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The Implementation of the NTC (Nikola Tesla Centre) Learning System and its Benefits in Relation to Neurological and Psychological Development of (very) Young Learners in EFL Contexts

Izvedba NTC (Nikola Tesla Center) učnega programa in njegove koristi v povezavi z nevrološkim in psihološkim razvojem pri učenju angleščine kot tujega jezika v zgodnjem otroštvu

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Zahvala

Za izjemno strokovno pomoč, podporo in potrpljenje pri izvajanju raziskave in pisanju magistrskega dela se zahvaljujem mentorju red. prof. dr. Janezu Skeli.

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ABSTRACT

The Implementation of the NTC (Nikola Tesla Centre) Learning System and its Benefits in Relation to Neurological and Psychological Development of (very) Young Learners in EFL Contexts

The present dissertation focuses on (very) young learners (age 1-5) and their ability to acquire and learn foreign languages in their preschool years. The final findings are based on neurology and psychology in connection to pedagogy using the NTC Learning System.

Many scholars, such as Piaget, Pinter and Singleton have made great strides to highlight early foreign language acquisition. The mainstream curriculum has tried to implement some changes throughout the years, but has not achieved the much-needed progress. Thankfully, some private institutions, such the Montessori school and the Waldorf school have evolved their teaching techniques. One learning system that uncovered the root behind the young child's learning, was the NTC (Nikola Tesla Centre) Learning System established by dr. Ranko Rajović. He based his research on the child's neurological and psychological development and formed a programme where children would be able to learn unknowingly while attaining great amounts of information. Using the appropriate tools and techniques, educators are able to recognise the child's potential at a very young age while being able to utilise their capabilities. The important change in our children's cognitive and motor development lies in teachers, nursery teachers and parents provided with proper education and training. They are the ones who could help improve the new generation of learners.

Key words: very young children, foreign language learning, neurology, psychology, preschool, NTC (Nikola Tesla Centre) Learning System

IZVLEČEK

Izvedba NTC (Nikola Tesla Center) učnega programa in njegove koristi v povezavi z nevrološkim in psihološkim razvojem pri učenju angleščine kot tujega jezika v zgodnjem otroštvu

Pričujoče magistrsko delo se osredotoča na učence v (zelo) zgodnjem otroštvu (1-5 let) in njihovo sposobnost usvajanja in učenja tujega jezika v predšolskem obdobju. Končne ugotovitve temeljijo na nevrologiji in psihologiji v povezavi s pedagogiko, ki temelji na pedagoškem programu NTC (Nikola Testa Center).

Številni raziskovalci, kot so to Piaget, Pinter in Singleton, so zelo veliko pripomogli k boljšemu razumevanju procesa usvajanja in učenja tujih jezikov majhnih otrok. Določene izboljšave so bile do sedaj že uvedene v uradni učni program oz. kurikulum, vendar potreben napredek še ni bil dosežen. Na srečo so nekatere zasebne ustanove, kot sta Montessori in waldorfska šola, le stopile v korak s časom in razvile naprednejše učne tehnike. Dr. Ranko Rajović, ustanovitelj NTC načina poučevanja, je tudi preučeval začetke poučevanja majhnih otrok in ustvaril program, ki temelji na otrokovem nevrološkem in psihološkem razvoju, pri katerem se otroci nevede učijo s pridobivanjem velike količine informacij. Z uporabo ustreznih orodij in tehnik lahko vzgojitelji prepoznajo otrokov potencial, hkrati pa izkoristijo njihove zmožnosti. Pomembna sprememba kognitivnega in gibalnega razvoja naših otrok temelji na ustreznem izobraževanju učiteljev, vzgojiteljev in staršev. Oni so tisti, ki lahko pomagajo izboljšati novo generacijo učencev, vendar potrebujejo znanje.

Ključne besede: zelo majhni otroci, učenje tujih jezikov, nevrologija, psihologija, predšolska vzgoja, NTC (Nikola Tesla Center) sistem poučevanja

CONTENTS

INTRODUCTION	1
1. Clearing the ground: The general education system in preschools in Slovenia	2
1.1. The main objectives and aims of the preschool education system	3
1.2. Teaching methods and learning areas.....	4
2. Language programmes in mainstream learning	4
3. Educational programmes following a more progressive educational programme	6
3.1. Montessori education	7
3.2. The Waldorf education	8
4. Ahead of his time – Piaget	9
4.1. The sensorimotor stage.....	11
4.2. The preoperational stage.....	11
5. The implementation of language learning in a young learner’s life	13
5.2. Early bilingualism.....	15
6. At what age should we start teaching EFL classes to young learners?	16
6.1. The concerns surrounding early language learning in mainstream education.....	17
6.2. How do we retain information most effectively?	18
6.3. The importance of early stimulation.....	20
7. Giftedness	21
7.1. Can giftedness be the source of problems?	22
7.2. Identification of gifted children	23
7.3. The importance of family and the general social surrounding for the development of giftedness.....	23
7.4. Problems in early development	24
8. Ranko Rajović and the NTC (Nikola Tesla Centre) learning system	25
8.1. Who is dr. Ranko Rajović?	25
8.2. The start of the NTC learning system programme	25
8.3. Main praecipe behind the NTC learning system programme.....	26
8.3.1. The difference between reproductive and associative knowledge	27
8.3.2. The NTC learning system programme	29
8.3.3. Activities that stimulate the child's brain the most.....	30
9. Who should be taught to educate?	32
9.1. Parents	32
9.2. Nursery and school teachers	33

10. The result of the lack of proper stimulation (developmental disabilities)	34
11. My struggles with the implementation of various techniques of EFL.....	35
12. NTC learning system programme in the private preschool <i>Dobra teta</i>.....	39
12.1. Preschool education at the private preschool <i>Dobra teta d.o.o.</i>	39
12.2. Implementation of the NTC programme in EFL classes	40
12.2.1. The 3 phases of the NTC learning system programme	42
PHASE 1: Motor exercises	42
A) Rotation and balance exercises	42
B) Eye accommodation exercises	45
PHASE 2: Activities involving abstract concepts (identification, classification, association).....	47
A) Reading	47
B) Memory games.....	49
C) Storytelling.....	49
PHASE 2: Music	50
PHASE 3: Activities improving the development of functional knowledge	51
A) Riddles	51
CONCLUSION.....	52
BIBLIOGRAPHY	54

INTRODUCTION

It is common knowledge that learning a foreign language takes time and requires large amounts of practice. Grammar, vocabulary and communicative capabilities are just parts of the overall knowledge we need to attain. Many adults have genuine difficulties with the acquisition of information that is foreign to them, but what about children? They have been born into the world that is typically quite foreign to them. Everything new they learn is a step towards the expansion of their general knowledge. Their acquisition of the mother tongue should be a great indicator of children's ability to gather new knowledge unknowingly and with ease.

This unbelievable ease with which children acquire new knowledge, is what sparked my interest and became the reason/driving force behind my thesis. My goal is to uncover whether children possess the ability to acquire languages in their preschool years and whether learning a foreign language simultaneously with the acquisition of the mother tongue is already a possibility at the age of one. With the usage of theoretical background, I present the theories that have already agreed with this supposition and are furthermore expended with the presentation of the learning institutions that have undergone the changes in the general learning system.

My work also focuses on the appropriate learning system that would greatly benefit young learners. I use the fields of neurology and psychology, which serve as the base, to try proving that the NTC Learning System, founded by dr. Ranko Rajović, is one of the most advanced programmes nowadays that enables children to advance, improve their IQ and reach their biological potential. This programme has also been used in my EFL (*English as a foreign language*) classes at a private preschool *Dobra teta* for the last three years. My findings using a variety of NTC activities are presented in the empirical part of my thesis.

1. Clearing the ground: The general education system in preschools in Slovenia

Our school system has been stagnant for quite some time. Even though the people's lifestyle and culture have changed massively over the years, the school system is the one constant that barely changes. Sadly, our educational system has more or less stayed the same for the last 30 years and that is why, I believe, the change is imminent. The responsibility lies on the shoulders of younger educators that are able to give room and support for a significant change.

But before we further delve into the benefits of the more progressive methods of education, it would be wise to gather some insights into how the mainstream preschool education system functions in Slovenia. According to the UNESCO International Bureau of Education (IBE), conducted in Geneva (Switzerland) in 2006, children start pre-primary education at the age of one and it lasts till the child's enrolment into the primary school education at the age of six and is not compulsory. The preschool programmes are funded by public funds, municipality funds, parents, donations and other sources. Preschool education is monitored by *The Organisation and Funding Education Act* which specifies the management and financing of education and monitors the conditions for its implementation, and *The Pre-school Institution Act* which monitors preschool education in the private and public sphere. There are some minor changes implemented in the areas of the Italian and the Hungarian ethnic minorities. Since they are ethnically and linguistically mixed, their preschool education institutions are regulated by the Constitution of the Republic of Slovenia.

Preschool education can either be private or public. Public preschool institutions are funded by the municipalities and private preschool centres are funded by either individuals or groups of individuals. But there are two types of private preschool institutions. Such preschool centres can either be with concession agreements, which must implement the national curriculum and also meet all the regulatory requirements for public preschool institutions, or be without concession agreements, which must also meet all the necessary requirements regarding the staff, premises, equipment and a positive estimation from the Council of Experts of the Republic of Slovenia.

As far as staff is concerned, it involves preschool teachers, preschool teachers' assistants, counsellors and other professional staff, management, administrative and auxiliary staff. The

legislation passed in February 1996, has introduced some major beneficiary changes that include the parents' choice between public and private preschool centres and their programmes, it reduced the number of children per group and per professional, improved the organisation of space at the institutions, increased the level of education of preschool teachers and preschool teachers' assistants and also increased the level of education of all the managing staff in preschool centres.

Preschool centres are usually organised in two age groups: the first age group consists of children aged 1 to 3, and the second consists of children aged 3 to primary school age. The first group generally consists of twelve children, and the second age group consists of twenty-two children. The municipality is still allowed to increase the number of children by two children for each age group, but is required to support its claim. Concerning the number of staff per child, in the first age group two professionals must be present six hours daily, and in the second age group, two professionals must be present four hours daily. This ration may be changed due to the nature of the group (homogeneous, heterogeneous or combined, or if there is a child with special needs present) (UNESCO 2006: 3-7).

1.1. The main objectives and aims of the preschool education system

The main objectives of the preschool education are to provide parents with the help concerning the general care of the child, better the quality of life of the children and family and create the necessary conditions for the child's optimal development of physical and mental abilities. The main goals, according to the UNESCO International Bureau of Education (IBE), of the preschool education in preschool institutions are:

- *to develop the child's self-concept and his/her ability to understand others;*
- *to develop the ability to recognise feeling and encourage the experience and expression of emotions;*
- *to nurture curiosity, and inquiring mind, imagination, intuition and independent thinking;*
- *to encourage linguistic development for the purpose of effective and creative use of speech and, at a later stage, of writing and reading;*
- *to stimulate artistic experience and expression;*

- *to stimulate motor abilities and skills;*
- *to convey the knowledge of various fields of science and everyday life;*
- *to develop independence regarding personal hygiene and health care.*

(UNESCO 2006: 7-8)

1.2. Teaching methods and learning areas

The national curriculum outlines six areas of activities: movement, language, art, nature, society and mathematics. It is important to note that the curriculum does not identify the skills children should master at the end of each age period, as it only serves as a framework of work in preschool education. UNESCO International Bureau of Education emphasises the importance of applying the diversity of a particular age group and enabling the integration of a variety of activity's fields. By using a variety of methods and through play, children should be stimulated and motivated to employ different strategies and tools to find the appropriate answer (UNESCO 2006: 8).

Education of individuals does not only relate to the education of preschool learners, but also to the education of parents and the professionals employed at the preschool centres. Many preschool centres aspire to organise many "Schools for Parents", where important topics ranging from psychological, social and emotional development of a child to nutrition and literacy are discussed. They also include several health education activities, parents' meetings, etc.

