



Neuroandragogy
against exclusion

Neuroandragogy against exclusion

STRATEGY, RECOMMENDATIONS AND GOOD PRACTICES



Erasmus+

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Neuroandragogy against exclusion –
strategy, recommendations and good practices

Editor: Katarzyna Czekaj-Kotyńia

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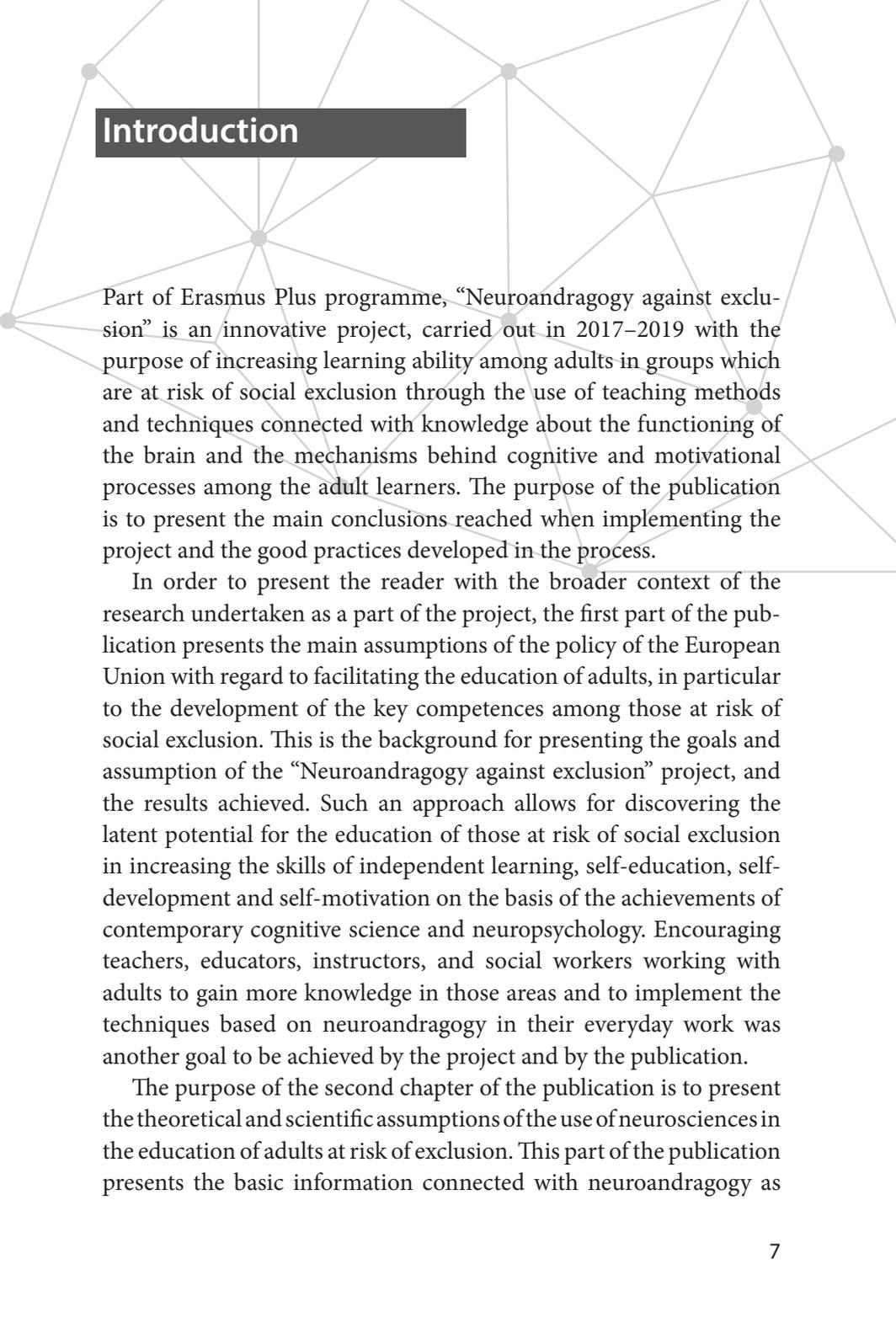
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Introduction

Part of Erasmus Plus programme, “Neuroandragogy against exclusion” is an innovative project, carried out in 2017–2019 with the purpose of increasing learning ability among adults in groups which are at risk of social exclusion through the use of teaching methods and techniques connected with knowledge about the functioning of the brain and the mechanisms behind cognitive and motivational processes among the adult learners. The purpose of the publication is to present the main conclusions reached when implementing the project and the good practices developed in the process.

In order to present the reader with the broader context of the research undertaken as a part of the project, the first part of the publication presents the main assumptions of the policy of the European Union with regard to facilitating the education of adults, in particular to the development of the key competences among those at risk of social exclusion. This is the background for presenting the goals and assumption of the “Neuroandragogy against exclusion” project, and the results achieved. Such an approach allows for discovering the latent potential for the education of those at risk of social exclusion in increasing the skills of independent learning, self-education, self-development and self-motivation on the basis of the achievements of contemporary cognitive science and neuropsychology. Encouraging teachers, educators, instructors, and social workers working with adults to gain more knowledge in those areas and to implement the techniques based on neuroandragogy in their everyday work was another goal to be achieved by the project and by the publication.

The purpose of the second chapter of the publication is to present the theoretical and scientific assumptions of the use of neurosciences in the education of adults at risk of exclusion. This part of the publication presents the basic information connected with neuroandragogy as

a dynamically developing strategy for teaching adults based on the current discoveries in the field of cognitive processes, mechanisms of processing and storing information in the brain, functioning of the reward system, and the role of emotions in the functioning of man and women and their learning processes. The purpose of this information is to make it easier for the teachers, educators, and social workers working with adults to use the elements of neuroandragogy in their work.

The purpose of the third chapter of the publication is to present the good practices and experience connected with the pilot workshops aimed at developing learning skills in adults at risk of exclusion. The most valuable aspect of this part of the publication is that it gives voice to the teachers and educators who participated in the pilot stage of the project. The articles they wrote document good practices developed while working with the adult learners from the groups threatened with exclusion. Discussion of the difficulties and barriers encountered in the process of running the workshops and training is a valuable source of information and conclusions for the future, developed in the process of carrying out the pilot stage of the project.

The most important part of the publication is recommendations regarding the preparation of training courses and professional competences of the specialists working with adult learners from the groups which are at risk of exclusion, as well as recommendations for including elements of neuroandragogy in their work with various groups of adults at risk of exclusion. The last part of the publication includes recommendations and guidelines developed on the basis of the analyses carried out as part of the project, evaluation surveys, and experience gained in the process. The conclusions are especially useful for teachers and educators, specialists responsible for designing and carrying out action aimed at improving the system for educating adults and preventing social exclusion, as well as to the employees of the NGOs in the areas of education and social support.

We hope that the publication will not only document the action taken in connection with “Neuroandragogy against exclusion” project

and the results achieved, but that it will be, first and foremost, a real professional support for all those who take up the challenge of using neurosciences in improving learning abilities in adults.

“Neuroandragogy against exclusion” project as a response to EU policy on adult education, with particular emphasis on the education of adults from disadvantaged groups

1

- *Author(s): Alessandro Carbone, (Bridging to the Future)*

The topic of adult learning is defined by the European Commission as being the “entire range of formal, non-formal and informal learning activities – both general and vocational – undertaken by adults after leaving initial education and training”¹

To further the economic development of the European bloc, adults must continue seeking further education and learning opportunities to meet the demands for new skills and to maintain productivity levels. Not only is learning vital for the development of the European economy, it also allows for improved social inclusion, active citizenship and participation in a progressively digitalised society.

For the period 2015–2020, the European Commission have set a European agenda for adult learning² that emphasises the need to increase adult participation in formal, non-formal and informal learning whether for personal development and fulfillment or to acquire work skills to help grow the economy. The agenda outlines how by 2020 adult learning should have developed. Below are the specific priorities for the period 2015–2020:

1 European Commission, EU policy in the field of adult learning, https://ec.europa.eu/education/policies/eu-policy-in-the-field-of-adult-learning_en (access: 01.07.2019).

2 European Commission, What is the European Agenda for Adult Learning and how is it implemented?, <https://ec.europa.eu/epale/en/policy-in-the-eu/implementing-the-european-agenda-for-adult-learning> (access: 01.07.2019).

- improving **governance** through better **coordination** between policy areas, enhanced effectiveness and relevance to needs of society;
- significantly increasing **supply and take up** of high-quality provision, especially in literacy, numeracy and digital skills; effective outreach, guidance and motivation strategies to reach and assist adult learners;
- more **flexible opportunities** for adult to learn and improved **access** through more learning at the workplace, the use of ICT, and second-chance programmes leading to a recognised qualification;
- improved **quality** through **monitoring** the impact of policies and improving the education of **adult educators**.

To counteract social exclusion, the European Commission released the European Pillar of Social Rights,³ a document covering 20 principles aiming to deliver new and more effective rights for EU citizens that will help social inclusion. The 20 principles are a joint commitment amount national governments, key stakeholders and EU institutions. The three main areas covered by the policies are:

- Equal opportunities and access to the labour market
- Fair working conditions
- Social protection and inclusion

To help counteract social exclusion and increase the quality and participation of adult learning in the European Union, “**Neuroandragogy against exclusion**” **project** aims to support people from disadvantaged groups, such as adults with low qualifications or no qualifications, unemployed and professionally inactive, elderly people and people whose qualifications have expired. The training proposed by the project is based on methodological foundations of **neuroandragogy**. Educational deficiencies can be eradicated by

3 European Commistion, The European Pillar of Social Rights in 20 principles, https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights/european-pillar-social-rights-20-principles_en (access: 01.07.2019).

the effective implementation of teaching and self-study methods for adults promoted in the project and of which are based on a strategy to enable far-reaching individualisation of the processes of both learning and improving skills in the context of specific needs and cognitive conditioning of each learner.

The project uses neuroandragogy as a support tool for adults from disadvantaged groups (the unemployed, professionally inactive, people 50+, the disabled, immigrants, people with low qualifications, people from lowly urbanised areas, etc.). These people often show deficiency of competences conditioning effective participation in social and professional life, such as: acquiring and processing information, critical thinking, problem solving, self-motivation, analysis of one's own experience, creativity. Lack of the above skills often results in such problems as: unemployment, poverty, helplessness, social exclusion. Research carried out in the EU shows that reduction of these phenomena is possible thanks to continuing education, yet people with the biggest needs, belonging to the disadvantages groups, are the least likely to participate in these activities.⁴

By understanding the way in which the human brain functions, it is possible to adjust the process of learning to suit specific abilities and cognitive preferences of the learner. Then, by expanding the motivation for development and raising awareness on individual educational paths, acquired qualifications can effectively be improved. Specific educational needs of adults from disadvantaged groups and their competences deficiency are referred to by a concept based on knowledge of brain functioning – neuroandragogy. Neurological sciences provide a lot of data which offer a new interpretation for typical educational problems and problems connected with learning. They draw attention to close relation between brain, human behaviour and the ability to continue learning throughout life. What is important

4 Eurostat, Combating Poverty & Social Exclusion, Luxembourg 2010; Adult Education and Training in Europe: Widening Access to Learning Opportunities, Eurydice 2015, <https://eurydice.org.pl/wp-content/uploads/2015/02/179EN.pdf> (access: 01.07.2019).

in the context of the project's target group, neuroandragogy assumes basing the didactic process on an individual experience of a learner and placing this process in a practical context of its functioning. Special attention is drawn to a strong connection between the brain, human behaviour and the ability to continue learning throughout a lifetime.

Neuroandragogy is currently the youngest and most dynamically developed strategy concerning adult education, meaning that it is very difficult for disadvantaged and minority groups in society to actively find suitable and effective training that involves neuroandragogy. The new concept is absent from educational programmes and professional education programmes of adult educators. Although it has been applied in pedagogy for about a decade, it has not yet been transferred to the subject of adult education. The project is consistent with the priority: Broadening and developing educators' competences by substantive and practical preparation of teachers, educators, trainers working with disadvantaged adults to apply neuroandragogy in their professional work.

The promotion among adults' educators of the modern teaching methodology based on knowledge about the functioning of brain will make it possible to develop their didactic competences in the scope of creation of educational environment and their relations with adult learners, in order to effectively motivate them to develop their knowledge and competences. The knowledge acquired by them on the design of didactic activities and the preparation of educational materials in line with the cognitive conditioning of learning adults will facilitate effective individualisation of work with each person and support them in developing universal skills of independent learning.

The project specifically aims to use the methods of neuroandragogy to support the skills of lifelong learning gaining qualifications by adults from disadvantaged groups and their professional and social inclusion. This involves a promotion among adults' educators of methods and strategies of teaching based on principles of neuroandragogy, development of competences of active learning and self-motivation

for development in disadvantaged adult groups, development of a neuroandragogy model of learning of people from disadvantaged groups, preparation of didactic materials for adults' educators on teaching and learning of adults, based on neuroandragogy, and the preparation of educational materials for adults on effective development of competences based on neuroandragogy.

The problem of social exclusion is a common challenge for EU countries. The disproportions of adults in continuing education in EU countries justifies the need for the project which can be applied to teaching in every country.

