Brain-Based TEFL

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About the Author

Jana Kamenická is a teacher, translator, and researcher at the Faculty of Education, Constantine the Philosopher University in Nitra, Slovakia.

Her research interests focus on neuropedagogy and psychopedagogy including the role of emotions in education, especially with regard to EFL. As a teacher, she has taught EFL both at Slovak and at bilingual English-Slovak grammar schools. As a translator, she has worked for several companies, as well as working on English-Slovak and Slovak-English translations and interpretations in Hong Kong and Austria. She became an English teacher at a bilingual grammar school at the age of 20.

With her 10 years of teaching practice, she is the author and co-author of several publications, including:

- *Emotionally Competent Stimuli in Teaching Foreign Language Vocabulary* (2022),
- *Emotional Stimuli in Teaching Foreign Language Vocabulary to Learners with Different Learning Styles* (2022),
- *Apple Tree Model of Emotion-Involved Processing* (2021a),
- *Apple Tree Model of Emotion-Involved Processing: Videos for Emotions and Foreign Language Learning* (2021b),
- *Positive Emotions in Teaching Foreign Language Vocabulary* (2021),
- *Emotional Engagement in Teaching Foreign Language Vocabulary* (2019),
- *How to Enjoy the Journey: Foreign Language Vocabulary Learning and Teaching* (2019).

Dedicated to my learners – the past, the present, and the future ones.

It is thanks to you that I grow as a teacher and learn to be more humble every day.

Jana Kamenická

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Thanks

I would like to express my sincere gratitude to the reviewers for taking the time and effort necessary to review this work. I sincerely appreciate their valuable comments and suggestions, which helped to improve the quality of this book.

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I am very thankful to my learners, who shape me as a teacher and who act as a mirror, which shows me how and what to improve every day.

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Contents

List of Abbreviations

3L	Learners can get caught in the vicious “3L” cycle of low ability, low confidence, and low motivation
3R	The Three Reals Principle
CEFR	Common European Framework of Reference for Languages
CLIL	Content and Language Integrated Learning
ECS	Emotionally Competent Stimulus/Stimuli
EFL	English as a Foreign Language
EHCS	Emotional Habitual Subjective Comfort Scale
EPSPAP	Engage-Present-Study-Practice-Activate-Produce approach to FL teaching
ESA	Engage-Study-Activate approach to FL teaching
FL	Foreign Language
FLA	Foreign Language Anxiety
FLE	Foreign Language Enjoyment
FLES	Foreign Language Enjoyment Scale
L2	The second language – the language which is learnt later than the native one (usually a foreign language)
PERMA	Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment
PERMA-V	Positive Emotion, Engagement, Relationships, Meaning, Accomplishment, and Vitality
PPP	Presentation-Practice-Production approach to FL teaching
REM	Rapid Eye Movement – as a sleep phase
TEFL	Teaching English as a Foreign Language
RAS	Reticular Activating System
SWB	Subjective Well-Being
VAK	Visual, Auditory and Kinaesthetic – as the three main channels through which we receive input from the outside world, referring to learning styles

Foreword

Dear reader!

This book focuses on the topic of brain-based learning – both in general as well as in the context of TEFL. In this work, my aim was to offer an overview of both theoretical knowledge and research findings from the field of neuroscience, general and positive psychology, and to apply them in educational contexts, especially in TEFL. This work is divided into four main chapters, in which we will closely examine:

1. The human brain – its structure, how the signals are transmitted, how learning is done, and how it can be maintained.
2. Factors that influence brain-based learning – such as individual differences of learners, the real-life orientation of content-to-be-learnt, active learning, memory strategies, intervals for learning, repetition and practice, forms of work, and an emotionally safe environment.
3. Emotions as the key aspect of brain-based learning – especially, their types, effects on the human psyche and memory – including the most recent theories, which have already been empirically supported, as well as the importance of *emotional hooks* in education.
4. Emotional hooks for TEFL – several ideas, which can be used to bring positive emotions to TEFL classes.

In the final section of this work, several questionnaires have been included – to help you (the reader) to identify various aspects of your personality, which affect your learning. These can be also used as quick diagnostic tools for learners. For more complex and precise diagnostics, however, consulting a psychologist is suggested.

Regardless of the presented theories, ideas, and principles, there is one, which stands above them all and I would like to emphasise its importance. Let me explain it using a short story from my own teaching practice:

I can still vividly recall my very first EFL lesson. I was standing in the hallway in front of that classroom trying to calm my mind, took a deep breath, pressed the handle of the door, and entered the classroom. My very first lesson was with the learners, who were at that time 19 years old (that is, one year younger than I was), and were considered the worst class at school. I took a lot of time thinking of how to gain the respect of these learners – considering showing off my English skills (but they would show off, too), being very strict about the rules (but they would still break them), and dressing up more maturely (but they would still comment on how young I look). After some time working with them, I realised that although these things matter to a certain extent, what matters most, is respect. I realised something that most of my colleagues at that time did not – that the teenage and young adult learners strive to be approached as adults, that is, as the teacher's equals – even though they might sometimes still act as children. Therefore, this is my advice for every future and in-service teacher:

Do not expect your learners to respect you if you do not show respect towards them. And even if you do, there will still be some, who will not understand this equation.

Jana Kamenická

Introduction

This publication presents TEFL from neuropedagogic and psychopedagogic viewpoints. It is an intersection of neuroscience, psychology, and pedagogy – especially pedagogy of EFL. These viewpoints are integrated and explained with regard to the living components of education – that is, the teacher and the learner. In the process of education, it is impossible to separate one from another – as it is the teacher, who plays the crucial role in managing the classroom atmosphere, and it is the learner, who directly influences the atmosphere. Only in the appropriate atmosphere, the learning happens properly. Therefore, we designed this work in such a way that it allows the reader to understand what affects and conditions people's learning abilities – both directly and indirectly. Moreover, we present several ideas and conditions under which the best learning takes place. Although this work was designed to serve mostly the future and in-service teachers of EFL, since the processes in the human brain are not conditioned by the school subject, it will definitely enrich and answer questions of other readers, too. The first three chapters will present concepts, which are universal for learners of various age groups, language levels, cultures, etc.

In the first chapter, we closely examine the structure of the brain from a neuroscientific point of view – including its structure and transmission of signals. It is especially important to understand these basics of brain functioning to better understand the process of learning, memory, knowledge, and attention.

The second chapter of this work presents factors, which affect EFL learning, but also learning in general. Especially in this part, it is recommended for the readers to use the quick diagnostic self-tests (included as appendices in this publication) after reading individual parts of this chapter – especially when it comes to differences of learners. These self-tests are quick tools, which will help each reader to define various components of their personalities and thus understand their own learning and the learning of their learners even better. Perceptive individuals might be aware of these characteristics even before taking these tests, however, some might be surprised about their results. Nevertheless, it is recommended to consult a psychologist for the best and the most accurate results.

The third chapter closely examines emotions as the key aspect of brain-based learning – as they accompany every step of our lives and we can never hide from them. Several neuroscientific and psychological concepts of emotions will be presented, explained, and discussed with regard to TEFL – including both the older concepts and especially the newest viewpoints and theories, supported with scientific evidence of current researchers in this field worldwide.

In the fourth chapter, we present several ideas on how to design brain-based EFL classes – especially for teenagers and older learners, who are often forgotten, when it comes to engaging activities in the classes. The language level of the presented activities is adjustable. These activities include several *emotional hooks*, which can be used in various conditions and for various topics – either for EFL classes or in other contexts, too. In this chapter, we heavily rely on *YouTube* and we are well aware of the fact that the links provided in this work might expire. Therefore, the readers of this work are more than welcome to contact the author if such a situation occurs.

1 HUMAN BRAIN:
The Centre of Brain-Based Learning

Despite all the scientific and research data available about the brain, it is still impossible to fully grasp and understand its functioning. The human brain is indeed very complex, but to understand the principles of brain-based learning, it is essential for both the teachers and the learners to understand its functioning at least partially. It is not the aim of this work to present and discuss all the brain areas and functions in detail – the human brain is far too complex to describe it in detail in the scope of this work. Rather, we aim to present a general overview and inform about features that are particularly important for learning (including EFL learning). Therefore, in the following pages, short characteristics of brain structures, transmission of signals will be offered – especially with regard to learning, memory, knowledge, and attention.

To put it simply, what makes the human brain so unique, is the fact that it distinguishes us from other animal species – as it allows us to think, learn, feel emotions, communicate through words and signs, and remember.

1.1 Human Brain Structure

Human brain is a very complex organ responsible for the management of all the processes, which regulate our body and thanks to which we live. It is responsible for the control of vision, breathing, touch, motor skills, temperature, hunger, thoughts, memory, emotions, and all the other processes, which take place in our body (John Hopkins Medicine, 2022). It is a highly developed mass of nervous tissues. Together with the **spinal cord**, which extends from the brain, they form the **central nervous system (CNS)**. All parts of the nervous system lying outside the CNS are part of the **peripheral nervous system (PNS)**.

The brain sends and receives various signals, or messages, throughout the body. Since different signals control different processes, the brain's role is to interpret them. These signals include, for instance, alertness, tiredness, pain, sadness, etc. Some of these messages are kept within the brain, others are transmitted through the spine and a very complex network of nerves in the body to distant limbs. For the transmission of signals, the brain uses billions of nerve cells, which are called **neurons** (John Hopkins Medicine, 2022).

The average weight of an adult person's brain is approximately 1400g (Oxford Concise Medical Dictionary, 2020) – although, it might differ from person to person. To our best knowledge, the correlation between brain mass and intelligence has not yet been proven. About 60% of its total weight is formed by fat and the remaining 40% is formed by the combination of water, proteins, carbohydrates, and salts (John Hopkins Medicine, 2022). Although the brain contains blood vessels and nerves (including neurons), it is not a muscle. It can be divided into three main parts, the **cerebrum**, **brainstem**, and **cerebellum,** as depicted in the following figure.

