescents is possible with the formation and development of conflictological culture.

The statistical analysis of the results of the work confirmed the effectiveness of the program and the correctness and reliability of the hypothesis of our study.

4. Conclusion

- We understand the conflictological culture of personality as an integrative quality, which is based on existential-humanistic values. Its structure includes the culture of thinking and feelings, as well as communicative and behavioural culture.
- The cognitive-behavioural approach we used in creating the conflictological culture development program allowed us to achieve the intended goals. The division of techniques into emotional, cognitive and behavioural ones allowed us to work on the development of each conflictological culture component.
- The overall level of conflict in the experimental group decreased compared to the control group, after participation in the training program. The overall level of conflictological culture in the experimental group increased. The ability to act in such a

way as to prevent conflict escalation has improved. Adolescents demonstrate improved skills in conflict prevention, anticipation and resolution, as well as readiness and ability to dialog.

• Adolescence is a sensitive age for change. Targeted influence on the aspects of personality that interest us can lead to the desired changes. However, age-specific features such as internal conflict, emotional instability, frequent mood swings, polar thinking, and complex contradictions of spiritual life dictate the search for new ways and opportunities for the formation and development of conflict culture at this age.

• The programme we have developed can be used by school psychologists to develop conflictological culture in adolescents. This will allow adolescents to be more conscious of understanding the essence of conflicts and the reasons for their occurrence, to seek constructive ways of interacting and getting out of conflicts, to cope effectively with their negative feelings, to show greater tolerance towards other participants in conflicts, and to master the skills of assertive non-conflict communication.

References

Aleksandrova, Y.V. (2010) *Vozrastnaja psihologija. Harakteristika psihologiceskih osobennostej podrostkov i junostej* [Age psychology. Characteristics of psychological features of adolescents and young men]. Moscow [In Russian].

Beck, A.T., Beck J.S. (2017). *Kognitivnaea terapia-polnoe rukovodstvo* [Cognitive therapy-complete manual]. Moscow: "Viliams" [In Russian].

Bozhovich, L.I. (2008). *Licinosti i eio formirovanie v detskom vozraste* [Personality and its formation in childhood]. St. Petersburg: Piter [In Russian].

Elkonin, D.B. (2001). *Psihicheskoe razvitie v detskih vozrastah: izbrannie psihologicheskie trudi* [Mental development in childhood: selected psychological works]. Voronezh: MODEK [In Russian].

Erixon, E. (1996). *Identichinosti: iunosti i krizis* [Identity: adolescence and crisis]: monograph, Moscow: „Progress" [In Russian].

Grebenkin, E.V. (2013). *Shcolinaya confliktologia dlia pedagogov i roditelei* [School conflictology for teachers and parents]. Rostov n/d: Phoenix [In Russian].

Heigl, P. (2003). *30 Minuten für faires Streiten und gute Konflikt-Kultur*. [30 minutes for fair disputes and a good conflict culture] [In German].

Fopel K. (2006) *Tehnologija vedenija treninga* [Technology of conducting training]. Genesis Publishing House [In Russian].

Isaeva, N.I. (2012). *Razvitie conflictologicheskoi kompetentnosti v podrostkovom vozraste* [Development of conflict management competence in adolescence]. Belgorod: Publishing House "Belgorod" [In Russian].

Kapustina, V.A., Karmanova, V.V. (2018). *Vzaimosveazi konflictnoi kompetentnosti podrostkov s ih predstavlenieami o roditeliscom vospitanii* [The relationship between adolescent's conflict competence and their ideas about parental upbringing]. Russian Journal of education and Psychology, Vol. 9, № 12. pp. 81-101 [In Russian].

Karimova, L. (2015). *Prevention of Interpersonal Conflicts In Teenagers Environment*. Procedia - Social and Behavioral Sciences, 2015. № 191, pp. 1843-1847.

Khudaeva, M.Yu. (2007). *Psihologicheskie uslovia razvitia conflictologiceskoi kompetentnosti v podrostkovom vozraste* [Psychological conditions for the development of conflictological competence in adolescence]: dis. ...cand. psychol. Sci. Belgorod: Psychological Institute of the Russian Academy of Education [In Russian].

Kulagina, I.Yu., Kolyutsky, V.N. (2001). *Vozrastnaia psihologia: Polnii giznennii tsikl razvitia cheloveka* [Age psychology: The complete life cycle of human development]. Textbook for students of higher educational institutions. Moscow: Sphere shopping center "Sfera" [In Russian].

Kurray, M. R. (2008). *Die Veränderung der Konfliktkultur durch den Einsatz von Wirtschaftsmediation*. diplom.de. [] [In German]

Liders, A.G. (2001). *Psihologicheskii trening s podrostkami* [Psychological training with teenagers: Textbook for students of higher educational institutions] / A.G. Liders. - Moscow: Izdat. Centre "Academy", pp. 256. [In Russian].

Platon, I. (2019). *Dezvoltarea inteligenţei sociale în adolescenţă.* [The development of social intelligence in adolescence]. In: Psychology magazine. Special pedagogy. Social assistance. 2019, no. 3 (56), pp. 65-76 [In Romanian].

Pochekaeva, I.S. (2010). *Vospitanie conflictologiceskoi kulituri starsheklassnikov* [Education of conflict culture of high school students]. Cand. of Psychological Sciences. Izhevsk, 2010. 215 с. [In Russian].

Samsonova, N.V. (2002). *Konfliktologicheskaya kulitura spetsialista i tekhnologiya ee formirovaniya v sisteme vuzovskogo obrazovaniya* [Conflictological culture of a specialist and the technology of its formation in the system of higher education]. Kaliningrad, Izd-vo KGU, 2002, pp. 308 [In Russian].

Sherbakova, O.I. (2010). *Formirovanie i razvitie poneatia „konfliktologicheskaia kulitura lichinosti" v teorii i praktike sovremennoi konfliktologii* [Formation and development of the concept of „conflictological culture of personality" in the theory and practice of contemporary conflict studies]. Moscow: Problems of modern education, 2010. № 2. C. 78-83 [In Russian].

Shcherbakova, O.I. (2011). Psychology of conflict culture of personality specialist: formation in the contextual educational environment: Avotoref. dis. dr. psychol. nauk. M. 3, 41 Electronic resource: https://cyberleninka.ru/article/n/formirovanie-i-razvitie-konfliktologicheskoy-kultury-spetsialista-v-kontekstnom-obuchenii7

Shurygina, O.V. (2017). *Razvitie konfliktologicheskoy kulitury studentov*. Development of students' conflict culture. Study guide. Nizhny Novgorod [In Russian].

Skutina, T.V. (2008). *Konfliktnaia kompetentnosti kak resurs razvitia mejlichnostnogo obshenia podrostkov* [Conflict competence as a resource for the development of interpersonal communication among adolescents]: dis. ...cand. psychol. Sci. Krasnoyarsk: SFU [In Russian].

Sukhomlinsky, V.A. (1981). *Potrebnosty cheloveka v cheloveke* [The human need for a human being] / V.A. Sukhomlinsky. 2nd edition. - M.: Sov. Rossija Pp. 96. [In Russian]

Vygotsky, L.S. (2021). *Pedologia podrostka. Psihologicheskoe i sotsialinoe razvitie rebionka.* [Pedology of a teenager. Psychological and social development of the child]. Series: Masters of Psychology. Ed. Peter [In Russian].

Yarychev, N. U. (2011). *Konfliktologicheskaya kulitura uchitelia: sushnosti, struktura i osobennosti razvitia*. Conflictological culture of the teacher: essence, structure and features of development. Scientific support of the system of staff professional development. № 1(6) pp. 24-30. [In Russian].

Well-being particularities and coping mechanisms among elderly population

Monica-Andreea Popescu•

Abstract

The aging process involves numerous changes, on a physical, social and family level, which requires the presence of necessary adaptive strategies for maintaining a healthy emotional level and an optimum well-being. Numerous theories have focused on the relation between the coping strategies and psychological well-being on elderly people, which can be the key for successful aging. The coping mechanisms appear in the context of change and perceived as stressful, while the elderly must tolerate or adjust their approach of these new situations, in order to maintain their emotional balance and well-being. The issue occurs when the changes are plenty, in a brief time period, and the individual is having the feeling of lack of control regarding his own life. This perception can determine low self-esteem, anxiety or depression. The third age being often characterized by successive changes on the social, family and medical status. Possible stressors at the third age that require coping may be acute, such as loss of a spouse, or are of longer duration, such as chronic pain or illness, long-lasting financial problems, ageism. Coping strategies involves effort and energy greater than the daily routine. A prolonged mobilization of resources can cause psychological and physical breakdowns. Older people's experiences are influenced by a combination of factors, such as gender, old age stages, religion, health, illness, location, socioeconomic status, and ethnicity. The research regarding the connection between psychological wellbeing and coping mechanisms can represent a base for future development of psychological interventions in the elderly population.

Keywords: psychological well-being; coping strategies; aging; life changes; stress factors.

1. Introduction

In contemporary society, the specific problems of the third age represent a point of interest, a fact that has led over time to the study of the specificities of this age stage, with the aim of

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preventing degradation and marginalization and creating an integrated and multidisciplinary approach to medical, community and social services.

Older people face biological, medical, physical and/or psychosocial changes. The third age is a stage in which most people go through major transitions, associated with changes in health and mobility, as well as changes in roles and interpersonal relationships.

Despite numerous researches in the field of gerontology, the essence of the aging process remains an unknown for the current state of knowledge. One of the existing problems in the aging process is when it starts and recognizing the first psychological and medical signs of aging.

As a result of the studies' analysis which refer to the well-being and the support services for the elderly, their association with dimensions of coping mechanisms is attested, this fact being also a starting point of this research. The third age is a special, fragile period that requires a complex, multidisciplinary, integrative study from a biological, psychological and social perspective.

As people age, threats to health, personal independence, and well-being arise, but there are differences in how individuals respond to these threats. Research into aging patterns shows that some people experience illness and early death, while others age actively and enjoy personal independence into old age.

2. Theoretical approach

By studying the specialized literature, the phenomenon of aging is approached differently by theories in the field of psychology, through which new approaches are created and the structure of the rules and principles that govern working with the elderly are reshaped. Theories highlight that psychosocial resources and psychological processes influence the relationship between early life contexts, socioeconomic factors, and health status in adulthood.

The World Health Organization considers regarding to the third age, there is a stage, composed of elderly people, aged between 60-70 years, old people, who are between 75 and 90 years old and the elderly, with age over 90 years (Unal & Ozdemir, 2019). Also, in addition to the classification issued by the World Health Organization, there is a used form of classification of old age: transition to old age between 65-75 years, middle old age between 75-85 years, and over 85 years is the stage of great old age. (Neamțu, 2011)

Old age represents the last stage of an individual's life cycle, in the field of gerontology, this term being explained according to three criteria, respectively: chronological age (number of years from birth to the present moment), functional age (decrease in the capacities of some organs, aspect that differs from one individual to another) and the life cycle (old age is the stage after maturity and until death). (Collopa et al., 2020)

Psychological theories of aging cover various aspects of the aging process, namely specific changes, social support, well-being, emotions, and cognitions that interfere with the end-of-life decline process.

Well-being is fundamental to a person's overall health, enabling them to successfully overcome difficulties and achieve what they want in life. Health and well-being are correlated and have great importance for the third age, due to the increase in the frequency of chronic conditions, the increase in life expectancy and the treatments against diseases which are specific to this stage of life. (Baker et al., 2005)

The research of Chen at al. (2018) highlights the importance of using coping mechanisms in order to deal with periods of stress and traumatic events and to overcome negative emotions and maintain a state of well-being. Aging means an accumulation of losses - physical strength, death of acquaintances, social relations, social life, role in society. While some elderly face aging and death using coping mechanisms such as anticipatory mourning, wish to die, isolation, other elderly seek spiritual and social support and accept the inevitable events with a dignified attitude.

The need to predict the effect of coping mechanisms on the well-being of the elderly is well substantiated by theories about the phenomenon of aging (Batles, 1987; Baltes & Baltes, 1990). Acording to Schoenmakers et al. (2015), old age is a process with many changes in itself, which do not only involve physical changes, but also psychological and social ones (retirement, decrease in income, children leaving home). It is important for older people to have adequate strategies to minimize the emotional consequences of such stressful situations and to adapt adequately to them. For this reason, studying coping mechanisms can be a solution for successful aging.

According to the analysed studies, the importance of the coping mechanisms used by the elderly gives them the opportunity to face the changes that occur with aging, to improve their mental health and to become more resilient. (Ribeiro, 2017)

The pioneer of research in the field of well-being was Ryff (1984, 2014), who focused his work on clarifying the definition of the term and understanding its structure, emphasizing psychological functioning at an optimal level so that the individual can develop and achieve.

Regarding the structure of well-being, the researcher proposed six dimensions - acceptance of one's own person, positive relationships with significant people in the individual's life, continuous personal growth, throughout life, having a purpose in life, autonomy, manifested in thought and action, and environmental management, explained by functioning in a certain environment, which satisfies the individual's needs and respects his values. (Ryff, 2014; Ryff & Keyes, 1995)

Following the current literature, the concept of "well-being" is a multidimensional concept, based on the individual's subjectivity and which depends on the individual's role in society, the experiences, time and place. The concept can be used in numerous researches,

as it is associated with a diversity of time points in life, groups of individuals, communities and cultures, gender, age, education, professions, needs and values. As a result, well-being differs from person to person, from place to place, and from one point in time to another.

Globally, due to the increase in the number of elderly people, the promotion of health and well-being has become a priority to ensure a healthy aging of the world population, there being a correlation between well-being and physical and mental health. The multidimensional phenomenon of well-being in the elderly involves feelings of happiness, purpose in life, contentment, satisfying social relationships and autonomy. (Kunzmann, 2000)

In the specialized literature, there are two views on the nature of coping. According to Vaillant (1977), coping is a personality trait that implies the existence of a set of adaptive and unconscious defence mechanisms.

According to Lazarus & Folkman (1984), coping represents the totality of stress control efforts, as a component of the relationship between the person and the external environment.

The purpose of coping strategies is to compensate or self-regulate stressful situations by reformulating goals or adapting to a new situation. (Gamrowska & Steuden, 2014). Compensation can be achieved in two ways - through emotion-based or problem-based coping strategies. Emotion-focused coping involves the regulation of negative emotions associated with the problem and involves the individual's self-regulation in order to minimize the emotional consequences of the stressful situation. (Mayordomo, et. al., 2015)

According to to Lazarus & Folkman (1984), there are two types of coping strategies: problem-focused coping or "direct coping", addresses the problem and includes strategies for accepting the confrontation with the stressor. This type of coping involves strategies of planning, increasing the level of effort and prioritization. The second type is emotion-focused coping or "indirect coping", which focuses on the person's ability or inability to cope with stress. This type of coping regulates the individual's emotions when faced with a problem and involves the distancing, isolation and desires of the individual. The efficiency of strategies resides in their adaptation to situational assessments and the choice of specific resources. (Gunther, 1994)

3. Methods

Participants and Recruitment Procedures

In the stage of non-experimental ascertainment research, the sample included a number of 213 elderly people from Iași County. In forming the sample, by applying the randomization method, we sought to respect the diversity principle of the living environment, by including in the research people living in residential centers for the elderly and people living at home. The aim was to check some independent demographic variables, which can influence the

results and explain some research findings with reference to the living environment. We also choose for elder male and female participants, who are differentiated by their family status - widowed, divorced or married, statistically distributed according to the age stage criterion - the stage of transition to old age (65 - 75 years old), the stage of middle old age (75 – 85 years), the stage of great old age or the long-lived (over 85 years).

The identification of the subjects was carried out with the help of specialists from the medical and social fields, the elderly people who participated in the study were people taken into the records of three institutions, respectively the Mental Health Center "Dr. Ghelerter" Iaşi, Archdiocese of Moldova and Bucovina and the Directorate of Community Assistance, Iaşi. The subjects were selected from different living environments, namely people who live at home and who attend the Bârnova Retirement Club, within the Bârnova Monastery, the Retirement Club from the Church of Saints Constantine and Elena, patients of the Mental Health Center "Dr. Ghelerter", Iasi, as well as beneficiaries of the Residential Home for the elderly "Sf. Parascheva". Through this we aimed to preserve the representativeness of the living environment among the beneficiaries.

The subjects were informed in advance that they would participate at a research for a doctoral thesis and that they would have the opportunity to complete a set of questionnaires in paper-and-pencil format. They were told that the application of the questionnaires is anonymous, only age, gender, living environment and family status are recorded.

Following the application of the "Mini Test for Mental State Examination - MMSE", out of a total of 213 subjects, 28 subjects were excluded due to cognitive impairment. After processing the questionnaires, 174 copies of the research protocols were validated, the difference of 11 copies were eliminated due to the information provided incompletely by the subjects by omitting the answer to the items or later refusing to continue the evaluation. Thus, the final sample consists of 174 subjects, of which 61.5% are women and 38.5% men, the majority 62.1% live in the residential center for the elderly and 37.9% live at home. Regarding the family status, the majority are divorced - 50.6%, 39.1% are widowed, 10.3% are married, and according to the age stage - the stage of transition to old age (65 - 75 years)- 44.8%, the stage of middle old age (75-85 years)- 42.5%, the stage of great old age or the long-lived (over 85 years)- 12.6%.

Measurement instruments
In a first stage, the subjects who meet the targeted demographic criteria were selected, and in order to ensure the cognitive capacity to participate in the research, the "Mini Mental State Examination - MMSE" (Mini Mental State Examination) was applied in a first stage (Folstein et al., 1975). The instrument is a screening test for the alteration of the cognitive functions of adults, testing spatial and temporal orientation, attention, immediate and short-term memory, the ability to perform concrete- abstract operations, motor skills and their

language. In this way, subjects with cognitive deficits, those with severe sequels after a stroke, with severe hearing impairments were eliminated. These criteria are necessary, given that older people with these conditions will face difficulties in answering the research questionnaires.

Subsequently, the subjects identified as being able to answer the questionnaire and participate in the formative research were applied research instruments, respectively: "Strategic approach to coping scale - SACS" (Hobfoll et al., 1994) and "Ryff scale for psychological well-being" (Ryff & Keyes, 1998). To measure the "coping mechanisms" variable, we used the "Strategic Coping Approach Scale - SACS" - a multidimensional questionnaire, built to identify behavioural coping strategies in a social context, which someone uses after experiencing certain negative events or situations.

The SACS scale measures the frequency of using certain behavioural coping strategies, through 9 rating scales: assertive action, social relation, seeking social support, cautious action, instinctive action, avoidance, indirect action, antisocial action and aggressive action.

To measure the dependent variable "psychological well-being", the "Ryff scale for psychological well-being" was applied. Well-being is a dynamic concept that includes subjective, social and psychological dimensions as well as health-related behaviours.
The scale includes 42 items distributed in 6 subscales: autonomy, control over the environment, personal development, positive relationships with others, the existence of a purpose in life, self-acceptance.

4. Results

In order to identify the relationship between the presence of each coping mechanism and well-being at the third age demographics, we used the Independent samples T-test, in the Statistical Package for Social Sciences program, version 13.0 for Windows (IBM, 2013). We divided the results for the well-being factor into two different categories – low level and high level for each dimension, thus we need to compare the 2 levels for each well-being dimension (low and high) with every dependent variable. Analysing the differences found regarding the "assertive action" coping mechanism and their manifestation depending on the psychological well-being, we deduce that they are significantly different for the dimensions of the "autonomy" well-being (t= -10.547, p< .000) , "environmental control" (t= 4.695, p< .000) and "self-acceptance" (t= -6.289, p< .000), thus: those who have a high level of autonomy have a higher average (x = 34.12) compared to those with a low level of autonomy (x= 23.75), subjects with a low level of environmental control have a higher average (x= 36) compared to those with a high level (x =32.44), and regarding self-acceptance, the higher mean is for the low level of the dimension (x=34.29) compared to the mean for the high level (x= 28.5).