The project focuses on the increase of educational potential related to the possibility and motivation of adults belonging to disadvantaged groups to start further education. People belonging to these groups are often affected by or at risk of exclusion because of the lack of professional qualifications, low level of elementary skills, lack of information competency, etc. At the same time, the analysis shows that the activities in the scope of the development of professional and personal competences, conditioning active participation in the job market and social life, are rarely taken up by people with the biggest needs in this scope: adults with low qualifications or without any, the unemployed and professionally inactive, the elderly. The use of neuroandragogy as a methodological rudiment of trainings organised for adults aims at the increase of their motivation to take up actions and increase their effectiveness. As a result its objective is social inclusion.

The project has produced five intellectual outputs. The first IO (intellectual output 1 – IO1) is a teachers' training programme "Neuroandragogy in education of adults from groups at risk of exclusion" that is addressed to teachers, instructors, trainers, social workers and educators who are working with adults from disadvantaged groups, especially adults who are threatened with social and professional exclusion. The training programme enhances the educators knowledge of both the teaching and learning of adults on the basis of knowledge about brain functioning. The training also

ensures that the educators understand how to create an educational environment according to neuroandragogy principles, whilst understanding how to motivate the adult learners to start education and develop their attitudes to be responsible for their own learning. The ability to individualise the learning process of adults is especially emphasised along with the ability to prepare material for adult learners according to neuroandragogy principles.

The training programme is split into four different blocks, with the first section of knowledge focusing on using neuroandragogy to build a educational environment that supports the motivation to learn, individualising teaching and learning in the context of adults from disadvantaged groups. The origins of the methodology is analyse along with the key methods to enhance the motivation of adults to take up further education and be responsible for their own learning and personal development.

The second block takes teachers and educators through the development of basic skills of adults from disadvantaged groups based on neuroandragogy principles, placing emphasis on how to recognise the educational and individual cognitive predispositions of the disadvantaged groups, whilst understanding how to plan activities that will develop their basic skills, in compliance with neuroandragogy principles.

The third block within the training programme ensures that educators understand how to support adults in taking up independent studies and therefore continuing education with the support of information and communication technology.

The fourth and final aspect of the training programme is analyse the development of learning competencies in the professional environment based on the principles of neuroandragogy. This involves the social aspect of development to battle social exclusion, and also the professional context of brain functioning.⁵

5 The Training Programme for Teachers is available on the project website: http://www.neuroandragogy.eu/wp-content/uploads/2019/02/neuro_io1_EN.pdf (access: 01.07.2019).

The second intellectual output (IO2) involves the Materials for educators working with adult learners: “Neuroandragogy in the education of adults from groups at risk of exclusion”. The didactic materials have been prepared in such a way that they are compiled into a handbook to support and advise the teachers and educators during the training and when it is over. The materials also serve as a compendium of knowledge and a source of inspiration in the preparation of class scenarios and materials for learning adults on effective studying and the use of knowledge about brain functioning and overcoming exclusion. This second output is primarily addressed to all teachers and educators working with adults from disadvantaged groups who would like to participate in the training, but can also be used independently as self-study materials and for working on one's own, due to the universal nature of the methodology. The materials specifically contain a theoretical introduction on the general principles of neuroandragogy, including the motivation of adults and scenarios of workshops for adult recipients from disadvantaged backgrounds.⁶

The third intellectual output (IO3) is Training materials for disadvantaged adults that can be used for the participants of the workshops and are addressed to the adults from disadvantaged groups, however, being as the knowledge of brain functioning is universal, it can be used by all adults, not necessarily the main target group. The training materials produced are adapted for the specific character of a given group of recipients and contain a short theoretical introduction that is simplified for the use of the learners, but helps them understand the potential reasons of educational failures but most importantly the favourable conditions for faster and more effective knowledge acquisition and skills development.⁷

6 The Materials for Educators Working with Adult Learners are available on the project website: http://www.neuroandragogy.eu/wp-content/uploads/2018/10/neuro_io2_en_lekki.pdf (access: 01.07.2019).

7 The Training Materials for Disadvantaged Adults are available on the project website: <http://www.neuroandragogy.eu/index.php/results-2/> (access: 01.07.2019).

The fourth intellectual output (IO4) is the interactive educational platform “Neuroandragogy against exclusion” that contains educational materials relating to the use of neuroandragogy principles in adult education and counteracting exclusion⁸. Training and didactic materials from the workshops are available, whilst the platform also enables an exchange of experiences by teachers and educators who are participating in the project. The platform most notably contains for teachers and educators a topical educational forum whereby contents of the project can be discussed; consultations with neuroandragogy experts; and the possibility to publish articles and scenario from classes. For learners, the most notable features are the ability to download educational materials prepared for them within the project by the teachers and educators; the opportunity to seek a consultants advice online; to be able to discuss their participation in the project and its effectiveness in the situations they have been in so far on national forums.

The final intellectual output is this publication: “Neuroandragogy against exclusion – strategy, recommendations and good practices”. It aims to promote neuroandragogy as an educational strategy supporting adults from disadvantaged groups; aims to encourage the use of neuroandragogy methods in the didactic workshops of the teachers and educators. This publication documents the experiences gathered in the project, developed conclusions and lessons learned from the difficulties encountered. We hope that it will be an effective support for all those who want to use neuroandragogics to develop adults’ learning skills and effectively counteract social exclusion.

⁸ Educational platform “Neuroandragogy against exclusion” is available on the address: <https://platform.neuroandragogy.eu/?lang=en>

The neuroandragogy as an educational strategy supporting learning skills of adults from groups at risk of exclusion

2

- *Author(s): Szári Norbert (Laterna Magica)*

Neuroandragogy draws attention to new advances in brain research. Much of these new research contents confirm what teachers of adults have been saying for years. A very good example of this is that children and adults do not learn in the same way. The brain of the child does not reach new brain function and true maturity until age 21 and older. This is clearly seen when youths use their emotions to decide and not their executive brain as adults do.

Neuroandragogy includes research that confirms ways adults can boost their IQ and make sharper their intellect and creative thinking even into old age. This is possible because “brain plasticity” still happens late in life. Even more interesting is the fact that we may even be able to experience neurogenesis (new brain cell growth) through life if we continue to learn new things and live within a brain stimulating environment. Neuroandragogy also makes the case for a possible delay of Alzheimer’s disease by the activity of new learning (music, a new language etc.) All this contributes to good brain health which improves on life itself.

Theoretical information

The framework of neuroandragogy focuses on the adult brain, its cognitive functions and its graduation, all in relationship to the education of the adult and the adult’s learning habits. We summarize the principles and doctrines of neuroandragogy.

THE RELATIONSHIP BETWEEN NEUROANDRAGOGY AND PEDAGOGY

It has been made very clear through research in neuroscience and cognitive neuroscience that the brain of the child differs from the developed brain of the adults. This difference is seen in the way children process learning versus the way adults process learning. Neuroandragogy offers a strong basis, a prime cause for the science of adult education and learning to be a separate field of study and not to be treated as a continuity of childhood education and learning. Childhood education must no longer be favored by researchers and scholars of education at the expense of adult education. There must be a fair chance given to both pedagogy and andragogy. It must no longer be said that adult education is under studied and under researched.

NEUROANDRAGOGY AND RESEARCH

Access to research data, tools and organizations provides a base from which to create neuroandragogical constructs. This creation provides results that are beneficial to other sciences. Linking sciences together which have already accomplished proven empirical research is not new and proves beneficial to new learning. Research in neurosciences has provided great opportunities to bind education with science that can reform the field of education.

ADULT LEARNING

Neuroandragogy acknowledges the cognitive functions and includes them all in adult learning. Definition for each is crucial:

I. Learning must be defined in neurological terms. The learning process is an involvement of storing information and then being able to retrieve it. Learning must challenge and stimulate the adult brain without stress, causing growth of the central nervous system. Neuroandragogy views the age twenty or older as the most appropriate because the brain has not reached maturity until at least age 21.

II. Experience is an important learning tool for the adult. Learning and experience affect the development of perpetual and cognitive abilities through mechanism of reorganization of the functional brain architecture.

III. Recall works with memory as a part of the learning process. The brain is actively at work both storing and recalling information. These cognitive functions have been found to operate differently in the brain of the adult than in the brain of the child.

IV. Memory is an important part of the learning process. This is a process of retaining information over time. We can define it as the ability to use our past experiences to determine our future path.

Bearing these facts in mind, a working definition for adult learning would be defined as: The most relevant information passing through the cortex to the hippocampus where it is then stored. If this information finds other stored information in the brain it connects, if not it begins to make new memory. If used shortly after, this memory becomes permanent in the hippocampus and is pulled up by the cortex for quick references. This is made possible by the complex chemical interaction being performed at a high optimal level, releasing transmitters by special post and pre-synaptic receptors. This in turn forms new synaptic connections. The retrieval of the stored information is a timely and slow process, performed by the neurocortex. If pressured the recall is even slower or impossible at the time most needed.

ADULT BRAIN DIFFERENCES

As soon as brain development begins, anatomical and psychological changes begin to occur. Some researchers believe the changes that occur in the nervous system as we mature may contribute to age related changes in cognitive performance. Most of the literature on adult development presents the information of changes or differences as weakening. From the view of the cognitive psychology, it is a true statement. But neuroandragogy sees brain development and brain differences between the adult and the child as a positive change.

According to neuroandragogy, the child's brain has a potential for continual growth, and the adult's brain has maturity, filled with wisdom and experience, with room for further development (plasticity).

With age, anatomical changes occur in the brain (for example: there is a gradual loss of nerve cells, dendrites and synapses; brain weight and volume steadily declines etc.). Children activate different and more regions of their brains than adults when they perform word tasks. However, few brain regions develop, only the regions that we use more frequently mature as we do. Other regions become less active, and some appear to stay the same as we grow older. New research suggests that some regions at the front of the brain mature earlier than some at the back.

But these differences don't draw inference of decline in mental functions and cognitive abilities. Neuroandragogy has the opinion that anatomical changes do not prevent learning nor do they prevent neural plasticity or neurogenesis.

THE POSITIVE EFFECTS OF EDUCATION ON THE BIOLOGICAL AND PHYSIOLOGICAL FUNCTIONS OF THE ADULT BRAIN

Neuroandragogy acknowledges the great benefits for the adult who seeks lifelong educations as a part of life. Research has proven that increased scores on fluid intelligence tests, increase in brain plasticity and brain cell growth all result from educational intervention. Empirical tests on educated adults given enriched living conditions concluded that they grew sixty percent more new neurons and performed better on learning tests. Neuroscience research suggests that learning outcomes are not solely determined by the environment. Biological factors play an important role in accounting for differences in learning ability between individuals. The brain changes constantly as a result of learning, and remains 'plastic' throughout life. Neuroandragogy has shown that learning a skill changes the brain and that these changes revert when practice of the skill ceases. Hence 'use

it or lose it' is an important principle for lifelong learning. Resilience can be built up through education with lifelong effects into old age.

DIFFERENCES OF THE LEARNING PROCESS

Neuroandragogy concludes that because the adult brain shows a difference in development when compared with the child, the learning processes are expected to be different. Adults reason at a higher level than children because life experiences force this level of learning; brain receptors may also be responsible for higher learning levels. A receptor within the brain is responsible for higher brain functions. The adult also processes information differently, usually slowing with age; thus the adult needs adequate time for learning to take place. The central theory of neuroandragogy proposes that learning for adults is possible, and different from that of children.

It is important that adult teachers recognize these differences because adults don't want to be treated like children who are still ruled by their emotions. Adults must be reasoned with and given equal opportunities to be rational in the learning experience.

The adult's learning occurs at a higher optimal level, caused by special brain receptors. Adult experiences affect the development of perceptual and cognitive abilities through the reorganization of brain structure. The adult experiences contribute to a higher level of reasoning. Adults process information slower than their young counterparts because of care to make fewer errors. Reconstruction and retrieval is slow, and new information searches are careful, providing time for stored information to make connections, which modifies connections between nerve cells. The adult economizes on the use of the brain for processing new information. While the youth utilizes the neurocortex to a great extent, the adult will use the hippocampus for storing the information, then the cortex for recall. Adults rely less on the emotional centers of the limbic system for decision-making and reasoning. The reasoning of the adult is therefore more rational.

ADULT EDUCATION

Adult education can provide a number of skills and learning experiences that have a number of benefits and purposes: from basic skills to language learning, from leisure courses to vocational training, from family learning to health provision, adult education can provide a number of ways that will support individuals throughout their careers and lives.

Adult education must help students unlearn old ideas and myths about the brain. There must be more effort made to teach how the brain learns the many benefits of new learning. Adult education should not be approached or presented as a means to an end (job, degree etc.), but must be presented as an instrument of improvement for ones-self and the community at large. Most adult education is voluntary, therefore, the participants are generally self-motivated, unless required to participate, by an employer.

Adults are mature and therefore have knowledge and have gained life experiences which provide them a foundation of learning. An adult's readiness to learn is linked to their need to have the information. Their orientation to learn is problem-centered rather than subject-centered. Their motivation to learn is internal.

The primary purpose of adult education is to provide a second chance for those who are poor in society or who have lost access to education for other reasons in order to achieve social justice and equal access to education.