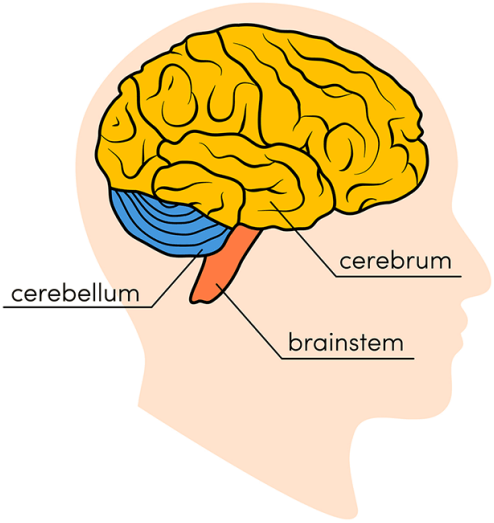


Figure 1. Brain parts[1]

Main Parts of the Brain

Cerebrum

Cerebrum (the front of the brain) is the largest and most highly developed part of the brain (Oxford Concise Medical Dictionary, 2020). The cerebrum is covered by the **cerebral cortex**, which is an outer 2-5mm thick layer of grey matter. It covers a large surface area due to its folds, and therefore it comprises approximately 50% of the brain's weight. It embraces the inner regions of the brain and its activity underlies most of human cognition.

Cerebral cortex is divided into two halves, also known as the **left and right hemispheres**. These two hemispheres are separated in the middle by the **longitudinal fissure**. It is believed that the left hemisphere is responsible for speech, abstract thinking and control of the right side of the body, while the right hemisphere is associated with image processing, spatial thinking and control of the left side of the body (Medical News Today, 2020). They communicate with one another through the **corpus callosum**, which is a C-shaped structure of white matter and neural pathways and is considered the centre of the cerebrum. The cerebrum is responsible for the initiation and coordination of movement and thermoregulation. Its other functions relate to senses, such as vision, hearing, touch, etc. It also enables speech, judgement, thinking and reasoning, problem solving, emotions, and learning (John Hopkins Medicine, 2022).

Brainstem

Brainstem (the middle of the brain) is the area of the brain, which connects the cerebrum with the spinal cord (John Hopkins Medicine, 2022). It governs instinctive behaviour and automatic processes ensuring basic life functions. In this part of the brain, there is no formation of speech or visual memory, so there is **no conscious learning**.

[1] Source: https://www.hopkinsmedicine.org/health/conditions-and-diseases/anatomy-of-the-brain

It includes the **midbrain**, which is a very complex structure with a range of different neuron clusters, neural pathways and other structures, which facilitate hearing, movement, and calculating responses, to name a few.

Another part of the brainstem is the **pons**, which is the bridge between the midbrain and the medulla. It enables a range of activities, such as balance, focusing vision, blinking, tear production, hearing, chewing, facial expression, etc.

The **medulla** is where the brain and the spinal cord connect to each other. It is essential for survival, as it regulates bodily activities – such as heart rhythm, blood flow, breathing, oxygen and carbon dioxide levels; and produces reflexive activities – such as swallowing, sneezing, coughing, vomiting, etc.

Apart from above mentioned parts, the brainstem contains also the **reticular activation system (RAS)**, which is a system of neural pathways, which is connected to every other area of the brain. This system especially is important, when it comes to various levels of **consciousness** – such as full alertness, attention, relaxation, drowsiness, sleep, etc. (Oxford Concise Medical Dictionary, 2020). Its role is to coordinate the overall brain and the autonomic nervous system activity, and our behaviour patterns (during both sleep and awakeness) – based on the messages it collects from the cerebrum, cerebellum and the senses (Oxford Concise Medical Dictionary, 2020). Furthermore, the RAS acts as **the brain's filter** to sort the significant incoming messages from the other irrelevant ones (John Hopkins Medicine, 2022) – due to the fact that it is impossible for the brain to pay attention to the thousands of inputs, which it constantly perceives. This fact is important to remember especially when it comes to **learning**. RAS cannot ignore novelty, stimuli that stand out, and messages, which have personal relevance for us. Such stimuli grab its attention, it tags them as important and we engage with them as a result.

Cerebellum

Cerebellum is the part of the brain, which is located at the back of the head above the brainstem. It is a fist-sized structure, which has two hemispheres (John Hopkins Medicine, 2022). It is responsible for balance, muscle tone maintenance, and the synchronization of activity in groups of muscles under voluntary control – converting muscular contractions into smooth coordinated movement (Mellová et al., 2010) (e.g. coordination of muscles in fingers, when writing with a pen).

Lobes of the Brain

Each brain hemisphere, the part of the cerebrum, can be divided into four parts – frontal, parietal, temporal, and occipital lobe, as depicted in the following figure. Each lobe is responsible for different functions.

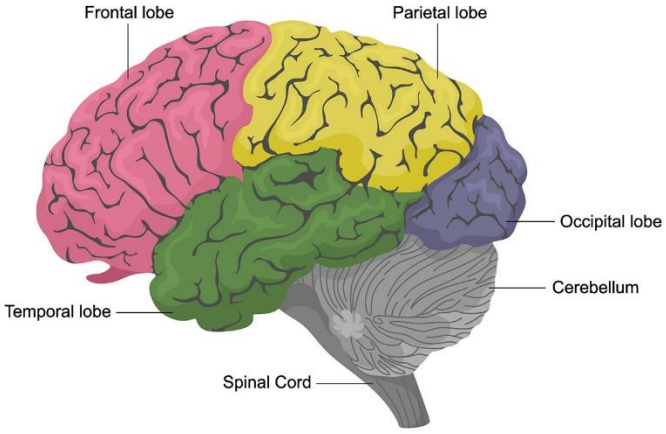


Figure 2. Brain lobes[2]

Frontal Lobe

Frontal lobe is the largest lobe of the brain. It is the frontal part of each cerebral hemisphere. It is responsible for the control of voluntary movements, specifically primary motor functions (Oxford Concise Medical Dictionary, 2020). The area further forward, at the very front of each cerebral hemisphere, is called the **prefrontal lobe**. This area is especially important when it comes to memory, learning (especially high-level cognitive skills), emotions and social behaviour (ibid.).

Parietal Lobe

Parietal lobe is the middle part of the brain, which is responsible for object identification, understanding of spatial relationships, and interpreting pain and touch. The **Wernicke's area**, located in the parietal lobe, is the area, which is responsible for understanding spoken language (John Hopkins Medicine, 2022).

Occipital Lobe

Occipital lobe is the back part of the brain, which is mostly associated with vision (John Hopkins Medicine, 2022).

Temporal Lobe

Temporal lobe(s), which is a paired structure located on both sides of the brain, is concerned with the appreciation of sound and spoken language (Oxford Concise Medical Dictionary, 2020), short-term memory, musical rhythm, and a certain degree of smell recognition (John Hopkins Medicine, 2022).

[2] Source: https://www.hopkinsmedicine.org/health/conditions-and-diseases/anatomy-of-the-brain

Deeper Structures within the Brain

Regarding the brain anatomy, apart from the above-mentioned structures, there are several deeper structures, which need to be mentioned to at least partially understand its complex functioning. **The deeper structures within the brain** involve the **pituitary gland, hypothalamus, amygdala, hippocampus, hippocampal formation,** and **ventricles** (see the following figure).

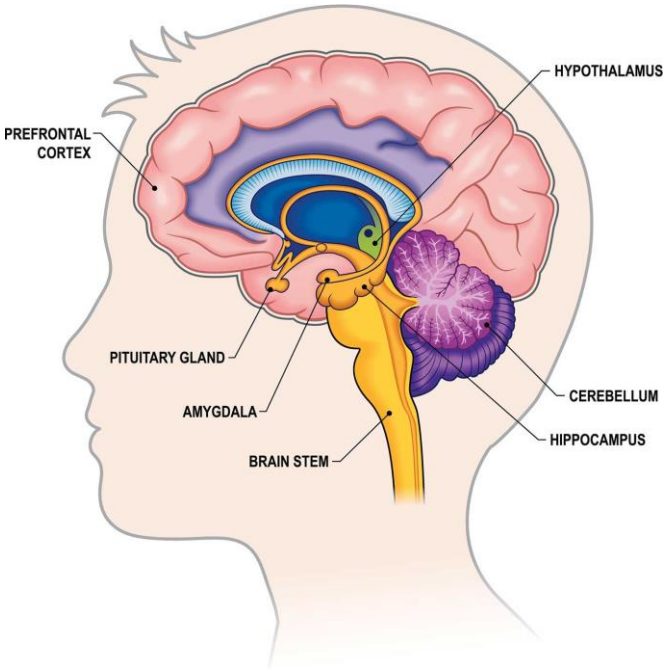


Figure 3. Deeper brain structures[3]

Pituitary gland

Pituitary gland is a structure the size of a pea, located deep in the brain behind the bridge of the nose (John Hopkins Medicine, 2022). It regulates the functions of other glands in the body – therefore, it is also known as the **master gland** or **master endocrine gland** (Oxford Concise Medical Dictionary, 2020).

Limbic system

Limbic system, also known as the **visceral brain** (APA Dictionary of Psychology, 2022), is a very complex system of neural pathways and networks. It has several different nuclei – among other involved brain regions are the **hypothalamus**, **amygdala**, **hippocampal formation**, and **hippocampus**.

[3] Source: https://www.hopkinsmedicine.org/health/conditions-and-diseases/anatomy-of-the-brain

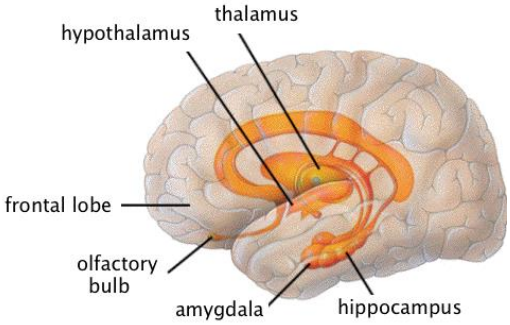


Figure 4. Limbic System[4]

This system is linked with the government of human body processes, which are concerned with pleasure, the expression of fear, rage, self-preservation, and the preservation of the human species (Oxford Concise Medical Dictionary, 2020). Above all of these functions, it is most often associated with emotions and its function to establish memories, which is especially important in an educational context (Oxford Concise Medical Dictionary, 2020). However, it is important to emphasise, that emotion and memory formation is conditioned by various factors, but the limbic system is where the 'magic' happens.

It is also important to mention, that this system plays an important role, when it comes to **happiness control**, as it is affected by neurotransmitters, such as dopamine, serotonin, endorphin, and oxytocin – which are known as the **hormones of happiness**, as well as by cortisol, adrenaline, and noradrenaline – which are known as the **stress hormones** (Dfarhud, Malmir, and Khanahmadi, 2014). (The specific roles of the above-listed neurotransmitters will be discussed later in this work.)