The statistical results can be seen in Table 1, at a significance level of p< 0.000.

Table 1. Coping mechanisms and well-being

Coping mechanisms	Well-being	t	Mean low level	Mean high level
Assertive action	Autonomy	-10,547	23,75	34,12
	Environmental control	4,695	36	32,44
	Self- acceptance	-6,289	28,5	34,29
Social relationship	Positive relationship with others	-8,398	12,67	19,65
Seeking social support	Positive relationship with others	-15,283	11,44	22,55
Avoidance	Autonomy	8,154	24,25	19
	Environmental control	-15,307	9	20,52
	Self- acceptance	4,288	22,88	18,52
Instinctive action	Autonomy	-6,189	17,5	22,8
	Environmental control	4,823	27,5	21,67
Antisocial action	Autonomy	-6,211	8,25	13,52
	Environmental control	5,138	15,5	12,59
	Personal development	-5,608	10,64	14,11
Aggressive action	Purpose in life	-5,670	10,75	14,24
	Autonomy	-5,599	10,5	15,08
	Environmental control	4,246	19	14,11
	Positive relationship with others	4,923	16,56	13,5

For the coping mechanism "social relationship", significant differences appear for the dimension "positive relationships with others" (t=-8.398, p< .000), the average of the elderly with a high level of this aspect of well-being is higher (x = 19.65) compared to those with a low level (x= 12.67).

The same significant difference was also registered between the coping mechanism "seeking social support" with the dimension "positive relationships with others" (t= -15.283, p< .000), with the mean of the high level higher (x= 22.55) compared to the low level of the well-being dimension (x= 11.44).

The "avoidance" mechanism registers significant differences for the dimensions: "autonomy" (t= 8.154, p< .000), with the average of those with a low level higher (x= 24.25) than the average of those with a high level (x= 19), "environmental control" (t= -15.307, p< .000), with the mean of the high level higher (x= 20.52) compared to the mean of the low level of the dimension (x= 9), and for "self-acceptance " (t= 4.288 p< .000), the mean of the low level is higher (x= 22.88) than the mean of the high level (x= 18.52).

For the coping mechanism "instinctive action" significant differences appear for the dimensions of psychological well-being "autonomy" (t= -6.189, p< .000), with the mean of the high level higher (x= 22.8) than the mean of the low level (x= 17.5) and for "environmental control" (t= 4.823, p< .000), with the low level mean higher (x= 27.5) than the high level mean (x= 21.67).

The coping mechanism "antisocial action" differs significantly regarding four dimensions of well-being, namely "autonomy" (t= -6.211, p< .000), with the mean of the high level higher (x= 13.52) than the mean low level (x= 8.25), "environmental control" (t= 5.138, , p< .000),

with the high level mean higher (x= 15.5) than the low level mean (x= 12.59) , "personal development" (t= -5.608, p< .000), with the mean of the high level higher (x= 14.11) than the mean of the low level (x= 10.64) and the dimension "purpose in life" (t = -5.670, p< .000), the mean of the high level being higher (x= 14.24) compared to the low level of the dimension (x= 10.75).

For the "aggressive action" mechanism, significant differences appear for the well-being dimensions, as follows: "autonomy" (t= -5.599, p< .000), with the mean of the high level higher (x= 15.08) compared to the mean of the low level (x= 10.5), "environmental control" (t= 4.246, p< .000), with the mean of the low level higher (x= 19) than the mean of the low level (x= 14.11) and "positive relations with others" (t= 4.923, p< .000), the mean of those with a low level is higher (x= 16.56) than the mean of those with a low level (x= 13.5).

5. Discussion

Coping strategies are an important area to understand the ways in which the elderly deal with daily difficulties, and moreover, knowing the relationship with well-being is an added value in improving the quality of life. The study was designed to include a conclusive batch of subjects in terms of age, living environment, family status, through which we ensured external validity regarding the characteristics of the targeted population.

The results emphasize the link between coping mechanisms and dimensions of well-being. People who approach the problems of everyday life through "assertive action" are firm, spontaneous and do not back down from problems. They are independent and self-determined through their positive attitude towards themselves, but do not feel in control of the outside world.

The elderly whose well-being is manifested through trusting and reciprocal relationships with those around them, are empathetic and concerned about the well-being of others, manifest the coping mechanism "social relationship" and "seeking social support", through which they join others to cope with difficulties, for emotional support, taking into account their needs as well.

Unforeseen events occur in the life of the elderly that require their ability to adapt, sometimes the changes have an emotional impact and can be difficult to manage, thus the avoidance coping mechanism also appears, although dysfunctional, it manifests itself through abandonment, avoiding solving problems and not confronting the agent stressor. People with such a mechanism are concerned with the expectations of other individuals, rely on the judgments of others in making important decisions, and feel dissatisfied with their own person.

Elderly problems are also addressed through instinctive actions whereby the person relies on intuition and reacts without considering the consequences or the needs of other people.

They resist social pressure and self-evaluate by their own standards, but have difficulty identifying opportunities and controlling the external environment.

Reaching the third age, some people focus on their own person at the expense of others and have as a coping strategy antisocial action through which they approach stressful situations even if they harm others, despite the fact that they are concerned with the evaluations of those around them and conform social pressures, failing to benefit from the opportunities that arise. These seniors have goals for the future, the desire to live and have new experiences through which to develop their personal potential.

Another prosocial- antisocial dimension of coping mechanisms is aggressive action, through which the elderly act quickly with the aim of disarming others, controlling and dominating. This may also be the reason why they have few close and trusting relationships with others, they resist social pressure, not wanting to compromise in order to maintain friendships.

Well-being is fundamental to a person's overall health, enabling them to successfully overcome difficulties and achieve what they want in life. Health and well-being are correlated and of great importance for the third age, due to the increase in the frequency of chronic conditions, the increase in life expectancy and the treatments against diseases specific to this stage of life.

Conclusions

The research brings added value by identifying the cognitive and behavioural dimensions and by measuring the psychological well-being and the degree to which the elderly know and access the support services addressed to them.

The adoption of policies at the national or world level is insufficient without the identification of intervention strategies based on psychological aspects characteristic of this stage of life. The personnel in charge of providing services for the elderly need theoretical, methodological and practical support, as well as an institutional normative context that encourages them to adopt relevant and effective professional practices for this category of the population.

These corroborated results will later allow the development of a psychological intervention that will act on maladaptive cognitive schemes, so that the elderly manage to adapt the way they think and behave in order to benefit from a qualitative and active aging. This population can contribute to society, given that they are a resourceful group that can actively contribute, realize their own potential, cope with life's stressors and contribute to their community in productive and fruitful ways.

References

Baker, L.A., Cahalin, L.P., Gerst, K., & Burr, J.A. (2005). Productive activities and subjective well-being among older adults: The influence of number of activities and time commitment. *Social Indicators Research*, 73, 431-458.

Baltes, P. B. (1987). Theoretical Propositions of Life-Span Developmental Psychology: On the Dynamics Between Growth and Decline. In *Developmental Psychology*, 23, 5, 611-626.

Baltes, P. B.; Baltes, M. M. (1990). Psychological perspectives on successful aging: the model of selective optimization with compensation. In: *Successful Aging: Perspectives From the Behavioral Sciences,* 1-34

Chen, Y., Peng, Y., Xu, H., O'Brien, W. H. (2018). Age differences in stress and coping: problem-focused strategies mediate the relationship between age and positive affect. *International Journal of Aging and Human Development,* 86, 347–363.

Collopa, G., Di Capua, B., Bellieni, A., Fusco, D., Ciciarello, F., Tagliaferri, L., Valentini, V., Balducci, L. (2020). Biological and functional biomarkers of aging: definition, characteristics, and how they can impact everyday cancer treatment. *Geriatric Oncology,* 22, 115.

Folstein MF, Folstein SE, McHugh PR. ""Mini-mental state". A practical method for grading the cognitive state of patients for the clinician". *Journal of Psychiatric Research, 1975; 12* (3): 189–98.

Gamrowska, A., Steuden, S. (2014). Coping with the events of daily life and quality of life of the socially active elderly. *Health Psychology Report*, *2* (2), 123-131.

Gunther, S.V. (1994). A Review of Coping, with Reference to Mental Health. In *A Comparison of Coping Between Grow Members and Public mental Health System Clients*. Wollongong University, Wollongong.

Hobfoll, S. E., Dunahoo, C. L., Ben-Porath, Y., & Monnier, J. (1994). Gender and coping: The dual-axis model of coping. *American Journal of Community Psychology, 22*(1), 49–82. https://doi.org/10.1007/BF02506817

Kunzmann, U. et al. (2000). Is age-related stability of subjective well-being a paradox? Cross-sectional and longitudinal evidence from the Berlin aging study. *Psychology and aging, 15* (3), 511- 526.

IBM Corp. Released 2013. *IBM SPSS Statistics for Windows*, Version 22.0. Armonk, NY: IBM Corp.

Lazarus, R. S., Folkman, S. (1984) *Stress. Appraisal and Coping*. New York: Springer.

Mayordomo, R. T. et. al. (2015). Coping strategies as predictors of well-being in youth adult. *Social Indicators Research*, 122, 479-489.

Neamţu, G. (2011). *Tratat de asistenţa socială*. Ediţia a II-a. Iaşi: Polirom, 1340.

Ribeiro, M. D. S et al. (2017). Coping strategies used by the elderly regarding aging and death: an integrative review. *Revista Brasileira de Geriatria e Gerontologia* , 20 (6), 869-877.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069–1081.

Ryff, C.D. (2014) Psychological Well-Being Revisited: Advances in the Science and Practice of Eudaimonia. *Psychotherapy and Psychosomatics*, 83 (1), 10–28.

Ryff, C.D.; Keyes, C.L.M. (1995). The structure of Psychological well-being revisited. *Journal of Personality and Social Psychology*, 69 (4), 719–727.

Schoenmakers, E. C et al. (2015). Problem-focused and emotion-focused coping options and loneliness: how are they related?. *European Journal of Aging*, 12, 153–161.

Unal, E., Ozdemir, A. (2019). Old age and aging. In *Recent Studies in Health Sciences*, 414-424.

Vaillant, G.E. (1977). *Adaptation to life*. Boston, MA: Little, Brown.

Determinants of Generation Z's School Orientation and Career Choice

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Abstract

In the context of the globalized society where the digital revolution has projected waves of economic, political, cultural, family, etc. dimensions, we are discussing the digital generation which, due to its psychological profile, has been given various names: Generation Z, Wireless Generation, Wi-Fi Generation, Facebook Generation, Instant Generation, etc. Considering the common patterns of young people who belong to this generation - of thinking and relating to themselves, to society, to the activity carried out - the purpose of the study is to identify the factors that influence them in their school orientation and professional choice. The sample is made up of 90 students enrolled in the first year of undergraduate university study programs from the faculties of Humanities and Sciences and Economic Sciences of the Petroleum and Gas University of Ploiești. In order to collect relevant information regarding the determining factors in the school orientation and professional choice of young people belonging to generation Z, a questionnaire-based survey was used, applied online to first-year students enrolled in various specializations belonging to the two faculties mentioned above. Also, a focus group discussion proved to be useful to identify details about young people's aspirations, expectations and representations regarding school and professional orientation. The analysis of the data obtained following the application of the questionnaire, but also during the focus-group discussion, highlighted the different benchmarks that the young generation Z have in shaping their professional approach, beyond the common patterns impregnated by the digital society. The difference is given by the extent to which they are concerned with looking for answers to the questions "who am I?", "what do I want to become?", based on which they can outline their self-identity.

Keywords: technology, generation Z, school guidance, professional orientation, self-identity

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1. Introduction

In the context of the globalized, digitally interconnected world, which leaves its mark on all the parameters of human development (social, family, cultural, economic, political, etc.), people are talking about a new generation, namely, generation Z. Some authors from the international specialized literature includes generation Z in the period 1997 - until now, while others are of the opinion that this generation is represented by those born in the period 1995-2012; after this year the Alpha generation is taking shape, whose psychological profile is still in their attention.

Referring to the dimensions of the digital revolution, the period in which this generation was born, Bonchiş (2021) presents the various names that have been attributed to it: the Net Generation, the Digital Generation, the Wireless Generation, the Wi-Fi Generation, the Facebook Generation, the Instant Generation, Hic et nunc generation etc. By association with the other generations, the same author sketches a representative picture of generation Z, revealing specific aspects.

Therefore, living in the middle of some of the most developed and sophisticated social networks, the Net generation differentiates itself from the other generations both by the style of clothing and by the way in which they access and process information; also, by the forms of communication and the ways of expressing emotions, through the attitudes it has towards family, school, career, religion.

Born into a digitally integrated world, young people of this generation are more concerned with getting information using media than traditional text. They also prefer iconic language over communication through the written or spoken word, hence a number of visual cognition-predominant skills that enable the digital native to find, analyze, interpret, use, and create images that facilitate probing a certain context. Visual understanding is connected with visual thinking, which, in addition to visualization, also involves the representation of notions, knowledge in the form of various structures (diagrams, drawings, models, etc.) that reflect the way the individual perceives, interprets and imagines them. Against the background of practicing visual thinking and related processes, visual intelligence develops, the digital native having the ability to graphically-visually represent certain ideas, to explore the surrounding environment, to orientate in space.

Because of the influences of the surrounding environment, research (Peterson, 2014; Kemp, 2014; Arar & Öneren, 2018) reveals that the thinking patterns of these young people are different from those of other generations; these digital native speakers have a more prominent part of the brain responsible for visual ability, which makes visual forms of learning more effective. Strongly oriented towards high technology, alongside these, kinetic skills support Gen Z's preference for play-based activities and experiential learning; young people are used to quickly accessing the information they process at the same pace and, not infrequently, superficially as they exhibit multitasking behaviors, solving several tasks simultaneously.

Born into a global society where affluence provides the cadence of unfolding, instant connectivity brings information overload, visual and sound stimulus excess, competition excess, predominantly intellectual interests and activities, coupled with a permanent desire for change. All this gives rise to the syndrome of accelerated thinking, which is a characteristic of the generation we are discussing. Gorgos (1985, p. 75, apud. Bonchiș, 2021, p. 133) defines the syndrome of accelerated thinking 'by an extremely rapid chaining of ideas in which the number of associations multiplies but loses in depth. The evocations are exacerbated but are minimized by numerous digressions that interrupt the main thread of speech, and the disturbances of attention make the subject unable to focus on a precise topic'.

In order to satisfy these young people's learning needs, it is essential to insert technology in education and to reorganize the educational process from a digital perspective. Thus, a new educational reality, represented by e-learning, m-learning, u-learning, creates appropriate contexts to facilitate the diginal natives' learning process. Thus, ICT by means of various search engines, web pages, games, etc., which can be easily accessed from various digital devices, as well as the flexible and personalized educational experience represent the new basis of the educational process. (Tudor, Langa & Lazăr, 2023).

Dependent on devices, the time they spend on media platforms (5-6 hours a day) has an unfavorable impact on face-to-face communication, so words, expressions, and abbreviations take on a totally unusual form for adults; shaping communication skills through oral language is difficult; attention and focus on a matter/theme is in decline; the empathic capacity is low, young people showing boredom, irritability, anger in the face of contexts that do not respond to their quick and flexible way of acting; the difficulty of being aware of both one's own affective experiences and those of others creates obstacles to behavioral adaptation. All this feeds today's young people with feelings of loneliness and dissatisfaction, generating a state of anxiety against the backdrop of emotional instability.

Beyond these aspects, the anchoring in high technology also implies the social anchoring of this generation which, being well informed on global issues, has developed different relationships, experiencing the feeling of 'togetherness' through communication on media channels. Compared to previous generations, this aspect makes it seem more socially active and more open to accepting cultural, ethnic, religious, sexual diversity, etc., often guided by the motto 'serve your community'.

In this sens the livea streaming platforms create the context of online communities that manage to get young people's attention and interest, offering them a live entertaining show, consolidated on a basis of a well –prepared scenario starting from a concept. In order to create entertaining educational contexts, adapted to generation Z's interests and meant to keep their attention, Radu (2023) mentions that an important step teachers should make is to use some of the streamers' tricks used in their online meetings that attract the audience. Among these tricks, the following can be mentioned: forming a

strong community, by means of encouraging communication through asking and answering questions and by debating some issues that attract young people's preoccupations, sometimes by giving them advice; rewarding students and using an avatar as an identification mark in order to give them the feeling of belonging; creating community events to encourage team work and collaboration.

Bonchiş (2021) mentions that generation Z, which he also calls generation C - connection, communication, collaboration, creation- is anchored in the present, is brave but a little resistant to difficulties, independent and, at the same time, happy to work in a team, ambitious, nothing seems impossible to it, careerist, with a high level of self-esteem, inclined towards narcissism.

Thus, in order to prepare the future graduates to be competent in their field of study, universities should entirely re-evaluate their teaching process by organizing educational experiences around two new concepts: Classroom Laboratory (CL) şi Virtual Project-Based Learning (VPBL). Based on constructivist theories, this approach emphasizes the students'active involevement in solving real-world problems, offering them opportunities to develop skills beyond their subjects of study, these skills being crucial in the present interconnected world. These skills are: efficient communication, team work, critical thinking, decision-making and problem-solving and reflexive thinking. Based on constructivist theories, this educational approach is very important (Luştrea et al., 2023).

The exaggerated preoccupation of young people from generation Z on the way they look, but also on the way they are perceived by others, focuses their attention in an intense process of self-observation, self-analysis and self-reflection because, as Creţu (2009) mentions, they are in an accentuated phase of searching for self-identity. Thus, interested in finding answers to the questions 'who am I?', 'what do I want to become?', 'how do others see me?', 'how do I present myself as a person?', in order to strengthen and support their high degree of self-esteem (self-appreciation, self-respect, self-acceptance), the young people of Generation Z resort to the media to present themselves according to the standards of the group, of the community they belong to (or, perhaps, even just adhere to). We recall here the selfie culture, combined with the sharing of personal information on media channels.

At the same time, Creţu (2009) mentions that at the base of all the orientations, actions and efforts of these young people is the outline of the ideal of life. This essential vector gives meaning to all their activity and represents the synthesis of their experience and conception of life, consolidating on the outline of the physical self (somatic features), spiritual (values, aspirations, conceptions, etc.) and social self (self-concept, self-esteem, self-representation).

Although this generation was born to parents who introduced the Internet and media, they consider them old-fashioned, but on the other hand, they want to be supported, listened to and entertained, opting for entertainment. They oscillate between career and personal life, living life in terms of the following organization: 'completion of studies, financial independence from parents, travel, career, become more spiritually mature,

know exactly who I am, enjoy life before having responsibilities, follow their dreams, and then become parents, marriage taking place after giving birth to children' (Bonchiş, 2021, p. 75).

Educated, innovative and creative, open to communication and collaboration, with high technology as a working tool, these young people are prepared for the labor market facilitated by devices. They are well-informed and flexible, have quick learning skills on the job, show insight, find alternative solutions to problems and display multitasking behavior. Confident in their own strength, they are eager for rapid ascent, prefer immediate and consistent gratifications, direct feed-back, having high expectations from employers. For them, the workplace must be pleasant and attractive, offer a flexible and less demanding schedule that allows parallel jobs. In this sense, the name *homelanders* is proposed, explained by the fact that 'this generation will spend more time at home with their parents, and their jobs will adapt to online styles' (Parker, 2020, apud. Bonchiş, 2021, p. 67).

Currently, Generation Z represents about 1/3 of the entire population of the globe. Many of these young people are still studying either in vocational, secondary, post-secondary or university education, while a large part of them is already active in the labor market, having occupations that are or are not in line with vocational training and education.