It must also be presented as an instrument capable of improving brain health.

APPROACH OF ADULT EDUCATORS AND WORKING WITH DISADVANTAGED GROUPS

A common problem in adult education is the lack of professional development opportunities for adult educators. Most adult educators come from other professions and are not well trained to deal with adult learning issues. Most of the positions available in this field are only part-time without any benefits or stability since they are usually

funded by government grants that might last for only a couple of years.

An adult educator should develop senses in adult students to heighten memory and recall possibilities. They must teach their disadvantaged students how to memorize, how to store information and how to recall it upon demand. They must depart from the regressive views of inevitable decline often found in studies of psychology and give their students hope by promoting a continued potential view that acknowledges compensation for loss.

The educators must reevaluate old theories regarding adults, their education and learning. They must begin to show interests in understanding current research regarding adults, including brain sciences, as this will contribute to improved professional practice. The educators must involve disadvantaged people in designing curriculums that encourage complexity, novelty, and creativity according to the interests of the adult students, and the scope of their experience and expertise. However, each educator must bear in mind that what's complex to one student is not to the other. Thus variety is important.

Adult educators must lead students through the process of unlearning, this helps to eliminate old ideas making room for new ones, especially new information regarding their neural development and learning abilities.

The main goal of a disadvantaged people centered course/workshop is to develop an offer for the sensitization and education of people who are disadvantaged in education and for their educators as well. The core elements of this kind of common work are to asses attitudes to education (personal level, social environment, gender etc.), to name the barriers to education and how to overcome them (real and perceived barriers e.g. discrimination, gender etc.), to raise sensitivity of disadvantaged groups by defining "educational disadvantaged" and how people become educationally disadvantaged (causes), to highlight benefits of education (providing the new educators with arguments for their outreach work), and to show concrete offers of

education for educationally disadvantaged people considering the mentioned barriers (educational programmes, training offers).

In case of people from disadvantaged groups (usually struggling with a very specific type of educational problem, collecting a pool of very similar experiences), knowledge about the neurobiological basis of learning and memorizing information is very important. Such knowledge and the ability to apply it in practice in situations related to learning, work, and coping with everyday life problems, is potentially valuable for every adult. However, in case of people from disadvantaged groups, who may have experienced school failures in the past, who did not find any satisfaction or success in life and school work when they were children and teenagers, or who do not see any possibilities for intellectual, professional, and personal development due to their age/disease/economic situation, the knowledge supplied by neuroandragogy can be the solution to many problems which make it difficult for them to start education and self-learning. It facilitates organizing one's own learning, planning independent development of one's working environment, selection of the most effective forms of learning, exercises, tasks, educational materials, understanding the possible educational failures in the past and development of learning strategies adjusted optimally to one's own cognitive abilities.

Specific recommendations regarding the implementation of neuroandragogy assumptions in the education of adults from groups threatened with exclusion are presented in the further part of this publication.

Good practices of using neuroandragogy assumptions in working with adults from disadvantaged groups – experience of teachers participating in the “Neuroandragogy against exclusion” project

3

The authors of the following articles are the teachers of adults participating in the pilot edition of workshops for adults threatening exclusion. They document experiences related to the practical application of neuroandragogy in adult education. They are also a collection of good practices gathered during the project implementation.

3.1. Neuroandragogy in class instead of Andragogy. Pilot course for adult immigrants in Kalamata Second Chance School within the framework of fighting social exclusion

- *Author(s): Andrianopoulos Panagiotis, Gallou Georgia, Lianou Eleni (Greece)*

Our decision to take part in the innovative “Neuroandragogy against exclusion” project is related to the fact that this theory and practice of learning combines the principles and conclusions of neuropsychology, neurophysiology and neuroanatomy with all modern and practically tested theories and practices of adult education.

Studying and exploiting the scientific knowledge of how the human brain works and how it evolves / transforms over time was a major

challenge for us. To understand that the human brain, in addition to being complex, is also an instrument that follows a dynamic and evolving path directly linked to the stages of the biological evolution of mankind was a very interesting idea.

Up until now, adult learning theories have focused on the effects of the social environment of the trainee, whether it was their social position or the educational context through which they can be reintegrated into the educational and ultimately productive process. Macro and microenvironment was approached from different perspectives, but none had attempted to combine it with modern findings in disciplines such as neuropsychology, neurophysiology, and neuro-orientation. Issues such as the way of stimulating and analyzing stimuli, the functioning of different types of memory, the impact of existing experience on the creation of new knowledge, the role of anxiety and sensory preferences had not been adequately studied and evaluated.

An important incentive to stimulate our participation in the programme was that neuroandragogy adequately substantiates its findings with practically verifiable research and the use of reliable measurement indicators. This methodological approach was something completely new to us, since we had learned to consider social-pedagogical sciences as separate subjects than those of medicine. It was a challenge that sparked our interest from the very beginning and this project was the perfect opportunity to deal with it. In addition, new insights into how the brain works and how the various cognitive functions of humans evolve can directly be applied in a wide range of cases. For example, they can be applied to the workplace, to the educational and training process, to managing and solving everyday issues, and, of course, to working with trainees who come from disadvantaged social groups.

Immigrants, the unemployed, large families, single parent families, prisoners, former addicts and generally, people from low socio-economic levels, are the overwhelming majority of our school's trainees. All of them have experienced rejection and failure in the

past and not only in their school environment, but in many areas of their lives. Neuroandragogy, therefore, appeared to us as a possible solution to many of our trainees' problems. Our participation in the project was the right opportunity.

Another motive for our participation was the important role that neuroandragogy attributes to the role that emotions play in the process of recruiting and building knowledge. The finding that learning is not only a cognitive but an emotional-cognitive process heavily influenced by the type and intensity of the various emotions made us realize that there are new possibilities regarding how to approach our trainees and work together with them. Let us not forget that the latter not only do they have cognitive but also emotional deficiencies and malfunctions. We realized, then, that neuroandragogy can familiarize us with the biological mechanisms of decision-making, problem-solving and memorizing, making it easier for us to approach learners.

A particularly positive element in our decision to engage in the project was the fact that neuroandragogy was not a completely new and separated methodology from what we knew, nor was it a strictly structured approach that did not permit individual adjustments. This is essentially a major and innovative development in the field of adult education, a set of general principles and scientifically substantiated rules that can have many creative uses.

The group of trainees who participated in the workshop we conducted were sixteen (ten women and six men), mostly foreigners. We chose individuals from both levels of our curriculum in order to have a greater variety of perspectives and views, as well as to achieve a more creative interaction between the more and less familiar with the school environment students. Five (5) people were between 25-35 years old, nine (9) were between 36-50 and two (2) were over 50. Eleven (11) were employed and five (5) unemployed. The overwhelming majority (15 people) were graduates of basic primary education while one was a university graduate (who joined our school to learn Greek).

In conclusion, we would say that we managed to avoid great variations in the characteristics of our team (gender or age group under-representation). At the same time, we also managed to include participants of diverse social experiences. That was reinforced by the fact that the majority was of foreign background.

Trying to create an overview of the workshop, it is good to refer to its individual elements. Its main themes were the self-development and self-improvement of learners. A systematic effort for meaningful acquaintance with oneself and the many traits (several in latent form), which are the basis of the personality of each one. There is no doubt that posing self-improvement as a strategic goal of the lab has also served as a major motivation for the active participation of all our trainees.

Organizational elements also play a role. More specifically, our workshop took place at the school, at the teachers' office. The tables were arranged in the shape of "π", there was a projector and the appropriate worksheets. The duration of the lab was 3 days (22,26,27/3/2019) for 4 hours each day (total 12 hours) so that it was not too long or too concentrated.

The experiential approach was our main way of working. By studying collaboratively our material, we tried to highlight the existing experiences of team members who, under the appropriate conditions, could lead to transformative learning. In an effort to locate and effectively promote these experiences, we used group and simple, short individual assignments.

Based on the above, we designed and implemented some appropriate activities. In order to get acquainted with how to learn effectively and how to choose working methods and techniques, we created memory games. More specifically, a memory game of mismatch, which exercises the brain. To promote self-activation and mobilization, we used motivational techniques such as motivational quotes so that adult learners became aware of what motivates them to complete an action. With Johary's window, we sought to strengthen their self-esteem and help them to learn better. SWOT analysis helped

them to reveal opportunities they would not otherwise identify. By understanding their weaknesses, they could manage and eliminate threats that could otherwise damage their ability to move forward. They are more likely to succeed in life if they use their talents to the fullest extent. Similarly, they will have fewer problems if they know what their weaknesses are and manage these weaknesses so they do not have an impact on their work.

By creating a timetable, we sought to emphasize the importance of organizing their time when they were trying to learn new skills and knowledge. We sought to help them understand how to divide the lesson and their personal time to maximize their ability to understand new information, as well as to understand the problems that occur when they do not balance their time effectively. We also sought to help them recognize their own learning styles, use that knowledge to organize their education, and choose learning methods and tools that match their personal preferences in learning.

During the workshop we had the opportunity to get in touch and use the following basic principles of neuroandragogy. First of all the plasticity of the brain, which has an extremely strong and well-developed ability to change and adapt. It is constantly changing as a result of learning, resulting in the creation and strengthening of some neural connections and the weakening or eliminating of others. We also tried to break down the major neuro-myths, which are quite widespread, such as the “enriched environments” that reinforce the brain’s ability to learn, that we use only 10% of our brain, that some of us are “left-oriented” and some are “right-oriented”, that brain development stops with children reaching puberty etc.

We tried to use/highlight these principles through the activities of our workshop. We assigned team assignments, and through observation of space and the use of appropriate audiovisual material, we showed the kinesthetic qualities of the brain. We also used team building games and shared the treats prepared by us in order to create a warm climate that would facilitate the learning process and the efficiency of the workshop.

Using neuroandragogy strategies in the day-to-day work of an adult trainer poses several difficulties. The most important and most common of these are the different social and cultural backgrounds of learners as well as their different learning levels both in terms of knowledge and personal skills and experience. Moreover, something that was seen to some extent in our workshop is the difficulty in understanding the terminology of neuroandragogy. Let us not forget that this is a fairly new subject.

Overcoming the above difficulties can be largely achieved by gradually approaching the learning material and learning objectives, with clear instructions from the adult educator and the use of personalized ways of transmitting our messages (audio, visual, etc.) as much as possible. It is very important to create a collaborative learning environment that is based on an understanding of the particular educational needs and interests of adult learners. The adult trainer as facilitator should promote synthesis and collaboration, and cultivate the critical approach to reality, always relying on the experiences of the team members.

Evaluating the effect of neuroandragogy on our adult learners is very important for how we will implement it in the future. As we have already mentioned, neuroandragogy is a fairly flexible framework of general principles. Consequently, any evaluation process can bring about substantial changes and improvements in its implementation, without distorting its philosophy. A significant part of our assessment was based on the views of the learners themselves and these were surveyed by an evaluation questionnaire. Also, let's not forget that these are adults with many experiences, which allows us to give serious weight to their answers and to put them in the process of evaluation.

More specifically, the trainees stated that they liked the workshop very much, while, when posed with the question about whether the educational material helped them to recognize their learning style, almost everyone gave the two highest grades on the rating scale. Positive views were also expressed on the motivation given by the

material to continue their learning pathway (the answers focused above 4, with the majority at 6), and how much it facilitated their efforts for independent learning. Encouraging for us was the fact that the material was very understandable to them. There were, of course, difficulties in understanding, but these were relatively easy to overcome with the provision of explanatory guidance. Finally, the question as to how useful the exercises were received the two higher rankings.

From the teachers' side, the feedback we received about the material was also positive. Particularly high scores were given to the following parameters of our material:

- setting guidelines for self-evaluation,
- the impact of material on independent learning,
- its effectiveness and suitability (compatibility with needs and special features) for adults from disadvantaged groups.

Trying to generalize our findings on the neuroandragogy strategy, we would say that it is particularly beneficial to all those involved in adult education. First of all, it is beneficial because neurosciences can support the teaching of the adult educator and in particular can help them design an effective learning process, organize learning, use effective educational methods and tools, motivate and understand possible educational failures. They provide important information to the trainer about anatomy, brain development, structure and function, maturation and aging of the human brain, the role of environmental stimuli, knowledge about the course of information processing in the human brain, the reward system reward, the role and importance of experience and prior knowledge. Consequently, brain-based learning refers to teaching methods, curriculum plans and school programmes based on the latest scientific research on how the brain learns. Its basic principles are that each brain is uniquely organized, learning always involves conscious and unconscious processes, the brain is social, it is better developed in cooperation with others, the brain perceives all the parts at the same time, etc.

In addition, with the help of neurosciences, some neuromyths, i.e. some misconceptions resulting from incorrect reading or incorrect reference to data from brain research and their implementation in education and learning are revealed. Such misconceptions affect the educational methods and practices of teachers. Getting more knowledge about neuroscience reduces the adoption of misconceptions and leads to better prepared educators.