2. Language programmes in mainstream learning

The status of English in a particular country differs greatly. It is important to consider the teachers' and learners' attitude towards learning English. Young learners might not have a formed attitude towards foreign language learning, but the importance of foreign language learning still lies in the child's perception of other cultures and languages in general. The motivation behind their language learning largely depends on the activities and the actual English teacher and how they motivate their students. Young learners learn because of intrinsic reasons, as they enjoy the language learning process itself. And what are the aims and

expectations foreign language teachers of young learners want to achieve? The main aims and objectives include the following:

- Develop children's basic communication abilities in English
- Encourage enjoyment and motivation
- Promote learning about other cultures
- Develop children's cognitive skills
- Develop children's metalinguistic awareness
- Encourage 'learning to learn'

(Pinter 2006: 38)

Most countries that are teaching English as a foreign language try to emphasize at least one of the first two aims. It is vital to prepare children to be able to talk about themselves and their immediate surroundings, to know how to respond to instructions in English while understanding them and given a topic of discussion, being able to communicate with a fellow student. The second objective involves associating English as an enjoyable subject and language. Some teachers may focus their attention to cross-cultural objectives, which include introducing a learner to different cultures, preparing children to take a variety of perspectives, modifying stereotypes, eliminating prejudice and discrimination and presenting tolerance. A teacher's goal is to be transparent and clear with their aims and objectives, as some parents tend to expect unrealistic results. Teachers need to create an environment in which students are exposed to natural languages. 'Croatian project' led by Lidvina Stokic and Jelena Djigunovic (2000) created a timetable where children would practice English for one hour every day. By doing so, children became more proficient and their pronunciation and intonation have improved dramatically. A research project in the USA led by Helena Curtain (2000) has uncovered that intensive foreign language programmes tend to create better results. The participants were English-speaking elementary school children in Spanish programmes and the intensity of the English classes played an important part in their proficiency. The problem lies in the restrictions English teachers face concerning the amount of English lessons there are able to conduct in a week, which is usually a maximum of two to three hours a week. This would be better if English lessons would last only half an hour every day, instead of a whole hour lesson.

How is English actually integrated into the curriculum? Some programmes enable children to learn English as an integrated entity into the already existing primary programme, but most programmes, especially in Slovenia, tend to present English as a separate subject. Fortunately,

there are some mainstream educational institutions who use the principle of CLIL ('Content and Language Integrated Learning'). In such schools, English is used throughout the curriculum in a systematic way where both the content and language are learned simultaneously. Children in the primary education, for example, have the opportunity to learn geography, maths, physical education (PE) while linking it to the English language. By doing so, primary school children tend to use English as much as their mother tongue. Such an advanced practice of learning enables teachers to motivate even the beginner learners while using good visual and other supporting materials (Pinter 2006: 38–41). It is evident that some mainstream teaching programmes are making great strides by trying to include different ways to portray English in a way that will help children acquire English almost simultaneously with the content. But there are some more progressive programmes that have been prepared to improve our mainstream learning programmes, even more, since they are not subject to restrictions of mainstream learning.

3. Educational programmes following a more progressive educational programme

There have been various educational approaches throughout the years whose view differs greatly from the normative education system. They have dared to be different and follow a different path to educate children. There have been some changes in the general mainstream system, such as the integration of foreign languages in a variety of classes (CLIL), but generally most educational institutions still follow the basic curriculum. That curriculum has, unfortunately, not changed drastically over the years and that is why it is important to develop other ways of learning that might be more in tune with today's society and the need for change. The Montessori and Waldorf pedagogies have tried to make changes in their educational ways. Their main focus and their main premise do differ a bit, but they both enable the creation of a new kind of education and consequently a new wave of educated individuals.

3.1. Montessori education

Maria Montessori dedicated her life to the cultural and pedagogical restoration of education. Her vision was to improve the person's quality of life, relationships and the cooperation among nations solely by changing people's education. Her reform is complex and systematic. In order to try create a peaceful future, she searched for answers in the new generations of children and their wants and needs. She was able to do that by observing children. Her education reform is based on three main principles:

- Scientific pedagogy focuses on the psychological development and is able to be carried out with all children without creating differences among races, religions, genders and social classes. She wanted to liberate the child of the pressure from parents, since parents are the ones who try to fill a child's life with numerous activities and thus hindering the child's growth rather than supporting it.
- It is a way of helping the child to grow into a beautiful human being. A parent is required to create an environment that fits to the child's mental and emotional level. Maria Montessori believes that a child's work is very important, since it builds a man of the future.
- A child is able to learn without realising they are learning. Her purpose was to connect happiness and joy to learning.

Maria Montessori believes that a child is not studying, but building his knowledge and personality with experiences and the relationship with their environment, things and other individuals. A child creates their own independence with constant activity and never-ending effort, concentration and development and thus liberating themselves from the adults' manipulation and sophisticated barriers, which are constantly and unknowingly being created by adults and teachers. Their main goal is to help children to do things on their own giving them the freedom to choose what they would like to learn. A child is the one who plans their own daily educations and the teacher's job is to enable that, guide the child and provide them with all the appropriate tools to undertake such activities. All those tools have to be, naturally, scientifically supported. In such an environment each subject or topic has its own designated spot in the room, so the child is quick to find it and learn from it. A child also freely chooses the material they want to use and corrects their own mistakes while doing it. The teacher's role changes massively with such education. They are not there to transfer knowledge, but just to

prepare the environment. The teacher is “passive”, but still holds the authoritative role of an adult (Pignatori *et al.* 1996: 18-26).

3.2. The Waldorf education

Emil Molt, the originator of the Waldorf school, wanted to form a school that will create a new age of children. The Waldorf school is based on idealism, whose main goal is to awaken the forces and capabilities of a child to be able to work in today’s society. In order to achieve such a goal, one must not only know the child as a whole, but present yourself as such in order to create a model, children are able to mimic. Such an approach supersedes the individual one. They believe that we have to provide the child with the necessary equipment they will need in their future till the age of nine. A child first draws, which helps them learn to write, which in turn turns to reading. Their main focus does not lie in the development of their intellect and abstract notions as such, but give the children time to do so gradually, when they feel ready. The Waldorf education believes that children should not be required to retain large amounts of information so quickly, but rather give them time to mature (Steiner 1987: 19-22).

In contrast, our mainstream preschool education system mostly focuses on the results, rather than the road to success. Children are bombarded with information from a very young age. They are, as a collective, given the materials and topics they need to cover and are not given a lot of freedom to choose. Maria Montessori’s main vision, on the other hand, is to provide children with the tools to learn what they wish to learn using the materials they want to use. Teachers in mainstream schooling also play a very active role, whereas teachers in more progressive preschools, such as the Montessori preschool, acquire a rather passive role enabling children to follow their own path of learning. They allow children to correct their mistakes, which unfortunately is not so widely practiced in mainstream education. The issue of knowing your students as a whole, is also a massive hinderance in the mainstream education. Due to larger groups of children in one class, a lot of teachers are unfortunately unable to focus on the children and their individual development.

4. Ahead of his time – Piaget

It is of vital importance I mention the originator of a more progressive view of education. He was seen as eccentric in his time, but his views and theories are now seen as the basis all future educational views are based on. It is true that his views no longer apply to the our general or even more progressive education strategies, but this is quite understandable since education and its methods should evolve through time.

Piaget was born in 1896 in Switzerland. He was an epistemologist and his main concern in his body of work was mostly centred around “the nature and beginning of knowledge” (Mooney 2013: 95). This type of work made Piaget a major contributor to the beginning of educational philosophy. He focused on *how* children learn, rather than *when* or *what*. In 1919 the world saw the extent of his dedication to the origination of knowledge at a young age. He travelled to Paris to work on the standardization of the British intelligence test for the French. He noticed many similarities in the wrong answers of children at a certain age and wanted to uncover what thought processes they used to come to such conclusions. The result of his study has become a major contributor to the development of today’s educational systems. Unfortunately, many teachers believe his work was too scientific with its complex terminology and they were concerned he gave too much importance to the thought process, rather than on children’s moods and social interactions with teachers and friends. Nevertheless, Piaget’s formation of the stages of cognitive development, which detect how children think in their initial years of development, have aided us to understand their thought processes. There are quite a few shortcomings in his research, but Elizabeth Jones put it best when she wrote:

[...] scientific explanations change, just as myth and superstition do, because even in physics, and certainly in psychology, they provide only partial explanations of the way things really happen. Learn them, use them, but don’t take them too seriously. Nothing happens because Piaget says it does. Piaget says it does because it happens, and he was an unusually thoughtful observer and generalizer. All of us can grow in our ability to do the same.

Jones (1986: 99-100)

Piaget’s theories have still broken ground when he explained that children’s learning is induced largely due to the environment. He believed that children create their own knowledge by putting meaning to the things surrounding them. He was of strong opinion that “construction is superior to instruction” (Hendrick 1992: 476), meaning that it is best for children to create their own

labels and understandings, rather than being given the label or explanation by the adults. He studied the Montessori work and, as Montessori, believed that “meaningful work is important to children’s cognitive development” (Mooney 2013: 98), which is best exemplified with the plant’s growth process. Being shown pictures and explained how to grow a plant, as teachers usually do, produces different results than actually growing, nurturing, watering the plant all by yourself. By doing so, students not only become aware of how a plant grows, but are able to help grow it themselves and therefore constructing a more solid knowledge base.

Piaget believes that the best thing we can do for our preschool children is to keep them curious. Rather than just giving them the information, we should create real problem-solving challenges and therefore spark curiosity in the minds of our pre-schoolers. We should be able to improve the image of a teacher into someone who “nurtures inquiry and supports the children’s own search for answers” (Mooney 2013: 100).

What I found most intriguing and what really correlates to the theme and aim of my research, is Piaget’s view of including as much play as possible into children’s lives. They should build sand castles, play hide-and-seek and through trial and error come to the conclusions and resolutions by themselves. They learn more when they learn unknowingly.

One of the most vital accomplishments by Piaget is his division of children’s cognitive development into 4 stages.

Table 1 *Piaget's Stages of Cognitive Development* (Piaget 1973)

Piaget’s Stages of Cognitive Development		
Age	Stage	Behaviours
Birth to age 2	Sensorimotor	Learn through the senses; learn through reflexes; Manipulate materials.
2-7 years	Preoperational	Form ideas based on their perceptions; can only focus on one variable at a time; overgeneralize based on limited experience.
7-11 or 12 years	Concrete Operational	Form ideas based on reasoning; limit thinking to objects and familiar events.
11 or 12 years and older	Formal Operational	Think conceptually; think hypothetically.

Since my research largely focuses on preschool children, I will delve into the first two stages respectively.

4.1. The sensorimotor stage

Piaget believed that children's reactions to the world are only reflexive. They rely on their senses and movement to be able to understand the world surrounding them. This stage later develops into "object permanence" part of the stage, where children understand that objects still exist even though they've disappeared from their line of vision. This age is also very much known for its "separation anxiety". That is why teachers have to be particularly careful and try to keep babies motivated, feeling safe and reassured, as children are extremely vulnerable and are trying to call out for their parents while crying. Teachers have to create an environment in which children crawl, climb and pull themselves up while not being physically at risk. Piaget believes that children also need "cause-and-effect toys", such as crib gyms and shape sorters. They also need to be in contact with softer materials (nontoxic playdough, corn-starch-and-water, water and sand). A lot of interesting possibilities can be provided by mirrors and artwork, babies' level and board and cloth books. Their cognitive development can improve as parents tell them what their plans are and show pride at their small accomplishments. It is vital to create a safe environment when children are going through separation anxiety. We should create as few changes as possible. It is extremely unwise to make changes in the child care department. Children should have a stagnant environment at that time.

4.2. The preoperational stage

Even though, the preoperational stage extends to the age of 7 or 8, it still covers a large part of the preschool years of a child's life, as it starts at the age of 2. Children at that time are, according to Piaget, hugely egocentric, as they can only think of a one thing or person at a time. They only think about things that relate only to them. The words of each child only trigger the connection to their own situations and experiences. It is of great importance to give the children the space to get to their own conclusion while gathering new information. There are two parts of information gathering that Piaget mentions. First includes *disequilibrium* in which children compile their own information and the second is *accommodation* where children have to change their view as they gather new information. And then accommodation helps the child to return to a better state of *equilibrium*. Piaget did a standard experiment in which he set two lines of coins and asked the children which one had more coins. Both lines had the same amount of

coins, but one had coins spread further apart. Children in the preoperational stage believed that the line which had coins spread further apart had more coins. Their belief remained the same when the coins from both lines were matched. Such conservation tasks are ideal to realise if children have grasped the idea that certain physical features of objects may stay the same, even though their outside appearance changes. Children in the preoperational stage can only focus on one characteristic at a time. For example, they can only think of their mother as their mother and not also the daughter of their grandma. They are incapable of holding more than one attribute of an object or person at a time. But Piaget believes that telling children what is the reality doesn't really resonate in the child. It is better to ask questions, such as *I am your mother, because you were in my tummy. But who do you think had mommy in the tummy when she was a baby?* That is how you enable a child to think and construct the knowledge all by themselves. That is how, they will be able to retain the information longer.