Being at a stage of life in which the search for self-identity outlines the trajectory of all decisions made, goals proposed and actions taken, professional orientation and choice represent the vector that provides the cadence of the entire path to achieving self-awareness. The choice of studies and, implicitly, the profession in accordance with the structure of the personality and the requirements of society helps the young person to discover his/her uniqueness, to develop as an autonomous person, to propose clear goals and to act with dignity and responsibility to fulfill them.

Crețu (2009) presents the results of a study conducted by Erikson on how adolescents assume roles, set goals and act to achieve them. So, four categories of teenagers are mentioned, as follows:

- those who seem to immediately outline their self-identity by adhering to the conceptions and values of their parents, without thinking about their own capacities and interests. Thus, young people easily adapt to present demands, but the future can bring disappointments, as they notice that the choices made are not in accordance with the dimensions of their personality. In this circumstance, they either assume the continuity of the course, but remain unfulfilled, or suddenly change the trajectory of their life, with all the consequences that derive;

- those who find it difficult to form their self-identity because they go through a long period in which they make all the attempts to see what really suits them. These young people may often come into conflict with their family, but they acquire a positive and consistent self-identity that fits both the present and the future;

- those who waste a lot of time and energy searching for answers to the three questions - Who am I? What can I do What will I be?- failing to make satisfactory choices;

- those who face much too high expectations from their parents and, because they cannot cope with them, do not feel appreciated, lose their self-confidence, relate negatively to their parents and look for other contexts in which to feel in out of constraints. In these circumstances, young people often engage in contexts contradictory to society's requirements, building a negative self-identity.

Regardless of the situation in which they are, it can be noticed that family is a factor that has a significant influence on the school orientation and professional choice of young people. Bîrle (Bonchiş, 2011) mentions that the family's influences can be based on: aspirations regarding a certain socio-professional status; beliefs about what success means and how it can be achieved; the behavioral patterns in the family and the types of reinforcement used; family members' experiences related to various careers, etc.

The conscious and responsible choice of the professional path, taking into account the dimensions of the personality and the demands of society, but less of external influences, helps the young person to outline his/her self-identity without deviations or delays, bringing him/her personal, professional and social satisfaction. Establishing the professional trajectory involves school orientation, which involves completing a general training program (theoretical and practical) and specialized training, carried out in an institutionalized setting (school, university, etc.); that is, the choice of a training program in a certain field of activity, intended to provide the skills required by that profession (Dumitru, 2008).

2. Methodology

2.1. Objective

The purpose of this study is to identify the factors that influence the school orientation and professional choice of young people who belong to generation Z, taking into account the psychological dimensions and behavioral patterns that the context of the globalized world has triggered.

In this sense, the research started from the following hypotheses:

H1: The more difficulties young people encounter in the process of defining their self-identity, the more they will let themselves be influenced by external factors in their school and professional choice;

H2: If young people orient themselves consciously and responsibly in their school and professional choice, then they will acquire a positive and consistent self-identity, suitable both for the present and the future.

2.2. Participants

The sample was made up of 90 students enrolled in the first year of the bachelor's degree programs of the faculties of Letters and Sciences and Economic Sciences within the Petroleum-Gas University of Ploieşti (Romanian language and literature-English language and literature, English language and literature English-French language and

literature, Informatics, Public administration, Managerial and administrative assistance, Pedagogy, Pedagogy of primary and preschool education, Accounting and management informatics, Economics of trade, tourism and services, Finance, Banks, Management, Merceology and quality management).
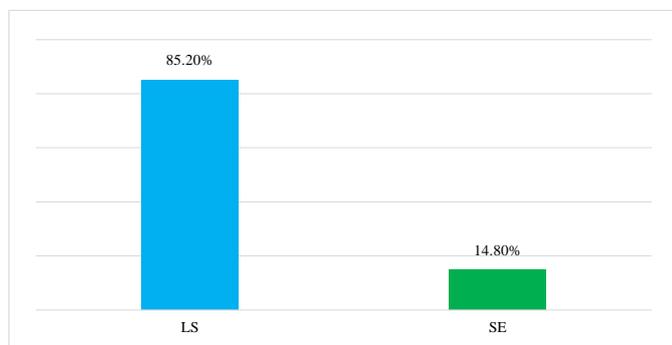
Figure 1. Faculties of the subjects of the study

Of these, 14.4% have previously followed other university undergraduate study programs, and 85.6% are in their first university undergraduate study program.

Regarding the age of the subjects, 85.6% are between 19-24 years old, 3.3% are between 25-30 years old, 2.2% are between 31-36 years old, and 8.9% are over 36 years old.
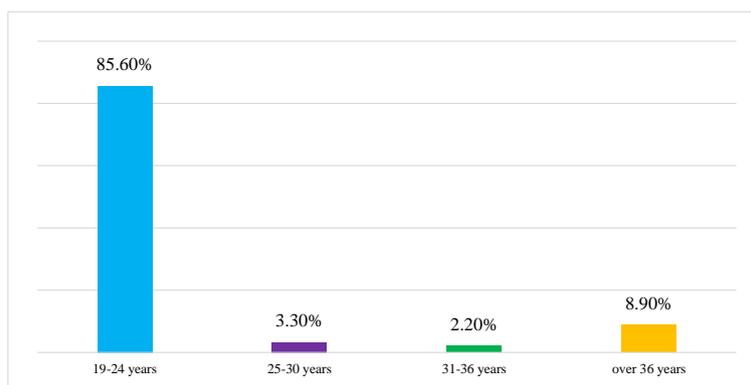
Figure 2. Subjects' age

2.3. Instruments and procedure

In order to collect relevant information regarding the determining factors in the school orientation and professional choice of young people belonging to generation Z, a questionnaire-based survey was used, applied online to first-year students completing various undergraduate university study programs within the two faculties mentioned above. The questionnaire was made up of 17 items organized both in the form of pre-coded questions that provided a varied list of answers and as complete as possible, and in the form of post-coded questions, open to allow the freedom of individualized expression of the answers. Also, a focus group discussion with 1/5 of them proved to be useful to identify details about their aspirations, expectations and representations regarding professional orientation and the labor market.

2.4. Data analysis and interpretation

Aiming mainly to identify the factors that influence the young people of generation Z in their school orientation and professional choice, one of the items of the applied questionnaire aimed precisely at this aspect. Thus, in choosing the current bachelor's degree program, the research subjects indicated the following factors: family (23.9%); friends (6.8%); former teachers who gave them guidance in choosing the studies and professions that suit them (17%); the learning experiences offered by different positive and/or negative models responsible for the learning situations they went through (23.9%); their desire to follow a training program that will provide them with general training for the profession they want (37.8%); the belief that this study program offers them professional training consistent with the dimensions of their personality and the expectations they have (40.9%); the desire to complete a bachelor's degree program that would offer them the prospect of a high socio-professional and economic status, stable long-term job (33%); the desire to complete any undergraduate university study program in order to integrate more easily into the labor market (8%); the desire to fulfill the parents' expectations, although this study program was not among their initial options – (3.4%); admission to this study program on a budgeted place (4.5%); curricular continuity between the profile covered in high school education and the specialization offered by undergraduate university studies as they want to deepen the field and establish the necessary skills for the profession they want (10%); the curricular continuity between the profile covered in high school education and the specialization offered by the undergraduate university studies which gives them comfort in studying the subjects, although they do not have clear prospects of following a professional path in this direction (14.8%); the desire to broaden their horizon of knowledge on this field of activity, although they have no clear intentions to follow a professional path in this direction (14.8%).

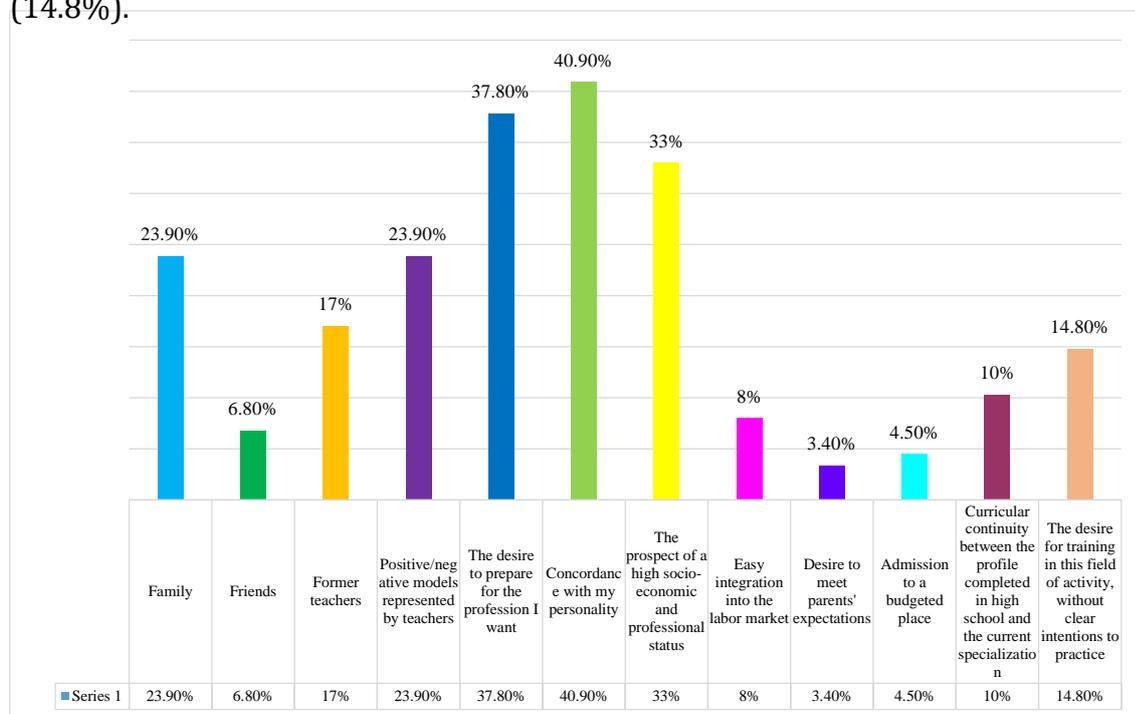|	Family	Friends	Former teachers	Positive/negative models represented by teachers	The desire to prepare for the profession I want	Concordance with my personality	The prospect of a high socio-economic and professional status	Easy integration into the labor market	Desire to meet parents' expectations	Admission to a budgeted place	Curricular continuity between the profile completed in high school and the current specialization	The desire for training in this field of activity, without clear intentions to practice
■ Series 1	23.90%	6.80%	17%	23.90%	37.80%	40.90%	33%	8%	3.40%	4.50%	10%	14.80%

Figure 3. Determinants in the choice of the undergraduate university study program

It is worth noting that students who let themselves be influenced by various external factors (family, friends, easy integration into the labor market, admission to a budget place, etc.), without reflecting too much on their own capabilities and interests, have the age between the ages of 19-24 and this is in the first bachelor's degree program they are taking. Although, through the devices they use, they demonstrate creativity, flexibility, openness to communication and collaboration, a desire for independence, they are in the stage where they shape their self-identity, they have a strong preoccupation with the way they present themselves, as well as on how they are perceived by others. In the hope that they will choose an easier way of socio-professional adaptation that could support their self-esteem, but also the respect of those around them, they adhere to the conceptions and values of the more mature people in the social groups they frequent, without thinking too much on the questions 'who am I?', 'what do I want to become?'.

Implicitly, the results of the study showed that these subjects did not have an explicit representation of their own identity at the stage when they were put in the situation of choosing their professional path. Thus, their answers can be seen in the figure below:
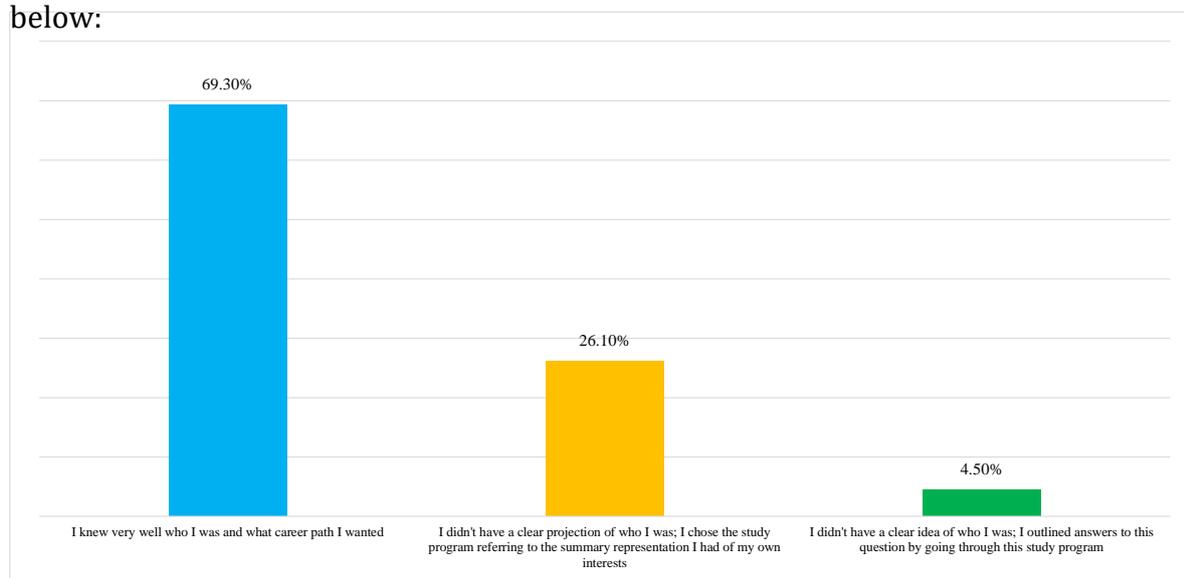
Figure 4. Self-identity and study program choice

Also, in choosing the bachelor's degree program, these subjects mentioned that they analyzed the educational offer made available only by the Petroleum-Gas University of Ploiesti (38.6%); they researched the professional perspectives provided by each bachelor's degree program (17%); they analyzed the admission conditions, selecting undergraduate university programs that do not require an exam, but only a file competition (5.7%); they were superficially informed, they enrolled in several faculties and specializations, the goal being to occupy a budgeted place (3.4%).
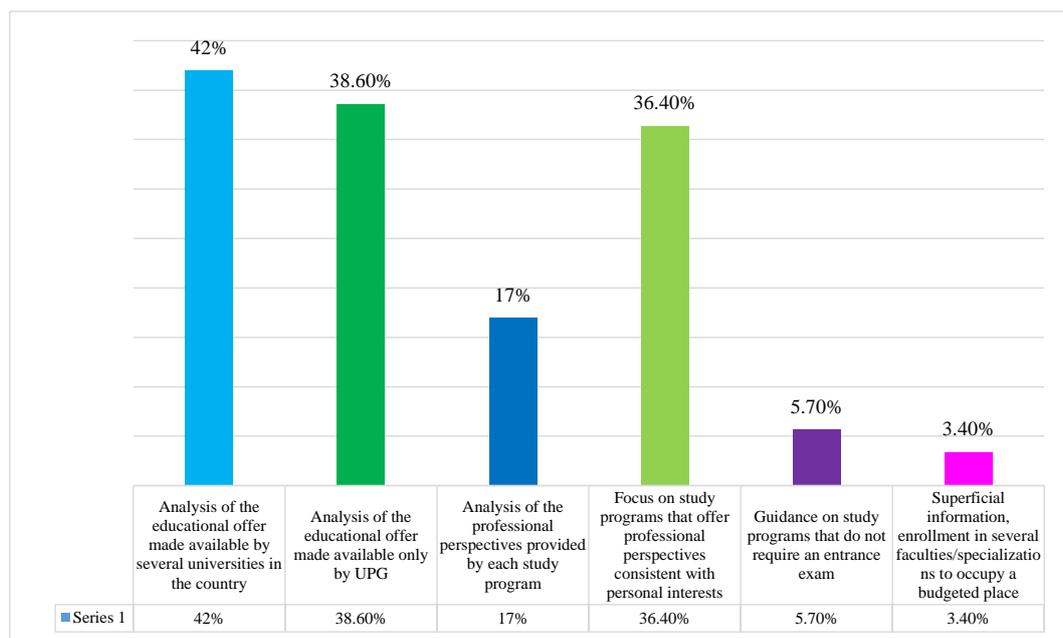
Figure 5. Stages preceding the choice of the bachelor's degree program

So, trying to make choices that will facilitate their educational and professional career, as well as adapting to the labor market, young people seek to outline a vague answer to the questions 'who am I?', 'what do I want to become?' beyond a well-defined trajectory, but only vastly outlined by the advice coming from the outside. The representation of these results creates the prerequisites for the validation of the first working hypothesis: the more difficulties young people encounter in the process of defining their self-identity, the more they will be influenced by external factors in their school and professional choice.

On the other hand, 69.3% of the subjects mentioned that at the time of choosing the study program they knew quite well who they are, what they can do, what skills they have and what they want to become in terms of their professional development. Part of them are the subjects who are over 25 years old and who are completing (or not) the second bachelor's degree program (14.4%). Being in the stage of youth, they have shaped their self-identity by doing all the trials during adolescence to see what really suits them. Thus, they report that the factors that influenced them to follow the study program in which they are currently enrolled are: the desire to follow a training program that will provide them with general training for the profession they want and the belief that the program of studies chosen offers them professional training in accordance with the dimensions of their personality and with the expectations they have.

At the same time, 54.9% of the young people who mention that at the time of choosing the study program they knew quite well what professional path they wanted are aged between 19-24. Although they are in the process of defining their self-identity, they have solid inner landmarks that guide them in the trajectory of all the decisions they make and the actions they take. Thus, the entire list of factors that were the basis of the choice of the

current study program targets aspects related to the intrinsic motivation of young people to prepare for the profession they aspire to. In this sense, the young people mentioned that before choosing the bachelor's degree program they are currently studying, they analyzed the educational offer made available by several universities and, implicitly, by the Petroleum-Gas University of Ploieşti and selected study programs that offered them professional perspectives consistent with their interests, expectations and personality dimensions.

At the end of the first year of study, 68.2% of the subjects who mentioned that they chose the specialized training program according to their personal wishes and interests, state that they are satisfied with the decision made because their expectations were met. These results create the prerequisites for the validation of the second working hypothesis: if young people are consciously and responsibly oriented in their school and professional choice, then they will acquire a positive and consistent self-identity, suitable both for the present and the future. A large part of the young people who did not have a clear representation of their self-identity and the professional path they wanted to follow, at the time of choosing the bachelor's degree program, mentioned that they have not yet evaluated the decision made because they have enough time to complete various situations and learning experiences to discover what really suits them (27.3%). Also, after completing the first year of study, 4.5% of them answered that the decision taken regarding school and professional orientation is categorically wrong because they were driven to fulfill their parents' expectations, without taking into account their own options.
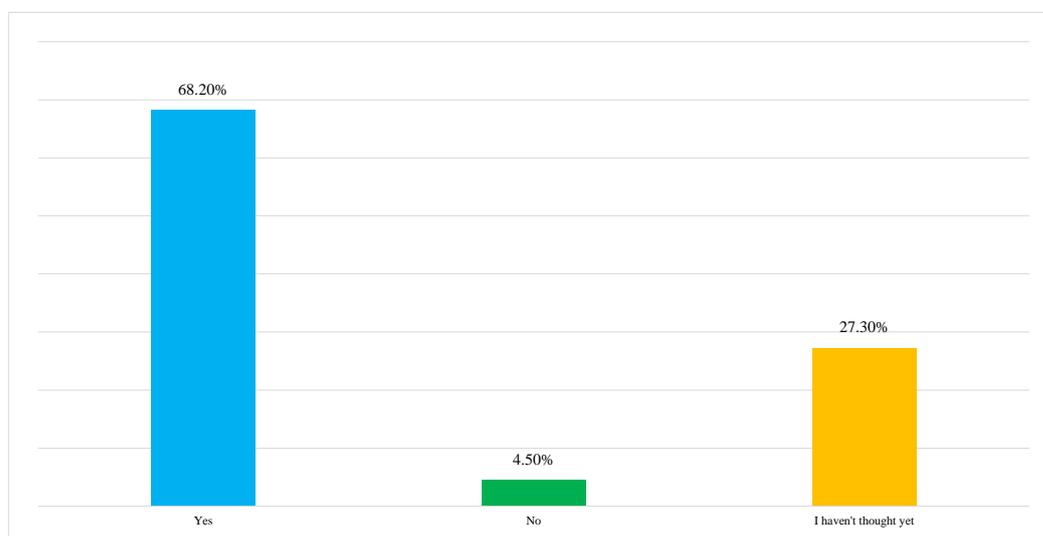
Figure 6. The chosen study program, an inspired decision?