3.2. Applying the concepts of neuroandragogy to ADHD as a neurobiologically coded (dis)advantage viewed from the perspective of a recently held workshop in Budapest

- *Author(s): Róza Mikecz (Hungary)*

I was intrigued and challenged by finding out about the emerging science of neuroandragogy when I first learnt about its existence in 2018 and attended the first workshop ever held on the topic in Hungary. At that time I had already been thoroughly involved in and committed to the study of psycho-social disabilities, which is one of the so many subjects underpinned by what is known as neuroscience, which is providing a new understanding of how we come into and operate in this world as human beings. Participation in the “Neuroandragogy against exclusion” project (coordinated in Hungary by the Laterna Magica organization) provided me with new experiences in this area.

“Those of us who are inflicted by the so-called psycho-social disabilities face many forms of stigma and discrimination”,⁹ among

⁹ Paul Deany, DRF Programme Officer, at the 9th Session of the Conference of States Parties to the CRPD at <http://disabilityrightsfund.org/our-impact/insights/psychosocial-disability/> (access: 03.07.2019).

others in the areas of education and work, both of which are vital for our survival as a human being.

The peculiar challenge in identifying psycho-social disabilities is that they are encoded and determined by invisible genetic and neurological influences, which can be reinforced or mitigated by socio-cultural elements that the individual meets during their life time. People are typically afraid of things they do not know. Psycho-social disabilities so far have belonged to an area that has not been visible for people at large, therefore people have tried to deny its existence. Neurosciences and genetics now offer us new insights into our operation as human beings and it has turned into our job to do something about the phenomena we have so carefully avoided so far, due to a lack of knowledge surrounding the subject. It is this aspect of genetics and neurosciences that provide neuroandragogy with food for thought. As Paul Deany DRF Programme Officer put it in the address quoted above: „If there is one thing I have learned living with bi-polar and working in this field, it is that the main constraint for persons with psychosocial disabilities is not our disability, but the many barriers societies, institutions and even States place in front of us. So, rather than continually trying to change ourselves, we need to start changing the way that society and States deal with us”¹⁰. Having quoted that, I claim that both those affected and society at large have change to make. Being an individual having acclaimed the validity of the existence of psychosocial disabilities through personal experiences, study and research, I will now continue by pointing out how, in my view, neuroandragogy in general and the project underway in particular can contribute to improving the life chances of the people afflicted by this “new type of disability”, which can be called the disability of the age of communication. The UN Convention of 2006 expanded the concept of disabilities including psychosocial disabilities among the conditions that cause “long-term physical, mental, intellectual or sensory impairments, which, in integration

10 Ibidem.

with various barriers may hinder (the affected people's) full and effective participation in society on an equal basis with others" and "in the enjoyment of every human being's right and fundamental freedoms".¹¹

Any (dis)advantage can be turned into its opposite depending on how we get around it; if placed into the proper perspective, even a gross disadvantage can produce outstanding and remarkable achievements. An obvious example is Paralympic champions or the names of great inventors, scientists or adventurers.

Psychosocial impairments, like ADHD, are not an illness, but, if untreated, they may result in serious disadvantages ranging from school-dropout through relationship problems to incapacitating mental illnesses. What sets psychosocial impairments or disabilities apart from other disabilities is that, at least in more cases than few, they are invisible and become manifested, often too belatedly, in the individual's conduct, for which reason they are difficult to diagnose and treat adequately. It is here that neuroandragogy can provide a helping hand through its concept and practice of inclusion, i.e. organizing the learning environment and material in such a manner that it prevents disadvantaging those who do not „fit in" immediately and readily with the rest of the learners. As ADHD is a neurodevelopmental disorder, given another cornerstone of neuroandragogy, neuroplasticity, which means that the brain matures at a varying pace, as well as the concept of life-long learning, neuroandragogy provides a „second or even more subsequent chances" for those who for some reason or another, which can be a neurodevelopmental disorder or some economic difficulty due to the family's life problems, or both, have not been able to continue their studies and dropped out of school to be able to earn money and support their family. The tools neuroandragogy offers, some of which were introduced in the most recent Budapest workshop, help educators organize the learning environment and

11 Convention on the Rights of Persons with Disabilities (CRPD), Article 1 – Purpose, <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-1-purpose.html>, (access: 03.07.2019).

material in a manner that accommodates „late bloomers”, who thus will be able to overcome the shame and sense of guilt that may accompany with their desire to return to the school bench and take up learning once again, and again.

Viewed from this perspective, the first and foremost message that can be inferred from neuroandragogy is the understanding of neurodiversity and its impact on the process of learning, more particularly in the sense that our brains are varied in as many ways as the human face. We all have general similarities, like noses, ears, eyes, faces, brow, etc, but the size, shape and the placement of these parts of the face make us look at and experience the world in so many different ways as we can only be. Unlike the human face, however, the brain and its various organs as well as their interconnections, operation and cooperation take place invisibly, conditioning our behaviour and the way we experience the world around us in at least as many ways as our faces differ. By accepting and grasping this understanding, the principle of neurodiversity, both those affected and those educating them, will be liberated from the obstacle of the conviction that there is only one unique way of experiencing and integrating the things we learn about the world and will at least attempt to remove the shame and awkwardness caused by this conviction through making that one step that is needed to seek help when they feel overpowered by the “traditional” way of learning about and doing things and by creating the “accessible learning environment” (and mastering the courage to seek accommodations), to enable all those taking part in the learning experience to master the targeted skills and knowledge (through the diversity of and multi-channel approach applied by the tools offered for perception and learning).

Neuroandragogy in counteracting of social inclusion is another concept communicated by the Budapest workshops that can make a real difference in regard to whether psychosocial impairments turn into an impediment in the way of individual development. ADHD, as other psychosocial impairments expose the individuals affected to various forms of exclusion, bullying or being avoided by their peers,

(and, unfortunately, some of their educators) which may result in more serious psychological damages and other consequences. School drop-out, aversion to learning and education, adversity to people who try to achieve more, marginalisation and being locked into old, stubborn and, at times, self-defeating patterns of behaviour, lacking the vital skills needed for further training and self-education are just a few of the possible detrimental consequences. By pointing out the fact that neurodiversity is an inherent trait of every human being and having an atypical brain is not a matter of choice or trying hard, or that of will, the acceptance and inclusion of the individuals concerned by their community can be more readily achieved. The exercises facilitated during the workshop sent this message to participants by helping them practice important social skills, like cooperation for the achievement of a shared goal, overcoming aversion to physical contact, memory exercises (ADDDers have a special difficulty with their working memory, which is important in planning and sequencing tasks) and creative story telling tools.

Some words about the organisers who facilitated the event: the openness and “freshness”, the ease and the inclusion (non-judgemental attitude) with which the organisers set the tune for and facilitated the programme enabled even the most reserved participant to actively take part in the programme (and even challenge the validity of some or another element) and forget about their reservations and barriers if only for the brief period of the programme, which tends to be the aim of inclusive education: we cannot change the attitude of the whole society but we can change our own attitude to how we provide and receive information. And this is for me the most promising aspect of neuroandragogy, as I can conclude from the two programmes I had the privilege to attend in Budapest. I definitely do look forward to learning more about and from and also contributing my share to this programme.

3.3. Neuroandragogy – or when adults learn. Reflections after the Czech edition of workshops for adult learners

- *Author(s): Ester Fišerová (Czech Republic)*

The foundations of my passion for education and thought development have already been laid before my birth – I am the oldest of three siblings and very soon I took care of my sister and then my brother. As a small child, I learned easily to read the letters in comics bubbles by asking repeatedly grandmothers and grandfathers about each letter, again and again and again before I remembered them all. At the age of four I supposedly read my sister a short passage of a fairy tale, and when she grew up to a similar age, I wanted to use the same method of reading on her. I was persistent, but my sister resisted bravely and began to read as a seven-year-old. At that time, I began to realise how it is possible that the learning process, which personally suited me, does not fit my sister at all. There are probably the foundations of my interest in education and human development.

I graduated from special education, then psychology. In practice, I started out as a Scout Counselor and Special Needs Teacher, and I started to look at how and if I could motivate others to learn and change. Then I moved to adult education, now I work as a university teacher, a certified coach, a soft-skills lecturer and a memory trainer.

On the Internet last year, I actually discovered a Neuroandragogy course by EDUcentrum, whose theme of learning and working the brain fit into my sphere of interest, so I curiously signed up, this time as a participant. I enthusiastically attended both parts of the course. The information and activities offered by lecturer Gabriela Bajerová Zezulová, as well as those contained in the teaching materials, have confirmed or logically developed the knowledge and experience that I have already acquired. For example, I consider the passage about neuroplasticity to be important because it is very optimistic and also

the opposite of my basic schooling! I really enjoyed the form of a pilot course where there was enough space for knowledge transfer, discussion, sharing, individual questions and answers so that each of us participants could in practice change what is really useful to him.

I did not hesitate and accepted the offer of EDUcentrum to work on the topic of Neuroandragogy, this time as a lecturer. I ran two workshops for participants disadvantaged in the labor market. 11 women participated in the workshops. In my case, these were mothers on maternity leave or women taking care of small children. The topic of the workshops was “Neuroandragogy... or we learn how to learn”.

During childcare, these women often lose contact with the working environment. As a result, their self-confidence is often reduced and their motivation for further education decreases. An educational workshop on Neuroandragogy was a great opportunity for them to learn more about learning processes and ways to remember new knowledge. Each participant also learned about the different types of learning-related typologies, priority planning and memorizing important information. Participants in the Neuroandragogy Training Workshop also appreciated that they could try out a number of things directly in practice. Extensive and well-arranged educational materials were also positively evaluated, allowing them to return to some activities and repeat them.

During the workshop, the participants were also introduced to the Moodle platform and the opportunities it offers. After registration, using the e-learning course, they could study other supplementary exercises according to their time possibilities, or communicate their questions.

How did I go about it? When working with participants, it is important for me, in accordance with the principles of effective learning, to create a pleasant and respectful environment. At the beginning of the workshop, I invited the participants to formulate their expectations as to what the workshop should bring to them and what kind of change they want. During the workshops I adapted the theoretical blocks according to individual orders and activated

the participants using individual exercises as well as group practical exercises that complemented or appropriately developed theoretical blocks of interpretation. We could also give a fairly large space for sharing the participants' personal experiences with learning, motivation, procrastination and, on request, with some useful typology typologies, which the participants evaluated positively. We ended the two workshops with the challenge of defining individual action plans using the SMART Progress Measurement Method to contribute to each participant's motivation.

The elements of Neuroandragogy appeared throughout the course of both meetings: both in the form of – alternating physical exercises and mental activity, enough stimuli for visual, auditory kinesthetic types of participants, respect for individual physiological needs and realization on the basis of the Kolb cycle method – and of course the content, where the participants positively evaluated, for example, the practical presentation of the benefit of the memory hook method / PEG WORDS and an explanatory block on the topic of forming, training habits and obstacles.

In Neuroandragogy seminars, both for caring parents and for university teachers, where I also deal with this topic, it is difficult to reconcile the expectations of the participants. As a rule, adults in such groups have a different level of biology knowledge and psychology, as well as their own (and not always entirely positive) experiences with effective learning and “brain training”. These different “entry levels” of workshop participants, as well as the fluctuating appetite and courage to participate in practical exercises, activities and create individual action plans for change, also derive from different experiences and knowledge at the outset. I overcome these difficulties with support and respect, an individual approach within the group's capabilities, repeated clarification of mutual expectations and consistent two-way feedback during and at the workshop.

Neuroandragogy's strategy is, in my opinion, useful for comprehensive education – it brings effects to both adults and children; disadvantaged and majority groups. This strategy can be particularly

useful for disadvantaged groups by focusing on personal responsibility for their own progress and development, or compensating for individual disadvantages, for example by encouraging courage, developing their own learning experience and communicating effectively with different types of personalities.

3.4. A fascinating experience for teacher and learners after the workshops in the UK

- *Author(s): Joe Bucknall (United Kingdom)*

The workshop in UK was organised to positively impact a selected group of adults who were deemed to have a socio-economic disadvantage, with the main idea of the training to encourage the group of adults to seek further education and use the neuroandragogy methodology as inspiration. To gain as much experience as possible to share with fellow teachers and educators, it was decided that a variety of activities were to be selected from the training materials offered in the Training Materials for Disadvantaged Adults. It was fascinating to be able to learn more about the relatively new concept of neuroandragogy and its achievements to date in the field of education for adults.

The coordinator of the British edition of the workshop was Bridging to the Future organization. The training was completed over a four week period, consisting of six sessions, each two hours lasting meaning that the training in total was 12 hours. The participants selected were young adults who suffered from a socio-economic disadvantage, adults whose families have a low income and low occupational status. It has been proven a socio-economic disadvantage correlates to a lower educational achievement, poverty and poor health, leading to a specialised selection of adults from this group of people to take part in the training.

The workshop began with a session on how the brain learns, sharing knowledge surrounding the theory and methodological use of neuroandragogy to ensure that the responsive group of adult learners were both engaged and totally understood the importance and relevance of the new concept. The strategy of neuroandragogy was analysed with the limbic system and its importance emphasised. It was proven to be a good idea to read around the topic beforehand to enable a simplified explanation to be given to the target group. The theory was well received by the trainees, who described their newfound information as concise and interesting, whilst they also explained that the session encouraged them to learn more and advance their own learning in the topic of neuroandragogy.