As teachers want to support the children's cognitive development, they should therefore be able to:

1. **provide longer periods of time of uninterrupted free-play**

We should allow children to develop and expand their knowledge at their own pace and when they are prepared (not all children are prepared to start learning reading at the same age)

2. **give children real life experiences throughout the whole year**

There is a major difference between giving the children the information about what a horse is like and showing pictures of it, then letting children see the horse, smell the barn and pet it. Such experiences don't need to include field trips. It may only include activities involving cooking or bringing animals to the classroom.

3. **plan open-ended activities and ask open-ended questions**

It is best to create activities you, as a teacher, do not have the answer for. Such questions start with "What do you think...?, Do you believe...?, How do you think that works...?" Such activities and questions expect from the child to think and form their own opinion (Mooney 2013: 77-94).

5. The implementation of language learning in a young learner's life

Young learners of a second or foreign language are generally in the process of acquiring their mother tongue at the same time. Such acquisition is a lengthy process that is in continuation throughout the whole childhood and even after their childhood. The process of acquiring the mother tongue and learning of a second or foreign language are two processes that are more or less linear. According to Pinter, “[t]he younger the child is, the more similar the two processes will be, because very young children lack the ability to manipulate and think about language in a conscious way. This is especially true for children in immersion environments” (Pinter 2006: 17). Learning the second or foreign language largely differs among adults and children. Adults are able to use their abstract understanding of a language and can find similarities and differences between their mother tongue and other languages. Adults can also utilise their knowledge of the world to try to understand some phrases or unknown words from contexts. Children, on the other hand, are unable to utilise such advantages and their ability largely depends on their age group. They are not be able to notice some similarities between the languages. Their focus mostly depends on the fun they are having and they generally don't perceive a language as an abstract notion. Older children respond to language learning a bit differently as they try to find some connections among the already known phrases or words in other languages.

Their growing abilities in their mother tongue, for example, to construct phrases, sentences, or questions, create and retell stories, or to hold a conversation, will all be important direct or indirect sources of support in the process of learning another language.

Pinter (2006: 18)

5.1. Developmental profile of language learning of a preschool child

Children are able to form one-word utterances between 12 and 18 months and two-word utterances between 18 and 24 months. First words are usually acquired at a slower pace, with only one to three words learned a week. When the child reaches the vocabulary of 20 to 40 words, the rate of acquisition increases rapidly and a child is soon able to learn up to eight

words a week. It is vital that we also mention that child's language development varies largely within their age group. Goldfield and Reznick (1990; qtd. in Singleton 2004: 15) state that not all children exhibit the same vocabulary spurt. They concluded that five out of 18 children had a steadier acquisition of vocabulary throughout the whole second year. Wells (1985; qtd. in Singleton 2004: 20) was a researcher who dealt with the later stages of a child's language development. He researched two groups of children, one with 60 subjects aged 15 months and the other consisted of 65 subjects aged 39 months. They observed the younger group over 27 months (from 15 to 42 months) and the second, older group was observed over 21 months (from 39 to 60 months). He made observations every three months, which consisted out of a recording of free speech. The results of such an extensive analysis resulted in the formulation of ten developmental stages according to three criteria:

1. Saliency: items should be easy to identify in a sample of spontaneous speech;
2. Order: items chosen within any system should be strongly ordered with respect to each other and selected in such a way as to represent the full range of the sequence of emergence within the system;
3. Frequency: as far as possible, items selected should occur frequently once they had emerged.

(Wells 1985: 205; qtd. in Singleton 2004: 21)

The pragmatic level of 'wanting' has appeared in at least 75% of subjects' speech by 21 months and in 100% of the cases by 24 months. 'Formulation', on the other hand, did not reach the 50% of occurrence until age 42 months and by the age of 60 months, I was only present with 72% of subjects. 'Simple past' time could be seen by at least 90% of subjects by the age of 30 months and 100% by the age of 57 months, 'singular nouns' could be heard with 75% of subjects by the age of 18 months and 100% by the age of 27 months (Singleton 2004: 13-22).

Chrystal *et al.* (1979; qtd. in Singleton 2004: 25) formed seven age-related syntactic stages to portray the development of language learning of a preschool child:

Table 2 Language acquisition in seven age-related syntactic stages (Crystal et al. 1979; qtd. in Singleton 2004: 25)

Stage	Average age in years and months	Major characteristics
Stage 1	0.9-1.6	Single-element sentence, for example, N(daddy), V (gone).
Stage 2	1.6-2.0	Two-element clauses, for example, SV (daddy gone), VO (kick ball), Prep N (in box), Det N (that ball).
Stage 3	2.0-2.6	Three-element sentences, for example, SVO (daddy kick ball).
Stage 4	2.6-3.0	Four- (or more) element clauses, for example, SVOA (daddy kick ball hard)
Stage 5	3.0-3.6	Clause sequence and connectivity, for example, co-ordination (daddy gone in the garden and him hurt his knee)
Stage 6	3.6-4.6	Completions of grammatical 'systems': elimination local child forms, for example, in the pronoun system (he for him above), and the addition of further members of a system, for example predeterminers in the NP (all, both, etc.)
Stage 7	4.6-?	Other structures, for example, sentence connectivity, using adverbials (actually, frankly), emphatic word order variation (it was X that Y etc.)

Singleton (2004: 25)

5.2. Early bilingualism

Children also possess the ability to start learning two languages at birth. This process is also referred to as 'simultaneous acquisition' of two or more languages. In a marriage where partners belong to different nationalities, partners are prone to use their own mother tongue while speaking to their child and by doing so, a child is able to acquire both languages at the same time. A well-known researcher in the field of bilingualism, Suzanne Romaine, names such an occurrence 'one person one language'. Children living in such an environment are prone to develop linguistically a bit later on, meaning, their first words might occur at an older age and some grammatical structures and the amount of words they acquire might be a bit fewer than the amount of words of monolingual children. This is not exclusive to all bilinguals. Some extroverted bilinguals, might start speaking as early as monolinguals, as they prefer to take risks. Another issue that may occur with bilingual children, is the mixing of the two languages

in the first two years of their life, but that is mostly no longer present in their third year of age (Pinter 2006: 27-28).

There are two other ways, according to Pinter, one can become bilingual, either by immigration or by schooling. Bilingualism can in those cases, be additive or subtractive. 'Additive' bilingualism includes learning a foreign language, where their first language is not replaced. The student will basically just add another language. Bilingualism can become 'subtractive' when the first language and/or culture is undermined as one learns the second language, and by doing so their second language replaces the first language. In some, more severe cases, a child's first language may be neglected as well as the second language might not be developed appropriately. Such an occurrence is named 'limited bilingualism'.

The process of acquiring a new language as an immigrant bilingual is well researched by Tabors. He states that children moving to another country only communicate in their mother tongue, then go through a non-verbal period or 'silent period', then use formulaic language and in the end produce language in a suitable manner. Pinter believes that children are more suitable to learn a second language, when their first language is already well established and cannot be replaced or threatened (Pinter 2011: 74,75). But is that really the case? Should children wait to be taught a language? In the following chapters, I will try to find the answer to these questions.

6. At what age should we start teaching EFL classes to young learners?

As we have gathered from the previous chapters, children are more than capable to understand and acquire information of various areas of knowledge. We are the ones that need to present the knowledge in a way that will enable them to amass new information easily and without any additional stress put on a child. Piaget was the one who saw great potential in very young children and it would be wise to follow his example, explore his idea and use it in relation to language learning. Pinter, on the other hand, was one of the researchers that questioned the benefits of learning languages young. It is known that children are more successful language learners than their adult counterparts. While visiting a foreign country, children are able to pick up phrases more easily than their parents. Many psycholinguists have proposed the so called 'sensitive period'. Some believe that children younger than 11-12 years are able to acquire a

foreign language without an accent and even to the native level (Pinter 2006: 29). This supposition was later changed by dr. Ranko Rajović, who claims that trying to acquire a language without a noticeable accent could only be achieved till the age of 6. This will also be touched upon later on. The positive aspects of learning a second or foreign language also lies in the child's lack of inhibition and anxiousness. Some still believe that children learning a second language later on, might be able to utilise more effective strategies and place it in the conceptual world more easily. They are also conscious of the reason behind their language learning. They tackle language learning more analytically, but in contrast, their pronunciation might never reach the level of the younger language learners' pronunciation (Pinter 2006: 29).

6.1. The concerns surrounding early language learning in mainstream education

When it comes to teaching foreign languages to young learners, the education system in Slovenia has been mainly concerned with the question of optimal age, i.e. the appropriate age at which children should start learning foreign languages. There is a major concern that children are already overburdened and should not be expected to learn foreign languages in the first years of primary education. I have come across multiple opinions whose main concern lies in the overload of information children in the first triad are faced with. With the beginning of the school year 2015/2016, Slovenian government made some changes in the implementation of a foreign language in the first year of primary schooling. That has already changed some parents' views of implementing EFL learning with 6-year-old children. But what more can be done to ensure the maximum knowledge children can attain at such a young age without putting too much pressure and strain to their already busy lives? Some parents spend an enormous amount of time driving their children to many extracurricular activities in order to improve their intellect and therefore increase their children's chance of getting a good education and future employment. Many are concerned their children would not become the excellent selves they expect them to become. What if there was a way to decrease the strain children unfortunately already feel at a young age, but at the same time still give them the best opportunity to expand their knowledge without much strain? One solution is the NTC programme that was founded by dr. Ranko Rajović, a well-known neuroscientist, who has dedicated his life to making a new generation of children with higher IQ. He started testing his programme with his son Danilo. He noticed great changes in his advancements and the joy of continuing the game. This later on

developed, when a lot of preschool teachers and parents showed marvellous reactions to the changed programme (Rajović 2013: 5).

6.2. How do we retain information most effectively?

That is the question that was best answered by dr. Ranko Rajović at the lecture conducted in a primary school in Šmartno pri Litiji. He talked about how sense organs collect information from the environment. They connect information to the already existing information using the associative sections of the brain. That is exactly why children need to gain various experiences, preferably by playing. This kind of activities stimulate children and help them later on in their lives. The proper stimulation is needed for our survival. By expanding our knowledge and improving our IQ, we increase our chances of survival. The reason why people see their whole life flash before their eyes before their die, is the brain trying to find some solution to survive. The brain's function all in all is to survive.

Children need to be taught in a way that makes them use both parts of their brain by connecting both of the brain's main characteristics (draw your name, draw a story, draw what you want to say in a letter, telling illogical and funny stories, riddles). They need to connect the right side of the brain as the creative side of the brain and the left side, which represents the rational, realistic and logical part of the brain. It is vital that children know how to connect both sides and complement one side with the other.