Beyond the degree of assumption and responsibility in choosing the school and professional path, among the expectations that young people have from the workplace the following can be mentioned: employment with a work contract for an indefinite period that offers them stability (61.4%); employment with a fixed-term employment contract to have more freedom to go through different professional experiences (5.7%); ensuring

a job that is consistent with professional training, with the skills they have (40.9%); securing a position that is not necessarily consistent with they professional training; they are flexible, perceptive, eager for challenges and easily adapt to any demands that the job brings (8%); to offer the possibility of professional development and, implicitly, rapid promotion, higher status and salary (28.4%); to ensure a pleasant, safe work environment (22.7%); to offer a flexible schedule, which allows parallel jobs and, implicitly, the fulfillment of tasks from anywhere (18.2%).
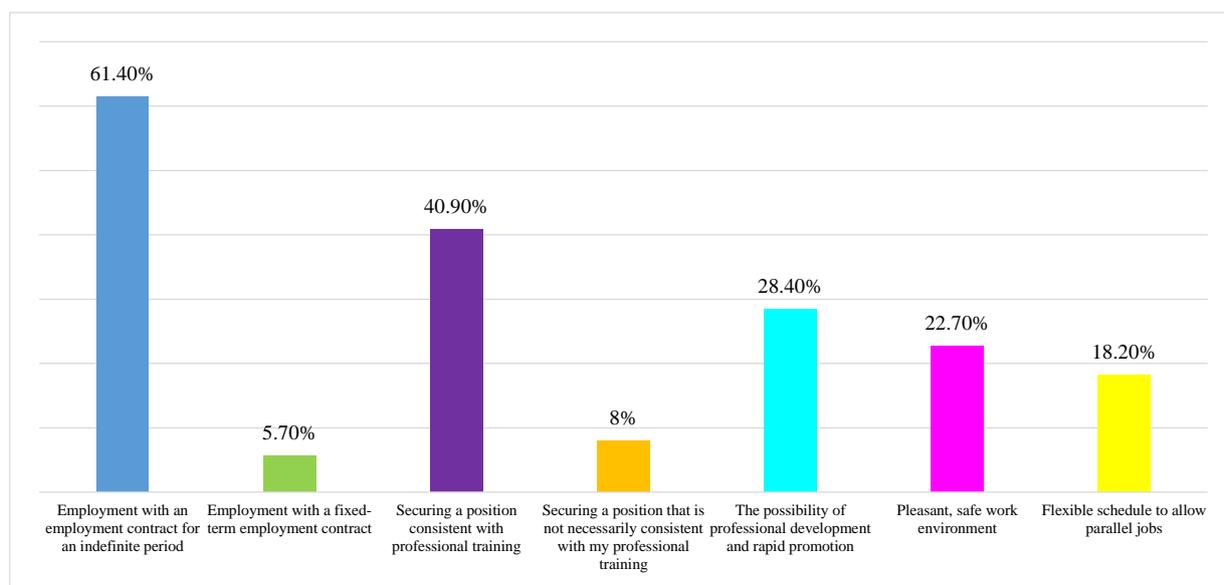
Figure 7. Expectations from the workplace

It can be noticed that that the subjects who chose the study program in correlation with the personality structure, with their own ambitions, aspirations and capabilities, but also with the demands of society, tend towards jobs that offer stability over a long period of time, which are consistent with professional training and which offer the prospect of rapid promotion, preferably in a pleasant, friendly environment.

On the other hand, the subjects who chose the study program influenced by various external factors, without thinking too much about their own capacities and interests, rely on their flexibility, adaptability and insight, tending to jobs that are not necessarily consistent with their professional training, but still gives them the freedom to make various attempts, to go through different professional experiences.

All the variables that have so far shaped the choice of career path in one form or another reflect, unequivocally, the degree to which the subjects of the study have configured their career plan. Thus: 53.4% mention that they already have a defined career plan and all their professional actions are directed towards its fulfillment; 17% mention that they have a structured career plan, but they do not act persistently to fulfill it because, over time, the milestones of the plan can change; 21.6% mention that they do not have a career plan already thought out, considering that they still have enough time to make a decision; 8% state that they will be surprised by what destiny will offer them when they graduate the faculty.

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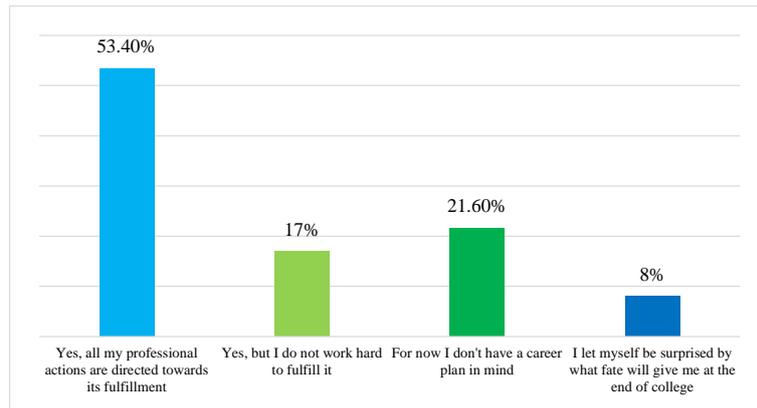
Figure 8. The existence of a career plan as the basis of the actions taken

Regarding the connotations that the study subjects attribute to professional success, these are the following: high socio-economic status (15.9%); high professional status (13.6%); balance between personal and professional life (73.9%); practicing a profession in the preferred field (55.7%).
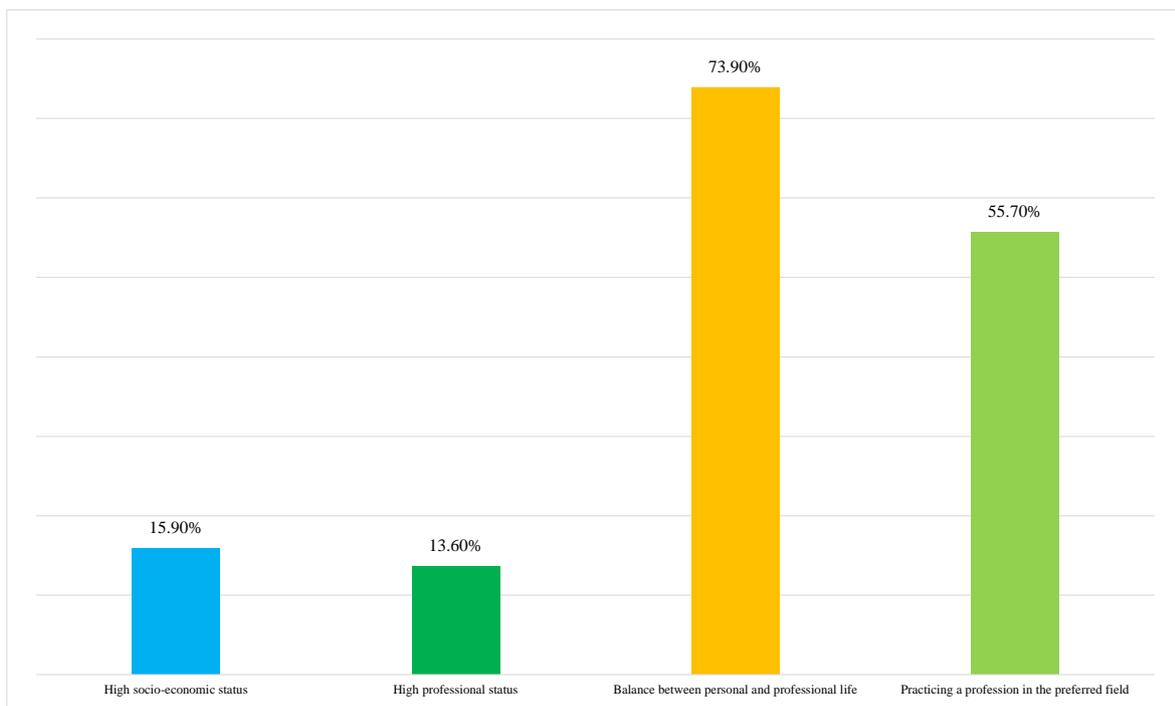
Figure 9. Connotations given to professional success

In order to reach these desired stages, the study subjects mention the need for: continuous desire for self-improvement, intrinsic motivation (I do what I do because I like it, because I can and want to become an expert), long-term maintenance of mental focus on the established plan, patience, perseverance, interpersonal communication skills, digital skills. In this context, the attributes that they consider necessary to cultivate are represented in the figure below.

Series 1	Dorința continuă de autoperfecționare	Motivația intrinsecă	Long-term maintenance of mental focus on the established plan	Patience	Perseverance	Interpersonal communication skills	Digital competences
Series 1	35.20%	53.40%	27.30%	44.30%	40.90%	29.50%	17%
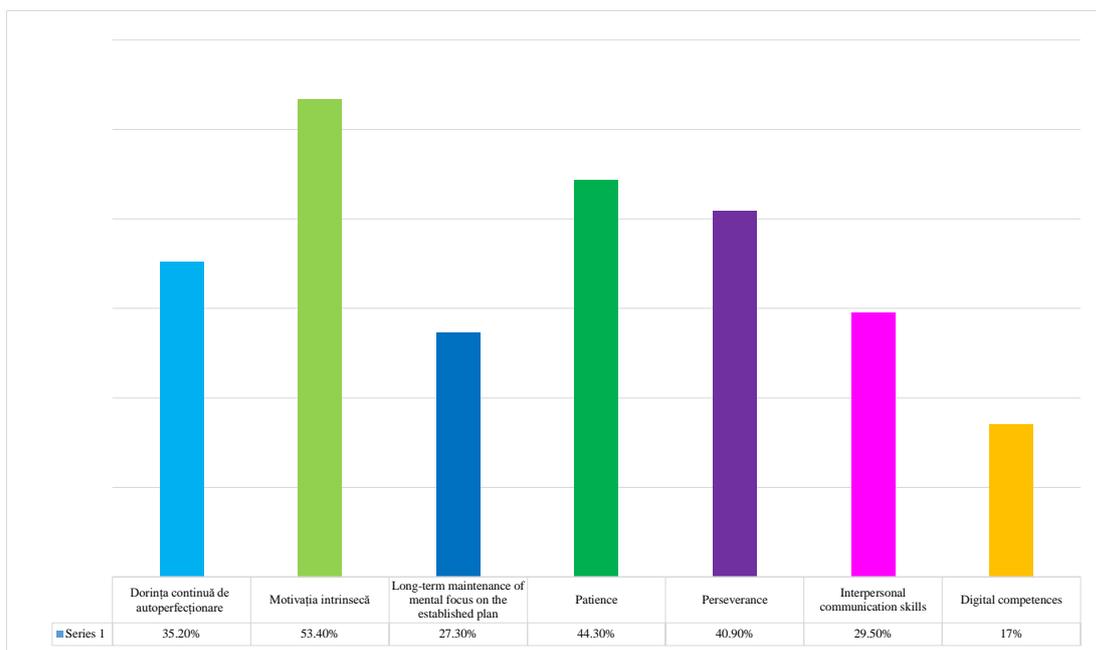
Figure 10. Attributes necessary to be cultivated to achieve professional success

Although 1/3 of the study subjects are in the process of defining their self-identity, not having a defined career plan, based on which to act in order to prepare both for easy integration into the labor market and to achieve professional success, however, the whole batch of subjects objectively appreciates the attributes they need to develop, demanded by the labor market in the global society.

3. Conclusion

Beyond the common features that the dimensions of global society impregnate in the profile of all young people belonging to generation Z (digital language speakers, device addicts, kinetic skills, preference for experiential learning, accelerated thinking, multitasking behavior, innovative, flexible, eager for rapid ascent, etc.), they have different benchmarks for shaping their professional approach, assuming roles and taking action to achieve objectives.

The distinction is determined by the extent to which young people are concerned with submitting to a process of self-observation and self-analysis, looking for answers to the questions 'who am I?', 'what do I want to become?'. The approach they choose to implement to outline their self-identity and, implicitly, their ideal of life, gives meaning to their entire activity. Thus, young people who think about their own capabilities, interests and aspirations, encouraged by family and friends, have a clear idea of who they are and what they want to become, responsibly choosing the school and professional path according to certain inner landmarks, such as: the vocation for a certain profession, the desire to follow a training program that ensures their general preparation for the field

they aspire to, the belief that the chosen study program offers them professional training consistent with the dimensions of their personality and the expectations they have.

On the other hand, young people who wander on the path of defining their own identity, not having a clear representation of their own capabilities and interests, are confused in choosing their school and professional path, allowing themselves to be influenced by various external factors. They adhere to the conceptions and values of the various people who are part of the social groups they attend, they choose study programs that do not take them too much out of their comfort zone, relying on the high capacity for adaptability and flexibility in achieving professional success that, those several of them equate it with reaching a high socio-economic status.

Thus, the optics through which young people look at the entire school and professional approach determines different directions of action, assuming the provided provisions, profiles different objectives, but also varying levels of achieving professional satisfaction and self-fulfillment.

References

Arar, T., Öneren, M. (2018). Role of Talent Management in Career Development of Generation Z: A Case Study of a Telecommunication Firm. *International Academic Journal of Social Sciences,* Vol. 5, No. 1, 2018, 28-44.

Bîrle, D. (2011). Familia şi vocaţia. in Bonchiş, E. (coord.) *Familia şi rolul ei în educarea copilului*. Iaşi: Editura Polirom.

Bonchiş, E. (coord.) (2011). *Familia şi rolul ei în educarea copilului*. Iaşi: Editura Polirom.

Bonchiş, E. (coord.) (2021*). Generaţia Z.* Iaşi: Editura Polirom.

Creţu, T. (2009). *Psihologia vârstelor*, Ediţia a III-a, Iaşi: Editura Polirom.

Dumitru, I., Al. (2008). *Consiliere psihopedagogică. Baze teoretice şi sugestii practice*, Ediţia a II-a, Iaşi: Editura Polirom.

Gorgos, C. (1985). *Vademecum în psihiatrie*. Bucureşti: Editura Medicală.

Kemp, N. (2014). Generation Z: A Tech Time-Bomb. http://search.ebscohost.com/login.aspx=direct=true&db=bth&AN=97231927&lang=tr&site=eds - live&authtype=ip,uid/.

Luştrea, A., Dincă, M., Craşovan, M., Oniţiu, A., Lucheş, D., Fyhn, H., Røyrvik, J. (2023). Exploring Virtual Reflective Learning Experiences in Higher Education. *Journal of Educational Sciences*, Vol. XXIV, 1(47), No.1/2023, 49-73.

Parker, L. (2020). For young people, two defining events: COVID-19 and climate change. Available on: nationalgeographic.com/science/2020/04/gen-z-pandemic-will-define-formative-years-coronavirus-climate-change/.

Peterson, H. (2014). Millennials Are Old News-Here"s Everything You Should Know about Generation Z. http://www.businessinsider.com/

Radu, I.R. (2023). Learning from Twitch streamers' experience for better online live lessons. *Journal of Educational Sciences & Psychology*, Vol. XIII (LXXV) No.1/2023, 15-25.

Tudor, S.L., Langa, C., Lazăr, A.N. (2023). Online curricula –students' perception on the quality of digital tools (the online course and the educational websites). *Journal of Educational Sciences & Psychology*, Vol. XIII (LXXV) No.1/2023, 04 -14.

Is autonomy in learning a key for motivation? Differences between age category depending on autonomous learning

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Abstract

Autonomy in learning is obtained through an active process, in which students set learning objectives, monitor, regulate and control their knowledge, motivation and behavior, guided by the characteristics of the educational environment. We chose this topic because we believe that one of the objectives of universities is to train autonomous, emotionally and psychologically mature students, prepared for all the problems encountered in all areas of life. University lays the foundations for life skills. The purpose of the present study was to investigate the differences between the ways of self-regulation in learning depending on age. An instrument for measuring controlled regulation was applied, namely the SRQ-L questionnaire, which refers to the reasons why people learn. 144 female high school students and college students, aged 15 and 16, respectively 20 and 21 years old, both categories following a humanistic profile. The results showed statistically significant differences between the means of the groups of 15, 16, 20 and 21 years. Our results can be used in the education system in the teaching-learning process based on the students' needs.

Keywords: autonomy, learning, students.

1. Introduction

Autonomy is a concept that many researchers have studied and tried to define. Thus, Benson (2007) states that autonomy is the ability to detach from the environment, to critically reflect, to make decisions and to act independently. It also assumes that the student will develop a certain type of psychological relationship to the learning process and content.

Learner autonomy is defined as the ability to take control of one's own learning. The ability is not innate, but acquired either through natural means or through formal means of education and taking control over one's own learning refers to the assumption by students of some responsibilities for all decisions related to all aspects of this learning

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(Kvetenska, Myska, 2017; Little, 1994; Matei, Lincă, 2019; (Lincă, Budişteanu, Popovici, Cucu, 2022).

Autonomous learning, on the other hand, means critical thinking, planning and evaluating learning, and reflection, a conscious effort on the part of the learner to continuously monitor the learning process from beginning to end (Benson 2001).

So, the autonomy of students becomes a major element for adult education in order to ensure assets in participation through learning processes (Breen, Mann, 1997; Sinclair, 1999; Dam, Legenhausen, 1996; Matei, 2022; Matei, 2021).

In the specialized literature, there are also studies that take into account the autonomy of the high school/college student as an effective factor of academic success Aaaa found a positive, statistically significant relationship between student autonomy and academic success (Benson, 2007; Henri, Morrell, Scott, 2018).

The ability to be autonomous is reflected in the way the student learns and in the way he uses the learning content in a wider context. (Negovan, 2010, Bound, 2013).

Benson (2007), also provides an extremely useful definition of what autonomy is not. He argues that autonomy: a) is not a synonym for self-education; b) it is not a matter of letting students do as they can best; c) it is not a teaching method; d) it is not a single behavior that is easy to describe; e) it is not a state of equilibrium.

The concept of autonomy has new meanings through Piaget's studies on the moral development of the individual. Piaget, observing children during play, identified, in relation to the rules of the game, two types of phenomena: the practice of the rules - expresses the way in which the rule is applied; rule consciousness - the way in which "the mandatory, sacred or decisive character, heteronomy or autonomy of the rules of the game" is represented (Piaget, 1980, apud Negovan, 2010, p. 16).