Upon teaching the key facts and learning points necessary for the adult learners to gather a basic understanding, a few activities were played that were provided in the Training Materials to help compliment the previous learning. The activities were particularly well received due to their flexible timing and active nature, with the method of loci and repetition activity receiving lots of recognition due to its topical relevance. It was clear that the real value came from the adult learners having a common input but also having an equally high individualised output thus allowing each individual to self-reflex and gain something substantial, yet also sustainable from the activity.

The second session focused on the methods that could be used to build a sense of self-motivation for personal development. A strong inner self motivation allows a person to focus on learning for a much longer period of time, not learning because a person must, but instead because that individual wants to learn and understands the importance of learning. Personal development is always fuelled by inner motivation, and the first step on the personal development path is to decide to make a personal change. Making this change should require an individual to leave their comfort zone, battling the brains desire to remain in a place of comfort and safety. Questions were put to the adult trainees and they were given time to analyse their own motivation and personal development so far in their lives.

Upon completing the knowledge section and receiving feedback on the quality and relevance of the learning undertaken so far, four follow up activities were selected to help solidify the second sessions learning. Two activities that were very similar, yet equally important and enriching were activities that specialised in the building of habits, but more importantly, the discovery of learning habits. Both activities were carried out virtually as one session, due to their nature and relevance to each other. The activities were described as potentially life changing by some of the adult learners, as the skill of changing habits (whether this be positive or negative) is a very difficult but necessary one.

The third session was particularly of use to the adult learners, emphasising key knowledge with regards to helping the learners recognise their own needs and predispositions to help them understand their optimum learning conditions. The theory involved the key subject of self-development, hence reiterating information from past sessions, but also methods of realising their learning styles and methods. Learners visibly understood the importance of the brain and that it is full of potential for self-directed learning. Thanks to the neuroplasticity of the brain, its conscious functions can all be improved. Self-learning is the new form of learning that is equipping people with skills that are relevant to their daily activities.

An activity called Johari Window was then completed at the end of the session. The Johari window enabled learners to better understand themselves and to help them acquire self-awareness. A portion of time was spent using the activity to reflect on the theory at the beginning of the session. The activity especially stimulated a very useful discussion on self-awareness and the power of emotional intelligence between humans. A SWOT analysis was then carried out by the adult learners, proving to be an enjoyable yet reflective exercise, with participants willing to develop the activity further and wanting to complete a SWOT analysis on another learner, using the proven method of peer to peer learning and evaluations.

The fourth session offered learners advice and knowledge on how they should better organise their learning so that the best possible results are achieved. Emphasis was placed on the individuality of the learner and how each learner is different. Previously learnt information was reiterated to further understanding. The word organisation was set as the key word for the session, with the skill of organisation being the root of all success and good things. Whether it be the effective organisation of time, or the effective organisation of work, the importance of organisation was evident. To enable motivation, a reward must be set as a driver to improve individual performance, with a happier individual's productivity increasing by approximately 12%. The creation of a learning environment to instil a strong work ethic, a relaxed body and mind and an area of high concentration should be a priority for any learner seeking to maximise their ability. Techniques were given to ensure a productive learning environment could be created, with tips such as how to negate distractions highlighted.

An activity focused on establishing a reward scheme was then completed, due to the importance of setting a reward to aim for. A happier worker is a more productive worker so an activity was set to help learners understand the neurological process that occurs after experiencing a chosen reward, along with the objective of realising the importance of a reward as a facet of learning. Participants led interesting discussions on reward systems and their prominence and what makes a successful, sustainable, relevant and motivating reward system.

The fifth session was tailored at educating the learners on choosing work methods and techniques to ensure effective learning and studying smarter, optimising the time spent learning and improving, and also better maintaining material previously studied. The most researched and proven learning routines and styles were given to the learners, with an open discussion following. Proven, reliable study skills were analysed and then practiced using activities to allow the

participants time to understand which routine or skill would work best for them.

The final session was designed to actively encourage the adult learners to use their own experience and skills when learning. Albeit young people learn faster, older people have more knowledge accumulated throughout their lifetimes and they also have the skill to be able to combine new information with already held information. Wide experience accumulated through a lifetime is often, most commonly, referred to as wisdom. From the point of view of neuroscience, the fundamental role of experience in adult education can easily be explained using memory traces and stimulus. The structure of experience based learning was clearly outlined and the positive effect it could have on a learners individual learning was analysed.

Following on from the main learning, and upon completing the main lesson objectives, two activities were completed to help the learner's process the knowledge learnt. Learning styles based upon an individual's past experiences were realised, and it was mentioned that there are no better or worse learning styles. Participants realised that the most important piece of knowledge to take away from the activity was that they should not be afraid to experiment with different styles of learning, even if they recognise themselves as a certain type. Discussion was led by the participants regarding each other's learning styles and it was stimulating to hear participants reflect on their own learning and thoughts.

When reflecting on the experience of using the neuroandragogy principles when working with disadvantaged adults, it is important to iterate the importance and effectiveness of the methodology. Not only is the concept of neuroandragogy mentally stimulating, it led to intelligent group discussions and peer to peer evaluation and feedback. It was clear that the adult learners totally understood the advantages that the neuroandragogy methodology could have on their lives, and that they realised the importance of personal development in a world where an individual can do just enough to

get by, but not excel and realise their potential. The motivation of the adult learners also increased significantly, with a newfound desire for individual learning implanted within their inners as the direct effect of the training.

3.5. Potentials of neuroandragogy in the work with youth at risk of exclusion

- *Author(s): Michaela Jauk and Sandra Thiel (Austria)*

From the perspective of coaching and training within the production school, it is possible to identify target-group-inherent phenomena that, in our experience, have a limiting effect on the learning behaviour of NEETs and youths at risk of exclusion. In the conception and implementation of workshops and learning units, the production school's implementation regulation recurs and recommends methodology and didactics to counteract the obstacles described below that relate to the learning of the target group or to promote self-serving learning behaviours.

In our observation, the self-efficacy referring to the expectation in dealing with one's own career goals and the related learning needs is very low. This correlates with a limited willingness to exert effort, a fundamentally reduced motivation to learn, as well as learning-inhibiting attribution strategies in connection with failure (in school). It should be noted that the barriers to learning described do not manifest themselves in ideal terms among all participants, but that they can be observed in the majority of young peoples.

The participants of the production school should gain self-serving (learning) experiences within one year, which should emancipate to a proactive examination of the requirements in the next vocational training step. The testing of neuroandragogical methods, in the sense of the implementation regulation for the production school, is a

further approach to prepare learning and knowledge contents and thus to ensure the objective goal of enhancing a kind of “fitness for vocational training and education”.

The Production School is an offer for adolescents, young adults at risk of exclusion and NEETs after completing their compulsory education to seek support for their further education or vocational training. The Production School is a compensation project for young people to acquire maturity in terms of being prepared for vocational training, re-entrance in education or the step into qualified employment.

The target group of the production schools are:

- Adolescents and young adults between the age of 15 and 21 (24 when disabled).
- Young people who need a comprehensive training of social skills and cultural techniques including “new media”.
- In general, the target group are young adults with learning difficulties, young adults who dropped out of school, young unemployed adults, NEETs.

During the workshop the young people gained knowledge about neurological and endocrine effects on learning and how the brain “successfully” learns. They acquired learning methods according to the promotion of concentration and structuring of content. They tried out motivational methods.

The workshop was conducted in two face to face sessions, both with a duration of 6,5 hours.

In order to clarify the objective of the workshop and to promote the learners’ willingness to learn, a detailed theoretical input was prepared at the beginning of the first session, which was intended to make the meaning and usability for the own learning behaviour comprehensible. To promote concentration, each module was followed by a kinaesthetic exercise. In selecting the methods, the individual learning goals of the adolescents were taken into account and a balance in terms of theoretical input; Move; Discourse as well as the inclusion of playful elements value.

Some methods, such as the activity titled: “Building new habits”, are successful if the new approach is also practiced at home using one’s own motivation. The workshop can only serve to motivate the participants how and why it is worthwhile to integrate new habits into their own everyday life. For the trainers and educators, themselves, it is very difficult to accompany the young people in their constant implementation. An example: the first module ended with the activity “Building new habits” and the assignment to the youths to log their individual follow-up on a daily basis. Success can only be assumed through the daily repetition of the reduction of an unpopular habit or the establishment of a new pattern of behaviour. During the testing, only four (out of nine) participants stated that they practiced the exercise almost daily. All four youths were able to report positive effects on the establishment of new behaviours or a reduction in unwanted habits. The other participants stated that they had found the exercise very interesting and motivating, but that they either did not have time or pleasure, or could not implement a daily exercise in their everyday life. Since the constant and continuous practice makes the success of this method, it would make sense to reflect on this at the end of the day in the measure where the young people spend their day or to fix several times a week for this new routine together with the trainers or to set a timeframe within the measure, so that young people can complete their protocol directly at the site.

For the exercise: „Motivational Quotes”, a Power Point Presentation with a sample collection of motivational quotes was prepared and discussed with the young people to get started in the method. This exercise was well received by all participants and should be linked as an additional reminder with the method described above. Each of the participants could write a quote at the end of the exercise. This method was extended based on the Zurich Resource Model by Maja Storch.¹² For the selected quote the adolescents were allowed

12 Cf. Nussbaum, Astrid Riedener / Storch, Maya (2014): *Ich packs! – Selbstmanagement für Jugendliche: Ein Trainingsmodul für die Arbeit mit dem Zürcher Ressourcen Modell*, 3.Aufl. Bern: Verlag Hans Huber.

to choose a picture that is motivating and positively connoted for them, or corresponds to a motivating aspect from their biography. This image was printed in duplicate on an A4 size paper with the selected quote. One copy should be placed at home, the other within the course site, in order to be reminded every day of the exercise “Building a new habit”.

The playful conclusion at the end of the second 6-hour module, presented the exercise “Memory Game”. This method was also positively experienced by all participants. A positive effect on concentration and a joy in informal learning under presumed time pressure was observed in all participants. In our opinion, this exercise is very well suited to regain the motivation to learn short-termed and uncomplicated.

The limited time resources and diverse tasks of trainers and coaches currently complicate a daily review or didactic embedding of some methods. Nevertheless, the workshop “Neuroandragogic” was initially included in the short programme of the production school. Another test run with 8 to 10 adolescents should clarify further adaptation requirements for an implementation on a long-term basis.

3.6. Learning and competence development through creative activity and involvement – on the practical use of neuroandragogy in education and psychology

- *Author(s): Justyna Rudnicka, Dominika Walicka, Hanna Penkalla (Poland)*

Neuroandragogy, an interdisciplinary field combining knowledge of the functioning of the brain with adult education science, offers numerous opportunities for the education of people who have experienced significant problems with their professional, personal or intellectual development, for whom it can be particularly valuable. The pilot edition of the “Neuroandragogy against exclusion” project included workshops for groups of various participants, the common denominator amongst whom was the risk of exclusion.

One group consisted of students from both a primary and a secondary school for adults, while another included people who wanted to raise their qualifications to improve or completely change their professional situation.

As applied in adult education, the techniques and strategies of neuroandragogy can be perfect tools for enriching classes, by introducing an element of creativity and allowing students to draw on their own experiences. Creative development of key competences as part of adult education should involve the acquisition of new knowledge and skills, based on the life experience of the students. Adult education cannot be boring or monotonous, otherwise “inviting” people of all ages to follow an educational path becomes much harder. It should be a journey full of emotion and the motivation to undertake educational activity. Education should change the fate of students and indicate new social, professional or hobby-related challenges to them. One of the aims of the “Neuroandragogy against exclusion” project’s pilot classes for the adult students was to create in the students the need to require a more creative approach from their

trainers during class, and a more effective use of the students' time at school. Another aim was to motivate the teachers to conduct classes employing other than traditional methods. We hope that this example will encourage other teachers to look for new educational strategies for running interdisciplinary classes, or at least to conduct open lessons.

Apart from its use in education, neuroandragogy can also be a very interesting and valuable tool for psychologists working with adults at risk of exclusion. People who encounter obstacles in the path of their development are frequently the target of specialists in psychology. The aim of psychological work with such people is to provide support in eliminating their dysfunctional behaviour, and to ensure improvement (as it is broadly defined) in their functioning.

An indispensable element of the psychologist's work, which allows them to achieve this aim, is psychoeducation. Thus, psychologists play the part of educators, teaching their patients/clients new attitudes, values, and behaviours. Neuropsychology is one of the obligatory modules one needs to master in order to work with people on issues concerning mental health and personality development. Knowledge of the brain allows to better match support methods to the needs identified. It is frequently used by psychologists in different stages of their work, and is often shared with patients as part of their psychoeducation. Drawing on neuroandragogy, psychologists are also able to introduce many elements consistent with the assumptions and procedures of a psychologist's work. By combining the fields of psychology and andragogy, a wide area of activity can be obtained that can streamline the functioning of an individual on professional, personal, and psychological levels. The use of knowledge of the brain's functioning within adult education can also have effects that are very beneficial to both students and educators, trainers and therapists.

Exclusion is a phenomenon consisting of a wide array of conditions. From the point of view of psychologists, the use of neuroscience in combating exclusion reduces these conditions to fundamental issues that can be worked on, emphasising their significance and offering an opportunity for the patient/client to develop and grow. This can

contribute to consolidating the situation of an individual trying to avoid exclusion or already experiencing it, and enable effective work on the other factors causing their exclusion.