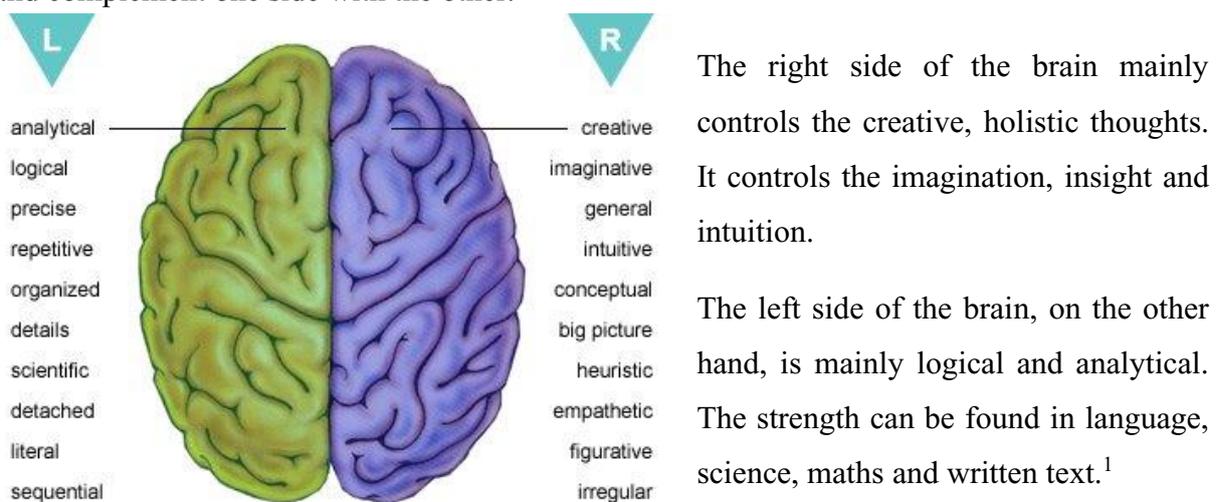


Figure 1: Left and Right Hemisphere of the Brain

¹ Left and Right Hemisphere of the Brain. Digital Image. Brain Injury Association of America. Brain Injury Association of America. <http://www.biausa.org/living-with-brain-injury.htm>. Accessed, 22 June 2017.

But in order to retain the wholesome knowledge and try to excel at both the creative and logical thinking, children need to know how to correlate between the two and find connections.

Ranko Rajović claims that it is not difficult for children to understand and respond to the before mentioned requests, as children are especially curious and find such tasks entertaining. They would not find it difficult to draw their own name. They would always find a solution. Whereas, adults would find such tasks unnerving and quite impossible to resolve, as we were mostly taught to use one part of the brain and separate between the two. Subjects, such as Maths and Art, were definitely greatly separated and seen as completely different. We would never have thought to connect the two and create some valuable work involving both. Children would, on the other hand, find it extremely difficult to learn something by heart. Such learning doesn't motivate the child, but only creates additional stress. Whereas, the adults, who have been taught to use that kind of technique of learning all of their lives, would find such a request normal and completely acceptable. Even though it would not create a lot of permanent, but rather momentary knowledge. That information would definitely fade into our subconscious after a very short period of time.

Learning things by heart requires no proper mental stimulation. The only way neurons in our brain won't die off, is by creating stimulation i.e. stimulating associations between both parts of the brain and using a larger surface of our brain. Out of 1000 children, 20 of them are gifted. Out of those 20, 17 don't progress as they don't have enough stimulation and lose the functioning of a large amount of their neurons.

And now we arrive at a question. How do we stimulate a child's brain? The best time to learn would be during play when their ability to concentrate is at its peak. At playtime, children are concentrated the most and more receptive to any kind of information. For them, learning doesn't have a bad connotation, but represents just the opposite; especially if it involves playing and having fun. Children would always want to learn something new as it only expands their imagination and enables them to think of fun ways to entertain themselves (Rajović 2013)².

² Based on the lecture's summary written by Ms Banjana.

6.3. The importance of early stimulation

Professor Marian Diamond conducted a study 10 years ago that involved two groups of animals who were genetically perfectly the same. The first group had ideal living conditions; temperature, water and food. The second group's living conditions weren't ideal, since they were required to solve a problem in order to get food. After two months, they concluded that the second group was much more intelligent than the first one, because of greater stimulation of the brain. After a histological analysis was carried out, they proved the second group had a greater number of synapses (connections among neurons) than the first one. That is why, it is vital that children receive a lot of stimulation at the start of their upbringing. That is how we enable the improvement of their IQ levels and the general perception of the world.

As a child is born, their brain isn't fully evolved yet. They are born with certain connections between the different neurons, called synapses. The phase, when the production of synapses, is best, is called the REM phase. That is the time when children are most perceptive and have the biggest potential. REM phase is the longest before the child's birth and becomes shorter and shorter as the child grows. Soon after the birth, the unnecessary connections (synapses) start to die off, since they are not being used, but at the same time new connections are always being formed. The disappearance of primitive connections is a good sign, since all the primitive reflexes disappear as well. That kind of primitive reflexes are called the MORO reflex. They involve every action that is done without thinking. The most important period for the development of thinking and correlating is the period between the age of 2 till 4/5. The potential only decreases as they turn 7 and keeps decreasing till the age of 12. At the age of 12, it reaches a stable level. 75% of synapses develop until the age of 7, 90% till 12 and the rest till 24 years of age (Rajović 2012).

That is exactly why, the preschool period of a child's life is vital since that is the time when the creation of connections between neurons is incomparably larger to that of the age of 7. Inside the brain, a fight for domination is in process. The creation of new connections amongst neurons and command paths is very active. A large web of neurons is being created and neurons and paths that are inactive, are lost. We are faced with a question whether children will be able to reach their biological potentials by stimulating the connections amongst neurons (Rajović 2013: 6).

European children start learning letters at the age of 5 or 6, in some countries even at 7, but the average child is able to learn 30 letters in the span of 2 to 3 months. That is where we should ask ourselves whether learning is encouraging or burdensome in the preschool years. A great answer to such a question lies in the education system in East Asia, where children learn complex symbols at a very young age and because of these possibilities achieve great success in international exams. Many educators and parents believe that such mental strains are too burdensome for such a young individual, but Rajović derived his study from the opposite belief. He believed they are at an advantage. That is the period in a child's life when the largest amount of new connections among neurons are being created. By encouraging children to learn, we encourage them as an individual and help better the nation as well. The inclusion of activities that stimulate a child's mental development, speed of thinking and decision making, their coordination, motor skills in their day to day lives, is necessary for their development.

Some parents put too much strain on their children and therefore may create aversion to learning. That is why, we have to be very precise in the usage of this programme and also pay attention to love and patience, which serve as the most important parts in the child's development. A child that has learned their mother tongue till the age of 3, has mastered one of the most difficult mental challenges and has therefore the possibility and capabilities to continue with their development and achieve their biological potential. We need to help children reach their full potential and become something extraordinary, because they are the ones that will form our future and help our countries develop (Rajović 2013; 6, 7).

7. Giftedness

What is giftedness? There have been various definitions. The main definition connects giftedness to a series of characteristics that enable an individual to permanently achieve an above average success in one or more activities. The condition for such an ability is due to highly developed mental capabilities, their composition and inner and outer stimulus, such as:

- early usage of extensive vocabulary,
- language capabilities, usage of phrases and whole sentences in the very early period of one's life,
- general observations,

- interest in books, later atlases, encyclopaedias,
- early interest for date and times,
- the ability to concentrate,
- early detection of sounds and consequences (makes them emotionally sensitive).

According to Matjaž Podmiljšak, the president of the Mensa Society in Slovenia, giftedness is greatly connected to the IQ. What is IQ? It is a numeric value that shows the general intellectual capability of a human. It can be evaluated by using the intelligence test, result of which is then compared to the general average results of the population who have taken the test in the same time period and are of similar age. The average value is established by 100, with a standard deviation of 15. The majority of people have the average IQ of 85 to 115 (Podmiljšak 2010).

L. Telman started researching gifted children after the 1st World War (1921) in California, USA. He tested 250.000 children out of which 1500 were talented. He monitored these children till adulthood. This was the biggest study that has ever been made. He monitored their schooling, education, achieved diplomas, qualifications and their achieved class in society. He realised that the gifted group was 10 to 30-times better than the control group (the same age, general population). Research has shown that giftedness is the most valuable asset of a nation (Rajović 2013: 8-10).

7.1. Can giftedness be the source of problems?

On average 20% of gifted children, who have an IQ higher than 160, has emotional and social problems. Gifted children, who have an IQ between 125 and 145 have less problems assimilating to the environment. Gifted children learn faster and differently as to their peers. They are more creative, stubborn and have difficulty assimilating to social norms. Such individuals usually aren't really popular with their peers, as they cannot follow their abstract thinking and different interests. Gifted children quickly start to question the authority and see the incompetence of parents and teachers. Such an act is in turn perceived as too challenging for the parents and teachers. There have been various researches carried out that brought about the results that the children's IQ corresponds to their inability to integrate themselves into the community with ease. The higher the IQ, the more difficult it is for people to understand them and them to understand others. That is why working with gifted children is vital since it helps

them to reach their full potential, to integrate into the society more easily and lessen the possibility of asocial behaviour (Rajović 2013: 12).

7.2. Identification of gifted children

It is imperative that we seek out the gifted children and offer them an individual approach to learning. This process is highly challenging and there is no universal strategy. 2% of gifted people can be found in the general public, but since their potential is not uncovered, they are only potentially gifted. The development of giftedness solely depends on the children's teachers and parents. Most schools are unable to identify giftedness and as children enter their schooling, their interests are not properly supported. Even if the gifted children are identified, they are usually placed into two separate classes, since the main purpose of the normal education system strives to achieve average results and gifted children are the ones who improve the class's grade average. By implementing such measures, their development is hindered, since they have no one to compete with. In order to understand this better, we should look at an example of a talented football player. The only way he will ever become better is with peers who serve as his competition (Rajović 2013: 12, 13).

7.3. The importance of family and the general social surrounding for the development of giftedness

Family, the individuals themselves and their social surroundings are significant for the development of giftedness. It is often assumed that gifted children come from a long line of gifted individuals and are part of a higher social class. Many studies have overthrown such assumptions and concluded that active parents' involvement largely correlates to the development of an individual's giftedness. That can be best seen with parents who spend time exploring common activities, facilitate the development of their own interests, answer their questions, offer them warmth and support and still support the development of their giftedness. Fashioning a proper study environment, which facilitates motivation and a positive attitude towards learning and knowledge in general also helps children. Active involvement of parents doesn't only correlate to the amount of time spend with their children, but also the utilization

of a distinct learning style that encourages initiative and active involvement of an individual child. Thus, not only the individual's family, but also their social environment and the individuals themselves play a significant role in the process of the development of giftedness. We have to approach it as a whole, as in, find and create a strategy for the identification of giftedness, encourage, develop giftedness on various levels, interconnect and work as a community and get informed about the development of giftedness. (Rajović 2013: 13, 14)

7.4. Problems in early development

We need to encourage a child's development of giftedness in the very early years of their life, since more than 50% of the brain development has concluded till the age of 4 or 5. If parents are able to recognise the child's needs, they can help and make great strides for the development of their brain. It is vital that we start developing certain skills at a very young age.

1. Children are unable to differentiate among different sounds or sounds from noises. They acquire knowledge as a whole and not as a divided concept. So, it is very unusual for children to learn every single letter as its own entity. It is more productive to learn words as a whole.
2. Children need to explore their motor capabilities from a very early age. There is a substantial difference between children who have the basic understanding of a specific sport and those who do not. Their brain is developed differently.

Seemingly insignificant elements of development in the early years of one's life might seem as such, but it makes a big difference in the development of brain activity. Stimulating environment greatly contributes to the development of a large number of neuron pathways. Such development has to be carried out in the preschool years of a child's life by teachers, as well as parents, since this is the time their brain develops most exponentially (Rajović 2013: 15, 16).

8. Ranko Rajović and the NTC (Nikola Tesla Centre) learning system

8.1. Who is dr. Ranko Rajović?

Ranko Rajović is a specialist in neuroendocrinology, more specifically internal medicine. He is the originator of the NTC learning system programme. This programme has become part of the curriculum in 15 countries in Europe, 7 of which are accredited by the Ministry of Education. Ranko Rajović is also the originator of *Mensa* in five countries, a member of *Mensa International Gifted Children Committee* since 2002, and also collaborator of UNICEF. Currently he works at the Faculty of Education in Koper, Slovenia (NTC 2017).

8.2. The start of the NTC learning system programme

After realising that neurology specialists had almost no influence on the formation of school programmes, dr. Ranko Rajović was encouraged to start the NTC learning system programme. He highlights the importance of neurophysiological knowledge in the following manner:

The necessity to integrate more neurophysiological knowledge in formal child education and that utilising the full potential of a human mind during the pivotal period of childhood, along with dedicated and educated parents and teachers, opens the door to more creative learning, with accelerated cognition and easier identification and development of capabilities.