Piaget (1980, ibidem) discovers four successive stages in the practice of rules by children, in the development of their attitude towards rules:

1. The motor and individual stage (regulated motor) in which, in fact, children do not comply with the rules;

2. The egocentric stage, corresponding to the period of 2-5 years when children seem to imitate the codified rules of adults but without caring about their partner, or as Piaget says "even when they play together, each one plays for himself (all children win in the same time)" (Piaget, 1980, apud Negovan 2010, p. 23);

3. The stage of early cooperation, placed between 7-8 years, in which children play according to the rules even if they do not understand them;

4. The rule codification stage where the rules of the game are strictly followed.

Based on these delimitations, Piaget (1980, apud Negovan, 2010) claims, deepened the research on the presence of the ideas of correctness, violation of rules and sanction for their violation. Trying to find out how the child represents his rules, Piaget (1980) comes to the conclusion that he unconsciously likens them to the rules he has to follow. And as far as the consciousness of the rule is concerned, the development occurs gradually:

1.   In the first stage - approximately around the age of 4, the rules have no meaning, and therefore, there is no awareness of their violation;

2.   In the stage of heteronomous morality/moral realism, which begins after the age of 4, the child begins to believe that the rules are sacred, unchangeable. They come from an authority (educator, parents, God) and must be respected without comment, the sanction for not respecting them being immanent. The stage of moral realism involves respecting the letter and not the spirit of the rule as well as an objective conception of responsibility;

3.   In the stage of autonomous morality or the morality of reciprocity that starts from the age of 10, "so from the second half of the stage of cooperation and throughout the stage of codification of rules, the consciousness of the rule undergoes a total transformation. The place of heteronomy is taken by autonomy: the rule of the game no longer appears to the child as an external, sacred law, because it is imposed by adults, but as the result of a free decision and as something worthy of respect to the extent that it is accepted on basis of reciprocity" (Piaget, 1980, apud Negovan 2010, p. 46). At this stage, the child understands that social rules are formulated by the individual and as such can be changed, he believes that the punishment for breaking the rules depends on the intention of the one who does it (the one who breaks 5 cups without wanting to should not be punished but the one who breaks one on purpose yes). In conditions of cooperation and mutual sympathy, a morality of reciprocity and subjective responsibility develops.

Therefore, Piaget (1980) associates rule compliance with autonomy. He distinguishes between the autonomy of consciousness and the consciousness of autonomy. The autonomy of conscience is linked to the type of respect that characterizes relationships between people: "By studying the rules of the game, I came to the hypothesis that there are two types of respect and therefore two morals: a morality of coercion or heteronomy and a morality of cooperation or autonomy" (Piaget, 1980, apud Negovan, 2010, p.128).

Coercion, unilateral respect and egocentrism maintain heteronomy and cooperation, reciprocity and mutual respect lead to the autonomy of conscience. The consciousness of autonomy is acquired based on the individual's competence for cooperation and reciprocity (Piaget, 1980, ibidem).

The author equates the unconscious egocentrism of the small child with the coercion exerted by an older person on the child: "Egocentrism in the sense of confusing the ego with the outside world and egocentrism in the sense of lack of cooperation, thus constitute a single phenomenon. As long as the child does not dissociate his ego from the suggestions of the physical world and the social world, he cannot cooperate, because to cooperate you must be aware of your ego and situate it in relation to common thinking. However, in order to become aware of his self, the child must free himself from the thinking and will of another" (Piaget, 1980, apud Negovan, 2010, p .64; Budd, 2016).

The assertions that even the above-cited author regards as hypotheses regarding the establishment of moral autonomy, contain extremely productive suggestions for understanding and explaining the lack of autonomy in academic learning, for

understanding the (sometimes exaggerated) demand from many students of guidance and supervision throughout the course of their learning/study activities.

A personal experience in which coercion (on the part of adults) prevailed, relationships based on unilateral respect (only on the part of the child towards the adult), and cooperative relationships were limited, perhaps, by a delayed egocentrism in the personality that normally evolves towards allocentrism, they can explain the inability of many individuals to assume and honor the responsibilities specific to the academic environment.

Piaget (1980, ibidem) appreciates the transition from heteronomous morality to autonomous morality, from rules of conduct and moral evaluation imposed by others to self-imposed rules, from objective responsibility based on coercion to subjective responsibility based on reciprocity, as a great gain in the "flow "to the moral development of the individual. The concept of moral autonomy has also received attention from Kolhlberg (1984), who places its installation in level III of post-conventional moral development, which begins approximately around the age of 13. At this level, the individual no longer automatically accepts the rules established by others, but builds a personal moral code based on moral values defined in his own terms and the self-judgment that prevails in comparison with the judgment coming from the outside.

Personal identity gives the individual the feeling of unity, continuity and coherence of his being, the feeling of the unity of the self, the feeling of being identical in time and of autonomy (Negovan, 2010; Lincă, 2019b; Lincă, 2016).

The issue of personal identity, of its construction, is very important for autonomy in academic learning, because only an individual with a clear identity can become autonomous, can perceive himself as a promoter of decisions regarding his own life. In opposition to essentialist interpretations of identity, in which it is linked to a unique essence that remains unchanged throughout the individual's life, the psychodynamic and sociological theories of identity affirm its constructed character. Dynamic theory emphasizes identification by which external persons or objects (especially the parent's Superego) are assimilated or introjected (Macaskill, Taylor, 2010; Lincă 2019a, Lincă, 2018).

Laplanches and Pontalis (1994) define identification as a psychological process through which a subject assimilates a characteristic of another and transforms based on the respective model. In the initial phases of personality development, identification takes the form of imitating parental models, but later it extends to models outside the family and finally to general models of social-human behavior (as the individual has access to social experiences in the family, school and community).

From a more pronounced psycho-pedagogical perspective, Ausubel formulated since 1952 (apud Negovan, 2010) says, the opinion based on empirical research, that through social interactions the identification of the dependent part with the superordinate part of man is born. The author distinguishes 2 types of specifically human identification: satelliteization and nonsatellization. Satelliteization, specific to the early child-parent

relationship, implies: the child's acceptance of the dependent situation and the parent's acceptance of the child's submission (on the basis of an indisputable right). Nonsatellization implies the acceptance by the child of his dependence on the parent only as a transitory situation and on the part of the parent the non-acceptance of the child's dependence on him (whether he simply rejects him or accepts him for reasons extrinsic to the child.

Another scientist who based his theory on Piaget's was Sweller (1988). Cognitive load theory, using our knowledge of the relationships between working memory and long-term memory, has been able to generate hypotheses that can be tested experimentally and, if supported, can lead to new effects and new training procedures (Sweller, Ayres & Kalyuga, 2011). Comprehension of educational content is considered to be affected, not only by the cognitive demands of the educational content itself, but also by the demands of the surrounding material in which the educational content is embedded. Therefore, learning management is the responsibility of the degree of autonomy that the subject has in the learning process.

We can talk about autonomy in learning in the context of learning foreign languages. High school/college students must build the system of the target language as a system for understanding and reproducing its meanings, a process that involves a certain degree of memorization and processing of the content (Matei, Lincă, 2019). Thus, autonomous language learning is by definition equivalent to effective language learning.

2. METHODOLOGY

Objectives

O₁. Investigating the differences between the ways of self-regulation in learning according to age category.

Hypotheses

I₁. There are differences between the ways of self-regulation in learning according to age category.

Instruments

The SRQ-L questionnaire (Brown, Miller, & Lawendowski, 1999) was used to measure controlled regulation. This questionnaire refers to the reasons why people learn. The answer to the items is predetermined, being expressed on a Likert scale from 1=never to 5=always. After calculating internal consistency, a Cronbach alpha coefficient of 0.75 was obtained for the proactive attitude scale.

Sample

144 high school and college students participated in the study (72 high school students and 72 female college students). Of these participants, 15 are 15 years old, 57 are 16 years old, 19 are 20 years old, and 53 of the participants are 21 years old. The mean of the ages is m= 18.26 and the standard deviation SD=2.51 (table 1).

Table 1. Demographic characteristics of the participants

Age					
	15 years	16 years	20 years	21 years	Total
High school students	15	57	0	0	72
Colege students	0	0	19	53	72
Total	15	57	19	53	144

Also, the 15- and 16-year-olds are high students in the 10th grade, humanities profile, majoring in social sciences, and the 20- and 21-year-olds are college students majoring in psychology, the second year of undergraduate study.

Regarding the selection principles of the participants, they were the specialization in the case of female high school students, and the profile in the case of female college students, so, in both cases, humanities subjects are treated. On the other hand, another principle of inclusion was the year of study: the second year of high school studies - the 10th grade and the second year of college. Thus, the homogeneity of the samples was ensured.

Description of data collection procedures

The application of the questionnaire was carried out in a high school and a faculty, to 10th grade students and, respectively, to second year students, humanities profile. The participants were provided with information related to the study and how to complete the questionnaire, being available for questions throughout its completion, but also after, for additional clarifications. The duration of completing the questionnaire was about 10-20 minutes. They were also informed that their responses were confidential and were asked to rate as honestly as possible the degree to which they identified with the respective items to ensure valid results. In advance, the participants agreed to take part in the research, most of them being volunteers eager to get to know themselves better, as we also offered the interpretation of the results to those who wanted this. Before being tested, they also signed the informed consent.

3. Results

Comparison of the average scores obtained by male and female students on the SRQ-L questionnaire. A one-way ANOVA was performed, taking age with 4 categories (15 years, 16 years, 20 years, 21 years) as the independent variable and controlled regulation as the dependent variable. The results showed statistically significant differences between the means of the groups of 15, 16, 20 and 21 years, having the means (m1= 2.82 m2= 2.86 m3= 2.46 m4= 2.45) and standard deviations (SD= 0.64 SD= 0.92 SD= 0.62 SD= 0.55) in the case of controlled adjustment ($F_{(3, 140)}= 3.39$, $p=0.020$, $p<0.05$; $\eta^2 = 0.07$), which leads to the confirmation, acceptance of hypothesis I1 (Table 2, 3).

Table 2. Indices of the descriptive statistics of the controlled regulation variable

Score - controlled regulation

	N	m	SD	SE	95% CI		Minimum	Maximum
					Lower	Upper		
15	15	2.82	0.65	0.16	2.46	3.18	1.00	4.00
16	57	2.86	0.92	0.12	2.61	3.10	1.00	5.00
20	19	2.46	0.62	0.14	2.16	2.76	1.00	4.00
21	53	2.45	0.55	0.07	2.30	2.61	1.00	4.00
Total	144	2.65	0.75	0.06	2.53	2.78	1.00	5.00

Table 3. ANOVA Test

	df	m	F	p.
Between Groups	3	1.865	3.395	0.020
Within Groups	140	0.549		
Total	143			

The dispersions within the 4 groups are heterogeneous, a fact highlighted by the significant result of the Welch test (F(3, 44,51) =3.42, p = 0.025, p<0.05) (Table 4).

Table 4. Test for nonhomogeneous variants of

controlled regulation and age variables

	Statistic	df1	df2	p
Welch	3.42	3	44.51	0.025
Brown-Forsythe	3.90	3	92.11	0.011

This fact led to the application of the Tamhane test.

Table 5. Tamhane Test

The dependent variable: score_controlled_regulation

Tamhane

(I) age	(J) age	Meandifferences (I-J)	SE	p	95% CI	
					Lower	Upper
	16	-0.04	0.20	1.000	-0.62	0.54
15	20	0.35	0.22	0.525	-0.26	0.98
	21	0.36	0.18	0.321	-0.17	0.90
	15	0.04	0.20	1.000	-0.54	0.62
16	20	0.39	0.18	0.222	-0.12	0.91
	21	0.40*	0.14	0.037	0.01	0.79
	15	-0.35	0.22	0.525	-0.98	0.26
20	16	-0.39	0.18	0.222	-0.91	0.12
	21	0.005	0.16	1.000	-0.45	0.46
	15	-0.36	0.18	0.321	-0.90	0.17
21	16	-0.40*	0.14	0.037	-0.79	-0.01
	20	-0.005	0.16	1.000	-0.46	0.45

*. Differences in means are significant at a p=0.05.

The post-hoc analysis with the Tamhane test (Table 5) highlighted the existence of a significant difference between 16- and 21-year-olds in terms of controlled regulation in learning (p = 0.037, p<0.05), having the difference in means -0.4 and standard error 0.14. So, it can be said that 21-year-old girls are more autonomous in learning than 16-year-old girls.

At the same time, it can be said that there are no significant differences in terms of controlled regulation in the other age categories. This result is also supported by the graphical representation of the differences between the averages of the 4 groups (Graph 1).
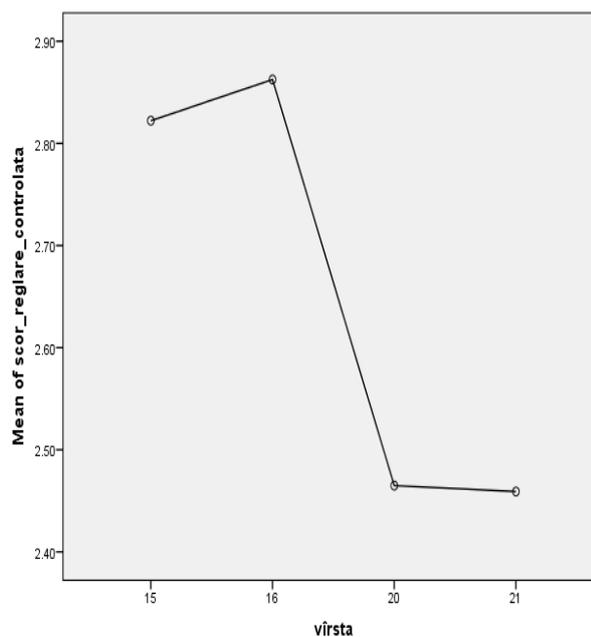

Figure 1. Mean scores for the controlled regulation scale

Graph 1 illustrates the increase in the degree of controlled regulation between the ages of 15 and 16, and after this age a decrease until the age of 20, but the sharp decrease is observed between the ages of 16 and 21.

Conclusions and discussions

In conclusion, all the objectives were achieved. The results showed statistically significant differences between the means of the 15, 16, 20 and 21-year-old groups in terms of controlled regulation, a fact that leads to the confirmation, acceptance of hypothesis I1.

The post-hoc analysis with the Tamhane test highlighted the existence of a significant difference between 16- and 21-year-olds in terms of controlled regulation in learning.

So, it can be said that 21-year-old girls are more autonomous in learning than 16-year-old girls. At the same time, it can also be said that there are no significant differences in terms of controlled regulation in the other age categories.

This situation can be explained by the fact that autonomy in learning is an evolutionary process. It develops along with the receptivity of the individual to take over the responsibilities related to learning (Rossi, 2002).

The characteristic of the autonomous student is that they frequently turn to the guidance of teachers but, unlike the one with less autonomy, they ask for help depending on their own needs and the difficulties they face in carrying out the learning tasks. This fact can only be realized when man has reached a high level of brain development. Similar results were also found by Yurgelun-Todd.

In a 2002 study, the American researcher studied the brain activity of teenagers while they identified the emotions expressed by faces on a computer screen. Those in early adolescence (age 14) tended to use the amygdala nucleus, a small, almond-shaped structure deep in the temporal lobe and strongly embedded in emotional and instinctual reactions. Older teenagers (17 years) showed similar patterns to adults, using the frontal lobes, which are involved in planning, reasoning, judgment, emotional regulation and impulse control, and thus enable more accurate, rational judgments to be made.

The post-hoc analysis with the Tamhone test highlighted the existence of a significant difference between 16- and 21-year-olds in terms of controlled regulation in learning. So, it can be said that 21-year-old girls are more autonomous in learning than 16-year-old girls. At the same time, it can also be said that there are no significant differences in terms of controlled regulation in the other age categories.

This difference may explain unwise choices in early adolescence, such as substance abuse. Immature brain development can allow feelings to override reason and prevent some teens from heeding warnings that seem legitimate to adults. Underdevelopment of frontal cortical systems associated with motivation, impulsivity, and addiction may explain in part why adolescents tend to seek thrills and why many find it difficult to focus on set goals for long periods of time (Bjork et al., 2004).

A limitation of this study is the relatively small number of participants in each category.

In the future, we propose to test autonomy in learning on a larger group and to consider all aspects of autonomy in learning for a more detailed look at the problem.

References

Benson, P. (1995). A critical view of learner training. *Learning Learning, 2*(2), 2–6.

Benson, P. (2007). *Teaching and Researching Autonomy in Language Learning.* Longman.

Bjork, J. M., Knulson, B., Fong, G. W., & Hommer, D. W. (2004). Incentive-elicited brain activitiesin adolescents: Similarities and differences from young adults. *Journal of Neuroscience*, 24, 1793-1802.

Boud, D. (2013). Enhancing learning through self-assessment. Routledge.

Breen, M. P., & Mann, S. (1997). Shooting arrows at the sun: Perspectives on a pedagogy for autonomy. In P. Benson, & P. Voller (Eds.), *Autonomy and independence in language learning* (pp. 132–149). Longman.

Brown, J. M., Miller, W. R., & Lawendowski, L. A. (1999). The self-regulation questionnaire. In L. VandeCreek & T. L. Jackson (Eds.), *Innovations in clinical practice: A source book,* Vol. 17, pp. 281–292). Professional Resource Press/Professional Resource Exchange.

Budd, R. (2016). Undergraduate orientations towards higher education in Germany and England: problematizing the notion of 'student as customer'. *Higher Education*, 73(1), 23–37.

Dam, L., & Legenhausen, L. (1996). The acquisition of vocabulary in an autonomous learning environment-the first months of beginning English. În R. Pemberton, E. Li, W. Or, & H. Pierson (Eds.), *Taking control: Autonomy in language learning* (p. 265–280). Hong Kong University Press.

Henri, D.C., Morrell, L.J. & Scott, G.W. (2018). Student perceptions of their autonomy at University. High Education, 75, 507–516.

Kohlberg, L. (1984). *The psychology of moral development: The Nature and Validity of Moral* (Vol II). Harper & Row.

Kvetenska, D., & Myska, K. (2017). Multidisciplinary Cooperation For The Benefit Of Endangered Child. *European Proceedings of Social and Behavioural Sciences*, *Multidimensional Education and Professional Development: Ethical Values*. https://doi.org/10.15405/epsbs.2017.07.03.43

Laplanche, J., & Pontalis, J. B. (1994). *Vocabularul psihanalizei.* Ed. Humanitas.

Linca, F. I., Budisteanu, M., Popovici, D. V., & Cucu, N. (2022). The Moderating Role of Emotional Regulation on the Relationship between School Results and Personal Characteristics of Pupils with Attention Deficit/Hyperactivity Disorder. *Children*, *9*(11), Article 11. https://doi.org/10.3390/children9111637

Lincă, F. (2019a). ATITUDINEA PROFESORILOR FAȚĂ DE INCLUZIUNEA ELEVILOR CU TULBURARE HIPERCHINETICĂ CU DEFICIT DE ATENȚIE (ADHD). *Revista de Pedagogie*, *LXVII*(2), 47–63.

Lincă, F. (2019b). TEACHERS' ATTITUDES TOWARD THE INCLUSION OF STUDENTS WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER (ADHD). *Journal of Pedagogy - Revista de Pedagogie*, *LXVII*, 47–63. https://doi.org/10.26755/RevPed/2019.2/47

Lincă, F. I. (2016). The relationship between the risk decision making and framing effect. *Romanian Journal of Cognitive Behavioral Therapy and Hypnosis*, *3*(2). http://www.rjcbth.ro/image/data/v3-i2/V3I2_Florentina%20Linca_RJCBTH.pdf

Lincă, F. I. (2018). Solutions for improving the symptomatology of the child with attention-deficit/hyperactivity disorder (ADHD). *Romanian Journal of Cognitive Behavioral Therapy and Hypnosis*, *3*(4), 1–24.

Little, D. (1994). Learner autonomy: A theoretical construct and its practical application. *Die Neuere Sprache,* 93(5), 430-442.

Macaskill, A., & Taylor, E. (2010). The development of a brief measure of learner autonomy in university students. Studies in Higher Education, 35(3), 351–359.

Matei, F.L. (2021). The importance of intercultural competence in the context of academic mobility. Training needs. *International Journal of Social and Educational Innovation*, 8(15), 38-52.

Matei, F.L. (2022). Online learning in university education: perceptions and difficulties. *Journal of Education, Society &Multiculturalism*, 3(2), 117-128.

Matei, F.-L., & Lincă, F.-I. (2019). Training Needs of Military Students on Intercultural Competence. *Land Forces Academy Review*, *24*(4), 291–296. https://doi.org/10.2478/raft-2019-0036

Negovan, V.(2010). *Psihologia învățării-Forme, strategii și stil*. București: Ed. Universitară.