The first series of workshops under the project (for primary- and secondary-school adults) included classes in civics. These workshops included six in-class hours and four hours of online work using the Moodle educational platform as part of a dedicated e-learning course. In-class lessons were provided for different groups, including the students from both the primary and secondary schools for adults, aged 18-40. Of 15 participants, 5 were from the primary school for adults. There was one student from the adult primary school in each of the workshop classes. The civics classes were about the European Union, its history, the rules of functioning, and its institutions and bodies. An attempt was also made to define Poland's place in the European Union. The use of neuroandragogy together with the tools it offers was thus used to teach specific knowledge of civics.

The second series of workshops was designed for people who wanted to raise their qualifications in order to improve or completely change their professional situation, and was focused on the psychological. The aim of the workshops was to present and to practice the technique of effective learning in accordance with the assumptions of neuroandragogy. The workshops were advertised via social media to people from the immediate and wider environment of the person conducting the classes, who presented themselves as part of the "Neuroandragogy against exclusion" project. Two people interested in the workshops replied to the ad, stating that they wanted to change their professional situation. The group ultimately consisted of eight people (two men and six women), all at risk of social exclusion. Two of the group were aged 50+, while the others were 25-29. One person was unemployed, and the other seven declared that they were employed. All were in the process of raising their professional qualifications and looking to change or find jobs. One of the group was a parent who had been raising a child for four years, while the others were overqualified for the positions they occupied or their jobs

had nothing to do with their education. Two had low professional qualifications, while four were graduates who were having problems finding jobs corresponding with their education. The workshops were held under school-like conditions, in rooms suited to group activities. They ran for a total of 11 hours over two sessions of face-to-face meetings. There was a week's break between the meetings, during which the participants used the materials and exercises available on the Moodle online platform. The face-to-face meetings were based on the curriculum provided in the materials, developed for the project, for adult learners at risk of exclusion.

The diversity of the groups was undoubtedly stressful for the participants and initially made them feel uneasy. Creation of a safe educational atmosphere turned out to be the first challenge for the trainers. Thus, the workshops began with the introduction of the participants to each other, in order to facilitate an atmosphere of friendly cooperation. The principles, the plan for the workshops and the participants' rights were all presented. It was also important that some common goals be set. Adults students reflected that the possibility of obtaining a certificate of participation for the training was an additional incentive and motivation for completing the course. They wanted to achieve success, to the best of their ability. Setting common goals and getting to know the views and interests of the other participants brought the group closer together, and prepared them for the shared creative activities ahead. During the workshops, some of the principles of adult self-education were explained to the participants, who then attempted to follow them during the classes:

- We all want to be successful as the learning process is inherent to our existence.
- Let's do it well and efficiently! This has to be a custom-made solution, adjusted to our perceptive and cognitive abilities.
- Knowledge should be dosed frequently but briefly, using one's life experience and stimulating a number of senses at a time.
- We use our experience to get to know the new, based on the old.

The civics classes used neuroandragogy and various methods and techniques considered “brain-friendly”. The participants were eager to create a crossword puzzle and rebuses, and to solve them. For a moment, they were both teachers and students. *I didn't know I was so able. This isn't hard at all*, said Milena (26). The students were most enthusiastic about the Memory Palace technique, which involves guessing the names of EU institutions and bodies based on graphic clues. Another interesting idea was the presentation of the effects of the students' work throughout the classes, with the possibility of taking photos of the presentations. Thanks to this, the students could draw on the knowledge they had acquired and revise their knowledge of the issues already discussed. Another activity was using a timeline to match important dates from the history of the European Union with the participants' own personal facts. In this way, everyone perfectly remembered the date of the Maastricht and Amsterdam Treaties.

In contrast, role-play activities and the presentation of their own opinions to the class initially caused many problems, as the participants did not trust one another. But during the workshops the students got to know their capabilities, and in time they became more and more comfortable with such exercises. The last workshop task, which consisted in writing a speech on human rights to be delivered in the European Parliament, turned out to be a great success. The trainer discovered that providing the students contact with music and visual forms of artistic expression enriched their way of thinking about political and historical issues. It also made it easier for them to remember facts, and reduced excessive stress.

Listening to music turned out to be the perfect way of creating an effective learning environment for the participants. It was agreed that everyone would propose one song during the workshops, which was a great idea. Music made it easier for the students to eliminate negative emotions and to focus on the task at hand. When developing mental maps, the students would sing, which according to the trainer, released their creative abilities. Another effective technique that

supported the learning process was memorising terms to the rhythm of music.

The main aims of the workshops in terms of raising the qualifications of the participants were the development and consolidation of their internal motivation to learn, and their introducing to methods of effective learning with use of neuroandragogy.

One significant challenge faced by educators when familiarising students with neuroandragogy is the presentation of neuroscience in an accessible form for the recipients. The way the brain functions is still very mysterious to us. Similar associations can be evoked by the “neuro-“ prefix on the names of the many disciplines the programme of neuroandragogy draws on, such as neuroanatomy, neurophysiology, and neuropsychology. People might imagine something complicated and difficult to understand, leading to failure. As such, an important task for the trainer was to get the participants interested, and to explain the difficulties in the psychological context of the issues analysed. This made them feel familiar with the topic, which paved the way for content that could initially have seemed too complicated and off-putting.

As the workshops were focused on the psychological sphere, it was important to stress the significance of neuropsychology to success or failure in the most important areas of the participants’ lives. Concentrating on the individual learning processes and acquisition of new skills is the driving force and motivation for getting to know one’s own resources and developing a plan for effectively achieving long-term aims. The combination of purely theoretical learning methods with an emphasis on individual differences, identification of cognitive preferences – and later on, active formulation of an individual development plan – allowed the participants to improve their sense of agency in the development of their personal and professional paths.

A very important part of the training was the issue of motivation. Many people experience a drop in motivation after a failure, which persists as they face other problems arising out of that failure. This can

lead to a permanently lower level of motivation, which is characteristic of socially excluded people. The explanation of mechanisms at work in such cases can lead to positive changes allowing for the reversal or stopping of factors causing the exclusion.

The above methods and strategies discussed and used during the workshops translated into the success of the classes and were very well received by the participants.

Observing both workshop groups at work, one could see that they all enjoyed doing the exercises. Milena, a participant of the workshops for adult students, commented that *I don't know how to draw or paint, but the effect of my work is surprising. I didn't realise that pieces of paper, card and felt-tip pens can help learning so much, even for adults.* And this is what Chrystian said: *I know now how to learn with my son. School can bring people together...*

Some of the great advantages of the classes were the interaction between the participants, and the atmosphere of understanding and cooperation. The creation of good conditions also helped facilitate the participants' sharing. They gladly and spontaneously shared their experiences and challenges with their classroom exercises and the techniques introduced. Apart from sharing their experiences, the workshops also allowed the participants to share their knowledge. The students understood that the fact they did not know something did not mean that others didn't know it either – the possibility of learning from one another was something new to them. They discovered that asking each other questions and talking together gave them the chance to acquire new knowledge, and is an effective learning method.

It has to be emphasised, however, that a lack of these elements and the inability to create an adequate atmosphere in class by the trainer, can be factors threatening the success and effectiveness of the project.

A potential difficulty for the workshop participants who were at risk of social exclusion, particularly the middle-aged and elderly, is the part of the workshops based on individual work using the Moodle online educational platform. For the younger participants (under

35), the online platform did not cause any problems. In some cases, the barriers to working on the Moodle platform were embarrassing for the older students: their material status, lack of regular Internet access and a lack of their own multimedia devices. People over 35 were less enthusiastic about the possibility of spending a few hours online. They feared the log-in procedure and felt they lacked the skills necessary to perform the tasks correctly. Although they made many attempts to use the platform, these were, however, without the desired effect. It turned out to be necessary to regularly motivate these people, individually, in face-to-face discussions. Three of them ultimately succeeded in completing the online test.

A lack of student motivation is definitely the main risk factor and a major barrier to successful training, and can occur when working with disadvantaged learners. To prevent the problem of low motivation among the workshops' participants, the trainer used awards and ample praise, which had a considerable effect on the students. During the initial stage of the classes, praise made the participants uneasy, and was interpreted as insincerity from the trainer. However, after a few more stages it became integral to the workshops. From this, it seems that it is more difficult for adults to believe in positive feedback. But awarding students frequently with a kind word turned out to be very motivating, and helped them complete their tasks.

Based on the observation of the workshop, it can be said that an important factor influencing the success of the training is its voluntary character. People who join a given programme voluntarily are, by definition, individuals motivated to undertake some activity, which is very promising.

Both training courses were assessed by the participants positively in the feedback they provided on the last day of classes and in the evaluation questionnaires they filled in. Good reception is also proved by the interest in another series of such workshops expressed by the participants.

According to the trainer who conducted the workshops, the training course served its purpose, particularly in terms of changing

attitudes towards learning. The participants were mostly aged over 35, unemployed, and suffering from low self-esteem. They would often say: *I won't make it, this is not for me, when am I supposed to do this...* But thanks to their participation in the workshops, the students identified their own learning styles, and this changed their attitudes towards the complicated self-learning process and drew their attention to bad habits that prolong their learning and impair its effectiveness. This was particularly visible in the people who failed to complete their tasks on the Moodle educational platform, and who also demonstrated no regularity and delayed their activity in all fields. Thanks to their participation in the workshop and the obtained information about the course of learning processes, secondary school students became more aware of their selected educational paths. Since the workshops, the participants have been more willing to take part in classes and they overcome the encountered difficulties in a more creative way. *I've made a promise, so here I am*, said one of the participants. On the other hand there were different attitudes, particularly among the primary school students, who needed to be constantly motivated to work and undertake any activity. This is illustrated by a statement made by one of the students: *I'm here because I need a good attendance record to get credit for the course.* For most of the participants, internal motivation to learn supplanted any external motivation. As Monika (27) said: *During the classes, time passes quickly and you don't get bored. It's a pity it's only a one-off event.* This was the best award for the trainer.

Thanks to the planning of the workshops as part of a long-term project, we could explore the actual effects of the training on the participants' learning processes. This also allowed us to assess the results of the training in a realistic way, which is, unfortunately, impossible with one-off events. Thus, it seems that to reliably verify the effects of the training and the extent to which the trained techniques are then practised in the everyday lives of the participants, it would be recommended to prolong the individual students' insight into their experience. Potential extension of the course by adding exercises that

support and enhance the skills practised, and contact with the group and trainer, could also contribute to a more sustainable effect of the programme.

An excellent summary of the workshops and the benefits offered by their use of neuroandragogy can be seen in one of the exercises for the adult learners. During the last stage of the classes, participants drew slips of paper from “the hat of plenty”. The papers were printed with quotations from famous people about being successful, education, and setting new goals, selected by the trainer from various cultural texts. The quotations were to serve as guides and reminders for after the workshops ended. The participants took them home as reminders of the “new era” in their education. They were to motivate them to continue working on themselves, and to inspire them to further activity. The participants also chose a motto for our workshop initiative, agreeing that the best choice would be the following quotation from Benjamin Franklin: ***Tell me and I forget. Teach me and I may remember. Involve me and I learn.*** This is the quintessence of the experience offered by the workshops conducted under the “Neuroandragogy against exclusion” project.

Recommendations on the preparation of training programmes, didactic and training materials concerning introduction of neuroandragogy to education of adults from disadvantaged groups

4

4.1. General conclusions from the project implementation and recommendations regarding the use of neuroandragogy in the training programmes and materials for teachers

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As part of “Neuroandragogy against exclusion” project, a training programme was developed for teachers, educators, and social workers cooperating with groups at risk of social exclusion. Educational materials were prepared for the participants of the training, the purpose of which is to provide them with practical professional support in their everyday work with adult learners (both results of the project were discussed in more detail in the first chapter of the publication). The pilot edition of the workshops for teachers and educators from the six countries participating in the project allowed for testing those tools, drawing conclusions and preparing recommendations regarding the introduction of the assumptions of neuroandragogy in the programmes of professional training for the teachers and educators working with adults from the disadvantaged groups, and for preparing effective didactic and educational materials for them.

The first conclusion reached in the process of implementing the project, based on the evaluation survey carried out in the course of implementation, is that it is reasonable to include the issues connected

with neuroandragogy in the professional training programmes for teachers and instructors, as well as in the programmes of general and professional education of adults from groups at risk of social exclusion. 83% of the instructors running the courses for teachers, and 90% of the teachers and educators working with adults consider those issues important and useful in their work with adult learners. Therefore, it is definitely recommended to include the courses in neuroandragogy and use the strategy in adult education as an integral element of professional training for teachers working with adults, as well as for instructors working in the area of adult education, workers of NGOs dealing with education and preventing social exclusion. This conclusion is further justified by the fact that among the teachers, instructors, and educators working in the area of adult education there is a huge category of people with working knowledge, with vocational rather than pedagogical education. Some of the project participants were not teachers but social workers, psychologists, HR specialists, career advisors, etc. Therefore, the first recommended action is to prepare the offer of trainings and courses in the basics of neuroandragogy, in particular for those working in education and preventing social exclusion, who do not have any pedagogical or psychological training. Moreover, it seems reasonable to organize trainings in neuroeducation for those from similar professions (e.g. separate courses for job instructors, career advisors, teachers of the subjects of general education etc.), as differences in the level of pedagogical and psychological knowledge of the participants of the training can be an obstacle to its effectiveness.