Hypothalamus

Hypothalamus is located above and neutrally and chemically connected to the pituitary gland, and controls its function – which is vitally important in overall hormonal regulation. It is also linked with the thalamus, which controls hormone release (Purves et al., 2008). It is responsible for several functions fundamental for **surviving**, such as the control of body temperature – it works as the body's thermostat (Boeree, n.d.), thirst and hunger, eating, water balance, sleep, response to pain, levels of pleasure, etc. (Boeree, n.d.; Oxford Concise Medical Dictionary, 2020). It is also associated with the synchronization of sleep patterns, memory and emotions (John Hopkins Medicine, 2022).

Amygdala

Amygdala(s) is a paired small almond-shaped structure, which is located under each hemisphere of the brain. It has numerous functions but is most often associated with **emotions and memory**. It is also concerned with the reward system, stress, mood, instinct and the *fight-or-flight* responses of the human body (Oxford Concise Medical Dictionary, 2020; John Hopkins Medicine, 2022).

When it comes to learning and remembering, this structure plays a crucial role in **tagging memories as important**. The two experiments led by Professor Todd of the University

[4] Source: https://webspace.ship.edu/cgboer/limbicsystem.html

of Toronto (Todd et al., 2012; Todd, 2013; Gallo, 2014) confirmed its sensitivity to stimuli of emotional value. The studies confirmed that the amygdala is most active when experiencing **emotionally vivid events**. The findings of these experiments also suggest that **information**, which is rated as more **emotionally vivid**, is **remembered more precisely** than emotionally neutral information.

Hippocampal Formation

Hippocampal formation is a curved band of cortex located within each cerebral hemisphere. It forms a portion of the limbic system and its function concerns behaviour governed by **emotions** and **instinct** (Oxford Concise Medical Dictionary, 2020).

Hippocampus

Hippocampus(es) is a paired seahorse-shaped organ on the underside of each temporal lobe, which is part of a larger **hippocampal formation**. It is connected to the amygdala and is associated with navigation, perception of space (John Hopkins Medicine, 2022), but above all, with memory and learning (Purves et al., 2008). It has been suggested that it is responsible for memory creation and consolidation as well as for turning short-term memories into long-term memories (Boeree, n.d.; Kelly, 2018).

Ventricles

Ventricles are cavities within the brain, whose role is to manufacture **cerebrospinal fluid** (Oxford Concise Medical Dictionary, 2020). This fluid surrounds and cushions the brain and spinal cord and is also essential for the delivery of nutrients and washing out of waste and impurities (John Hopkins Medicine, 2022).

1.2 Transmission of Signals

Neuron

Neuron is the term used for the **nerve cell**, which is the basic (active) functional unit of the nervous system. The neuron's function is to transmit electrical nerve impulses and transfer information from one part of the body to another (Oxford Concise Medical Dictionary, 2020). Each neuron consists of the following parts (ibid.):

- **cell body** – which contains the nucleus of the neuron;
- **dendrites** – branched structures, which are the receiving part of the neuron, as they extend from the body of the neuron and through which impulses enter;
- **axons** – long and thin nerve fibres (even over a metre in length in certain neurons), which are the transmitting part of the neuron, as they extend outwards and carry impulses away from the cell body; this part is unbranched except at the nerve ending – called **axon terminal**; in large nerves, the axon has a myelin sheath.

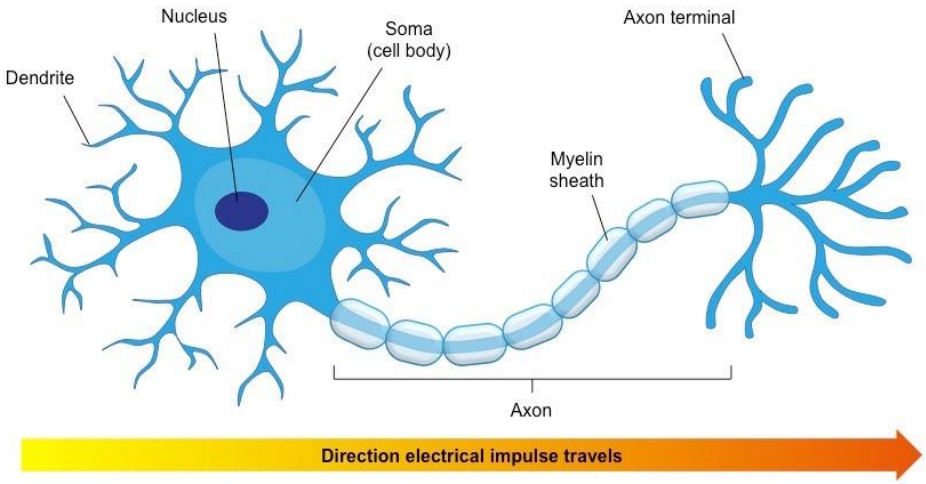


Figure 5. Neuron[5]

We have approximately 86 billion neurons in the brain (Herculano-Houzel, 2009), which are connected through **synapses**. The neurons are created in the process called **neurogenesis**, which is crucial during embryo development. Until recently, it was believed that we are born with a given number of neurons and that the central nervous system was incapable of neurogenesis after birth. However, in the 1990s, evidence of adult neurogenesis has been found in the brain, which is now considered a normal process occurring in the healthy brain throughout our lifespan (Queensland Brain Institute, n.d.).

There are **several types of neurons**, such as (Queensland Brain Institute, n.d.):

- **sensory** – which are activated by sensory inputs from the environment (e.g. when touching a hot object);

[5] Source: https://ib.bioninja.com.au/standard-level/topic-6-human-physiology/65-neurons-and-synapses/neurons.html

- **motor** – which travel either from the spinal cord to muscles (to transmit impulses from the spinal cord to muscles – both skeletal and smooth, so that they directly control all of our muscle movements) or between the brain and spinal cord;
- **interneurons –** which are the ones *in between* and connecting the motor and sensory neurons;
- **neurons in the brain –** the distinction of types of neurons in the brain is much more complex; there are tens or even hundreds of different types of neurons and researchers are still trying to find a way how to properly classify this vast variety of brain neurons.

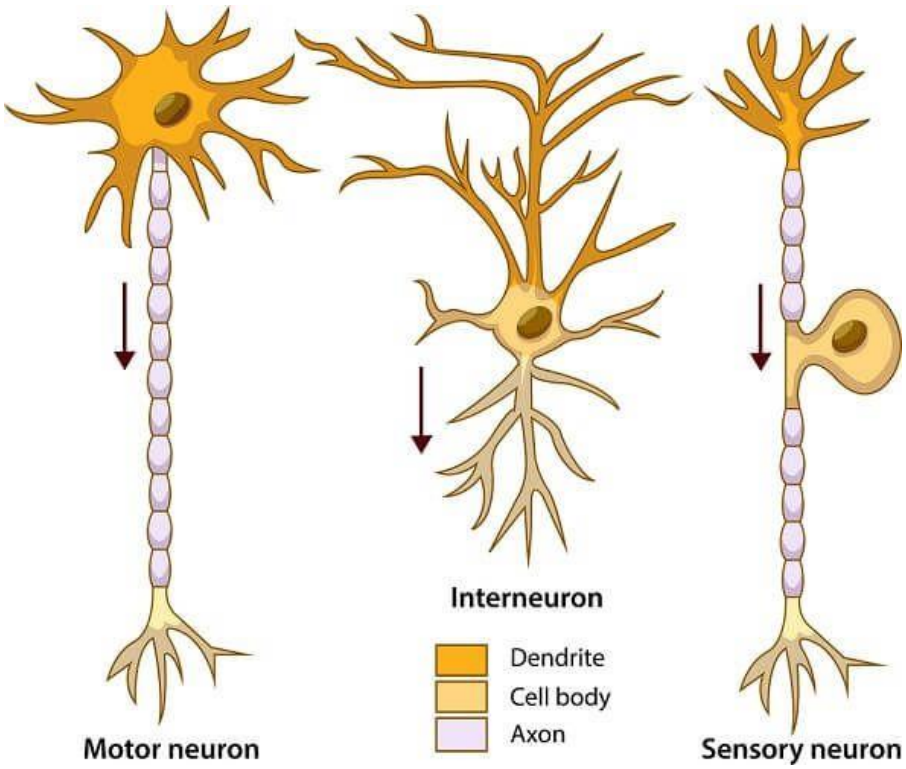


Figure 6. Types of neurons[6]

[6] Source: https://biologydictionary.net/sensory-neuron/

Synapse

Synapse is the small fluid-filled gap between neurons (Figure 7) across which nerve impulses are transmitted at the end of nerve fibers from one neuron to another (Cleveland Clinic, 2022).

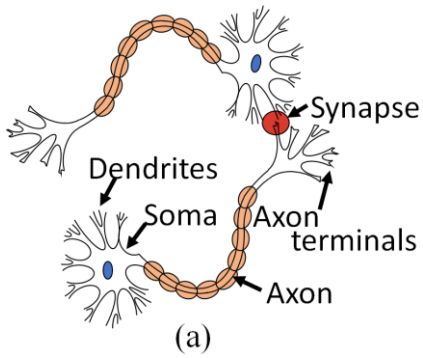


Figure 7. Synapse between two neurons[7]

When the impulse reaches the synapse through the receiving part of the neuron – **dendrite**, it causes the release of a chemical substance – **neurotransmitter**, which is diffused across this gap (Figure 8). As a result, triggers an **electrical impulse** in the next neuron (Oxford Concise Medical Dictionary, 2020). The impulses start with the stimulation of one or more dendrites and are concentrated in the body of the neuron, where they jump through the transmitting part of the neuron – **axon**, to the synapse and to the dendrite of the neighbouring neuron. To add, some brain cells are believed to have more than 15 000 synapses (ibid.).