Rossi, D. (2002, 6-19 iunie). *Self-Directed Learning: A Strategy for Lifelong Learning*. Comunicare la 2nd International Lifelong Learning Conference, Yeppoon.

Sinclair, B. (1999). Wrestling with a jelly: the evaluation of learner autonomy. În B. Morrison (Eds.), *Experiments and Evaluation in Self-Access Language Learning (p.* 95-110). Hasald.

Sweller, J(1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science,12* (2), p, 257-285. https://doi.org/10.1016/0364-0213(88)90023-7

Sweller, J(1988). Cognitive load teory. *Psychology of Learning and Motivation*, *55*, p. 37-76. https://doi.org/10.1016/B978-0-12-387691-1.00002-8

Self-assessment in the context of visible learning

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Abstract

Visible learning is an imperative of the current instructional process. Visible learning is a concept that refers to the fact that students have a clear understanding of the learning objectives, learning processes, and success criteria, so they can assess their own progress (Hattie & Anderman, 2013). Through active involvement, students become partners in the learning process and are involved in making decisions about their own goals and learning strategies. The active involvement of students facilitates their self-assessment, which is one of the key components of visible learning. In this context, visible learning involves the use of didactic strategies that make learning transparent to students, by providing specific and timely feedback, and by promoting collaboration and self-assessment (Fisher, Frey & Hattie, 2016). Self-assessment is a process by which students monitor and assess the quality of cognitions and skills while learning and identify strategies for improving their acquisitions. This aspect of formative assessment involves setting objectives and evaluation criteria, which can facilitate the self-assessment process. Self-assessment is a condition of visible learning, as it involves students to take responsibility for assessing their own learning, to adjust their learning based on the feedback received, and to set specific objectives to improve their performance. In this article, we highlight the specifics of students' self-assessment by presenting theories (cognitive control theory, self-determination theory) and self-assessment models used in practice. Based on the theoretical analysis, we identified the principles that can make the process of student self-assessment more efficient in the context of visible learning. Methodologically, a questionnaire and a test were applied, based on which we ascertained the students' opinion regarding their self-assessment process and the level of implementation of self-assessment in the didactic process. As a result, we formulated conclusions and recommendations for improving the process of self-assessment and formative assessment of students.

Keywords: assessment, formative assessment, self-assessment, learning, visible learning.

1. Introduction

In the context of innovations in the educational field, the concept of learning has evolved. Nowadays, learning is not just about the simple transfer of knowledge, but it

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emphasizes transparency, interaction, and the involvement of students in their own learning process. This process demands visibility on the progress and on the responsibility of each student for their own academic development.

In the current instructional process, visible learning is a concept that focuses on the transparency and clarity of learning for students. This approach fosters a culture of responsibility, where students are encouraged to explore their own learning, identify their strengths and weaknesses, and develop their metacognitive processes. The term „visible learning" was introduced by John Hattie, who notes that the „visible" aspect involves making the students' learning visible to teachers, thereby ensuring the clear identification of the attributes of progress. Visible learning also refers to the fact that everyone involved in the didactic process must visibly know the impact they have on learning (Hattie, 2014). J. Hattie (2012) argues that teachers who adopt the principles of visible learning promote a culture of success, develop a common understanding of the direction of learning and success, and help students become their own teachers.

Hattie and Anderman argue that in the process of visible learning, students clearly understand the learning objectives, learning processes, and success indicators, for the purpose of monitoring and evaluating their own progress (Hattie & Anderman, 2013). By clearly understanding the learning objectives and assessment criteria, students become more engaged in their own learning process. In a visible learning environment, students are actively involved in the learning process and become partners in their own development. The active engagement of students facilitates self-assessment, a crucial component of visible learning. In this regard, teachers encourage students to participate in setting learning objectives, to assess their own progress, and to reflect on their own learning. This approach promotes self-assessment and students' responsibility for their own learning. Thus, Fisher, Frey and Hattie assert that visible learning involves providing specific and timely feedback, promoting collaboration, and self-assessment (Fisher, Frey & Hattie, 2016). In this context, self-assessment becomes a key component of visible learning, facilitating the process by which students become aware of their own progress, understanding their abilities, and identifying ways for continuous development.

Self-assessment is a process whereby students monitor and evaluate the quality of their cognitions and skills while learning and identify strategies to enhance their acquisitions. This facet of formative assessment entails the establishment of objectives and assessment criteria, which can streamline the self-assessment process. Self-assessment necessitates that learning be visible because it requires students to take responsibility for assessing their own learning, to adjust their learning based on the feedback received, and to set specific goals to improve their performance.

J. Hattie asserts that one of the most powerfull effects on learning stems from self-assessment, which involves the ability to assess one's own learning process and to adjust learning strategies accordingly (Hattie, 2008). According to the theory of cognitive control, students play an active role in the learning process by monitoring and adjusting

their own cognitive processes. This is a central aspect of visible learning where students are seen as active partners in the learning process.

Regarding the issue of self-assessment, existing research has addressed various aspects of this process, revealing valuable insights into how students assess their own progress. However, there are certain aspects that have not been addressed yet or have been insufficiently explored in the specialized literature, such as the theoretical and methodological landmarks of self-assessment in higher education. From the analysis of the literature on self-assessment, a significant gap has been identified concerning the level of understanding of existing theories compared to the actual practices of self-assessment implemented in the academic environment. Therefore, the identified gap indicates the need for further and more in-depth research that explores not only the theoretical aspects of self-assessment but also provides a more detailed perspective on actual practices in the context of visible learning.

2. Theoretical background

„*Self-assessment is both pivotal and requisite, as it facilitates self-knowledge and fosters self-awareness—fundamental facets that, progressively, empower individuals to ascertain the meaning of their own value, an indispensable precursor for any form of transcendence. This readiness, when examined through the lens of continuous education, demands an individual's dedication not only to their own formation but also to the act of evaluating their own progress towards self-enhancement*" (Cerghit, 2008, p. 373). Relating this methodology to the functions of evaluation, we posit that self-assessment regulates instruction by implementing modifications in its method of delivery.

Panadero et al. defines self-assessment as „wide variety of mechanisms and techniques through which students describe and possibly assign merit or worth to the qualities of their own learning processes and products" (Panadero et al., 2016, p. 804). Epstein and his colleagues delineated self-assessment as „ongoing self-monitoring" (2008, p. 5). „Self-monitoring is characterized by an ability to attend, moment to moment, to our own actions; curiosity to examine the effects of those actions; and willingness to use those observations to improve behavior and patterns of thinking in the future" (Epstein et al., 2008, p. 5). Recently, the formative perspective of self-assessment is taking shape in various educational contexts. For example, Sargeant noted that most researchers define self-assessment from a formative perspective and consider it an activity that relies on both external and internal data to inform and make decisions regarding the performance of learners. Sargeant also emphasizes that self-assessment is effective if guided by assessment criteria: „multiple external sources can and should inform self-assessment, perhaps the most important of which being the performance standards" (Sargeant, 2008, p. 1).

Other research has shown that self-assessment can influence academic performance (Hamodi et al., 2017; Yan & Brown, 2017; Zulliger et al., 2022).

Although self-assessment is primarily an introspective action, it transcends the concept of „self". The presence of „others", in addition to the „self", plays a pivotal role in the self-assessment process (Boud, 1999; Brown & Harris, 2013; Yan & Brown, 2017). The proactive role of students in the self-assessment process aligns with the feedback provided from the learning environment.

To achieve an efficient self-assessment process, Rolheiser (1996) proposes the implementation of a staged self-assessment process, identifying stages and levels of student involvement in assessing their own acquisitions. Subsequently, we elucidate the essence of each stage of self-assessment implementation (table 1):

1) Stage I - the teacher involves students in setting the assessment criteria. Often, students come with ideas to negotiate with the teacher to reach the final criteria. At the beginner level, the teacher provides the assessment criteria to the students, and as the students develop a deeper understanding of the assessment process, they can be actively involved in setting the criteria.

2) Stage II - the teacher demonstrates how to use the criteria for assessment tasks. At the beginner level, students apply the criteria following specific examples. At the intermediate level, students are responsible for applying the criteria following the description and explanation provided by the teacher. At the advanced level, students apply the criteria based on a model provided by the teacher. In other words, they are able to develop and elaborate their own model for applying the criteria. This advanced approach reflects a deep understanding of the criteria and the ability to apply them in various contexts.

3) Stage III - the teacher provides feedback on the students' application of the criteria. At this stage, feedback should refer to the assessment criteria. At the beginner level, feedback is provided exclusively by the teacher. As students learn how to provide feedback, they are encouraged to offer reciprocal feedback. This level of implementation assumes that students start developing their critical analysis skills and feedback provision. At the next level they can be involved in assessing their own progress.

4) Stage IV - involves identifying subsequent learning objectives and strategies that can help achieve the objectives. If at the beginner level, the learning objectives and strategies are set by the teacher, then as the self-assessment skills develop, students become capable of formulating objectives and setting learning strategies independently. The advanced level at this stage involves a deep understanding of one's own learning styles and how students can achieve the best results.

Table 1. Scheme for Progressive Implementation of Self-assessment
(adapted from Rolheiser, 1996)

Stages of self-assessment implementation	Levels of Implementation		
	Beginner level	Intermediate level	Advanced level
1. Setting the criteria	Teacher provides the criteria.	Students select criteria from those proposed.	Students establish the criteria.
2.Teaching students to apply criteria	Providing examples of criteria application.	The teacher describes how the criteria are applied.	The teacher's model of criteria application.
3.Providing feedback following criteria application	Teacher provides feedback.	Feedback is provided by both the teacher and the students.	Students' involvement in arguing their own feedback.
4.Setting objectives and learning strategies	Teacher sets objectives and learning strategies.	Students select objectives and learning strategies.	Students establish objectives and learning strategies.

Theories of self-assessment

   The theory of cognitive control focuses on how individuals manage and control cognitive processes to accomplish tasks. Cognitive control refers to those flexible mental processes that allow the dynamic selection of ideas and, correspondingly, actions, in symbiosis with the objectives specific to the context (Kouneiher et al., 2009). This theory elucidates the manner in which cognitive resources are directed, coordinated, and adjusted to meet the requirements of different cognitive activities. Cognitive processes are governed by control mechanisms that assist in the selection of relevant information, inhibition of irrelevant information, and adjustment of cognitive strategies based on task requirements. Additionally, the theory of cognitive control also addresses the concept of metacognition. Metacognition involves awareness and understanding of one's cognitive processes and learning capabilities; it encompasses the control and regulation of cognitive processes, such as planning, monitoring, and assessing learning.

   In this regard, the theory of cognitive control provides a clear understanding of how students direct their cognitive processes (thinking, attention, memory, etc.) and other cognitive resources to assess their own abilities and acquisitions. Through the lens of this theory, we underline the importance of metacognition in the self-assessment process, meaning that during self-assessment, students must be aware of their own thoughts, feelings, and actions, as well as their efficacy in achieving the proposed objectives. According to research, self-assessment involves the flexible and adaptive allocation of mental resources to evaluate and adjust one's own performance. This process demands metacognitive skills, that is, the awareness and understanding of one's own cognitive processes, actions, and achievements (Miller, 2000). Consequently, self-assessment helps students become more responsible for their own learning and take an active role in managing their cognitive resources.

In a study conducted by Kouneiher et al. (2009), it was demonstrated that self-assessment relies on executive control processes, which allow the dynamic selection of ideas and actions based on objectives and context. Executive control facilitates self-assessment by managing cognitive resources and attention (Diamond, 2013). In the self-assessment process, students direct their attention towards their own ideas and cognitive strategies, and executive control facilitates this process consciously and intentionally.

Executive control processes are essential for monitoring performance and adjusting cognitive strategies based on received feedback. Efficient self-assessment involves using relevant feedback from the learning environment. Thus, the self-assessment process must be dynamic and adaptable, with students using information from feedback to adjust and improve performance and learning. In this context, feedback becomes an essential element of the self-assessment process. According to the theory of cognitive control, the self-assessment process involves metacognitive skills, the use of executive control processes, and the appropriate reception of feedback received from external sources (teacher, peers, etc.). Through the lens of the cognitive control theory, visible learning can be understood as a pedagogical approach that encourages students to be aware and responsible for their own learning, using metacognitive strategies and executive control to achieve progress.

The self-determination theory, initially developed by Edward L. Deci and Richard M. Ryan in 1985, represents an important approach in the psychology of motivation and is successfully applied in the educational context. This theory focuses on satisfying the fundamental psychological needs of the individual for autonomy, competence, and social relatedness, having a significant impact on the learning process.

According to the self-determination theory, people have basic psychological needs that must be satisfied to actively engage in various activities, including learning. These needs are autonomy, competence and social relatedness.

- *Autonomy*, which means the individual's need to have control over their own actions and decisions.

In the context of visible learning, satisfying this need means encouraging students to take an active role in their own learning process, set personal goals, and make decisions regarding learning methods. By encouraging autonomy, students become responsible for their own self-assessment. They become more aware of their own strengths and weaknesses and can make decisions to improve their performance.

- *Competence*, refers to the need to feel competent and capable in performing tasks and objectives.

To support the development of competence in learning, the educational environment must provide appropriate challenges and support for students in overcoming difficulties and improving performance. Visible learning promotes the clear establishment and communication of learning objectives. Thus, for the efficient conduct of self-assessment,

students can be involved in setting their own goals, establishing assessment criteria, which gives them a sense of competence and control over their learning.

- *Social relatedness*, refers to the desire to be connected and accepted by others.

Positive interactions with peers and teachers, as well as constructive feedback, contribute to satisfying this need, having a positive impact on intrinsic motivation. Thus, visible learning can be facilitated through active collaboration and communication between students and teachers. This interaction helps students develop positive interpersonal relationships, feel supported in the self-assessment process, and connected in the learning process.

In the context, we support the idea that self-assessment encourages students to take an active role in the learning process, which contributes to satisfying these psychological needs. Students can choose to plan and organize their own learning process, assess their progress, and identify ways to improve their results.

Self-assessment models

The „self-marking" model. This model is based on self-determination theory and the idea that students can become more aware of their own learning and development through active involvement in the self-assessment process. Within the self-assessment process, students use „a model of correct answers and assessment criteria (and possibly grading sheets) to compare with their own work" (Taras, 2010, p. 202). The criteria are provided by the teacher, and the students only apply them.

For the effective implementation of this self-assessment model, the following conditions are recommended to be taken into account:

- Formulating clear assessment criteria, understandable to the students, and providing examples if necessary. The assessment criteria allow students to correlate their answers with those provided as a model on the assessment sheet.
- Providing constructive feedback from the teacher. It is important for teachers to create an open learning environment and encourage students to be proactive in self-assessing their own learning.
- Encouraging collaboration among students, so they can provide each other with reciprocal feedback. Through positive social interactions, students feel more motivated and develop communication and cooperation skills.

The „sound standard" model. This model complements the self-marking model by providing a representative example for each level of performance for the assessment criteria. The same process as self-marking is used and, therefore, it can be considered a subcategory of this model (Cowan, 2006). This model encourages students to assess their own results by comparing their answers with provided models or reference examples from the teacher. This model requires students to develop (together with the teacher and peers) assessment criteria, to provide feedback based on criteria, and to grade their completed tasks before presenting them to the teacher. Upon submission of their work, students are asked to write the expected grade on a sheet, accompanied by the strengths and weaknesses of the work.

For the effective implementation of this self-assessment model, it is recommended to consider the following conditions:

- Providing representative reference examples for each level of performance aligned with the learning objectives.
- Establishing assessment criteria, which can be provided by teachers or collaboratively developed with students, depending on the proposed objectives.
- Offering reciprocal feedback among students, based on predetermined criteria.

Self-assessment with integrated tutor feedback model. This model requires the integration of feedback from the teacher and peers before the student self-assesses. The teacher and/or peers provide feedback on the activity (written or oral) in relation to predetermined criteria. This model aims for a more complex approach to the self-assessment process, allowing students to benefit from external guidance and feedback to improve their academic performance. „Student self-assessment with integrated tutor feedback is an efficient means of helping students overcome expectations and focus more on their achievements rather than the resources needed to accomplish their task" (Taras, 2003, p. 562).

Feedback can be provided in the form of observations, suggestions, or questions that help students identify the strengths and weaknesses of their work. Based on the feedback, students reflect on the observations and suggestions received, thus they can develop a deeper understanding of their own acquisitions and can identify strategies for improving performance.

For the efficient application of this self-assessment model, it is recommended to take into account the following conditions:

- Communicating the assessment criteria transparently, so that students know exactly what they need to assess.
- Providing examples of constructive feedback. The teacher should provide examples of feedback to guide students in the self-assessment process.
- Allocating sufficient time for self-assessment and feedback. It is necessary to allocate enough time for students to assess their own performance and to give and receive feedback. Only over time can a thorough analysis be made and opportunities for performance improvement be realized.
- Using online technological resources to facilitate self-assessment and feedback provision. Online platforms or digital tools can allow students to record their self-assessments, and the teacher and/or peers to provide feedback.

The learning contract design model. According to this model, self-assessment is understood as a learning contract, in which students make decisions about what, when, and how they will learn. This contract is an agreement between the student and the teacher, in which the assessment objectives, learning strategies, and assessment criteria are established (Taras, 2003). Students are actively involved in developing their own learning objectives, based on personal interests and abilities. They collaborate with the teacher to clearly define what they want to learn, how they will assess progress, and what

the concrete steps will be to achieve these objectives. Students can choose the learning methods and resources that work best for them and can adjust plans based on progress made. During the task completion, students receive feedback from the teacher on the activity's accomplishment.

Thus, the self-assessment process involves constant monitoring of progress and achievement of learning objectives. Students are encouraged to reflect on their own learning process, identify their strengths and weaknesses, and develop strategies to overcome obstacles. This model requires a high level of autonomy from the student and a commitment from the teacher to support this process. Students must have the ability to set their own learning objectives and plan strategies to achieve them. Also, the teacher must be prepared to provide support and guidance throughout this process, as well as monitor progress and provide constructive feedback.

For the efficient application of this self-assessment model, it is recommended to observe the following conditions:

- Maintaining collaboration between the teacher and the student throughout the task completion. It is recommended that the teacher be available to provide guidance, and the students be involved and responsible for achieving their learning objectives.
- Monitoring students' progress and providing optimal feedback. Feedback helps students to self-assess more efficiently and adjust their learning plan.

Based on the theories and models of self-assessment outlined, we highlight the *principles* that guide the process of student self-assessment:

The principle of transparency in assessment emphasizes the importance of clarity and transparency regarding the objectives and assessment criteria for students. This facilitates understanding of what is expected from them and how they can improve results. This principle is consistent with the theory of cognitive control, which highlights the need for a clear understanding of expectations and objectives to direct the self-assessment process efficiently.

The principle of ensuring optimal feedback in self-assessment emphasizes the importance of providing quality and relevant feedback to students, to support them in the self-assessment process and improve their academic performance.

The principle of contextualization suggests that self-assessment is more efficient when learning is integrated into a relevant and authentic context, reflecting how knowledge and skills will be used in real life. The principle of contextualization thus encourages the development of transfer skills and the application of knowledge in various contexts. Contextualized self-assessment allows students to develop complex skills, such as critical analysis, creative thinking, and problem-solving. This is achieved when students assess not only what they know but also how they can apply this knowledge to solve real challenges.

3. Empirical framework of the research

The empirical aspect presented in this article aims to find and analyze students' perceptions of the self-assessment process during courses and seminars, as well as to evaluate the level of implementation of self-assessment in the teaching process. The research questions underlying this study are:

- How do students perceive and describe the self-assessment process during courses and seminars?
- What is the level or degree of implementation of self-assessment in the teaching process?