(Rajović 2019: 9)

The NTC programme was established after a long research was carried out to improve creative learning and the development of thinking. This unique education system is intended to be used by parents, children and teachers, and schools and preschools. He procured a team of specialists in pedagogy, neurophysiology, education, special needs education, psychology and genetics and created a simple programme that enables educators to monitor and measure the accomplishments of children. The author first applied the NTC programme activities with his youngest son Danilo during his playtime and while conversing with him. Danilo was 3 years old, but his desire to learn during playtime grew exponentially. This still experimental approach

to learning was first implemented in Danilo's preschool group and three years later it became accredited by the Serbian Ministry of Education. The NTC programme became highly sought after, as teachers and parents expressed a lot of interest (Rajović 2019: 9). Since its beginnings the programme is now being carried out in countries such as Slovenia, Serbia, Hungary, The Czech Republic, Bosnia and Hercegovina, Switzerland, Italy and Croatia (Rajović 2013: 6,7)

8.3. Main principle behind the NTC learning system programme

To present the NTC learning system in the best possible way, would be with a riddle that was also introduced to primary school children. Dr. Ranko Rajović introduced this riddle to educators at our NTC classes as well, in order to portray how differently we think because of our upbringing and type of education.

A man brought home twenty animals, they are the same shape, size and colour. Not long after returning home he realized that one animal is worth much more than the others. Do you know which animal is that?

When hearing this riddle, one would first think that the animals a man brought home are small animals as he would otherwise probably not be able to bring 20 of them home. Then we are introduced with a question, why did the person not know that one animal is worth more from the beginning, just from looking at them. Maybe the thing that might be different about this specific animal could not be seen at the first glance. Did they realise that the animal already has some offspring growing and will therefore be worth more when sold? Maybe it is hidden. Which animal hides things that are worth something?

This simple riddle that children try to solve, is easily answered by those who have mastered functional and associative knowledge. On the other hand, people who have gained reproductive knowledge, are struggling to find the answer. What is the difference between these types of teachings?

8.3.1. The difference between reproductive and associative knowledge

Our general education system is mostly based on reproductive knowledge. Children gather all the information they are presented with in their classes, learn the information and repeat what they can remember. This type of learning is mostly based on repetition. This type of transferring knowledge is more primitive. Using reproductive knowledge, will not enable us to achieve functional knowledge that we can use in the following years of our life. The GDP (gross domestic product) depends on the functional knowledge and the expansion of it.

We have put our children into a mould where they are only permitted to say what we expect from them and therefore not think outside of the box. Rather than creating some unique idea, children would just follow the principle and rules their parents and educators have been brought up in. They would rather be like everybody else and become part of a community that follows blindly, than stand out and be someone that could lead the rest and be different. Some children might have the answer, but would rather not answer as they would not like to be ridiculed and be wrong. They would rather be quiet than risk it.

Slovenian students are great at acquiring information with the usage of reproductive knowledge (understanding of the read text). Unfortunately, they do not achieve functional knowledge, since most of the gathered information is quickly lost and forgotten. In addition to that, they are unable to make the appropriate connections among various subjects, since each subject is taught separately. One area that is easily changed, if the teachers are well educated and motivated, is the formation of questions. Children will still be able to gather all the needed information, but they will try to browse through their knowledge of other subject and find the solutions there. Because their thought process would be more complex and longer, they would be able to connect the acquired knowledge to a variety of fields and the information would be retained for a longer period of time.

The formation of questions in an associative and reproductive way differs greatly. It is important we set the questions in a way that motivates children to think and connect their already attained knowledge. This can be best portrayed with a question that seeks the same answer:

Reproductive question: Which animal is similar to a horse and is black and white?

Associative question: Which animal do most pedestrians cross?

Those two questions both seek the answer “zebra”, but the first one is formed transparently and is quite detailed. It also doesn’t leave a child a lot of space to think and find their own way to an answer. It is extremely straightforward and reproductive. The main principle of **reproductive knowledge** is: **read, learn and you shall know**. That is its method, but it’s not how the brain learns and collects information the easiest way. This is a lower, more primitive way of learning. We shall never be able to use functional knowledge if we have been taught and are now teaching younger minds by using the reproductive method of teaching. The main problem of reproductive knowledge is its retention period. On the day when we try to gather some information, our mind will enable us to still remember 60 % of the information we have learnt, in four days this decreases to 40% and after 7 days we only remember 10% of it. This method of learning is also especially boring and lacks any kind of interest for most of the children. Who would even like to be told to read 2 chapters of a book and then recite the main points the next day? This makes learning dreadful and monotonous. Children might even lose any previous interest in the topic itself, if all they have to do is recite back what they had read. If we use reproductive knowledge, we only activate a very small portion of our brain. Not being stimulated intellectually at an early age already puts us at a disadvantage. We have lost the most precious years when retention is best and our ability to gather information with ease has massively decreased. Using reproductive way of teaching in our later years only worsens our situation and makes us even less prone to retain information. With the usage of the associative way of teaching we set ourselves to a world of endless possibilities where we are able to find multiple connections amongst the information we have gathered throughout the years and form a better, wholesome knowledge. That is one of the reasons the NTC learning system is better equipped for the future generations of intellectuals. By using associative learning, we use 30% of our brain. With repetitive learning we only use 10% of our brain (Banjana 2013: 1-4).

I have been researching the topic of the most appropriate teaching programme correlated to the time one should start their education, and have come to the conclusion that the NTC teaching programme is one of the most effective ways of teaching. The NTC programme has made great strides in the world of education and its main goal is to teach children while using associations and increase their IQ by stimulating their brain at a very young age.

So now that we understand the difference between the two types of learning, I should reveal the answer to the riddle; The man brought home a shell. He found a pearl in it. We realise that the solution is very simple and our teaching techniques complicate the process of realizing the solution.

8.3.2. The NTC learning system programme

The NTC learning system programme is result-oriented and research-based. It enables teachers and parents to teach more effectively. The learning should start from day one and is conducted under effective supervision. Teaching while using the NTC technique only works best if carried out for a longer period of time. It helps communities and their purpose to grow and sets a great precipice for a brighter future. The main premise of the NTC programme is the involvement of new findings from the fields of neuroscience and translating them into school and home environments. In order to implement this programme into a child's day to day life, one must integrate it into play.

According to dr. Ranko Rajović, these are the main benefits of the NTC learning system:

- Raise the level of intellectual abilities of children who participate in the programme;
- Prevent the lack of concentration and attention later in school (dyslexia);
- Coordination of movement and motor skills is being developed;
- The speed of thinking and reasoning (functional knowledge) is being developed;
- all children benefit from the programme, and this is especially useful for detection of gifted children and for encouraging development of their talents;
- The number of neural connections is enlarged, which along with specific exercises, increases the capacity of brain for processing information.

(Novak Djoković Foundation, 2020)

The NTC system consists of three implementation phases:

Phase I: additional stimulation of synapses – exercises for motor skills, graphomotor skills and accommodation of the eye.

Phase II: Stimulating the development of associative thinking:

Level 1 – abstraction, visualization;

Level 2 – abstract classification and seriation;

Level 3 – associations, music.

Phase III: Stimulating the development of functional thinking:

1. Mysterious stories;
2. Baffling questions, convergent thinking;
3. Stimulative questions, divergent thinking.

These phases are of vital importance for the understanding of the division of children's responsibilities and capabilities at a very young age. They will therefore be explained more in detail in the empirical part of my thesis.

8.3.3. Activities that stimulate the child's brain the most

Introducing **colour contrasts** to children's day to day life is a great stimulation. We should not only focus on pink for girls and blue for boys, but introduce them to the whole variety of colours. We should introduce the array of colours in the first months of a child's life. They can be placed next to the crib and around a child's room. In order to stimulate the formation of synapses even more, we should also add different patterns (stripes, zig zag patterns, circles, etc.). Their brain will gather the variety and would be forced to work and perceive the world around them in a different way. Preventing a child to **chew their own food** at an appropriate age, also hinders the growth of synapses and their 4 teeth.

Movement also improves a child's brain stimulus. **Crawling** is extremely important in the first stages in the child's development, as it correlates to the positioning of the hands and the pressure of hands onto the surfaces. If we limit that, their little fingers will not have the full range of function. Parents have been prone to prevent or limit some activities, as they fear for their child's safety. Activities that help a child's development include exploring while walking, jumping on the bed and falling down and they are all part of their instinctive behaviour. They help a child find their centre of gravity and with each jump a child is activating plenty of muscles and by doing so, creating numerous synapses. A child who wants to twirl is bound to fall down sometimes, but parents try to limit this behaviour as they think, it may endanger them. It does just the opposite. It actually benefits them in a substantial way. We do not allow children to go and play outside at the age of three, but would rather see them sit safely inside, but by

doing so, we limit the child, rather than help them. The reason why a baby is hitting their back against the crib in a rhythm lies in the lack of stimulation throughout the day. Neurons that do not receive enough stimulation, die off. If children are “protected from” a variety of activities that a child should experience till the age of 3, a part of their brain lacks the needed synapses to form a more intelligent individual.

A child’s **visual perception** also develops till the age of 5. A child needs to practice their eye’s focus at a time when something is moving towards or away from them. Therefore, half of the children who use screens with a distance of 20 cm from their eyes, will damage their eye’s focus. 50% of children have troubles with motoric functions and have speech impediments. The children obtaining fewer synapses, are still able to understand, but have problems with the production of speech. Motor abilities are well connected with cognitive abilities and that is exactly why early stimulation is so important for a child’s development (Rajović 2012).

Even though, the NTC learning system focuses on the limited usage of electronics, dr. Ranko Rajović does not exclude the positive sides of it. He listed some useful tips for parents to incorporate the NTC programme in their daily lives:

- A child can watch educational programmes on TV and some cartoons until the age of 7, but the time for electronics needs to be limited (1 or 2 hours maximum).
- If a child spends an hour watching TV, he should compensate for that by spending at least the same amount of time outside (playing with a ball, jumping rope, rubber band), developing their motor & graphomotor skills, while expanding their associative learning.
- A child should include rotation around their axis, balancing, running, jumping and crawling and therefore expanding the production of synapses.
- Children are able to recognise complex abstract symbols. They do it spontaneously at the age of 2 or 3. Parents are encouraged to include the learning of flags, brands of cars etc. during their daily walks. They might expand this with the usage of memory games and puzzles (Novak Djoković Foundation, 2020).

9. Who should be taught to educate?

The implementation of the NTC learning system should be infiltrated in the children's daily routines and activities making it inconspicuous. In order to use the NTC activities effectively, the following individuals need to be well educated:

9.1. Parents

Parents are the ones that should implement the NTC programme from a very young age. Placing a variety of colours and patterns, encouraging a child to chew and crawl must be implemented in the first months of a child's life. As the child starts to walk, it usually tests the boundaries the parents have set in order to protect them from harm and that is why the production of synapses may be greatly hindered.

Rotation is one activity that improves the connections among neurons in a great way. When a child spins, they go in the middle of the room stretch their arms out and consequently fall a lot, but they always laugh and see the activity as play. This activity is usually stopped by parents or even grandparents because they don't want the children to hurt their knees or elbows. There is also a common misconception that spinning the other way "unspins", which is not correct. So why is rotation so important? The act of spinning activates the whole brain and forms a large number of new synapses.

Jumping is unfortunately also limited due to the parent's fears for their child and the damage they may cause to their material things. But with each jump they shift their balance from 5 to 6 cm to the left and then to the right while coordinating all of their muscles. And which organ enables this movement? The brain! Again, the creation of new synapses is accelerated. Motor and cognitive development is certainly connected and we should not separate the two. By moving, a child is developing his intelligence! Jumping in puddles should also become part of their rainy-day routine. Most of the children love to jump in the puddles. It is true, they will be wet and dirty, but just imagine that by allowing them to jump, you are helping their brain development.

Balancing is another activity that stimulates the brain greatly. Parents have to be the ones to allow their children to do instinctual activities, such as walking on the kerb. It is encouraged

that parents are still in their vicinity when they try to balance making them more courageous without creating unnecessary fear.