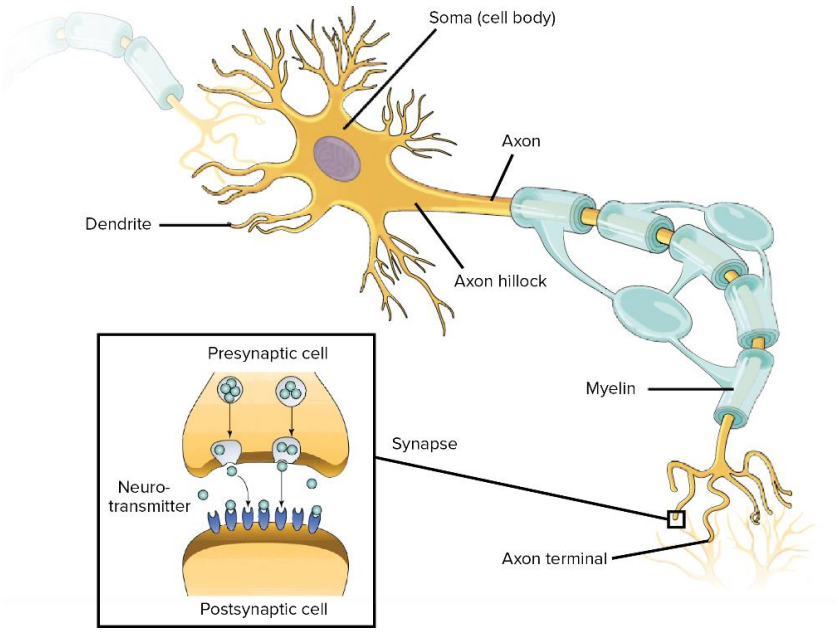


Figure 8. Neurotransmitters in synapse[8]

[7] Source: https://www.researchgate.net/figure/a-Biological-Neurons-connected-by-Synapses-Soma-neuron-body-b-Typical-Artificial_fig1_358306650

[8] Source: https://www.khanacademy.org/science/biology/human-biology/neuron-nervous-system/a/overview-of-neuron-structure-and-function

Neuroplasticity

Neuroplasticity is the ability of the brain to form new connections and pathways and reorganise how the existing ones are wired (Ackerman, 2018). It is important not to confuse this process with neurogenesis, which is the brain's ability to grow new neurons (Bergland, 2017). Our brain works by **neural networking** – since neural pathways are multi-layer networks rather than simple chains of neurons (Palkovits, 1996). When incoming information is received and reprocessed, it either forms new neural pathways or connects to those, which already exist.

Based on this definition, it is quite simple to guess the relation between neuroplasticity and learning. In fact, by learning, we form new pathways in the brain. Ackerman (2018) emphasises that "**each new lesson has the potential to connect new neurons and change our brain's default mode of operation**". She also adds that not all learning is "equal" in terms of the neuroplasticity of the brain. According to her, learning new facts does not facilitate the rewiring of the brain to such an extent as, on the other hand, foreign language (FL) learning or learning to play a musical instrument does.

When it comes to neural networks in the context of education, learners should be able to **understand** the content taught and be able to **apply**, **analyse**, and **evaluate** it. Such an approach can facilitate the formation of **multilayer neural networks**. However, since the brain stores primarily the information, which is important for our survival, certain connections between neurons tend to be lost over time – that is why we tend to forget certain pieces of information. When it comes to learning, to prevent forgetting, it is essential to use the learnt content in various contexts – or rather, to apply and reapply it, analyse and reanalyse it, to deepen the knowledge, use repetition and practice, and use testing. These steps should ensure that the learners receive feedback on whether and to what extent they understood the content taught and/or what needs to be redefined or corrected.

To put it simply, **learning can be understood as the formation of synapses in the brain** – that is, **connecting or changing the existing connections between neurons** and thus **creating or rewriting the existing neural networks**.

Neurotransmitters

Neurotransmitters are chemical substances (i.e. hormones, acids, and other complex substances), which are released from nerve endings in order to transmit impulses across synapses to other nerves, muscles, and glands they supply (Oxford Concise Medical Dictionary, 2020). In fact, they are **chemical messengers** in our bodies. They have various functions, but in general, thanks to them the human body is more **responsive**, as they have the ability to increase awakeness, awareness, and motivation. In the following lines, a short characteristic of chosen neurotransmitters, which are especially significant when it comes to learning, memory, and emotions, will be offered.

To allow proper functioning of the brain and body, the neurotransmitters have to be in the right balance. Several neurotransmitters enable the creation and maintenance of such balance, as they work together and against each other to achieve that both the brain and body function properly (Cleveland Clinic, 2022). One such example is the cooperation between gamma-aminobutyric acid (GABA) and serotonin, or dopamine and noradrenaline.

Acetylcholine

Acetylcholine is a chemical, which plays an important role in many different body functions and is considered the **chief neurotransmitter (**Oxford Concise Medical Dictionary, 2020). It is the neurotransmitter, which transmits **signals between** neurons in the **central nervous system** (CNS) and the **peripheral nervous system** (PNS). In fact, all of the body movements, including the movements of the heart, stomach, blinking, etc., are possible thanks to this neurotransmitter (Cherry, 2022). It acts at various sites within the CNS, however, it plays a vital role in the brain, as it is involved in **memory**, **cognition**, **attention**, **arousal**, **motivation**, **neuroplasticity**, and **REM sleep** (ibid.).

Gamma-aminobutyric acid and amino acid glutamate

Gamma-aminobutyric acid (GABA) is the neurotransmitter, which is responsible for **blocking** specific signals in the central nervous system and controlling nerve cell hyperactivity (Cleveland Clinic, 2022). This has a **slowing and calming effect** on the brain, which results in a **reduction of stress**, **anxiety**, and an **improvement of the sleep quality** (ibid.).

While GABA has a calming effect, **glutamate** works in the opposite way – they could be considered as an *on* and *off* switch of the brain (ibid.). While **GABA** is the main **inhibitory** neurotransmitter in the brain, **glutamate** is the main **excitatory** neurotransmitter in the brain, which **enables the chemical messages to be carried** from neuron to neuron (ibid.).

Stress Hormones

Although the stress hormones might seem as inhibitors of learning and memory, they are crucial for the creation of the right balance and ensuring the proper functioning of the body. There is evidence that stress hormones negatively interfere with remembering (Kelly, 2013), however, there is also evidence that they can enhance long-term memory (Cahill and Alkire, 2003). It is also important to mention that they ensure the basic body functions without which remembering itself would not be possible. Obviously, in education, the aim is not to purposefully stress the learners. For educators, it is important to understand, that during positive emotional experiences, both stress hormones and hormones of happiness were found to be present in the body (ibid.).

Adrenaline

Adrenaline, or epinephrine (AmE), affects **blood circulation** and is the neurotransmitter responsible for the preparation for the **fight-or-flee response** of the body. Thanks to increasing the **blood flow**, it affects **heart rate**, **depth and rate of breathing**, **metabolism of sugar**, **metabolic rate** in general, **muscular contraction** and delay of **muscular fatigue** (Oxford Concise Medical Dictionary, 2020).

It has been suggested that adrenaline might be responsible for **long-term memory enhancement**, especially when the body releases adrenaline during emotionally stressful events, it might result in strengthening the memory – which is proportional to the importance of the experience (Cahill and Alkire, 2003). Later research findings showed that due to **fear** experienced during **stressful events**, adrenaline in the body contributes to **higher levels of arousal**, which results in the **better encoding** of these events (Toth et al., 2013).

Noradrenaline

Noradrenaline, or norepinephrine (AmE), functions similarly to adrenaline in the body. It is released, when we experience **stressful situations** or when the body prepares for the **fight-or-flee responses**. It affects the **depth of breathing** and by affecting **heart rate** and **blood pressure**, it also affects the relaxation of muscles – both smooth (in organs) and skeletal (Oxford Concise Medical Dictionary, 2020).

It also affects **processing** in the brain, as it plays an important role in the **processing of sensory stimuli**, increases **attention**, and improves the **creation and retrieval** of both short-term and long-term **memory** (Sara, 2015).

Cortisol

Cortisol is the neurotransmitter, which facilitates our **focus** and allows us to better **deal with stress** (Oxford Concise Medical Dictionary, 2020). It is also very similar in function to adrenaline, as it helps to create memories of short-term emotional events – also known as **flashbulb memories** (Kennedy, 2013). However, long-term exposure to this chemical leads to cell damage in the hippocampus and results in **impaired learning** (McAuley et al., 2009).

Hormones of Happiness

Dopamine

Dopamine is a chemical, which is known as the neurotransmitter of **motivation**, **drive**, and **reward** (Wise, 2004). It is also a neurotransmitter, which is mostly associated with **learning and remembering** especially due to its important role in the limbic system (Oxford Concise Medical Dictionary, 2020). Dopamine **strengthens the neural connections** in the body, which results in **deeper learning** (Gallo, 2014). It is responsible for the '**stamping-in' of memories** especially if the stimulus-reward association is created (Wise, 2004).

In fact, from all the neurotransmitters listed and discussed in this work, it is dopamine, which is most often associated with **emotions** and **cognitive processing**. In an educational context, dopamine is released mostly when learners experience **enjoyable** and **engaging experiences**, which evoke positive emotions. Consequently, their **attention** and **motivation** are increased, which, as a result, facilitates **remembering**, **retention**, and **recall**.[9]

In addition, dopamine also stimulates the release of noradrenaline from nerve endings, and thus, facilitates the right balance of neurotransmitters (Oxford Concise Medical Dictionary, 2020).

Endorphin

Endorphin naturally occurs in the brain and is produced during **excitement**, **strenuous exercise**, and **pain** – it acts as a **pain reliever** and is also responsible for sensations of **pleasure** and **euphoria** (Oxford Concise Medical Dictionary, 2020).

Serotonin

Serotonin is a significant **mood modulator**. Depending on its level in the brain, it is considered as the hormone of **happiness** and **contentment**. On the other hand, its lack can result in a **bad mood**, **anger**, **depression**, and even **sleep disorders** (Oxford Concise Medical Dictionary, 2020). In addition, it also plays an important role in **reward**, **learning**, and **memory** (Young, 2007).

Oxytocin

Oxytocin is mostly known for its role during and after **childbirth**. During labour, it causes contractions of the uterus and causes contractions in the muscle fibres of the breasts to stimulate the milk flow (Oxford Concise Medical Dictionary, 2020).

It is also believed to be the neurotransmitter of **social bonding** and the brain's **'morale molecule'**, which encourages people to behave virtuously (Zak, 2015). Several studies confirmed that oxytocin increases **empathy** and **trust** between people and also affects their **generosity** (Zak, Kurzban, and Matzner, 2004; Barraza and Zak, 2009; Theodoridou et al., 2009; Cardoso et al., 2013; Lane et al., 2013).