To address these questions, the research methodology involved the development and validation of research instruments, including the use of a questionnaire and a test. Thus, the applied methodology is quantitative, focusing on obtaining numerical data through standardized instruments. The validation of research instruments was conducted using the Cronbach's Alpha coefficient on a sample of 73 students from the Faculty of Psychology, Educational Sciences, Sociology, and Social Work, State University of Moldova. A simple random sampling method was employed to ensure the representativeness and generalizability of the results. Students were informed about the research instrument validation study and were asked for their consent to participate.

The questionnaire assessing students' opinions regarding the self-assessment process and the test measuring the level of self-assessment implementation in the teaching process were constructed based on the theoretical model proposed by C. Rolheiser for the implementation of self-assessment in education.

The questionnaire assessing students' opinions regarding the self-assessment process consists of 7 questions. These questions evaluate students' perceptions and opinions regarding the self-assessment process, how students perceive their own involvement in the self-assessment process, and the utility of this process in developing their skills. Within the questionnaire, both open-ended and closed-ended questions were included to obtain a comprehensive and detailed understanding of students' perceptions.

The test measuring the level of implementation of self-assessment in the teaching process was designed to assess the extent to which self-assessment is systematically and coherently integrated into courses. The test consists of 12 questions related to various aspects of self-assessment, such as establishing evaluation criteria, teaching students to apply the criteria, providing feedback following the application of criteria, and setting learning objectives and strategies.

Both instruments, the questionnaire and the test, were administered online from March to April 2023 through Google Forms to a sample of 23 students. This was done to collect the necessary data for the analysis and interpretation of perceptions and the level of implementation of self-assessment in the context of visible learning. The representative sample included third-year students specializing in Psychology and Psychopedagogy at the Faculty of Psychology, Educational Sciences, Sociology, and Social Work at the State University of Moldova. Responses were collected electronically, and the data underwent statistical-mathematical analyses for calculating averages and frequencies.

4. Results

Following the applied questionnaire, we obtained results that reflect the students' opinion regarding the self-assessment process.

The *question related to the degree of student involvement in self-assessment* generated the following findings:

- 14% of students do not get involved in the self-assessment process. This may indicate a lack of awareness or understanding of the benefits of self-assessment, or it may suggest that these students face difficulties in self-assessment.
- 30% of students sometimes get involved in self-assessment, especially when teachers request it.
- 26% of students often get involved in self-assessment, being proactive in monitoring their own performance progress. This indicates a deeper understanding of the role of self-assessment for personal development and for improving academic performance.
- 30% of students always get involved in self-assessment, considering it a constant practice in their learning process. This group represents students who have strongly internalized the importance of self-assessment and are developing skills in managing this process.

Therefore, most students either often or always get involved in the self-assessment process. This aspect indicates a positive trend among students to monitor and self-assess their performances.

The *question related to the perception of the effect of self-assessment on the learning process* generated the following findings:

- 9% of students believe that self-assessment does not influence their learning.
- 17% of students argue that self-assessment stimulates the motivation to learn, but to a small extent.
- 22% of students believe that self-assessment motivates them to be more responsible in learning.
- 35% of students state that self-assessment increases confidence and the desire to learn more.
- 17% of students argue that self-assessment develops intrinsic motivation and determination for academic success.

These results demonstrate the diversity of students' perceptions regarding the effects of self-assessment. Most students perceive positively the effects of self-assessment on responsibility, self-confidence, and the desire for continuous learning, on motivation and academic success. A small portion of students believe that self-assessment does not influence learning or has a small influence on motivation; thus, we can suggest that these students do not clearly perceive the benefits of self-assessment or may encounter difficulties in its efficient application.

At the *question referring to the level of involvement in setting the criteria and requirements for evaluating one's own performance*, we obtained the following results:
- 39% of students receive the assessment criteria set by the teacher. In the case of these students, teachers play a dominant role in setting criteria, and they apply the provided criteria.
- 61% of students collaborate with the teacher to establish the assessment criteria.

Thus, most students mention that they actively participate in establishing the assessment criteria, collaborating with the teacher. This suggests a positive and constructive dynamic during lessons, where students have the opportunity to actively participate in defining the requirements by which they are assessed.

At the *question referring to the level of application of the established criteria in self-assessment*, we obtained the following results:
- 55% of students state that they receive from teachers concrete examples (e.g., papers, projects, etc.) that were appreciated based on the assessment criteria.
- 43% of students apply the criteria following the description and explanation provided by the teacher.
- 2% of students develop their own model for applying the assessment criteria.

These findings demonstrate that students use various strategies to apply the established criteria in the self-assessment process. Most rely on concrete examples provided by teachers or the descriptions they provide. At the same time, a small percentage of students choose to develop their own models for applying criteria, which implies an independent perspective in the self-assessment process.

At the *question referring to the extent to which students provide feedback in the self-assessment process*, we obtained the following results:
- 22% of students do not get involved in providing feedback, as it is only provided by the teacher;
- 39% - request feedback from the teacher and colleagues;
- 39% - actively get involved in arguing their own feedback.

Therefore, an equal proportion of students (39%) request feedback and actively get involved in arguing their own feedback. This demonstrates that most students have a proactive approach to self-assessment and are motivated to improve their performances. However, there are 22% of students who rely exclusively on the feedback provided by the teacher. This shows a tendency for students to rely on the teacher's authority for performance validation, which may limit the student's autonomy and self-reflection capacity in the long term.

At the *question referring to the students' involvement in setting future learning objectives*, we obtained the following results:
- 26% of students follow the objectives and learning strategies proposed by the teacher;
- 35% - select learning objectives from those proposed by the teacher according to their own needs;

- 39% - individually establish objectives and learning strategies.

These results reflect the variety of ways in which students approach the learning process and their degree of autonomy in setting objectives. A significant percentage (39%) indicates the students' tendency to have control over their own training and to actively direct their academic path.

At the *question referring to the measures taken following self-assessment to improve academic performance*, we find that:

- 13% of students do not take measures to improve performance, being dependent on teachers' feedback. These results may indicate either high confidence in the guidance provided by teachers or a lack of initiative or resources in carrying out self-assessment and self-regulation of learning.
- 22% - try to improve performance without asking for help from the teacher and/or colleagues, which reflects a higher degree of independence and confidence in their own self-assessment abilities.
- 23% - request feedback and advice from teachers or colleagues and develop an action plan to improve identified weaknesses, thus combining self-assessment with external feedback, which may lead to a deeper understanding of one's own capabilities.
- 32% - identify aspects requiring improvement based on self-assessment, and request feedback and advice from teachers or colleagues when necessary, meaning that students have self-assessment and metacognitive capabilities in terms of progress improvement.

In conclusion, students acknowledge the value of self-assessment as a tool to improve their own learning. There is a clear trend towards autonomy and proactivity, with a majority of students actively participating in the self-assessment, feedback, and objective setting processes. However, support and guidance from teachers remain essential for most students in the self-assessment process.

Based on the applied test, we obtained the following results that reflect the level of self-assessment implementation in the didactic process, as well as the degree of student involvement in self-assessment process :

- 22% of students have low involvement in the self-assessment process.

Their results suggest that there is a lack of clarity regarding the evaluation criteria or a difficulty in applying them correctly. The feedback provided after self-assessment may be limited or inefficient. Students have difficulties in setting their learning objectives and strategies based on self-assessment.

- 45% of students have moderate involvement in the self-assessment process.

They demonstrate a clearer understanding of the evaluation criteria and begin to apply them more adequately. The feedback received after self-assessment may be more relevant, but may still require improvement. Students set their learning objectives and strategies, but not to a very advanced extent.

- 33% of students demonstrate high involvement in the self-assessment process.

They have a clear understanding and efficiently apply the evaluation criteria. The feedback provided and received is relevant, detailed, and significantly contributes to the improvement of academic performance. Students set their learning objectives and strategies with the help of self-assessment, constantly adjusting them to achieve their learning goals.

Thus, the results of the applied test reflect various levels of student involvement in the self-assessment process. This highlights the fact that consistent guidance and direction from teaching staff is necessary for involving students in the self-assessment process, so that students develop a clear understanding of the evaluation criteria and apply them appropriately, provide constructive feedback in the context of self-assessment, which will lead to the efficient establishment of learning objectives and strategies.

5. Conclusions

Student involvement in the self-assessment process is essential for developing proactive behavior of students towards their own learning process. Through self-assessment, students not only become more aware of their own knowledge, abilities, strengths, and weaknesses, but they also take an active role in monitoring and regulating their own learning. When students identify their strengths and weaknesses, they become capable of setting goals and establishing learning strategies. Analyzing the data collected based on the questionnaire and test, a moderate tendency of student involvement in the self-assessment process can be observed. This suggests that, although a significant percentage of the student sample recognizes the value and importance of self-assessment, there are still barriers in the process of implementing it at an advanced level. Obviously, for students to reach their full potential within self-assessment, both teaching staff and students need to collaborate together. In the context of visible learning, self-assessment facilitates the connection between what students know and what they need to learn further. This approach encourages better awareness and accountability, placing students at the center of the educational process and promoting thorough learning.

The conclusions of this research confirm and support the theories of cognitive control and self-determination, emphasizing the importance of self-assessment in the development of metacognitive skills and the promotion of visible learning. The results indicate that the implementation of self-assessment in the visible learning process can foster a culture of responsibility and encourage students to explore their own learning, identify strengths and weaknesses, and develop metacognitive processes, in line with the concept developed by J. Hattie.

In the context of visible learning, it is recommended for teaching staff:
- Providing assessment criteria. This facilitates a clear understanding of expectations and allows students to assess their own results against these criteria.
- Involving students in the development of assessment criteria. Thus, the criteria become more relevant and closer to the experiences and perspectives of the students.

- Providing timely and objective feedback during the self-assessment process. This feedback can offer guidance for students regarding their strengths and aspects that require improvement.

The conclusions have significant practical implications for teachers and practitioners in the field of education, highlighting how visible learning strategies can be enhanced through the integration of self-assessment in the instructional process. Despite the valuable contributions made, the research does not exhaust the subject. There is an ongoing need for further studies to explore in more detail the variability in the implementation of self-assessment in various academic contexts and to investigate the effectiveness of specific strategies.

While the presented study makes significant contributions, it is accompanied by several limitations. The specific context of a particular faculty may limit the applicability of the findings in other academic environments. Although the validity of the research instruments has been ensured, it may not fully cover the diversity of concepts associated with self-assessment. The acknowledged limitations underscore the importance of caution in generalizing the results and emphasize the need to adapt methods to account for the contextual and methodological specificities identified in this research.

References

Boud, D. (1995). *Enhancing Learning through Self-Assessment*. (1st ed.). Routledge. https://doi.org/10.4324/9781315041520

Brown, G.T.L., & Harris, L.R. (2013). Student Self-Assessment. In J.H. McMillan (Ed.), *The Sage Handbook of Research on Classroom Assessment*, (pp. 367–393). SAGE Publications.

Cerghit, I. (2008). *Alternative and Complementary Instructional Systems. Structures, Styles, and Strategies*. Polirom. (in Roumanian)

Cowan, J. (2006). *On becoming an innovative university teacher: Reflection in action*. 2nd ed. Oxford University Press.

Diamond, A. (2013). Executive functions. *Annual Review of Psychology*, 64, 135-168

Epstein, R. M., Siegel, D. J., & Silberman, J. (2008). Self-monitoring in clinical practice: a challenge for medical educators. *Journal of Continuing Education in the Health Professions*. 28, 5–13. doi: 10.1002/chp.149

Fisher, D., Frey, N. & Hattie, J. (2016). *Visible Learning for Literacy, Grades K-12: Implementing the Practices That Work Best to Accelerate Student Learning*. Corwin.

Hamodi, C., López-Pastor, V. M., & López-Pastor, A. T. (2017). If I experience formative assessment whilst studying at university, will I put it into practice later as a teacher? Formative and shared assessment in Initial Teacher Education (ITE). *European Journal of Teacher Education*, 40(2), 171–190. https://doi.org/10.1080/02619768.2017.1281909

Hattie, J. (2008). *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement.* Routledge.

Hattie, J. (2012). *Visible Learning for Teachers: Maximizing Impact on Learning.* Routledge.

Hattie, J., & Anderman, E. M. (Eds.). (2013). *International Guide to Student Achievement.* Routledge.

Hattie, J. & Yates, G. (2014). *Visible Learning and the Science of How We Learn.* Routledge.

Kouneiher, F., Charron, S., & Koechlin, E. (2009). Motivation and cognitive control in the human prefrontal cortex. In *Nature Neuroscience*. 12, 939–945. doi: 10.1038/nn.2321

Miller, E. K. (2000). The prefrontal cortex and cognitive control. *Nature Reviews Neuroscience*, 1(1), 59-65.

Panadero, E., Brown, G. L., & Strijbos, J.-W. (2016). The future of student self-assessment: a review of known unknowns and potential directions. *Educational Psychology Review*. 28, 803–830. doi: 10.1007/s10648-015-9350-2 https://link.springer.com/article/10.1007/s10648-015-9350-2

Rolheiser, C. (Ed.). (1996). Self-evaluation: Helping students get better at it. Toronto: Visutronx.

Sargeant, J. (2008). Toward a common understanding of self-assessment. *Journal of Continuing Education in the Health Professions*, 28, 1–4. doi: 10.1002/chp.148

Taras, M (2003). To feedback or not to feedback in student self-assessment. *Assessment & Evaluation in Higher Education*, 28(5), 549-565.

Taras, M. (2010). Student self-assessment: Processes and consequences. *Teaching in Higher Education*, 15(2), 199-209. doi: 10.1080/13562511003620027

Yan, Z., Brown, G.T.L., Lee, C.K.J., & Qiu, X.L. (2020). Student Self-Assessment: Why Do They Do It? In *Educational Psychology* 40 (4), 509–532. doi:10.1080/01443410.2019.1672038.

Yan, Z., & Brown, T. L. (2017). A cyclical self-assessment process: Towards a model of how students engage in self- assessment. *Assessment & Evaluation in Higher Education*, 42(8), 1247–1262. http://doi.org/10.1080/02602938.2016.1260091

Zulliger, S., Buholzer, A., & Ruelmann, M. (2022). Observed quality of formative peer and self-assessment in everyday mathematics teaching and its effects on student performance. *European Journal of Educational Research*, 11(2), 663–680. https://doi.org/10.12973/eu-jer.11.2.663

Enhancing Self-Regulated Learning: Immediate and Follow-up Effects of Cognitive Prompts

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Abstract

The need to identify methods to support self-regulated learning has raised the interest of researchers in recent years. Cognitive prompts are considered very promising instructional tools for developing self-regulatory abilities. The present study aims to investigate the usefulness of several types of cognitive prompts in activating learning strategies for studying an educationally relevant content by psychology students. Two empirical investigations were conducted in a realistic learning environment to test an instructional strategy which integrates cognitive prompts. The first experiment tested the effectiveness of prompts to stimulate deep and shallow processing, measuring immediate learning effects. The second experiment focused on long-term effects of the strategy. The findings indicate that prompts activating deep learning strategies resulted in a slightly improvement in students' performance, but this enhancing effect diminished over time. Cognitive prompts encouraging a deep learning approach can support the comprehension of complex content in a psychology course. Future research is suggested to identify conditions that facilitate long-lasting learning effects. Cognitive prompts may be an effective method for teaching psychology to support students' efforts to understand a complex content. For enhancing the long-term impact of the method, teachers should explore other learning strategies.

Keywords: self-regulated learning, cognitive prompts, learning strategies, deep learning

Introduction

Self-regulated learning (SRL) is one of the most valued aims of higher education. The ability to learn autonomously deeply and reflectively is a crucial educational competence and is considered a key skill in all learning environments. The need to identify the most diverse methods to support and promote SRL skills has raised the interest of researchers in recent years. However, many facts still remain unknown regarding which particular

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aspect of SRL interventions has a more significant positive impact on academic performance. Regarding this issue, the literature revealed that cognitive prompts are very promising instructional tools for guiding the self-regulatory effort of learners. Based on these findings, the present study focuses on the role of cognitive prompts in activating and maintaining SRL strategies in a realistic learning environment.

SRL and cognitive prompts

SRL has been conceptualised differently in various approaches and theoretical models, but there is a broad agreement regarding the fundamental assumptions of SRL. A self-regulated learner can perform activities that directly contribute to learning (e.g., memorising or organising information). Moreover, they set learning goals, plan, monitor and adjust their own learning process. Therefore, self-regulated learners are able to use a variety of cognitive and metacognitive learning strategies in order to regulate their learning.

Many students, however, experience numerous difficulties in adequately self-regulating their own learning in various instructional contexts (Engelmann et al., 2021). These students lack a variety of self-regulatory skills or, even if they possess them, they apply them only sporadically, and these difficulties negatively affect their learning performance.

However, there are several interventional approaches available to successfully teaching SRL skills. One of the ways promoted as an instructional strategy for supporting learners' self-regulation efforts is the provision of scaffolds. These are tools that support the learning process and help learners acquire higher levels of understanding beyond their existing abilities (Simons & Klein, 2007). A special category of scaffolds are cognitive prompts. There is a large and consistent body of research demonstrating the effectiveness of cognitive prompts as instructional tools to support students to self-regulate their learning and thus achieve increased learning performance (Endres et al., 2017; Glogger et al., 2013).

Cognitive prompts can be simple questions, incomplete sentences, performance instructions, or pictures and graphics presented to learners during the learning process, so as to induce and stimulate cognitive activities (Bannert, 2009). In teaching activities, prompts can be integrated successfully into various instructional methods - journal writing, reading, problem solving, reflective writing (Endres et al., 2017; Glogger et.al., 2013; Nückles et al., 2020). Research in the field has demonstrated the usefulness of prompts in facilitating learning with different materials and learning contexts – in an introductory psychology course (Berthold et al., 2007), in a biology introductory course (Smith et al., 2010), in mathematics and biology lessons (Glogger et al., 2013).

Despite the advantages of using prompts, there are few studies focusing on their role in activating the learning strategies that students use in studying scientific texts. The understanding of scientific content is closely related to the types of learning strategies that are used, as they are crucial for facilitating retention and deep understanding. When studying a text, generating inferences, coherently relating ideas, constructing

connections between new and prior knowledge depends on the type and quality of learning strategies used to process that content (Leopold & Leutner, 2015).

A deeper understanding of how prompts can be organised and structured to stimulate active and deep learning strategies is therefore extremely important in supporting the efficient study of scientific content. In addition, if we want to support the transfer of learning strategies into everyday learning routine, it is necessary to investigate the effects of prompts in natural learning conditions not only in laboratory studies.

Prompts and learning strategies

There is a wide variety of prompts and conditions under which prompts can be presented. Theoretical models of SRL provide the foundation for the design of prompts, so prompts vary according to the dimensions of SRL they aim to develop (cognitive, metacognitive, motivational, cooperative). In the present study, the analysis focuses on prompts that support cognitive aspects of SRL learning by activating cognitive learning strategies. We focused on the cognitive components because they are most directly related to learning outcomes and performance.

Learning strategies are considered key components in the cognitive regulation of learning (McDaniel et al., 2021). Typically, they are classified into cognitive and metacognitive learning strategies (Weinstein & Mayer, 1983). Cognitive strategies, which are the main focus of the present study, involve direct processing of learning materials. Studies indicates that cognitive learning strategies differ in their potential to activate deep versus surface processing of text contents (Leopold & Leutner, 2015). Surface-level processing is focused on the accumulation and reproduction of factual knowledge, without promoting the understanding of relationships between knowledge and its connection to prior knowledge.   In contrast, deep level means in-depth processing and understanding of content.

Strategies such as elaboration and organisation are considered to facilitate in-depth processing of information. By focusing on building and integrating information, elaboration and organisation strategies ensure coherence and structure in the content learned, thus facilitating deeper understanding. The in-depth approach is associated with high-quality learning outcomes and successful studying.

Repetition and rote learning are typical strategies illustrating a surface processing. They focus the learner's attention only on the surface aspects of the material to be learned (e.g., number of paragraphs, position of a particular concept on the page) and not on grasping its meaning.