The guidelines presented above indicate the context in which neuroandragogy should be included in the trainings for teachers, instructors, and educators working with adults. On the one hand, the cognitive processes occurring in the human brain, mechanisms connected with storing and processing information, and the functioning of the reward system connected with motivational processes are universal phenomena. Therefore, the knowledge regarding these issues, including the theoretical and scientific

background, should be a part of professional training for teachers, educators, and instructors working in any area of adult education. However, it is also recommended to adjust the content regarding the abovementioned theoretical issues to the character of the professional tasks and type of the group of adult learners the participants of a given training or course work with. The practicality of the information presented in the training for teachers, its usefulness, ease of application in everyday work, were the elements that received the highest ratings from the participants of the project.

In the light of the conclusions from the implementation of the project, it is recommended to acknowledge the importance of the proper balance between the theoretical knowledge provided to the participants of the training, and the skills practiced there. The shaping of practical methodological and didactical competences in the field of "brain-friendly" adult education makes it possible to include a number of practical exercises, case studies, simulations, and activities conducted independently by the participants of the training in the programmes of training for the teachers, educators, and instructors working with adults. This makes it possible for the participants to acquire, remember, and process the information included in the programme of the training in a "brain-friendly" manner, i.e. one which is both active (involving independent action), and effective (placed in a practical context). This is confirmed by the results of the evaluation conducted. Among the methodological aspects of the training for teachers, the following were considered the most valuable: opportunity to learn by action, opportunity for frequent teamwork, and opportunity for exchanging views and discussion.

A recommended solution was also introducing elements of distance learning based on an e-learning platform, apart from face-to-face meetings, to the trainings for teachers, educators, and instructors working with adults. The participants of the project positively evaluated the implementation of the programme of training for teachers in such a manner. This is because basing part of the training on the platform provided the participants with more flexibility

regarding the conditions of their learning, and the opportunity of doing additional exercises and tasks on the platform increased the effectiveness of the process of memorizing the information, but also provided them with a space for reflexion and analysis with regard to the experience gained in the face-to-face training. It is also recommended to use the e-learning platform as a repository of educational materials, knowledge resources, links to useful articles and educational on-line applications. This is because this kind of solution provides the participants with access to the materials and information they can use not only during the training, but also after it finishes.

Another area of recommendations developed on the basis of the conclusions from the implementation of “Neuroandragogy against exclusion” project is the design of the educational materials and tools addressed at teachers, educators, and instructors working with adults from the groups at risk of social exclusion.

The first recommendation in this regard is that it is important to closely connect the theoretical, scientific information presented in the educational materials, with the practical aspect of their use in the educational work with adults. In practice, it means designing the educational materials and tools in such a manner that after the theory behind a given phenomenon is explained, there is a practical example illustrating how the theory relates to a real teaching situation, and then the participants should be invited to an exercise / task / activity which allows for using the information thus acquired in practice. The recommended structure of educational materials (theory – example of use – practical exercise) can facilitate understanding and acquiring complex knowledge and set of competences in the area of neuroandragogy also for those without any pedagogical or psychological training.

As proved by the evaluation surveys conducted and by the experience of the implementation of the project, the teachers working with adults expect that they will be provided with a number of educational tools that they can use in their work with adult

learners, in the form of activity scenarios, exercises, tasks, games, educational materials (surveys, questionnaires, check-lists, work sheets etc.) for adults, adjusted to the specificity of their cognitive processes. Therefore, it is strongly recommended to include a great number of such tools in the educational materials in the field of applied neuroandragogy, designed for the teachers and instructors working with adults. It is recommended to develop those tools in such a manner that the participants are able to quickly adapt them to the specificity of the field of education they work in and to the character of the adult learners they work with.

As it was already mentioned in the publication – teachers and instructors of adults, therefore also the recipients of the educational materials, are people with varied professional training, not only within the field of pedagogy or psychology. This implies the need for adjusting also the language of the materials to various types of addressees. According to the evaluation surveys conducted as a part of the project, it is not recommended to use a register which is too scientific, full of specialist terms and definitions. Moreover, such language forms discourage those readers who do not have much specific knowledge about neurobiology or neuropsychology and for those who do not work with the topic on an everyday basis. Simple, but clear, and vivid language of the materials makes it easier to understand specialist content and complex processes that must be included as an element of educational content in the field of neuroandragogy.

As for editing, it is important to take care of the visual quality of the materials designed. The teachers and instructors participating in the project said that visual attractiveness, but also clear structure of the materials, are important for their reception and make them more user-friendly. This is in line with the idea of “brain-friendly” adult education, which explains the importance of effective acquisition and processing of the information learned, of activating multiple sensory channels, of using not only text, but also images, symbols, and visualisations, using associations and mental connections.

Therefore, editing the educational materials for adults must involve structuring and hierarchizing the content with various techniques of highlighting the most important information, visualising some of the information with suggestive images, presenting complex data with the use of infographics, tables, and charts. However, it is also important that the main purpose of the use of the highlighting techniques, visualisations and images must be to provide information, and not merely decoration. Otherwise, the overflow of stimuli would lead to a cognitive overload in the addresses of the materials.

Developing the universal competency in learning based on the knowledge on the functioning of the human brain and with the use of existing predispositions and cognitive conditions, which was the basis of “Neuroandragogy against exclusion” project, involves also developing the ability of searching for information, knowledge sources, and educational resources independently. Therefore the last recommendation with regard to the design of the educational materials for teachers and educators must be to include a number of references to the latest academic literature on the application of neurosciences in teaching adults, internet articles connected with this area, applications and IT tools effective in “brain-friendly” adult education. This will make it possible for the addressees of the materials to supplement and extend the knowledge acquired during the training also after it finishes, and to search for information connected with the topics the participants were most interested in.

4.2. Recommendations regarding the design and implementation of training aimed at developing the learning skills among the adults from the groups at risk of exclusion

- *Author(s): Katarzyna Czekaj-Kotynia (University of Social Sciences)*

“Neuroandragogy against exclusion” project involved also the design and testing of materials for adult learners at risk of social exclusion. Implementation of the pilot edition of workshops directed at this group of recipients allowed for formulating the conclusions and recommendations regarding the design of training and educational materials aimed at developing the learning skills on the basis of the assumptions of neuroandragogy for the disadvantaged adults.

When analysing the course and evaluation of the workshops, it is important to acknowledge that the first problem to overcome in working with the adult learners from the groups at risk of exclusion is to encourage the participants to take part in this type of training. The most frequent barriers in developing such a motivation in this target group is: a history of educational failure, poor learning habits, economical barriers, living conditions, time constraints making learning more difficult, lack of knowledge on the connection between developing one’s skills and the improvement of the quality of private and professional life. Low motivation of the participants results in their reluctance towards participating in the training, low level of participation during the training, and finally higher risk of resigning before the end of the full cycle of meetings. Therefore, it is recommended to give priority to the issues of self-motivation and the functioning of the reward system in the workshops for adults from disadvantaged groups. Thus, developing a high level of involvement of the participants in the process of self-education, and letting them discover factors that motivate and demotivate their learning individually must precede any other action taken by the teacher with

regard to shaping the knowledge and practical skills connected with learning with the use of the information on the functioning of the human brain.

Adult learners from the groups at risk of exclusion who participated in the project presented varied levels of autonomy and readiness to take responsibility for their learning process. As a result, they frequently skipped the classes, avoided performing the activity when not supervised by the teacher, and there were difficulties in organizing and controlling this part of the educational process which should be conducted independently by the participants. This leads to the conclusion that it is necessary to adjust the action of the teacher to the individual needs of the workshop participants. The number and level of difficulty of the activities and tasks recommended to a given learner must take into account their level of inner motivation, and they must be adjusted to their time limitations and personal situation. It is also recommended to provide the participants with the opportunity of flexible adjustment of the pace and intensity of learning to their personal situation and cognitive predispositions. The educational platform can be a recommended tool here. Providing access to the educational materials via this channel makes it easier for the adults to learn, even if they could not participate in the given part of the classes. Publishing a set of exercises for individual work provides the participants with an opportunity to choose the tasks of the proper level of difficulty, adjusted to their interests. Moreover, the educational platform provides the participants with an opportunity to learn at the time and place of their own choice.

At the early stage of developing their learning competence, adult learners from the groups at risk of exclusion require a lot of support and help from the teacher (more than in the case of other groups of adult learners). This is confirmed by the conclusions from the pilot edition of the workshop organized as a part of the project. Therefore, it is recommended to gradually, slowly increase the level of independence of the learners in the course of the training. It is not recommended to provide them with tasks and activities to be done individually at

the very beginning of the learning process. At first, their work should be supervised by the teacher to a large extent, so that (s)he provides them with detailed instruction, explaining all the procedures of work and possible solutions to the tasks the participants of the workshops face. Only when the inner motivation towards self-education is developed, along with well-founded habits of regular learning, and basic competences connected with self-control and consistency is it recommended to increase the level of independence of the students in solving the tasks and planning the process of their own learning. In such a case, a recommended form of work for the adult learners can be teamwork. Cooperating with those encountering similar problems may increase their belief in future educational success, makes it easier for them to break through educational barriers together, and develops teamwork skills which are so valuable within the job market.

The experience acquired in the course of the project allowed to indicate those types of tasks, activities, and exercises which, in the case of the recipients of the workshops – adults at risk of social exclusion, are the most effective and best suited for the specific educational needs of the target group. In this context, it is recommended to apply the following teaching methods in particular:

- Teamwork methods and techniques – activating social learning and stimulating mirror neurons, they increase motivation and effectiveness of learning, facilitate overcoming educational barriers, and stimulate creative thinking in the team.
- Methods and techniques aimed at gaining insight into one's self – allow the people with inadequate self-esteem and low feeling of agency to discover their strengths, talents, skills, and overcome the difficulties which have been a barrier for their education and development.
- Case studies – they apply theoretical knowledge, often too abstract for the recipients with low level of competence in a given area, to practical contexts and real-life situations, which facilitates memorising and understanding the new information.

- Memory techniques – positively stimulate the functioning of memory, facilitate acquiring and ordering of the new information also for these adults who experienced failure in the course of their formal education, not being able to adjust the learning methods to their predispositions.
- Methods combining analysis and creative thinking (e.g. mind maps) – activate both hemispheres of the brain and allow for adjusting the learning process to one's own predispositions and skills (using not only text, but also image, chart, symbol, etc.)

The workshops for adult learners were conducted in the countries of the partnership, with varied groups of participants at risk of exclusion. This allowed for testing and evaluating the effectiveness of the strategies of neuroandragogy with regard to various types of adult recipients. The conclusions and recommendations resulting from the experience gained with regard to selected groups of learners at risk of exclusion are presented in the subsequent subchapters of the publication.

4.1.1. Recommendations regarding the use of neuroandragogy in developing the learning skills of people with disabilities

- *Author(s): Karin Kicker-Frasinghelli (Lebenshilfen Soziale Dienste GmbH)*

The findings of neurodidactics generally correspond to the learning conditions that people with disabilities should find in order to best benefit from the learning process they are in. So, one can be assured that the neurosciences provide important basic knowledge in terms of teaching people with intellectual disabilities and/or learning difficulties. Nevertheless, there are some specific requirements to be considered to support the learning process even better.

These requirements are about the accessibility¹³ of the information and teaching material for the learners. When teaching people with intellectual disabilities and/or learning difficulties, this accessibility targets the written and spoken language as well as the dramaturgy of the lessons. So the following chapter will focus on ...

- ... the requirements on documents and material,
- ... the requirements on the spoken language,
- ... the requirements on the lessons.

EASY-TO-READ MATERIAL AND DOCUMENTS

There are already many resources and standards according to Easy-to-Read (ETR). The leading standards in Europe were developed by Inclusion Europe together with other organisations within a European project¹⁴. The criteria that are defined are about the format and layout, the writing, words and sentences, structure and images.

The size of the document shall not be too large in terms of pages and shall be on the format A4 or A5. It is not recommended to use pictures or patterns as background for a text, this makes it very hard to read. The fonts shall be non-serif and the writing has to be large enough, it is suggested to use at least the size of Arial 14 and to avoid any writing designs, italics or underlining.

It is recommended to use easy understandable words whenever possible. If you have to use difficult words, explain them. It is not ETR to use abbreviations or special characters (for instance &, \$, \$...). The sentences shall be short and simple. Should always be used a new line for a new sentence. When writing longer sentences should try to split them over two lines according to their sense. According to the layout it is ETR-standard to write left-adjusted and never justified to avoid the big gaps between the words.

13 We assume that an architectural accessibility is standard and does not have to be explicitly mentioned here.

14 European standards for making information easy to read and understand, https://easy-to-read.eu/wp-content/uploads/2014/12/EN_Information_for_all.pdf (access: 21.07.2019).

The target group benefits from illustrations that highlight the content and support the understanding. There are photographs, symbols or drawings that can be used. Always use the same image for the same thing in one text¹⁵.