[9] Both the *Emotion-Involved Hypothesis* (Kanazawa, 2020) and the *Apple Tree Model of Emotion-Involved Processing* (Kamenická, 2021a; Kamenická, 2021b) are based on this fact.

To add, when we listen to **stories**, we automatically become empathetic towards the storyteller – which is thanks to this chemical. The more oxytocin the brain releases, the more our empathy towards to storyteller and their trustworthiness in our eyes increases (Eber, 2020).

To conclude this, once again, we would like to emphasise the fact that none of the above-mentioned neurotransmitters should be perceived as an independently functioning chemical. Whether it comes to the basic life-ensuring functions, memory, emotions, or other psychological or physiological processes, always a higher number of neurotransmitters is involved. Especially, when it comes to hormones of happiness and stress hormones, we should not perceive them as black-and-white. With regard to happiness control, there is evidence that oxytocin together with cortisol and adrenaline play an important role (Dfarhud, Malmir, and Khanahmadi, 2014). On the other hand, there is evidence that during stressful events, not only cortisol but also dopamine and oxytocin are present in the human body (Kelly, 2013).

1.3 Learning

Memory

In one of our recent works (Kamenická and Kráľová, 2021), we compared human memory to a wardrobe. Similar as in a wardrobe, our memory stores certain items – some of which are used more often than others. When it comes to clothing, we get rid of the pieces we do not wear for various reasons – because we do not like them anymore, they do not fit anymore, or they are too old and their quality decreased over time. We keep and wear certain pieces, which are still useful and *in fashion*. Our memory works similarly. It keeps and uses the pieces of information which are still useful for us and gets rid of items which are redundant. We can say that **our memory selects the information** for further processing.

Depending on this selection and the type of processing, we distinguish two types of memory:

- **short-term memory** – which is responsible for the temporal storage of information and decides if it will be transferred to long-term memory or forgotten,
- **long-term memory** – which can last for a few days or several years.

Regarding the process of (foreign language) learning, it is desirable to **transfer** the information from short-term to long-term memory. If our memory is selective, the question is *how* to achieve the transfer, which would guarantee the long-term storage of information. There are several rules, which promise successful results and will be discussed later in this chapter. However, it is important to emphasise that even in the wardrobe, the same system of organising items will not fit everyone – since some people prefer hangers, others shelves, etc. That is why everyone should be able to decide which system suits them better – as it should be when it comes to (foreign language) learning.

Knowledge

Authors (Gondová, 2012; Kráľová, Kamenická, and Tirpáková, 2021; Sanchez, n.d.) distinguish between two types of knowledge, which come under various names:

- **Explicit (declarative) knowledge –** includes knowledge that can be consciously recalled and/or declared. For instance, knowledge of vocabulary items and the ability to use them in controlled and guided activities, such as matching and gap-fill exercises.
- **Implicit (procedural) knowledge** – includes automatised and unconscious skills and habits. For instance, the ability to actively use the knowledge of vocabulary items in conversation.

When it comes to the learning and use of a foreign language, the aim is to transform (= proceduralise) learners' initial declarative knowledge into procedural knowledge (Gondová, 2012). To help the reader to better understand these two types, we provide the following table:

Table 1. Types of memory and knowledge

MEMORY		
SHORT-TERM	**LONG-TERM**	
	EXPLICIT (DECLARATIVE) KNOWLEDGE	**IMPLICIT (PROCEDURAL) KNOWLEDGE**
	- conscious - receptive - passive	- subconscious - productive - active
	= knowledge of vocabulary items, grammar rules, symbols for phonemes in the phonemic alphabet for transcription of pronunciation = ability to use them in controlled and guided tasks and activities	= the ability to use vocabulary items and apply grammar rules in free speaking and free writing tasks and activities, e.g. conversation, writing emails, to use proper pronunciation

Research findings suggest that **positive emotional experiences** could support remembering and recall of the taught content on the level of **long-term memory** (Todd, 2013). An experiment we conducted (Kráľová, Kamenická, and Tirpáková, 2021) revealed that exposure to positive emotional experiences facilitated the **declarative knowledge** of foreign language vocabulary among research participants. In fact, achieving the transfer of the information into procedural memory is not that simple – we need to support the declarative memory for the information to become ***proceduralised*** or automatized. When it comes to foreign language learning, it has been suggested that to remember a certain vocabulary item **8-25 varied exposures** are needed (Gondová, 2012).

From the neuroscientific point of view, from the vast number of neurotransmitters, it is **dopamine**, which facilitates long-term remembering (Kelly, 2016). Dopamine is released into the body, when we experience something we desire and which makes us feel good, or rather, something that brings positive emotional experiences. Thanks to the presence of dopamine, the centres in the brain responsible for emotions tag that experience as meaningful, and therefore, worth (long-term) remembering.

In the context of (foreign language) learning, naturally, the question of the **efficacy** of the educational process comes into mind. Already Jan Amos Comenius (1907) emphasised how important it is to find a way to enable teachers to be more effective – to teach less, but at the same time to enable students to learn more – decreasing the hurry, fruitless work, and frustration, and increasing joy, success and the amount of free time. Or simply, our aim should be to **spend less time and energy on learning more**.

Thus, when it comes to memory, it is not just about keeping and retrieving certain pieces of information. It is also important to consider *how* we put the information into storage. Buzan (1995, p. 40) suggested several **brain rules**, which make **memorising** easier and are often used as the basis for the creation of **mnemonics**[10] (we elaborate them with our ideas):

- **Imagination**. We should be able to imagine the information or associate it with certain images. It is especially helpful if we are able to:
    - **expand** – to create enormous and gigantic mental images,
    - **contract** – to create very tiny mental images,
    - **create absurdity** – to create absurd and ridiculous mental images.
- **Rhythm**. We should try to include rhythm when trying to remember something.
- **Senses**. We should involve all five senses (i.e. sight, hearing, smell, taste, touch).
- **Sequencing and ordering**. We should create associations between individual pieces of information and also be able to order and categorise them.

The authors (Buzan, 1995; Kelly, 2016) also add the following **brain rules**:

- **Emotions**. Humour, fun, fear, joy, happiness, disgust, and many more… Experiencing emotions helps us remember things on the subconscious level and cannot be avoided in everyday situations in classes. In fact, every learner remembers certain episodes from school (positive or negative) for life.
- **Movement**. Not just touching, but the active movement of the whole body helps with remembering.
- **Sensuality and sexuality**. Whether we want to or not, we do remember information, which is somehow related to sex (or other taboo topics) very easily. This can be also related to the fact that these topics can easily trigger emotional responses in us.

In the **context of FL learning** the above listed brain rules are and can be used as follows:

- **Imagination –** can be used in the form of **visualisation** or **guided imagery**.
- **Rhythm** – is used in **jazz chants** and **pronunciation drills**.
- **Senses** – especially **sight** and **hearing** are mostly involved when it comes to all of the **language skills** (i.e. reading, listening, writing, and speaking). It would be definitely interesting if FL teachers tried to make the FL classes more **multisensory**.
- **Sequencing and ordering** – are often used when telling **stories**. The events in the stories are designed to be told in a sequence. Since they serve as a natural mnemonic, they are very easy to remember.
- **Emotions** – especially positive emotional experiences in FL can be delivered by the use of **emotional hooks**.
- **Movement** – is used mostly in **TPR** activities.
- **Sensuality and sexuality** – although the very specific sex vocabulary is not taught in FL classes, learners are nonetheless very familiar with it. It is obvious that they learn

[10] A mnemonic is a word, sentence, poem, short story, etc., which is created in order to help us remember certain information. For instance, the sence "*My Very Educated Mother Just Served Us Nachos"* can be used to remember the correct order of the planets of the Solar System, starting with the planets closest to the Sun – Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

specific vocabulary items from different sources than FL textbooks. Nonetheless, these sources seem quite effective when it comes to the facilitation of long-term memory. Also, taboo topics are often very powerful **cores of mnemonics**. Despite their apparent efficacy, we recommend teachers NOT to search and ask their learners about details of their learners' mnemonics.

Attention

When it comes to learning and memory, the question of our attention should be also addressed. Concerning memory, we often pay attention to incoming information, yet somehow the information does not make it to the right place in our memory (and we simply forget it). Often, it is not the question of whether we ***pay*** attention or not. Rather, it is the question if the information ***caught*** the attention of certain areas in the brain. Undoubtedly, it can be stated that our attention is very **selective**.

From the neuroscientific point of view, learning is the **creation or re-creation of pathways between neurons** to form complex **neural networks**. However, it is not guaranteed that each incoming information will create the pathway we desire. If the brain considers the incoming information as irrelevant or unimportant, it will not be further processed. Thornburry (2002) emphasises that **repetition**, **distributed practice** across a longer period of time, **learners' own pace** of retrieval activities, **imagination**, **mnemonics**, **motivation**, **high degree of attention**, **affective depth** of information are the most effective memory aids. Therefore, to increase the relevance of the incoming information in order to **facilitate memory** and appropriately direct the **brain's selectivity**, the following can be concluded:

1. RAS

Target the reticular activation system (RAS) and grab its attention – by including **engaging stimuli** in learning (e.g. things that stand out, things that have personal relevance to learners, things that bring novelty, etc.). RAS is very sensitive to **engaging stimuli** and considers them as **worthy of further processing**. Once they catch its attention, a burst of dopamine is released in the body (Kelly, 2015a, 2015b). Dopamine makes us feel good, which positively affects our reward system and boosts our motivation (Wise, 2004) – as well as strengthens our neural connections (Gallo, 2014), which is especially useful when learning.

2. Amygdala

Target the amygdala and grab its attention – by including **emotionally charged experiences** and information in learning. The amygdala is sensitive to emotionally vivid information and it was suggested that such information is **remembered more precisely** than emotionally neutral information (Todd, Talmi, Schmitz, Susskind, and Anderson, 2012; Todd, 2013; Gallo, 2014). Again, it is thanks to dopamine that the amygdala tags the incoming stimuli as worthy of attention. We could say that the amygdala uses dopamine similarly as a secretary uses post-it notes, whose role is to catch our attention and remind us of certain information (Gallo, 2014).

3. Association

Try to associate new information with the knowledge you already have. This helps to organise and re-organise knowledge into a meaningful system. Thornburry (2002) adds that personal organising of knowledge in form of associations is one of the most effective memory aids known.