Quantity and quality of strategies

A challenging topic in studies of learning strategies concerns two important aspects of their application—quantity and quality. These aspects have a significant impact on the evaluation of SRL and deep understanding. Studies (Glogger et.al., 2013; Leopold & Leutner, 2015) indicate that learning outcomes are affected not only by the frequency/quantity of the utilised strategies but, more importantly, by their quality or

the extent to which they perform their specific function (Leopold & Leutner, 2015). Thus, strategic learning behaviour means both using the right strategy with a certain frequency in relation to the intended purpose and applying it at a high-quality level. Consequently, considering the quality of the learning strategies used and measuring the differences in the quality of their application relative to their specific purpose can be an important factor in explaining learning outcomes.

Objectives and hypotheses

The present study aims to investigate the usefulness of various types of cognitive prompts in supporting SRL in a realistic learning environment. More exactly, we designed an ad hoc instructional strategy by integrating cognitive prompts into an educationally relevant complex content in a compulsory psychology course. We hypothesized that cognitive prompts activating deep learning strategies will generate better results than cognitive prompts activating shallow learning strategies at a real academic exam. This work reports on two experiments — Experiment A directly assesses our hypothesis and Experiment B evaluates the temporal dynamics of the effect that we observed in Experiment A. More specifically, in experiment A and B, we tested the immediate and long-term impact of cognitive prompts in supporting self–regulated learning in an ecological educational context.

Experiment A

Objective

The first study aims to investigate the short-term impact of cognitive prompts in supporting learning strategies.

Methods

Design and participants

The intervention was conducted in a real-world educational setting and a quasi-experimental design was used. The participants were 125 students, (73 female and 51 male). enrolled in a mandatory Psychology course.

Instruments and materials

The learning content consisted of a specific chapter ("Memory") from a coursebook which students could access via the online platform used by the university. The learning content was designed in two different versions (in Appendix): a deep level version and a surface level version. The deep level version was developed by integrating in the content of the textbook several prompts designed to activate deep learning strategies (elaboration, organisation). In contrast, the surface level version integrated the same number of prompts in the same content sections but was focused on activating surface learning strategies (rehearsal). The procedures used for developing these two different versions were similar. The first step was the formulation of instructional learning outcomes in accordance with a revised version of Bloom's taxonomy (Anderson & Krathwohl, 2001). The second step consisted in the elaboration of prompts. Specific prompts were

developed, in connection with the agreed upon learning outcomes. The prompts were designed based on the model proposed by Glogger et al. (2013).

A multiple choice test for the final exam was used to assess the potential of our prompting learning strategies to support learning. A bank of low- and high-level multiple-choice items was developed in accordance and aligned with course learning outcomes.

Procedure

Students were instructed to study the prompted content from their online textbooks and to respond to the prompts. The study task lasted 3 weeks and was integrated into regular teaching and learning activities. At the end of the study period (next week), students' learning performances were measured with a multiple choice test. This test was a part of students' requirements for the course.

Rating of student responses to the study tasks

The categories of learning strategies that we expect to be activated by deep version prompts were organisation (e.g., identifying the most important ideas, connecting important ideas) and elaboration (explaining, linking new information to previous topics or to previous personal experiences, challenging the learning content, exemplification). In the surface version, prompts were used to activate mostly rehearsal strategies (reviewing main principles, reproducing definitions).

The quality of learning strategies was assessed by surveying students' responses to prompts incorporated in the learning content. The quality of each student response was interpreted as an indicator of the quality of having applied the learning strategy activated by a prompt. The quality of rehearsal, organisation and elaboration was rated on a 4-point scale ranging from 0 (low quality) to 1 (high quality). The interval between the minimum score and the maximum score that could be obtained by a participant was between 0 and 17 points (17 prompts of 1 maximum point/prompt). We considered that a participant who obtained a total strategy score above the mean (8,5 points) effectively employed quality learning strategies in their study process. These scores were considered for further analysis and the ones below the mean were excluded from the analysis. This quality check was carried out in order to ensure that only the quality strategies would be considered in examining the students' learning performances.

Results and discussion

Data were collected from a total of 125 participants, divided into two groups: the Deep Processing group (DP; n = 61, 57 females, mage = 19.78 years, sd = 1.88) and the Shallow Processing group (SP; n = 66, 61 females, mage = 19.56 years, sd = 1.89). After applying our quality checks (see the methods section above), we included in analysis 37 data sets of the DP group and 61 datasets of the SP group. Data used to generate the analyses presented in the paper are accessible via a publicly available data repository https://osf.io/2n9ac/?view_only=6f9c404880e34d41ab8e85713404b5c7.

Preliminary data screening of the valid data sets (i.e., data sets passing our quality checks) showed that Levene's test was not statistically significant (F = 0.95, p = .33), indicating that the assumption of homogeneity of variance was met. However, a statistically

significant Shapiro-Wilk test for the Shallow Processing group (p = .004) indicated that this data violates the assumption of normality. Consequently, instead of using a parametric paired-samples t test, a Mann-Whitney U test was performed to evaluate whether a deep level of processing results in better performance on a real-life academic exam compared to a shallow level of processing. The test provided marginally significant evidence to argue that the DP group scored higher than the SP group, U = 1279.5, p = .06. These results indicate that cognitive prompts are indeed an effective method to foster deep learning. Prompts function as strategy activators and this could support the application of productive learning strategies which, in turn, influences students' learning outcomes. These results are in accordance with existing studies regarding the prompts' effectiveness in optimising various instructional methods and in supporting learning (Nückles et al., 2020; (Roelle et al., 2014). More than this, the present results showed that some types of cognitive prompts are more reliable than other cognitive prompts in activating deep processing strategies, which ultimately leads to better learning outcomes. The results reveal a marginally significant difference between the deep processing group and the surface processing group. It is important to be mentioned here that the present study was conducted in a realistic educational context. In this setting, various variables could not be rigorously controlled as in a lab-based context, for example, other learning strategies could be used by participants with the prompting-based learning strategies alike and to diminish or to enhance the level of processing of the content. Therefore, these results are encouraging, suggesting that an instructional strategy that uses specific prompts aimed to activate deep learning strategies functions marginally better than a strategy based on prompts activating surface strategies and better than any other learning strategies that might be employed by participants to study in a university course. Whereas, prompting studies are usually conducted in artificial learning conditions, there are studies which confirm the potential of prompts for supporting deep learning and cognitive aspects of SRL in real-life educational settings (Baars et al., 2022).

Experiment B

Based on the results obtained in the first experiment, we consider that our prompting strategy was quite effective in a realistic learning context. The following research question that naturally resulted in assessing an educationally relevant context was aimed at gauging the stability of the gained effect over time. Therefore, the authors decided to design the second experiment with a 5 months follow-up phase (next semester) after the first evaluation phase of the learning process. In this way, we tested not only the immediate but the long-term impact of the developed prompting strategy on students' learning performance in a psychology course, as well.

Objective

This experiment aims to assess the temporal trajectory of the marginally significant advantage exhibited by the DP group compared to the SP group in learning a scientific

content in a psychology course. We assess whether this learning advantage amplifies, attenuates or maintains over time.

Methods

Design and participants

To pursue our objective, we extended the design presented in experiment 1 by administering a 5 months follow up for both the DP and SP groups. Sixty-three out of the previous 125 participants decided to enrol in this second phase of the study.

Instruments and materials

The instrument used in the second experiment consisted of a follow-up multiple choice test. The follow-up test was an equivalent version of the final test used in the first experiment for assessing students' learning performances.

Procedure

The follow-up test was administered 5 months after the first evaluation phase. In the interval between the final test and the follow-up test no participants were involved in formal learning activities in the present study.

Results and discussion

Preliminary screening of the collected data showed that the Levene's test was not statistically significant (F = 0.01, p = .91), indicating that the assumption of homogeneity of variance was met. Consequently, statistically non-significant Shapiro-Wilk tests for the DP group (p = .16) and for the SP group (p = .19) indicated that these data satisfy the assumption of normality. Consequently, a parametric paired-samples t test was performed to evaluate whether the DP group scored higher than the SP group at a 6-months follow-up after the post-test exam. Paradoxically, the DP group scored lower (m = 4.46, sd = 2.02) than the SP group (m = 4.52, sd = 1.93). However, the difference is not statistically significant t(47) = -0.11, p = .92, Cohen's d = -0.03, 95% CI = [-1.2 – 1.08]. Based on this finding, it may seem that the advantage of the DP group lasts less than six months. However, it is important to note that null hypothesis significance testing (NHST) cannot support this interpretation. As Altman & Bland (1995) argue, the absence of evidence for an effect does not prove or disprove its existence. NHST procedures do not directly compare support for the alternative hypothesis with support for the null hypothesis. Thus, it would be useful to determine if our hypothesis is actually false, suggesting that cognitive prompts triggering deeper levels of processing do not have a lasting effect on academic test performance. Accordingly, Bayesian inference has gained traction in psychological research. This approach provides a continuous measure of confidence in an alternative hypothesis relative to a null hypothesis (Lakens et al., 2020). Thus, a description of our rationale for crafting a Bayesian test for this hypothesis is desirable.

In a Bayesian test, the null hypothesis can be confirmed but, in order to do so, one must first specify a distribution of the effect sizes that one is looking for. This step is best informed by prior relevant research. However, in our case, there is little work as such already available. Therefore, we resorted to modelling our distribution of priors by

employing the room to move heuristically (Dienes, 2019). Next, we contextualised our implementation. We began by deriving the maximum plausible difference between the SP (shallow processing) and DP (deep processing) groups. Using this rough maximum value, we then modelled our distribution of priors.

According to the room to move heuristic if cognitive prompts targeting deep processing result in longer-lasting memory traces compared to prompts targeting shallow processing, we would expect the mean performance of the DP group to fall between the mean of the SP group and the maximum extreme of the measurement scale. In our case, the maximum expected performance of the DP group cannot exceed 4.48 points more than the performance of the SP group (9, the maximum scale value, minus 4.52, the mean of the SP group). However, we lack grounds to assert that this is the exact expected value. In fact, it is highly implausible for the differences between the two groups to be so consistent. To address this, we proceeded to model our prior distribution in a conservative manner. Thus, we employed only a half of the normal distribution with a mean of 0 (indicating a higher likelihood of finding no difference between the groups) and a standard deviation of half the maximum theoretical difference between the two groups. Considering the above, the corresponding Bayes factor for our test is BH(0; 2.26) = 0.25. This factor can be interpreted as indicating that our data is 0.25 times more likely to be valid under our hypothesis than under the null model. Following conventions, any Bayes value between 0 and 0.33 can be regarded as confirming the null hypothesis.

These results show that the effects induced by cognitive prompts in the deep level processing group, in the previous phase (post-test phase), are not stable over time. Comparing the follow–up scores of the deep processing group with those obtained by the shallow processing group there is no significant difference between the two groups. These findings indicate that prompting strategies for activating deep learning would not be sufficient for preserving a learning advantage in the long run. Even though the learning strategies employed by the DP group were high quality learning strategies, they do not have consistent effects over a long period of time. These results manage to confirm other studies, conducted in laboratory conditions, that used prompting learning strategies and indicate that cognitive prompts are less powerful pertaining to their long-term effect on knowledge transfer than metacognitive or motivational prompts (Daumiller & Dresel, 2019; Schumacher & Ifenthaler, 2021).

At the same time, we must take into consideration that participants were involved in a 3 weeks study period, but they were not exposed to the learned content in the period from the administration of the post-test to the follow-up (5 months). It seems that retention of the content over longer periods of time requires more learning processes to be involved (e.g., memory and fluency), than understanding and sense making which are supported by our prompting strategy. Studies developed in laboratory conditions (Ryan & Koppenhofer, 2022) show similar results regarding the limits of self-explanations to induce the long term-retention. A very reasonable explanation to this is that different learning processes are supported by different instructional principles (Koedinger et al.,

2012). For example, understanding could be facilitated by self-explanation (Chi et al., 1994), whereas memory and fluency could be increased by spacing and retesting. Even though that in our prompting strategy a variety of instructional principles (organization, elaboration, explanation) were involved, these principles were mainly focused on understanding and sense-making.

Therefore, we consider that one possibility to increase the impact of cognitive prompts over time is to complement the prompting strategy with other learning strategies, such as practice testing and distributed practice. At the same time, taking into account the self-regulation literature, and important direction might be the use of cognitive prompts alongside other categories of prompts (metacognitive prompts, motivational prompts). Future research should be guided by the need to clarify the conditions that facilitate long-lasting learning effects.

Conclusions

The main purpose of the present study was to explore the potential of cognitive prompts to regulate the learning process of students enrolled in a compulsory psychology course. Though any conclusions should be approached with caution due to the marginal statistical significance of the data, the results suggest that prompting strategy supports learning of a complex scientific content but failed to confirm its long-term retention. More research is needed to advance our understanding of the role of cognitive prompts in supporting long –term retention.

References

Altman, D. G., & Bland, J. M. (1995). Statistics notes: Absence of evidence is not evidence of absence. *BMJ*, *311*(7003), 485. https://doi.org/10.1136/bmj.311.7003.485

Anderson, L. W., & Krathwohl, D. R. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives : complete edition*. Addison Wesley Longman, Inc.

Baars, M., Zafar, F., Hrehovcsik, M., de Jongh, E., & Paas, F. (2022). Ace Your Self-Study: A Mobile Application to Support Self-Regulated Learning. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.793042

Bannert, M. (2009). Promoting Self-Regulated Learning Through Prompts. *Zeitschrift Für Pädagogische Psychologie*, *23*(2), 139–145. https://doi.org/10.1024/1010-0652.23.2.139

Berthold, K., Nückles, M., & Renkl, A. (2007). Do learning protocols support learning strategies and outcomes? The role of cognitive and metacognitive prompts. *Learning and Instruction*, *17*(5), 564–577. https://doi.org/10.1016/j.learninstruc.2007.09.007

Chi, M. T., De Leeuw, N., Chiu, M. H., & LaVancher, C. (1994). Eliciting self-explanations improves understanding. *Cognitive science, 18*(3), 439-477. https://doi.org/10.1016/0364-0213(94)90016-7

Daumiller, M., & Dresel, M. (2019). Supporting Self-Regulated Learning with Digital Media Using Motivational Regulation and Metacognitive Prompts. *The Journal of Experimental Education*, *87*(1), 161–176. https://doi.org/10.1080/00220973.2018.1448744

Dienes, Z. (2019). How do I know what my theory predicts? *Advances in Methods and Practices in Psychological Science*, *2*, 364–377. https://doi.org/10.1177/2515245919876960

Endres, T., Carpenter, S., Martin, A., & Renkl, A. (2017). Enhancing learning by retrieval: Enriching free recall with elaborative prompting. *Learning and Instruction*, *49*, 13–20. https://doi.org/10.1016/j.learninstruc.2016.11.010

Engelmann, K., Bannert, M., & Melzner, N. (2021). Do self-created metacognitive prompts promote short- and long-term effects in computer-based learning environments? *Research and Practice in Technology Enhanced Learning*, *16*(1), 3. https://doi.org/10.1186/s41039-021-00148-w

Glogger, I., Holzäpfel, L., Kappich, J., Schwonke, R., Nückles, M., & Renkl, A. (2013). Development and Evaluation of a Computer-Based Learning Environment for Teachers: Assessment of Learning Strategies in Learning Journals. *Education Research International*, *2013*, e785065. https://doi.org/10.1155/2013/785065

Koedinger, K. R., Corbett, A. T., & Perfetti, C. (2012). The Knowledge-Learning-Instruction Framework: Bridging the Science-Practice Chasm to Enhance Robust Student Learning. *Cognitive Science*, *36*(5), 757–798. https://doi.org/10.1111/j.1551-6709.2012.01245.x

Lakens, D., McLatchie, N., Isager, P. M., Scheel, A. M., & Dienes, Z. (2020). Improving Inferences About Null Effects with Bayes Factors and Equivalence Tests. *The Journals of Gerontology: Series B*, *75*(1), 45–57. https://doi.org/10.1093/geronb/gby065

Leopold, C., & Leutner, D. (2015). Improving students' science text comprehension through metacognitive self-regulation when applying learning strategies. *Metacognition and Learning*, *10*(3), 313–346. https://doi.org/10.1007/s11409-014-9130-2

McDaniel, M. A., Einstein, G. O., & Een, E. (2021). Training College Students to Use Learning Strategies: A Framework and Pilot Course. *Psychology Learning & Teaching*, *20*(3), 364–382. https://doi.org/10.1177/1475725721989489

Nückles, M., Roelle, J., Glogger-Frey, I., Waldeyer, J., & Renkl, A. (2020). The Self-Regulation-View in Writing-to-Learn: Using Journal Writing to Optimize Cognitive Load in Self-Regulated Learning. *Educational Psychology Review*, *32*(4), 1089–1126. https://doi.org/10.1007/s10648-020-09541-1

Roelle, J., Berthold, K., & Renkl, A. (2014). Two instructional aids to optimise processing and learning from instructional explanations. *Instructional Science*, *42*(2), 207–228. https://doi.org/10.1007/s11251-013-9277-2

Ryan, R. S., & Koppenhofer, J. A. (2022). Prompted Self-Explanations Improve Learning in Statistics but Not Retention. *Teaching of Psychology*, *0*(0). https://doi.org/10.1177/00986283221114196

Schumacher, C., & Ifenthaler, D. (2021). Investigating prompts for supporting students' self-regulation – A remaining challenge for learning analytics approaches? *The Internet and Higher Education*, *49*, 100791. https://doi.org/10.1016/j.iheduc.2020.100791

Simons, K. D., & Klein, J. D. (2007). The Impact of Scaffolding and Student Achievement Levels in a Problem-based Learning Environment. *Instructional Science*, *35*(1), 41–72. https://doi.org/10.1007/s11251-006-9002-5

Smith, B. L., Holliday, W. G., & Austin, H. W. (2010). Students' comprehension of science textbooks using a question-based reading strategy. *Journal of Research in Science Teaching*, *47*(4), 363–379. https://doi.org/10.1002/tea.20378

Weinstein, C. E., & Mayer, R. E. (1985). The teaching of learning strategies. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed.). Macmillan.

Appendix

Example of Learning Material and Cognitive Prompts of Shallow and Deep Processing Groups

The following section contains an example of a learning content extracted from a cognitive psychology manual. This text was presented to participants in both the Shallow and Deep Processing groups:

"6. 4. Episodic memory and semantic memory

6. 4. 1. The main theoretical-experimental results

A clear distinction between "episodic memory" and "semantic memory" was proposed by E. Tulving (1983, 1984), the difference later becoming accepted within cognitive psychology. Episodic memory refers to the memory of autobiographic events: when and where we lived a certain event. For example, memories of last New Year's Eve, the first day of school, what we did yesterday, how we spent our holidays, etc., all of this fit within the episodic memory category. This type of memory contains a series of information associated with specific temporal and spatial frames. It is vital for building our own identity, the identity of the self.

Semantic memory (often called "conceptual memory") refers to the general knowledge which we have about the environment in which we live. For example, we know that … is an important academic center, the chemical formula for water is H_2O, that it was Shakespeare who wrote Hamlet, that the wine is an alcoholic beverage, etc. the knowledge within semantic memory is not (usually) associated with a specific temporal and spatial context. We do not know where and when we first heard the chemical formula of water, when and where we read that the author of Hamlet was Shakespeare etc. The great majority of the knowledge that books and courses offer us address semantic or conceptual memory. However, the experiences that we had along our lives represent the content of episodic memory."

After reading the text, participants responded to several prompts depending on the group they were allocated to. For instance, in Deep Processing group, some cognitive prompts were: "Explain the differences between episodic memory and semantic memory.", or "Think about and give your own example for each type of memory (episodic and semantic)". Some examples of cognitive prompts in Shallow Processing group were: "Define episodic memory", "Define semantic memory". All participants were then asked to write down their answers.