Children used to spend a lot of their time outside and their brain developed faster and better, whereas now, children spend more and more time behind their screens. Children who spend 3-4 hours a day behind their computers have 40.000 motor movements less every day. We don't even allow children to jump up and down in the house, because we don't want them to get hurt. Some parents even buy their children either a TV or a computer to use in their rooms, just to minimise the jumping. UNICEF carried out a research which concluded that 70-80% of children have TV, PC or video games. The question is where to set the line. As children watch their screens, they don't develop any **dynamic eye accommodation**. That kind of accommodation helps form a lot of synapses. That is actually the most important movement in a child's development. An enormous number of synapses is formed with the usage of fingers (10, 12, 14%). As children are holding their computers or phones their fingers aren't generally productive or in movement. The speech centre also creates a lot of new connections amongst neurons and the third largest producer of synapses is the centre of vision. These are associative areas (30% of our brain) that enable us to survive and since children don't move their fingers or don't speak for at least 3-4 hours daily, the number of synapses largely reduces. Their visual connections are mostly developed through running, moving or playing. (Rajović 2012)

9.2. Nursery and school teachers

New Teacher Centre includes on-the-job mentoring by a very accomplished peer with years of experience and expertise. The implementation of such education largely helps the teacher's retention, in turn improves the students' achievements and reduces the costs of teacher education. Since quality is the one that matters the most in teaching, it is best to educate the teachers as soon as possible. We have implemented that in our private preschool. All of our staff got the possibility to be part of the NTC education seminar run by dr. Ranko Rajović. Our seminar lasted two sessions and after each session we had homework that we had to turn in and discuss during the next lesson. A few of us were even asked to participate in the weekend education programme in Serbia, carried out by the NTC centre run by dr. Ranko Rajović. We have learned a lot of ways to implement the NTC learning system programme in our daily lives at the preschool. Activities centred around the development of motor, graphomotor and

cognitive abilities. Some activities focused on the child's inability to express themselves confidently by using drama lessons that are based on the NTC programme. After a few weeks, we transferred that knowledge to other educators and staff at our preschool. Some of the activities could be carried out by the whole collective, but others required smaller groups that circled which enabled us to each cover a particular field of activities. We finished our day by assigning homework which was also later discussed. This teacher training was very effective, since it triggered new creative processes in the educators' minds. They were able to think of other activities that would serve our children the best. Nursery and school teachers are of vital importance during the major developmental years of a child's life. We, as teachers, have the responsibility to share our knowledge with parents and help them with the cognitive and motor development of their children. By doing so, we will be able to create a new generation of intellectuals.

10. The result of the lack of proper stimulation (developmental disabilities)

Every second child has some development impairment and they may only be minimal. Professor Susan Greenfield from Oxford describe a horrifying example of the consequences the lack of stimulation may bring. A 6-year-old child was blind on one eye when he started his schooling. They wanted to know the reason behind his blindness and they realised he had an infection in one eye and his mother put a gauze over his eye for 10 days. As brain didn't have any stimulation during that time, he connected the synapses differently and the boy turned blind.

When a cat is closed into a white room, into a room with horizontal black lines or in a room with vertical black lines, the cat's brain becomes damaged for the rest of its life. Thankfully that would not happen to a human as their brain develops slower than the brain of the cat, but serious consequences may occur after 10, 20 or 30 days (Rajović 2012).

The institute of pathology of speech in Bosnia and Hercegovina has concluded that 40-50% of children have some kind of speech disorders, 50% of children do not have fully developed motor skills at the age of 6, 50% of children have slower eye accommodation and 70% of children in Central Europe have flat feet. 20-30 years ago, only 10-14% of children had the condition of **flat feet** and it was seen as genetic, nowadays genetics does not serve as the reason

for such a developmental disability. Children's posture is consequently also seen as a major problem. That is largely due to lack of one's stimulation. Children are never barefoot, not even inside. Children should run barefoot, especially during the summer days. They should walk on the asphalt, small rocks and pebbles, grass. By doing so, the creation of synapses increases greatly.

The studies carried out in the USA in 2010 and 2011, have gathered that the deep brain structures of our children are diminished and therefore will have decreased cognitive abilities. Their cortex is not well developed, since our children have fewer synapses connected to their speech, fewer synapses connected to their motor skills or balance, and fewer synapses connected to their vision. That is why, a lot of children are not prepared to start their general primary education at the age of 6. Their reading, writing and calculating will therefore also be largely affected (dyslexia, dysgraphia, dyscalculia, etc.).

The disabilities occur because of the lack of certain activities in the first years of a child's life. Those activities may involve jumping, rotation, hide and seek, playing with marbles and rubber bands. These activities help to form synapses (the connection between nerve cells), muscle coordination, coordination of the whole body and intelligence. Nowadays children are mostly static and spend most of their time glued to a computer screen and some other screen with the same consequences. This kind of inactivity does not stimulate the most important parts of a child's developmental process, but hinders them. Their biological potential to reach great cognitive abilities will be reduced substantially.

11. My struggles with the implementation of various techniques of EFL

As a student myself, I had to try really hard to find a way and adjust my retention techniques in order to memorise a lot of information and I did it with the usage of anagrams, poems and a lot of movement. I realised that I always retained information better if I moved around the room, went for a walk or did a few exercises while revising. I spent countless hours trying to find a way to improve my retention. This process continued as I became an English teacher. I have used various techniques over the years. During my time as a tutor, I have always tried to

appropriate my teaching methods to every particular student. I have learned a lot through trial and error.

While working as an English teacher and tutor, I have come in contact with a variety of children, teenagers and adults. The majority of them wanted to understand English and possessed a lot of motivation to learn, but they never could find a way to retain information. They had issues with concentration and they were part of our school system that requires them to retain large amount of information without really understanding it. Our system is, unfortunately, based on results rather than the road to achieving those results. Many children that I worked with, had problems focusing and found learning by heart tedious and unsuccessful. I completely agree with them. I can say that most of the information I had to retain quickly, soon became part of a distant memory. We try to memorise massive amounts of information, quickly write them down on a test, but forget most of it in the next few days. Because I had such problems with memorisation and finally found a method that worked for me, I wanted to share the knowledge with my students. I always tried to explain most of the information in a way that would make sense to them and that they could apply to their everyday life and find some connection within the already acquired knowledge. I was very successful. My tutoring quickly became sought after and I tutored more than 20 individuals each week.

I tried to use the different techniques of teaching and learning with the family I stayed with in London, England. I lived with them for a year and acquired the role of a tutor, teacher and *au pair*. I spent most of my days with two English boys. I helped them with their homework and saw the enthusiasm in their eyes when I suggested we should make studying fun; of course, I always included the activities they were interested in. I used many techniques while teaching or just revising certain subjects they had problems with or just had difficulty memorising. Those subjects mostly included Latin or French for the older, 12-year-old and spellings for the 8-year-old. I must say, it was very difficult for them to concentrate and learn all the needed words. They are part of a very elite school in London which expects quite a lot of them, but I could see that was more than doable, as both of the boys are extremely bright, just lack some motivation sometime. I must say, it wasn't easy at first. We did try to take breaks by running up and down the stairs and walking around the room while revising or just rolling on the couch and floor. That does help sometime, but the most effective way, must have been when we used the ball. I created a game, which included being able to score a goal with a football as soon as they either spelled the word correctly or knew the meaning of some Latin word. This worked brilliantly for a while. They didn't focus on the learning itself, but on the chance of being able to play with

me and score a goal. Which would not only motivate them to learn but also motivated them to show off their ability to play football. Later on, our games changed a bit. We used smaller balls, sat on opposite sides of the room and each had a small Lego man that we needed to hit to win. For each correct spelling, you would get a shot at winning the game. With more difficult words, the boy was able to have 2-3 tries at one time. The older boy and I created a game of catching a ball with one hand and trying not to drop it while trying to remember and understand as much as possible, of course. For each correct paragraph or a collection of words, we would have a game of how long it takes us to keep the ball in motion and safe from the floor. That didn't really motivate him, but created an opportunity for him to relax while learning. He was able to shift his attention while still preserving the level of concentration needed to continue learning.

I also had some great success teaching EFL to a three-year-old girl. Her mother insisted she started learning English as soon as possible, but wasn't sure whether that would be possible, as she is very lively and thought she would not be able to retain a completely new language for her. Some of her family also wasn't really sure that would be the right use of their resources, but in the end agreed to trial lessons with me. Since I didn't have a lot of experience teaching 3-year-olds one-on-one, it was quite the challenge at first to find ways to entice interest in English. I was sceptical myself, but saw this as a challenge. I brought her a lot of material every single time. We started with stories that she already knew, but read them in English. I used the book as a great source. I pointed to all of the things while reading so she would start to correlate the word with the image and the meaning behind it. We also used some other toys to tell the story. We used Barbie and animals that were mentioned in the story. That led us to learning about animals. We did that while listening to songs, we played with the toy animals while learning about animals from the song. I stumbled upon a problem when I tried to introduce her to colours, as she wasn't completely sure about the Slovenian meaning of some colours. That is why, I had to find a solution. I knew she liked dressing up dolls. That is why, I created two models, a boy and a girl and cut out some pieces of clothing, each being a different colour. Our goal was to dress the models in way that she wanted as she was the greatest fashion designer. She dressed the girl and told me which colours she used to make her match. Later on, we included accessories and by doing that learned new colours. She loved that game! While we were learning, I always had a song ready that we could dance to and sing. While singing we would either use other toys to accentuate what we have been learning, or use different dances for each song. She learned the dances with me and with movements came also the understanding of what we have been singing about. I could see the interest in her eyes, she wanted to learn

more and she wanted to show off to her family members and they were all quite impressed by her knowledge. She didn't really see our lessons as learning, but mostly just playing. She was always so happy to see me and called me her "special friend". I was just a buddy that came and talked to her in English, but also used some Slovene sometimes to make it easier for her to understand. She was always so happy to see me and play with me and it was amazing to see her improvement and development.

Even though, the methods I used aren't all entirely part of the NTC teaching system, but the base of such methods is identical. All methods include learning while playing. Children don't even know they are learning and can acquire a lot of information unknowingly. Some might say that a three-year-old is too young to have a teacher, but after my time with her, I realised they are mistaken. She was able to learn a lot of words and sing a lot of songs in a language that was before completely foreign to her. And even though, she might not be able to remember all the new information that we have learned together, she at least got a feeling of the language, which will later on help her greatly. And I think I might have underestimated her myself. I didn't even think she will learn that quickly and have such enthusiasm about her seeing me and learning.

These success stories motivated me to find a way to teach differently and I was searching for a method that would be the most similar to my already established teaching technique. That is when I came in contact with the NTC learning system program. I have always been interested in neuroscience and psychology, since I always searched for answers to the questions why and how. How does our brain work? How do we retain information? Why are some people more creative and others more logical? What is the reason behind people's reactions and thinking? Is that due to their upbringing or some other source? I really love to research everything I don't understand. That is exactly what happened when I came in contact with the NTC teaching practice. I wanted to know why do children acquire information better with the usage of such a technique and after realising the founder of such a technique is a doctor working in neuroscience, my interest peaked.

12. NTC learning system programme in the private preschool *Dobra teta*

I have been working at the preschool *Dobra teta* periodically for the last 9 years. I started as a preschool teaching assistant and became the Head of the English department 3 years ago, when I returned from London. At that time, I talked to the director of the preschool and she introduced me to the NTC learning system. She was trying to implement it in their preschool, but hasn't started yet. She wanted me to be the first one to implement it in EFL classes at their preschool. I was more than happy to accept this challenge, especially after I have realised that the methods of the NTC learning system already coincide with my already established teaching methods and mentality. I have become fascinated by the sheer simplicity and at the same time, complexity of such a method.

As I have explained in the theoretical part of my thesis, we have already established how important early stimulation is. Children need to be challenged and encouraged to learn from a very young age. We want children to spend as much time as possible outside testing boundaries and expanding their imagination. We are required to stimulate the young minds and create a new generation of intelligent individuals.

12.1. Preschool education at the private preschool *Dobra teta d.o.o.*

The private preschool was founded by Jana Fleišer in 2011, who was also awarded a title of The Young Entrepreneur award in 2014. She started with just one preschool centre in Kranj, Slovenia and has expanded to 5 preschool centres in Kranj and Ljubljana. The preschool centres consist of young, energetic and skilled professionals, who are wholeheartedly committed to their work. They strive to create a relaxed environment while providing motivation to play and create while focusing on the overall development of social, emotional, motoric and creative capabilities. Their main emphasis lies on the individual child's development of personality and capability, as each child is unique.