4. Multisensory approach

Multiply the channels through which the information is received. If we use **multiple channels** (e.g. vision, hearing, touch, etc.), there is a lesser likelihood that the incoming information will go unnoticed. It has also been suggested in the context of FL learning that hearing an external model many times and then hearing their own correct speech allows learners to build their internal audiomotor images of the correct model (Greenberg, 1995). It is because **hearing** is fundamental when it comes to **controlling and monitoring of speech**. In addition, orally supported practice can help to convert short-term memory into procedural (permanent) memory.

5. Repetition

Repeat. Repeat. Repeat. If the brain cannot remember information (i.e. create the desired neural pathways) for the first time, we need to repeat and **practice** it several times. To remember certain information, sometimes even 8-25 exposures are needed (Gondová, 2012). Di Matteo, Rossi-Arnaud, and Tirozzi (1997) suggest that **memory and attention** are intrinsically **rhythmic processes**. Thornburry (2002) adds that repetition and regular use of knowledge are one of the most effective memory aids.

To conclude this, especially in the context of foreign language learning, we need to be aware that it should not be only about the effort to memore vocabulary items, grammar rules, phonemic symbols, etc., but also about **sparking curiosity to discover the world, forming opinions, awakening motivation, supporting healthy psyche, and building relationships – both intrapersonal and interpersonal**. We will discuss these ideas in more detail in the following chapters.

1.4 Maintenance

With regard to the brain and its role in the process of learning, memory formation, acquiring knowledge, and paying attention, it is crucial to pay attention also to its maintenance – which happens especially **during sleep**.

The smart-watch users might already be familiar with the fact that sleep has several phases. These can be simply named **non-REM**[11] and **REM phases**. Usually, there are four stages of sleep – 3 stages of non-REM phases with REM phases interwoven between them (Kolowich Cox, 2015).

The Non-REM Phases

Even though there are no given and 100%-guaranteed rules for the human body, usually, the non-REM phases of sleep occur during the early cycles of our sleep. These phases play a crucial role when it comes to **filtering redundant information, and stamping in and storing the new ones** (Gillis-Furutaka, 2018).

The non-REM phases of sleep include the following stages (Kolowich Cox, 2015):

- **Stage 1: Light sleep.** During this phase, our eyes move very slowly and our muscles start to relax.
- **Stage 2: Sleep onset.** During this phase, our body temperature drops (which sometimes makes us wake up) and our eye movements stop. We also stop to perceive our surroundings. Furthermore, in this phase, our breathing and heart rate become regular. The decrease of cortisol in our body is very typical for this phase – which is essential for us to fall asleep (it increases in the later phases of our sleep so that it makes us alert after we wake up).
- **Stage 3: Deep sleep.** This phase is especially important for the restoration of our body. During this phase, we regain energy. The blood pressure decrease is characteristic for this phase. Furthermore, our breathing slows down, our eyes stop moving, and our muscles relax – the blood supply is increased and the hormones responsible for growth and development are released and thus allow the muscles to repair and grow muscle tissue.

The REM Phases

The REM phase of sleep is the stage when we **dream**. The **crazy, emotional, and creative dreams with powerful stories** occur only during the REM phase (Gillis-Furutaka, 2018). The REM phases tend to occur usually in the morning hours, i.e. before waking up (ibid.). Regardless of whether we are able to remember our dreams or not, it is essential when it comes to **providing energy** and support for our daytime performances (Kolowich Cox, 2015).

[11] REM stands for 'rapid eye movement' – during this phase of sleep, our eyes scan back and forth under the eyelids, and the brain waves are faster and less organized (Kolowich Cox, 2015)

In the REM phase, **the brain is freed from noradrenaline, the key stress chemical**, as its production is deactivated when we enter this phase (Gillis-Furutaka, 2018).

Concerning brain functions, during this dreaming phase, several brain areas are affected as follows (Gillis-Furutaka, 2018):

- **the prefrontal cortex is deactivated** – i.e. the area responsible for rational thoughts, logic, and decision-making;
- **four brain areas increase their activity by 30%** (in comparison to the awake stage), including the following:
  - **the visuospatial regions** – concerned with **visual perception**,
  - **the motor cortex** – concerned with **movement apparatus control**,
  - **hippocampus and its surrounding regions** – concerned with **autobiographical memory**,
  - **amygdala and cingulate cortex** (part of the limbic area) – concerned with the **creation and processing of emotions**.

Furthermore, when we sleep, our **brain cells shrink to 40% of their awake size** (the normal size). This, as a result, **increases the space between the brain cells** – i.e. the intercellular space. This allows the **cerebrospinal fluid** to flood the space and **remove the accumulated waste** more effectively (Levy, 2018). This serves as **a therapy for the brain** – as it allows the recall and processing of emotions from the recent past, and the reduction of their original impact power (Gillis-Furutaka, 2018).

Nowadays, it is very affordable to obtain a smart watch, which allows its user to check the duration, quality, and phases of their sleep. Although this tool is not professional, it is still useful – especially because we often neglect sleep and underestimate its importance. Gillis-Furutaka (2018) emphasises that deprivation of REM sleep can lead to a **reduced ability to read the surrounding social world correctly**. Kelly (2018) adds that high-quality sleep is especially important for **learning**, especially for the hippocampus, which is concerned with **memory formation and consolidation** – i.e. the conversion of short-term memories to long-term ones. He emphasises the importance of **compensation for the sleep deficit** and suggests allowing extra hours of sleep when the chance arises (e.g. during the weekend).

Finally, with regard to healthy and sufficient sleep, we would like to emphasise Kelly's (2018) idea that:

A learner's hippocampus is more important than a university campus.

2 BRAIN-BASED LEARNING: How to Achieve a Maximal Effect from an Invested Effort

With regard to brain-based learning, it is important to explain several terms:

Neuropedagogy is an interdisciplinary science based on the functioning of the brain and mechanisms of the learning process – including learning and teaching. It aims to answer the question of *how* to stimulate the brain areas and create neural pathways in order to maximise learning and thus learn effectively – i.e. with a maximal effect from the invested effort.

Neurodidactics[12] is a discipline, which can be considered a subset of neuropedadogy and studies methodologies based on brain functions. The aim of neurodidactics is to answer the question of *how* to integrate the curiosity, attention, and emotions of learners.

Psychopedagogy is an interdisciplinary science based on the functioning of the human psyché and how it influences the process of education – including learning and teaching. It aims to answer the question of *how* psychology of an individual affects their learning, memory formation and retrieval – both positively and negatively – mostly with regard to emotions experienced.

Psychodidactics[13] is a discipline which can be considered a subset of psychopedadogy and studies the psychology of education and factors, which influence learning, memory formation and retrieval – both directly and indirectly. The aim of psychodidactics is to answer the question of *how* psychological states and processes affect learning, memory formation and retrieval – both positively and negatively.

If we want to **maximise learning** – that is create the proper conditions for the brain, we need to understand how it works **naturally**. Learning and thinking are highly subjective processes. Although it seems almost impossible in traditional (foreign language) classes, the teachers should still try to employ an **individual approach** to learners, differentiated teaching, respecting and adapting to learners' differences. We will discuss these differences in more detail in the following subchapter.

R. N. and G. Caine (1990) defined twelve **brain-based learning principles**, which were developed on the basis of available knowledge about the brain and determine requirements for the maximum efficiency of the teaching process: views on the student as a subject/object of education, as well as requirements for the maximum efficiency of the teaching process:

[12] Note: In the Slovak environment, we often come across the term "neurodidaktika", which is often translated as "neurodidactics". However, in English, neither oxfordlearnersdictionaries.com nor dictionary.cambridge.org distinguish this term.

[13] Note: In the Slovak environment, we often come across the term "psychodidaktika", which is often translated as "psychodidactics". However, in English, neither oxfordlearnersdictionaries.com nor dictionary.cambridge.org distinguish this term.

1. ***The brain is a parallel processor.*** It simultaneously performs many functions, including **thoughts**, **emotions**, **imagination**, etc. Therefore, good teaching should "'orchestrate' all the dimensions of parallel processing" (Caine and Caine, 1990, p. 66) and incorporate various techniques and strategies (and their combinations) to encomprise all of these dimensions.
2. ***Learning engages the entire physiology*.** For the brain, learning is as natural as breathing for the body and it is possible to both facilitate and inhibit it. The growth of neurons, their nourishment, and the synaptic transmission of signals are fundamentally related to the perception and interpretation of experiences (Diamond, 1985). The brain is affected differently by peace, challenge, happiness, contentment, and boredom, as well as by stress and threat (Ornstein and Sobel, 1987). Thus, good teaching should also incorporate and take into consideration the **emotional aspect of education**.
3. ***The search for meaning is innate.*** Making sense of our experiences cannot be stopped, as it is survival-oriented and basic for the brain. It can only be channelled and focussed. The brain naturally registers the familiar and simultaneously searches and responds to novel stimuli (O'Keefe and Nadel, 1978). Concerning education, on the one hand, we should provide learners with **stability and familiarity**, on the other hand, we should also try to satisfy their brains' enormous **curiosity** and hunger for **novelty**, **discovery**, and **challenge**.
4. ***The search for meaning occurs through "patterning".*** It is natural for the brain to create **associations**. It naturally integrates incoming information with already known information. When it comes to teaching, we should present the information in a way that facilitates patterning in the brain. Teaching should be meaningful for learners and allow them to create personally relevant patterns – i.e. integrating **life relevant** approaches.
5. ***Emotions are critical to patterning.*** Emotions and cognition cannot be separated (McGuinnes and Pribram, 1980; Lakoff, 1987; Ornstein and Sobel, 1987), since what we learn is strongly influenced and organised by emotions. Several researchers confirmed that **emotions facilitate the storage and recall of information** (e.g. Rosenfield, 1988; Todd, 2013; Kanazawa, 2020; Kráľová, Kamenická, and Tirpáková, 2021; etc.). For teachers, it is essential to understand that their learners' feelings and attitudes will be involved and determine their learning. Also, they should support a healthy **emotional climate** in the classes, which is marked by mutual respect, cooperation, and acceptance.
6. ***Every brain simultaneously perceives and creates parts and wholes*.** Although there is scientific evidence about differences between left and right-hemisphere oriented learners, the fact is that **both hemispheres interact** in every single action we do and create an overall picture. When it comes to education, we should understand that **learning is cumulative and developmental**. Furthermore, to properly understand certain information, we need to know both **detailed** as well as an **overall point of view**.
7. ***Learning involves both focused attention and peripheral perception*.** Simultaneously, the brain absorbs the information of which it is directly aware as well as the one which

lies beyond its immediate focus (i.e. peripheral stimuli). As a result, it responds to the **entire picture** in which communication and teaching occur (O'Keefe and Nadel, 1987). As a matter of fact, each signal is full of complex meanings. Thus, it is emphasised that in order to facilitate learning, **peripheral information can be purposely organised** (Caine and Caine, 1990). Teachers should engage students through their own interests and enthusiasm with the use of **subtle signals** – for instance, incorporating art and music, which also impact learning (ibid.).