EASY UNDERSTANDABLE SPOKEN LANGUAGE

It is important to understand how to communicate effectively and how to make information clear and easily understandable when speaking. Easily understood language has to be practised again and again since it is not easy to use. The most important thing is to be aware that the language is simple but for adults. Many people walk into the trap and use children's language. These hints may be useful:

- To keep sentences short and grammatical constructions simple.
- To speak clear and slowly.
- To use words that are easy to understand, no jargon or technical terms.
- To use an active language and no passive verbs.
- To use a positive language.
- To prefer to use simple tenses.
- To keep the language personal.
- To use practical examples to illustrate what you are talking about.
- To interact with the learners and involve them into your presentations and talks.

One of the most important things is to always check if the learners understood what we're talking about. Inclusion Europe suggests the use of "Accessibility Cards". Each student gets a green, a yellow and a red card.

- They should raise their green card when they agree with what you say. They should raise it to show they are understanding and following.

15 Ibidem.

- They should raise their yellow card to tell you that you are speaking too fast.
- They should raise their red card to tell you they do not understand what you are saying or to ask a question. Then you should explain it again with simpler words.”¹⁶

DRAMATURGY OF THE LESSONS

When preparing the Neuroandragogy Workshops for the target group, people with intellectual disabilities or learning difficulties, it is about finding the most suitable design for the workshop. Here, again all suggestions coming from the neurosciences are good to reflect on:

- use interactive methods,
- involve kinaesthetic exercises,
- try to attract the learners via different channels (listening, reading, doing, experimenting...).

It may be better to divide a long-term workshop into smaller units and to meet more often as a result. Do repetitions of the content and stick to a golden thread throughout each unit.

These suggestions, nevertheless, are deemed to be useful for every learning person, and are not only regarded as important for the target group, people with intellectual disabilities.

16 Inclusion Europe (n.s.): Teaching can be easy. Recommendations for lifelong learning staff to make their courses accessible. P. 6. Available online: https://easy-to-read.eu/wp-content/uploads/2014/12/EN_Teaching_can_be_easy.pdf (access: 21.07.2019).

4.2.2. Recommendations regarding the use of neuroandragogy in developing the learning skills of women returning to the labor market

- *Author(s): Zdenka Havrlikova (Educentrum)*

The neuroandragogy pilot workshops for women returning to the labour market brought us a lot of insight and inspiration on how to design and implement such training activities.

Modern organizations offer many solutions supporting women returning to the labor market after childbirth by offering them flexible forms of collaboration (part-time work, home office, shared work place, short-term babysitting in company) and continuing to engage them in further development and learning to enhance continuity of cooperation, motivation and loyalty. However, this example of good practice has been unique in the Czech Republic for a long time. Employers offered flexible jobs very rarely, which does not motivate women to get back to work quickly. But on the other hand a long separation of women from the labour market has a number of negative effects. If women have more children, it often happens that they leave work for several years. Returning after such a long time is often very difficult. Women suffer from a lack of self-esteem, fail to name and present their strengths, and lack current knowledge of employers' reality and requirements. When preparing curricula and learning materials for neuroandragogy workshops it is recommended therefore to start with activities that help women to discover and name their resources, strengths, talents, knowledge, skills and competences. This is an essential condition for gaining enough self-confidence when looking for adequate career opportunities.

It is also advisable to stimulate such learning skills that will help women to effectively work in flexible and often very dynamic working arrangements. To be able to work from home or to share

work requires to train skills such as planning, organizing, effective communication, self-discipline or self-motivation etc.

Implementation of a pilot edition of workshops developing learning skills for women returning to the labor market allowed to formulate a number of detailed recommendations regarding the organization of support and training for this group of recipients. The pilot workshops' results showed that it is advisable to design training curricula based on the following key principles that are effective when working with women caring for small children who are returning to the labour market. Such principles support efficient and conscious learning which is the key to neuroandragogy:

CONSTRUCTIVIST PERSPECTIVE

This perspective enabled participants to learn how to construct their reality and open up new opportunities and alternatives in their personal and professional lives, further encouraging learning motivation. Furthermore, this perspective allowed the participants to realize the boundaries of their language and thus their world and to learn how to expand them through naming their new life experiences. In practice, it is advisable to involve story-telling in trainings.

SYSTEMIC APPROACH

This approach helped participants realize the influence of the context that influences them and understand change as an opportunity to move on, learn and develop. This approach also supported taking responsibility for their decisions and awareness that other people cannot be changed and influenced arbitrarily. This is also related to the fact that each person has his or her individual learning style and which must be respected.

CONTEXTUALIZATION

This perspective taught participants to understand all the factors that influence them in their development (personality, life experience,

professional experience, family, social, health, etc.). It also led participants to find their goals that are personally important to them.

VALUE ORIENTATION

One of the foundations of working with parents caring for small children is to work with values. Career breaks and childcare is a time when many parents redefine their values. Therefore, it is important to start with teaching the participants to realize their values, name them and evaluate their importance in the career decision making process. It is also important for parents to recognize the roles they play (e.g. parent / employee / entrepreneur) and to find a balance between them.

COGNITIVE PERSPECTIVE

Cognitive perspective is an important theoretical starting point, which is necessary to incorporate methodically into training programmes for parents with small children. It allows parents to realize their resources, knowledge, skills and experience. It helps to realize what influences parents' decisions and how they make decisions. Through cognitive perspective they also identify their goals, barriers, and solutions.

STRENGTH-ORIENTED APPROACH

Strength-oriented approach allowed the participants to identify their strengths and explore future job opportunities. With this approach, they also break away from what they can't do and instead start building on what they can and what they wish to develop.

When preparing the pilot neuroandragogy workshop, the approaches listed above were taken into account in work with women caring for small children and supported the social aspect. That proved to be an efficient strategy when working with this target group. The participants appreciated the childcare service during their trainings a lot. We received feedback from a number of participants that, without babysitting, it would not be possible for them to attend the training

programme. We also received useful suggestions for other aspects of the training. Participants stated that they would prefer longer and more continuous education, as well as individual support such as coaching or career guidance. They would also appreciate to get into contact with mentors from the practice who would give them tips and recommendations useful for return to work. Low self-esteem was still seen as a major problem hindering successful career development. On the other hand, the motivation for further learning was high for a number of participants, because after years of focus on childcare, the participants wanted to start working on themselves again. One of the most important aspects for the participants was also the social level, the possibility to share their fears, worries, experiences, dreams and desires with people in the same situation.

All these approaches and recommendations discussed above are linked by this denominator: they teach participants to think constructively, to grow and to think positively. They support them in further motivation to learn, self-develop and find meaning in their personal and professional life.

4.2.3. Recommendations regarding the use of neuroandragogy in developing the learning skills of immigrants

- *Author(s): Andrianopoulos Panagiotis, Gallou Georgia, Lianou Eleni (Kalamata Second Chance School)*

In order to design and implement workshops to develop the learning skills of our adult learners – immigrants and to design educational materials for them, we need to develop a clear strategy that will follow progressive and concrete implementation steps. When considering vulnerable groups of the population, such as immigrants, there is a need to implement core skills development programmes aimed at

social inclusion and in employment. Programmes can offer courses on horizontal skills, life-skills such as problem solving, collaboration, creativity, adaptability, flexibility, innovation, critical thinking, problem solving, technology use, communication, organization, skills and behaviors that will enable adult learners to self-direct their lives, to become autonomous, to deregulate their behavior, to lead them to self-improvement and self-development. The training programme should be well organized in general and provide trainees with the necessary supporting educational material.

Firstly, we need to take into account the main features of our target group, that is, immigrants. We should be able to understand the real problems faced by migrant learners and the impact they have on their educational development. Specifically, immigrants usually face problems due to the difficulties they encounter when joining a new society due to insufficient knowledge of local language (both written and spoken) and culture. They show a lack of concentration due to obligations and fatigue (multiple roles, lack of time, unemployment, uninsured work, underemployment, etc.). In addition to daily life they face problems of prejudice, lack of self-confidence and ignore the way of communication with public services and agencies. There is a lack of motivation to participate effectively in the educational process and the possibilities of exploiting new knowledge.

At the same time, we need to know the basic characteristics of adult learners, such as tendency for self-determination, a wealth of experience and knowledge, a set mode of learning (learning model), and a tendency for active participation.

We should also mention the role of the adult educator, who should act as co-ordinator and facilitator, promote co-operation and cultivate the critical approach of reality, always relying on the experiences of the members of the group. They should seek to create a collaborative learning environment and a positive classroom environment, which will be based on an understanding of the particular educational needs and interests of immigrant learners. In addition, they should give simple and clear instructions and handle as much as possible in a

personalized way, the ways of transmitting messages (acoustic, visual, kinesthetic etc.). In addition, the trainer is called upon to take on the role of an intercultural consultant who as a facilitator, knowledge leader and animator interacts in a fertile and effective way with adult, immigrant learners. A key criterion for the success of the programme is the admission by the trainer of the diversity and need to integrate these social groups into the local society. Understanding the cultural characteristics and socio-economic differences of the different groups will lead to the success of the programme. The trainees on their part have the need to experience positive feelings and acquire a sense of belonging to the education / training group.

Another dimension to be taken seriously for the organization of a workshop and educational material for immigrant learners is that the basic principles of learning are based on knowledge of the brain function, the principles of neuroandragogy. The basic principles of neuroandragogy are that each brain is uniquely organized, learning always involves conscious and unconscious processes, the brain is social, i.e. it develops better in cooperation with others, the brain perceives all the parts at the same time, brain is neutrally plastic, the brain works more effectively for organizing and storing experience when we feel positive, pleasant emotions, and that the brain easily stores the experience associated with the life or work etc.

With the help of neurosciences, some misconceptions that result from misreading or incorrectly referring to data from brain research and their application to education and learning are revealed. Such misconceptions affect the educational methods and practices of teachers. The adult trainer analyzing the specifics of immigrants as adult students should know that the human brain as well as the entire human body is subject to change over time. For example, the speed of its functions is reduced, the reflex reactions and the concentration are diminishing, the memory capacity decreases, and spiritual flexibility slows down. They should also know that the power of the mature brain is the experience and the accumulated knowledge, the pre-existing knowledge. Thus, the adult educator, bearing in mind

this information, should emphasize pre-existing knowledge and experiences by encouraging immigrant learners to share them in the learning process, as well as by using teaching methods that motivate learners and avoid learning blockages such as stress. They should also bear in mind the challenge to make the meaning of an activity clear, and to apply a multi-sensory approach to meet the different needs of immigrant learners, apply repetition in order to re-energize neural connections, and, finally, breaks, as during the learning process, the brain needs time to process the learning material.

The next step must be to properly diagnose the educational needs of our target group, in our case the immigrant learners, as this defines the success of a training programme. In order for the diagnosis to be accurate, the trainer, before the beginning of the programme, should survey the reasons for their participation in the programme and what expectations they have. The trainer should also take into account immigrant trainees intentions to become actively committed to the training programme, as well as what prior knowledge they have and what they would like to acquire. The trainer should adequately clarify the educational objectives that are feasible and provide clear explanations and instructions. The selected educational activities should be directly related to real situations that the trainees will encounter in their working environment and respond fully to their needs and expectations. The trainer should take care to promote an active participatory educational method and choose educational techniques that enhance the active participation of immigrant learners in the educational process, achieving a satisfactory degree of interaction between learners with themselves and with each other.

An important dimension is to motivate immigrant learners to further engage with the content of the programme by applying it to their daily personal or professional lives. The qualitative assessment of this programme, which also is a crucial dimension of the design and development of educational and training programmes, is therefore necessary. It would also be good for the activities to end with a reward, a suitable encouraging message.

The educational material for migrants should also be based on the communicational learning approach, aiming at creating a portfolio of training materials that will provide learners with a set of texts relevant to their everyday life and interests such as daily routines, day-to-day training sessions, weekly programme, site instructions, fun guides, applications, statements, maps, rentals, alerts, instructions for use, cooking recipes, song lyrics, customs, etc., bearing in mind that the purpose of autonomous learning is to make them function in the workplace and personal lives as autonomous explorers of knowledge.

Summary

The experience gathered during the implementation of the project „Neuroandragogy against exclusion” as well as the evaluation studies conducted in its course allow to assess positively the scope of the objectives achieved and the results developed.

Adult learning strategy based on the neuroandragogy assumptions has proved to be an effective tool to support the learning competences of adults at risk of social exclusion. The pilot workshops carried out during the project allowed participants to learn effective methods of individualized teaching and development of adults’ competences. Teachers, educators and instructors working in the field of adult education considered it important and purposeful to include neuroandragogy workshops in vocational training programmes. The conclusions drawn from the project allowed to identify areas where the use of neuroscience-based education effectively supports counteracting social exclusion. They also made it possible to diagnose problems that may be related to the use of neuroandragogy in the daily work of adult teachers and the self-education of disadvantaged people.

The assumption of the “Neuroandragogy against exclusion” project was to initiate a new direction of using knowledge about the brain functioning of adults in education and counteracting social exclusion. The creators and implementers of the project hope that the developed materials, tools, good practices and recommendations will enable people working in these areas to effectively incorporate the acquired neuroandragogy knowledge and skills in their professional tasks. And also that “Neuroandragogy against exclusion” project will become for them an inspiration and motivation to continually develop and expand their own knowledge and search for more and more innovative and effective ways of teaching, and above all – to arouse the desire to self-education. Especially among those who need it most.

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