They differ from all the other preschools because they are very committed to each individual and have the great desire to find new ways to improve the education not only with the children, but also with parents. They are well aware that family is the most important thing and that is

why they organise many seminars on various topics ranging from psychotherapy, paediatrics, physiotherapy. They are also committed to having a great relationship with the parents and educate them as much as possible and that is why they try to stay in constant contact with them not only on a face-to-face basis, but also through blogs and articles posted on their website (*Zasebni vrtec Dobra teta*).

They started implementing the NTC learning in the last years and the results are already astonishing. The programme is not only used in English lessons, but has expanded to every single preschool and educator. They include its activities daily and children learn more in a shorter amount of time while not being under any pressure. They want to learn as much as possible and share the information with their parents as soon as possible.

12.2. Implementation of the NTC programme in EFL classes

After conducting the theoretical part of my thesis, I ventured to prove the theory by myself. I am currently working as the Head of the English department at a private preschool *Dobra teta* in Kranj. Their main goal is to teach children to think on their own and create a new generation of independent, self-reliant and intelligent children. This is the methodology I most certainly followed in my methods of teaching English. Not only did I introduce English to very young learners for the first time, but did it in a way that encouraged free-thinking and play. I have used a lot of techniques that have proven to be highly effective in the past by using songs, fairy tales and other kid-friendly techniques, but did it slightly differently. I have been surprised on many occasions by the sheer happiness and eagerness to learn something new. Children responded tremendously and made my teaching lessons a delight. Not only did I try to come up with a variety of games, but always kept in mind the children's likes and preferences. I tried to bring each lesson as close to each group as I possibly could. For example, I knew one of the groups I taught, loved to craft. That is why I adjusted their lessons to their liking and spent a bit more time crafting. Others preferred stories or motor games. I was prepared to adjust accordingly. Not only did I do that, but I used my knowledge of NTC to improve my already existing techniques. I have concluded that the retention is much higher using the NTC techniques and the notion that children aged 1 to 5 are too young to start learning a foreign language was completely overthrown.

In order to realise the programme, I had to use the appropriate methodology. In the NTC programme, we use practices that are not part of the basic Organisation of Programmes for all Pre-Primary Education, but they suit every segment of the programme. These exercises work stimulatingly on the physical and mental development of children. A special focus is given to the specific motor and graphomotor exercises encapsulating learning symbols, abstract concepts and their visualisation, seriation, classification and consequently the connectivity and recollection of associative techniques (Rajović 2013: 18).

I used the NTC method in my classes conducted in the morning, and also with the ones conducted in the afternoon. The morning classes were carried out with all age groups of the preschool education. One-year olds had lessons that lasted 15 min and the rest of them had lessons that lasted more or less 30 min. The results were mind-blowing. I did not expect the feedback and knowledge children retained. I was mostly astonished by the information retention throughout the school year. Of course, there was some repetition needed, for the children to truly comprehend the new information, but did it in a way where the NTC methods were used. I used a wide range of obstacle courses, puppet shows, other lessons involving movement and storytelling. Children were able to experience different ways to expand their knowledge and by doing so realising which one suits them best by maximising on their retention.

I was mostly surprised to witness the retention children aged 1 had. It was a bit of a difficult start, since most have just started their preschool years a couple of months ago. I was a bit sceptical at first, because I thought that might be a bit too early for them, as many other people believe. I was stunned to see that by week three, children knew my purpose there. They knew that I would bring a change to their daily lives at the preschool and bring new knowledge that they always accepted as part of play. It is true that the methods I used when teaching the 1-year-olds were a bit different from my methods teaching older children, but the results were staggering. By the end of the year, children who didn't know how to even say hi in Slovenian, managed to say hi and bye in English. They mostly understood what I was saying or at least tried to by accurately responding to my questions verbally or non-verbally. I was surprised to see how easy it was for them to gain information simply by playing with me. We danced, sang and read stories and they were happy to listen to my exaggerations in voices and pitch. That made it a lot easier for them to understand and retain what I taught.

My method of teaching also includes a lot of movement, real objects and a variety of games that improve a child's retention of information, such as the inclusion of puppets. I have been using a toy zebra as part of my teaching lessons. First, we started with simple greetings as Hello,

Bye, then we wished Zebra Good Night. I used Zebra Zozo as an introductory sequence into the lesson. I always spoke English while having Zebra Zozo in my hand. It was very simple vocabulary, such as “She is tired”, “I don’t want to!”, “Where is Zebra Zozo?”. And that is exactly what created a magnificent amount of cheerfulness and movement from the youngest of children. They knew exactly what I wanted from them and they moved around searching for poor Zebra, who needs to go to sleep. We then all wished her Good Night and she went back to sleep in her bed. Those are all quite straight-forward teaching methods, but it involved a lot of excitement. My afternoon lessons include nine separate groups of children of 5 to 15. These 30 min to 45 min lessons are more hands-on and, of course, carried out with the NTC teaching methods.

12.2.1. The 3 phases of the NTC learning system programme

As I have already mentioned, the NTC learning programme consists of three phases. I will touch upon these phases below while introducing the activities I used while teaching. The first phase includes additional stimulation of the synapsis development. In this phase, motoric, graph motoric and eye adjustment exercises, are the ones that are mostly focused on (Rajović 2013: 16).

PHASE 1: Motor exercises

A) Rotation and balance exercises

The importance of rotation around one’s axis lies in the comprehension of all the elements that are part of such a movement. “The vestibular apparatus of the inner ear transmits impulses to the structures of the brain stem and from there to the core of the cerebrum and cerebellum, which are then connected to the III., IV. and VI. cranial nerve and in turn that influences the eye movements”. This complex physiological process is best developed in the early years of one’s life when neuron pathways are at its height of development. In the later years, it is very difficult to influence such processes. It’s a fact that children undergo an intense process of brain development, which can especially be seen with the length of a child’s REM phase while sleeping (the amount of blood in a child’s brain is double the size of an adult’s brain) and that is why, it is highly important to utilise this part of a child’s life to improve the development of their natural potentials. The following exercises have been used while teaching and have achieved great results (Rajović 2013: 18).

Exercises n. 1

Spinning around a child's axis with their arms spread wide from 10 to 15 seconds increases their ability to internalise information. After spinning, children should close their eyes and try to hold their balance. After a short recess, the exercise is best repeated twice or three times. Children don't change their direction but always turn in the same direction. The next day, the direction could be changed. I used this exercise on multiple occasions, but in different ways.

Firstly, we started using this exercise to prompt movement in itself while issuing the order "TURN AROUND". That is how they started to understand what the words meant while moving. On a different occasion, I used this while teaching children opposites. First, they turned around SLOWLY and then QUICKLY. That prompted a lot of laughter and general happiness. They kept listening and waited patiently to turn around quickly. By doing so, they generated a larger amount of connections among synapses while learning new vocabulary. After a couple of months and especially with older preschool children, I combined this exercise with obstacle courses. I used this at the beginning of the obstacle course, where they had to continue their course by jumping over elements, jumping through hoops, crawling through tunnels, testing their balance by expertly walking on beams or tape drawn lines on the floor (later explained in exercise n.2), crawling under a variety of obstacles etc. Children were prompted to carry or find some kind of new vocabulary that I wanted to revise as well. They either picked different cards up that held new vocabulary throughout the obstacle course, or picked up the first part of the vocabulary as part of a puzzle or memory game, expertly overcame the obstacle course and in the end, found the other part of the puzzle or the second part of the first vocabulary item.

Exercises n.2

Using a trampoline also increases a child's mobility and motor capabilities, especially if we promote jumping at least 5 or 10 min a day. I have also incorporated trampoline-type activities. I mostly used such activities when children needed a break from static activities. I used it as a warming up exercise to stimulate children's thinking and brain activity. I usually incorporated counting in English while jumping. I either used it separately or as part of an introductory element to an obstacle course.

Exercises n.3

Walking on beams or tape-drawn lines on the floor is another activity that highly motivates and increases a child's ability to gather and store new information. I used coloured tapes in a variety of activities. I used blue, red, green and yellow tapes and taped them to the floor in different patterns; I used crisscross patterns, straight lines and short and long lines stacked horizontally

requiring children to jump with either one leg on a short line and with two legs on a long line. I also gave them the option to jump on the short lines with legs joined together and make a wide jump on the long lines. I used different coloured lines to revise the names of the colours while perfecting their balance abilities. At first, children experienced some problems walking while using one foot after another. After a while, they improved their technique while following my instructions.

One specific activity that I constructed incorporated blocks as part of a storyline where a friendly clumsy monster destroyed different coloured houses and made a mess with bricks. Children were required to go on an adventure and rebuild the houses. They walked towards the large pile of bricks, picked up a coloured brick, found the corresponding line and overcame the variety of paths and bridges (straight line, crisscross or jumping on short and long lines) and put the coloured brick to the corresponding coloured sheet of paper at the end of the lines. After all of the “bricks” were brought to the appropriate coloured sheet, children’s adventure still wasn’t finishes. They needed to rebuild the houses and solve the village. They followed my instructions while doing that. I used this continuing activity to revise prepositions, by saying “put the blue brick under the red brick” or “place the yellow brick on the red brick”. Children built a marvellous new building and saved the day.

Exercises n. 4

Recent research involving the child’s abilities have shown that children are nowadays unable to strain their thigh muscles. The child’s thighs start to ache very quickly and that limits the range of movement. That is why the activity called the INVISIBLE CHAIR is a highly suitable game that promotes movements and independent thinking. This game includes at least two players who stand next to each other both facing the board or a piece of paper holding a pen. Their task it to draw houses, but there is a catch. Children can only draw the roofs (triangles) in a standing position and can only draw the rest of the houses (squares) in a squat with a 90° angle. The one who draws the largest number of houses, wins. I used this game on many occasions, but mostly with older students. Sometimes, I just used it as a relaxing exercise in between activities that would motivate children to focus later on. This exercise was also used to help children learn the word “house” and as an introductory activity to a new theme of shapes.

B) Eye accommodation exercises

Nowadays, eye accommodation presents a big problem in a child's development. Without proper eye accommodation, children will have problems learning and concentrating. Watching television and playing video games hinders the development of a highly significant eye function. The mentioned physiological process develops with quick eye movements, following an object with your eyes, running and jumping over obstacles. Children spend too much time watching television and playing video games where eyes are not being challenged and development of them can therefore stagnate. In the last years, research has shown that the reason behind multiple attention deficits and concentration problems, lies in the lack of eye accommodation exercises. After lengthy and tiresome activities that would improve a child's eye accommodation after such stagnation, their accomplishments in a school environment improved. Nevertheless, it is better to prevent than treat the already existing deficit (Rajović 2013: 19, 20).

Exercises n.1

Eye accommodation is ideally improved with activities involving a ball. The eye constantly adjusts to the ball's movements and the exercises are easily adjustable according to the age group. Children ranging from age three to four, can sit opposite each other separated by half a metre up to a metre and pass the ball on the floor. They can do this activity up to 4 or 5 minutes daily. Children aged four to five can form a circle and pass the ball from hand to hand. After a while, they can stand a bit further from each other and throw the ball to one another. Children aged five to six, can pass the ball at a larger distance (more than a metre) or can throw the ball in a basket.

I used the ball while teaching various topics. At first, I used the ball with younger groups of children by sitting in a circle and passing the ball to another person that was wearing the same coloured piece of clothing, uttering the colour and the item of coloured clothing in common. I upgraded this type of exercise with older and also younger, more advanced learners, by instructing the children to utter the new vocabulary and forming a story together. By doing so, we not only improved the child's eye accommodation, revised the vocabulary, but also broadened the children's imagination. We, of course, increased the distance between learners corresponding to their age.

While learning colours, I also used different coloured ball pit balls where children needed to find the right colour and bring it to me and try to throw the ball in the basket. I used this type of activity while learning the names of fruit and vegetables as well, but we were making a salad of some kind in order to make this activity even more fun.