8. ***Learning always involves conscious and unconscious processes.*** The signals we peripherally perceive enter our brain without our awareness and interact at unconscious levels – therefore, **we learn more than what we are consciously aware of**. We not only experience what we are told but also what we experience. In teaching, we should employ "**active processing**" (Caine and Caine, 1990, p. 68), which allows learners to review how and what they learned – which should help them with taking charge of their learning and their own development.

9. ***We have two types of memory: a spatial memory system and a set of systems for rote learning.*** The spatial memory system does not need memorisation techniques and allows us to remember, for example, what we had for dinner last evening. However, our brain also deals with facts and details and these are dealt with and organised differently. These pieces of information are conditioned by the practice before they are stored in memory. When it comes to teaching, it is emphasised that **the exaggerated focus on memoring does not encourage the transfer of learning**.

10. ***The brain understands and remembers best when facts and skills are embedded in natural spatial memory.*** When learning our native language, it is shaped by our social interactions as well as by our internal processes (Vygotsky, 1978). Learning is facilitated when this type of information embedding is adopted. In education, spatial memory is best stimulated through **experiential learning**. Teachers should use **real life-related activities**, including **projects**, **demonstrations**, **visual imagery**, **stories**, etc. According to Caine and Caine (1990), success depends on using all senses to immerse the learner in complex and interactive experiences.

11. ***Learning is enhanced by challenge and inhibited by threat.*** When under threat, our brain becomes less flexible, narrows the perceptional field (Combs and Snygg, 1959) and reverts to more primitive routine behaviours (Caine and Caine, 1990). When it comes to learning, teachers should try to create an atmosphere which is **high in challenge and low in threat** in class – i.e. **a state of relaxed alertness** in their learners.

12. ***Each brain is unique.*** In fact, the more we learn, the more unique our brain becomes. Although we all have the same senses and the basic set of emotions, they are integrated differently in each brain. Thus, teaching should be versatile – allowing students to express their preferences (e.g. visual, auditory, kinaesthetic, etc.).

To add, teachers should never underestimate the role of **motivation**, which is the **prerequisite for effective learning**. When the learner is curious, they take learning as a challenge, which brings them positive emotions. As a result, important neurotransmitters will

be released in the body (e.g. dopamine and serotonin), which will lead their brain to optimal performance. Also, it is important to bear in mind that classroom climate should satisfy not only learners' **cognitive** needs but also their **affective and psychomotor needs**. In the following pages, we will offer a closer perspective on the ideas, or rather, memory aids, which should be followed to properly understand and apply brain-friendly education.

2.1 Differences of Learners

In the following pages, we will list and discuss several neuropedagogical and psychopedagogical characteristics of learners, which are crucial when it comes to their learning – yet, they differ from learner to learner. **It is essential for a learner to determine their learning characteristics** – as it will lead them to a better understanding of the self and higher effectivity in their learning.

When it comes to the learning characteristics, **none of them should be considered incorrect, wrong, or unfavourable for the learner** – as neither neuropedagogy nor psychopedagogy are exact sciences as e.g. mathematics and physics are. We would like to emphasise to the readers of this work, that we, as teachers, work with human beings and each one of them is **unique, they can/do change, and develop over time**.

Therefore, we hope that the readers of this work use their knowledge of their learning characteristics to their advantage – either in their own learning or when they will be teaching others.

2.1.1 Age Groups

The age of the learner is one of the most distinctive characteristics – as it is closely tied to and determines other important variables of the learning process (Pokrivčáková, 2012). Therefore, in a majority of school systems learners are divided into **classes according to their age**. In general, we differentiate **four age groups** of learners:

- **very young learners** (0-7 years old) – children attending pre-primary or starting primary education, who cannot read or write yet;
- **young learners** (7-10 years old) – children attending primary education;
- **teenagers and adolescents** (approximately 11-18 years old) – learners attending lower and higher secondary education;
- **adult learners** (approximately 18+ years old) – including young or early adulthood (approximately 18-39 years old), middle adulthood (approximately 40-59 years old), and old age (approximately 60+ years old).

The differences between learners, which are tied to their age, include the following:

- **literacy** – the ability to read and write;
- **attention span**;
- **imagination**;
- **cognitive development** – including concrete and abstract thinking;
- **psychological development** – including their confidence;
- **social development** – esp. the ability to work individually, in pairs, and in teams;

We provide more detailed characteristics of individual age groups of learners in the following tables:

Table 2. Characteristics of very young learners

Very young learners (0-7 years old)**:**	
literacy	• cannot read or write yet • often already able to use smartphones, tablets, computers, etc.
attention	• have a very short attention span – important to catch their immediate interest and often alter activities • are curious – they enjoy riddles, problem-solving, etc.
imagination	• have a very vivid imagination
confidence	• are rather egocentric
cognitive development	• are more sensitive than rational • benefit from sensory input and multisensory learning – TPR is recommended • are unable to understand very abstract concepts • are unable to understand theoretical explanations
psychological development	• are rather egocentric
social development	• prefer individual work – they are not mature enough to work in pairs or groups

Table 3. Characteristics of young learners

Young learners (7-10 years old)**:**	
literacy	• can read and write – but complex texts are not recommended • are already very skilled with smartphones, tablets, computers, etc.
attention	• their attention span is getting longer – still important to catch their interest and often alter activities and forms of work • are curious – they enjoy riddles, problem-solving, etc.
imagination	• have a vivid imagination – good to use in creative tasks
confidence	• are getting less egocentric and more self-conscious • feel discouraged when ridiculed
cognitive development	• are still sensitive but getting more rational • benefit from sensory input and multisensory learning – TPR is recommended • are getting more logical – but still are unable to understand very abstract concepts • are able to understand theoretical explanations – but not too complex
psychological development	• egocentric thinking diminishes
social development	• are learning to work in pairs and groups

Table 4. Characteristics of teenagers and adolescents

Teenagers and adolescents (approximately 11-18 years old)**:**	
literacy	• can read and write complex texts • are very skilled with smartphones, tablets, computers, etc. – often even more than the teacher
attention	• attention span is getting even longer • are still curious, if a teacher knows how to catch their attention – e.g. by incorporating interesting topics, curious and mysterious stories, problem-solving activities, etc.
imagination	• can have a very good imagination and based on it can be very creative (esp. in arts, music, writing poetry and stories, etc.)
confidence	• are full of doubt about selves • yearn for respect and an "adult" approach from adults based on equality (although they still sometimes act as children) – esp. when answering their questions and reacting to their comments
cognitive development	• still benefit from sensory input • their abstract thinking is maturing and its capacity increasing
psychological development	• are full of contradictory emotions, doubt, confusion, hesitation, uncertainty, and misunderstanding • although they yearn for being dealt with as adults, they still depend on adults for direction
social development	• mostly focus their attention on themselves • prefer cooperative tasks – including pairwork and teamwork • they are extremely sensitive to how others (esp. peers) perceive them – it is crucial for teachers to avoid any sort of ridicule and embarrassment

Table 5. Characteristics of adult learners

Adult learners (approximately 18+ years old)**:**	
literacy	• can read, write and understand long and complex texts • the use of modern technologies and devices is strongly affected by their age (although there might be exceptions) – the older the learner, the less skilled
attention	• quite a long attention span
imagination	• some individuals can have a good imagination, others can be very rational and thus hinder their own imagination
confidence	• have matured self-confidence and self-esteem • afraid of any form of failure in a FL – which often makes them unwilling to communicate in a FL
cognitive development	• very often know when their weaknesses are and what they need and want to learn – they see themselves as the teacher's clients and need to discuss their expectations • understand abstract rules, concepts, and vocabulary • prefer theoretical definitions and often deductive approach – and do not depend on sensory input so much (although they can benefit from it, too) • appreciate task-based learning, working on projects
psychological development	• feel self-confident if they can demonstrate their knowledge and experiences acquired from outside the classroom • have a 'language ego problem' – when they cannot express themselves in a FL as they would in their mother tongue, they feel frustrated (and often search for word-to-word translations)
social development	• appreciate cooperative learning • depend on teacher's feedback – as they consider themselves the teacher's clients

2.1.2 Introversion and Extroversion

When it comes to differences between learners, another very distinctive characteristic should be paid attention to by teachers – that is, if the learner is **introverted** or **extroverted** – as it strongly affects also how they learn and work on the given tasks.

An introvert is usually characterised as a rather **quiet person**, who feels more **comfortable and relaxed** when they are in a **small group** of people or when they are **on their own**. In contrast to extroverts, when in big groups, introverts can easily feel extremely exhausted from all the interaction. In fact, introverts have **very rich inner worlds** and often prefer to be immersed in their own **thoughts and feelings** rather than spend time in the company of other people. However, if they decide to give their energy to **people**, they **choose very carefully** to whom. They invest their energy and time to the people they care about most and prefer a quiet meeting to a party full of strangers. They might find it **difficult to speak up for themselves**. Often, they might tend to be more **reserved** when it comes to working in teams and asking for favours from others. Nonetheless, when it comes to communication, they can **get their point across very effectively**.

An extrovert is usually characterised as a rather **lively and confident person**, who **enjoys the company of others**. In fact, they naturally seek the company of others to help them **relax**. Unlike introverts, when they are on their own, they might feel bored and even frustrated – as they **recharge their energy levels from social interactions** both with their **friends** and with **strangers** alike. They are **assertive** and **go-getting**. They are relatively comfortable with **conflict** and are great at **making quick decisions** or **giving answers quickly** – that is why it is easy for them to **get their voices heard**. They tend to have very good rapport skills but often tend to **speak before they think** the idea through – in contrast to introverts.