Another exercise that worked wonders, was the activity that included children working against each other in pairs. They stood opposite each other and between them was a ball. Children hold their focus on the balls and the rhymes. While being focused on the balls placed in between, they have to follow the instructions of the rhymes. The rhyme can stop at any time when I said the word BALL. At that particular time, children were instructed to pick up the ball and the one who picks it up the fastest, wins. I made up the rhymes that included movements encouraging the development of the child's synapses. We can carry out this exercise in various ways.

Put your hands on your shoulders,

finger on your nose

turn around three times,

until you barely hold your pose.

Gently rub your tummy,

tickle your toes,

pinch your ears,

and hold them closed.

Jump back

and try to hold still,

grab your knees,

but do not kneel.

An easier version includes children kneeling opposite each other, but still trying to get the ball the fastest. To make this exercise a bit more difficult, I used another word instead of BALL that wasn't the word I was looking for. This change enabled children to listen more carefully and therefore not lose a point. When my goal included the repetition of some vocabulary, for example the Autumn vocabulary, I uttered words such as ACORN or CONKER. This is when

children were encouraged to get the ball as soon as possible. But, when I said the word SNOW, children had to stay still and leave the ball alone.

Exercises n.2

Activities involving running, jumping rope, crawling and spending as much time as possible in nature, help with the development of eye accommodation. This segment needs to be explored on a daily basis by the child's parents as well. These exercises have been used in my classes almost every lesson. They became part of a warming up activity where children counted how many times one jumped, or became part of another activity involving obstacle courses. Children were instructed to jump over a variety of obstacles or jump in coloured hoops and name the colour while jumping.

PHASE 2: Activities involving abstract concepts (identification, classification, association)

A) Reading

The process of reading and identification of abstract symbols, is one of the most complex processes, which a child needs to learn. Abstract concepts need to be connected into a logical whole and later connect the words into sentences, which need to be memorised. This skill is extremely important and needs to be internalised in the period of intense brain growth, which is definitely before the child's beginning of primary schooling.

Exercises n.1

Children are shown a series of five recognisable symbols once a week. Activities involving symbols, flags etc. can help children a higher degree of understanding; functional knowledge. I have used this technique while exploring Great Britain and its countries. I have shown a variety of flags that children were able to recognise after a while.

The revision of flags is best done with a spider web obstacle course. Using elastic bands I stretched around tables and chairs, I created an amazing obstacle course. I scattered a variety of blocks around the obstacle course. At the beginning of the obstacle course children were presented with a particular flag. They had to name the country this flag belongs to, go through an obstacle course and collect the colours this flag consists of and place it on the parts of the flag as they come out of the course. You could also present the children with an Eiffel Tower for example, which they had to associate with France, find the appropriate flag and then find

the coloured pieces. This kind of obstacle course was also used on multiple occasions with a variety of other vocabulary repetition activities.

Exercises n.2

After three months, we start to teach words. We show them a variety of words that children are able to recognise once a week. They come in contact with 5 words a week and revise them 3 times a week for 10 minutes. On Friday, teachers tell parents the words, they have learned that week and parents are able to revise the words during the weekend. On Monday and Tuesday, the words are revised in preschool and then on Monday, children start to learn the next five words. This programme enables children to learn new words very quickly. This programme is beneficial for every child and enables children to recognise abstract symbols, without even requiring children to remember every single word. After a two-month long period of learning new words, children are required to pass a test, where they should recognise (“read”) 40 new words. This can later be carried out by parents that want children to recognise more words.

Personally, I have not used such exercises, but I did promote the learning of new words by printing out the whole alphabet with the accompanying pictures of a variety of objects and taping them in every classroom to enable children to recognise the items while learning the meaning of it. Children were able to subconsciously recognise the words and their meaning. That is another way to revise the new vocabulary I wanted the children to acquire.

They have also revised the words in a variety of other ways; either as part of an obstacle course, memory game or some other didactic game that would give the children the opportunity to learn while playing. In the last year of my teaching, I have realised that children are very quick to acquire new words and some, more advanced learners, were even able to recognise and even spell the words. That is why I have decided to add magnetic letters with accompanying cue cards with pictures and capitalised names of the images on it. The case also involved a whiteboard and a marker that helped children write new letters and even words. I included this case in every older group of children in the preschool giving them the possibility to revise the words during the rest of the week and not just the day when the English classes are in session.

B) Memory games

Words and concepts (flags, emblems, company symbols etc.) are used in classic memory games and specified games to explore creativity and functional thinking. Gifted children are able to perceive the symbols and pictures more quickly and to stand out in every group of children with their fast observation, new word acquisition and fast exercise solving.

Exercise n.1

10 words are written on cards. Every single week the number of words is increased. This is a classic memory game that I also used to introduce new “seasons” vocabulary. I wrote a story in order to teach the children vocabulary centred around the autumn season. At first the story involved only two characters with their fruits and after I noticed this new vocabulary has been acquired, I added one new character with an accompanying fruit. This is how children were able to acquire new vocabulary while listening to a story. I told the story only using the new vocabulary with accompanying pictures on different cards and children always listened very intently. Later on, they were the ones telling the stories. I did the same thing with the other seasons as well. In the winter, I used pictures to present a play-like performance (kamišibaj) where children were very much integrated into the story telling. They knew the story and all the accompanying vocabulary. This vocabulary and some additional vocabulary, was also given to children and their preschool teachers in order to create a new story that they presented in the later weeks. That made children even more invested to use as much of their imagination to create an astounding story. They were proud of their own product and were even more motivated to create something of their own, while actually learning.

C) Storytelling

The usage of storytelling helps children improve their associative thinking while creating a beautiful tale. Using the knowledge, they have already acquired, gives them a sense of security while leaving room for their imagination and a sense of adventure.

Exercise n.1

I have used this type of activity on multiple occasions and some have already been introduced in my thesis. I want to point out one more activity that really brought the best creative ideas out of my young learners. Children were introduced to a particular vocabulary in advance and have revised it as well. Then I used a variety of block of different colours that could be built into a tower. I normally used three blocks at a time. I instructed a child to place the particular items of vocabulary on the appropriate blocks. Children quickly understood I was looking for the

items that corresponded to the colours of the blocks. After placing the items on the blocks, they started to form a story. This story ranged from a couple sentences to a full-fledged masterpiece. This kind of storytelling evoked a lot of laughter and merriment. Children were happy to listen to others as they wanted to hear other ideas and laugh with them. I wrote each of these stories down and created a booklet with 4 stories, each child has thought of corresponding to a particular season of the year. They were very proud of their finished product and wanted to share their ideas as much as possible in the later classes. We gave the children a voice and courage to express it.

PHASE 2: Music

Plenty of researches in the last decades have shown that musical activities (listening, singing, playing and artistic musical expression) directly and indirectly influence the child as a whole. It improves their development as a whole. Musical talent is expressed the earliest compared to the development of other talents, that is why family and preschool environment are so vital. I have used music in a variety of ways.

Exercise n.1

While we were exploring the world and the variety of countries English may be spoken in, we listened to different hymns, which enabled children to distinguish amongst nations and explore their culture and heritage. We connected the introduction to the hymns with the country's major monuments and flags.

Exercise n.2

Using instruments in our EFL classes was also part of our music growth. Children learned the names of a variety of instruments, while trying to figure out how a particular instrument is played. We also looked at the pictures and listened to the sounds of a variety of instruments known to be played in a particular country. While listening we also talked about our preferences while listening to the sounds the instruments were producing.

Exercise n.3

While introducing the topic of senses, we needed to explore the sense of hearing. Firstly, we listened to the sounds and tried to distinguish among a variety of sounds and associate the sounds to our everyday lives. I used 3 sounds; the sounds of water, helicopter and strong wind. Children listened carefully to the sounds and needed to climb on the table, when they heard the sound of water, hide under the table when they heard the sound of wind and lie on the floor

when they heard the sound of the helicopter. Not only did we test our hearing, but also revised the prepositions, such as under and on.

PHASE 3: Activities improving the development of functional knowledge

A) Riddles

Logical thinking and solving riddles as quickly as possible can be trained and brains, as any other organ, can also be in shape. Stories and questions are there to stimulate individual thinking. It is also best to reward the problem solving with an applause or some kind of praise. By doing so, you motivate children to want to solve riddles in the future as well. We could add a moral lesson in the end to enable children to remember the vocabulary or some kind of information, even more easily.

Exercise n.1

Using riddles with beginner EFL learners is very difficult, but that hasn't stopped me. I used very simple riddles while revising vocabulary of animals. I thought of the vocabulary they have already been acquainted with, such as colours, words, such as tall, short, big, small, long and the variety of habitats. Such riddles were mostly used when children were unable to remember a particular name of an animal and when they did, I always praised them on their knowledge of English, since they understood everything while only listening to me speaking in English.

CONCLUSION

The main objective of this thesis was to demonstrate whether children have the ability to attain large amounts of information and learn a completely foreign language. I have realised that children are more than capable to start learning new languages in their preschool years of education. They have the ability to reach their biological potential and be formed into highly intellectual beings. Unfortunately, our education system limits their abilities and potential with the usage of outdated teaching methods and techniques. Many are of the opinion that teaching a new language should start with a child's primary schooling, in order to not overburden children. They believe children are unable to understand the complex foundation of many languages. In this thesis, I have touched upon all of these issues and whether these parents' beliefs hold any ground. Some parents stand on the other side of this understanding. They believe children need to be part of as many extracurricular activities as possible. Children spend most of their mornings in their preschools and schools and most of their afternoons in a variety of activities. But there are parents who do try to aid their development into highly intellectual beings, but cannot achieve the heights, a suitable education system would, since children spend large amounts of time in such institutions.

In the 19th century, Piaget, a major contributor to the educational philosophy, saw the potential children have at a very young age. He focused on the idea of *how* children learn, rather than *when* or *what*. Children should be able to come to their own conclusions and include their thought processes in their learning, rather than just transparently being guided to the solution. Nowadays, there are some education institutions that have used the more progressive approach to learning, but there was one programme in particular that quickly piqued my interest. The NTC Learning Programme became part of my extensive research lasting three years focusing on the possibility of it being a suitable programme to teach EFL to very young learners. I have come to the conclusion that such a programme is indeed highly efficient, since it enables children to acquire large amounts of information while playing. Such a programme also enables us to recognise the potential in children and provide us with the tools to cherish it due to the NTC predispositions. I have experienced first-hand that even the youngest learners aged one have the ability to acquire a new language relatively unknowingly.

This pedagogical programme did catch my attention very quickly due to its root in neuroscience and psychology. It made it possible for me to understand the reason behind each exercise based

on the advanced development of children, but I had my doubts as well. I believed that such a programme is mostly suitable for children aged three and up, but I have been mistaken. After applying this method in my EFL classes at the private preschool *Dobra teta*, I have realised that major changes in the understanding of a completely new language has been mostly recognised in children aged one to three. These were the ones, who haven't been in contact with the English language before and have due to activities focusing on the NTC learning system, reached, what was for me, unimaginable desire to learn.

It is significant that we also mention the significance parents hold while trying to reach the full potential of their children. For that reason alone, we need to educate not only teachers and nursery teachers, but also parents with whom children spend large amounts of time. They are the ones that have the ability to help children become the intellectuals they have the possibility of becoming. While writing this thesis, I have become even more aware of the importance of educating parents and have therefore included it as part of my teaching method. The knowledge children attained has subsequently expanded.

This thesis has become a large part of my professional path. I am glad that the results have been very successful, conclusive and have improved the understanding of the English language of many children attending my EFL classes. It has changed my understanding and attitude towards our education system and the need for a change. If we changed some outdated methods and modernised them, just imagine the new generations of children thinking out of the box. What they could do for the evolvement of our society? The change depends on the education we offer our children.

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Declaration of authorship

I hereby confirm that I am the sole author of this Master's thesis and that all sources used are listed in the bibliography and identified as references. No other person's work has been used without due acknowledgement in this thesis.

Ljubljana, 29. 09. 2020

Ana Zeilhofer

Izjava o avtorstvu

Izjavljam, da je magistrsko delo v celoti moje avtorsko delo ter da so uporabljeni viri in literatura navedeni v skladu s strokovnimi standardi in veljavno zakonodajo.

Ljubljana, 29. 09. 2020

Ana Zeilhofer