An ambivert is **in the middle of the introvert-extrovert spectrum**. While extroverts tend to talk more and introverts to observe and listen, ambiverts know **when to speak up and when to listen**. They share the characteristics of both and **adjust their behaviour** to fit a particular situation or a person. While an extrovert might enjoy small talk in an elevator with a stranger, an introvert is likely to try to avoid the interaction – ambiverts can adjust to both. They feel **comfortable in social settings** but also **value their alone time**. Especially when an awkward silence arises in somebody's company, an ambivert might be the one who will try to break it – making the more introverted people feel comfortable starting a conversation. That is how they are able to **ensure a balance in the social dynamics**. Ambiverts are naturally very **empathetic**. While an extrovert might try to offer a solution to their friend's problem right away, an introvert will most likely be a better listener. An ambivert tends to listen and ask thoughtful questions to try to lead the friend to the solution.

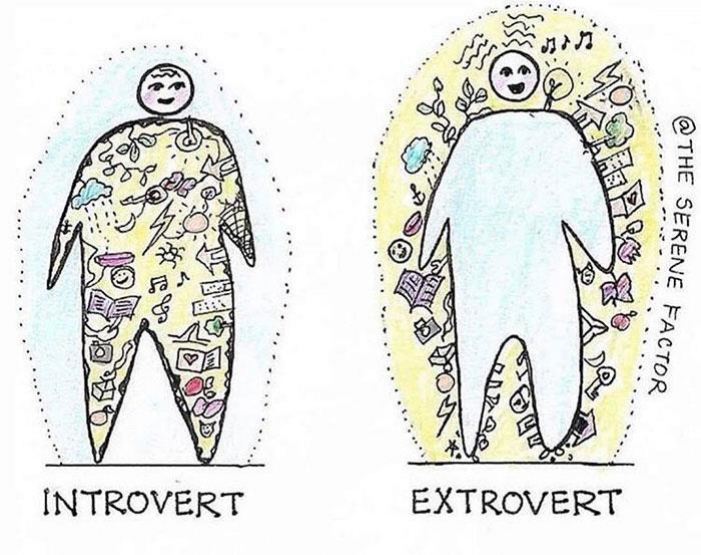


Figure 9. Introvert vs. extrovert[14]

To add, people are good at **adapting their behaviours** – that is in fact, what ensured their survival for thousands of years. Thus, it is possible for **an introverted person to flourish in the company of others** and for **an extroverted person to enjoy time alone**. Usually, however, the introvert would need to recharge their battery in alone time afterwards, while the extrovert would need to recharge their battery in a group of people.

Since one of the basic features of effective learning is ensuring the optimal conditions and development for all students, each learner should be encouraged to learn more about their personalities (and each teacher should be encouraged to learn more about their learners' personalities) – for example by using the **introversion and extroversion test** (Appendix A). We would like to emphasise that there are no right and wrong answers!

2.1.3 The Four Temperaments

The human personality theory about four types of temperaments was created first by a Greek physician **Hippocrates** (approximately 460-375 BC) and later by **Galen**, who was a Greek physician, writer and philosopher (approximately 130-200 AD). They believed that there were four humours (i.e. liquids) in the human body, which were responsible for a particular pattern of personality. According to this theory, we distinguish (Ashton, 2018):

- **a choleric temperament** – influenced by yellow bile – it was believed that its excess caused the angry ("choleric") temperament,
- **a sanguine temperament** – influenced by blood – it was believed that its excess caused the cheerful ("sanguine") temperament,
- **a melancholic temperament** – influenced by black bile – it was believed that its excess produced a depressive ("melancholic") temperament,
- **a phlegmatic temperament** – influenced by phlegm – it was believed that its excess produced a calm ("phlegmatic") temperament.

[14] Source: https://nedhardy.com/2022/02/17/20-funny-introvert-memes-that-are-totally-relatable/

The Choleric Temperament

People with this temperament are often "**the doers**". Usually, they tend to be **goal-oriented** and good at **decision-making**. One of their strongest assets is their **determination** in their actions and tasks. They are very **analytical**, **logical**, **extremely practical**, and **straightforward**. However, they are **not particularly social** – they **dislike small talk** and **rather enjoy deep and meaningful conversations**.

Strengths: they are strong and direct

Possible Weaknesses: they tend to be argumentative and competitive

The Sanguine Temperament

People with this temperament are often "**the talkers**". Usually, they tend to be very **lively**, **sociable**, **cheerful**, and **optimistic**. They **cannot tolerate boredom** and usually seek **variety and entertainment –** especially because they love **adventure** and are willing to take **risks**. Above all, people with this temperament are **carefree** – which is why they often **struggle with completing tasks** and are **chronically late**.

Strengths: they are open and positive

Possible Weaknesses: they tend to talk too much and struggle with completing tasks or obligations

The Melancholic Temperament

People with this temperament are often "**the thinkers**". Usually, they tend to be **thoughtful** and rather **introverted**. Very often, they are very **creative** and **analytical deep-thinkers**. Being **tidy**, **conscientious**, and **highly organised** are their strongest assets. However, they often focus on the **negative** rather than the positive.

Strengths: they set high standards for themselves and are prone to be creative

Possible Weaknesses: they have unrealistic expectations and can be too obsessed with perfection

The Phlegmatic Temperament

People with this temperament are often "**the watchers**". Usually, they tend to be rather **quiet** and **relaxed**. Being **friendly**, **sympathetic**, **easy-going**, and **tolerant** are their strongest assets. However, they have a strong tendency to **worry**, unlike the sanguine risk-takers – and thus prefer **certainty and stability to change**.

Strengths: they are loyal and accommodating

Possible Weaknesses: they can be indecisive and overly sensitive

The following figure presents some more of the distinctive characteristics of the listed temperaments. As depicted in the figure, some of the temperaments tend to be more emotional than others.

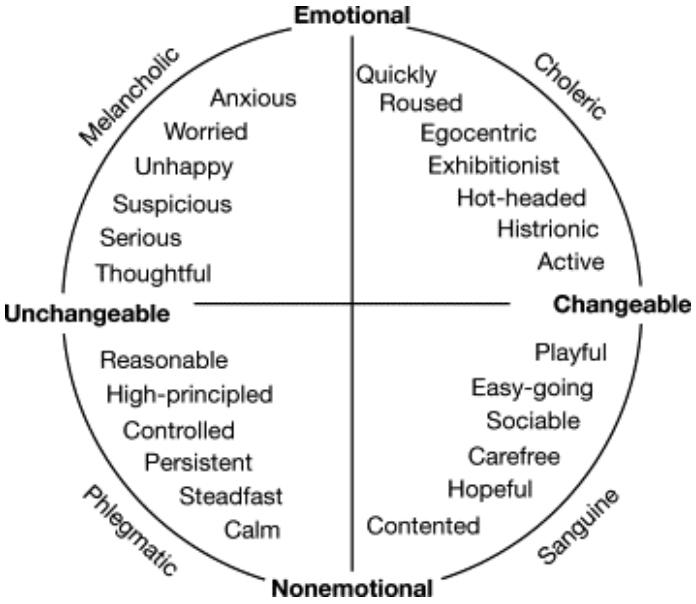


Figure 10. The four temperaments[15]

Here, it is important to emphasise that most of us do not have only one dominant temperament. Rather, most people have **a combination of two temperaments** – often with one of them being more dominant.

Each learner should be encouraged to determine and learn more about their own temperament – for this purpose the **four temperaments test** (Appendix B) can be used.

[15] Source: Saklofske et al. 2012. Extraversion–Introversion. In: *Neuroscience and Biobehavioral Psychology*. https://doi.org/10.1016/B978-0-12-375000-6.00164-6

2.1.4 Learning Styles

In the previous chapter, we discussed that each learner is unique, therefore, assuming that all learners learn at the same pace and in the same way, and that they are interested and motivated by the same things is not accurate. Despite these individual differences, the fact that can be applied probably to most of them is that they make swift progress if they are **actively involved** – i.e. the most effective learning is **learning through doing**. This can be applied basically to every age group of learners, including teenagers and young adults (Kráľová, Kamenická, and Tirpáková, 2021).

Bearing in mind the brain-based learning principles discussed in the previous chapter, it is to be emphasised that learning is more effective if it is accompanied by sensory experiencing, especially taking into consideration the **learning style**, which suits best to each learner.

Learning style can be defined as (more or less) a **consistent way** in which people **perceive**, **organise**, and **process information** (Kamińska, 2014). Already Jan Amos Comenius (1907) emphasised the importance of sensory input, which plays a **crucial role** in **impressing** and thus **supporting the cognitive processing** in the brain.

Basically, we distinguish **three learning styles based on our sensory preferences** (Scrivener, 2011):

- **Visual –** people who learn best by seeing (e.g. pictures, graphics, illustrations, demonstrations, etc.). In FL education they tend to prefer reading over listening.
- **Auditory –** people who learn best by listening (e.g. presentations, rhythms, sounds, etc.). In FL education, they enjoy listening to audios and videos, storytelling, songs, jazz chants, and pronunciation drills.
- **Kinaesthetic –** people who learn best by touching, feeling, and doing. In FL education, they thrive when doing TPR activities, motion games, miming, or doing things manually. Also, they might tend to walk when they learn or revise.

Since each brain is unique, learning style preferences do not always occur separately. In many cases, there might be learners who prefer the **blended learning style** – i.e. the combination of the two, or even all three of the above-listed learning styles (Kamenická and Kováčiková, 2019).

Since one of the basic features of effective learning is ensuring the optimal conditions and development for all students, each learner should be encouraged to try to define their learning style – for example by using the **self-test learning style questionnaire** (Appendix C).

Multisensory Approach

As mentioned above, learning styles does not always occur in isolation. In fact, it is quite common for learners to prefer the **"blended" learning style** (Kamenická and Kováčiková, 2019). Therefore, it is very beneficial for learners to use a range of activities targeted to various senses. Moreover, the **stimuli coded in different ways** (visual imagery and verbal associations) have **a higher chance of remembering** than those coded in one way (Paivio, 1990).

In practice, the multisensory approach is very **natural** to humankind. It has been suggested that our thoughts occur in the forms of **images** (Buzan, 1988) and their **associations** – in the form of **stories** (Kelly, 2016). While images "suit" the visual learners best, the associations our brain creates give them a sense of movement – which "suits" the kinaesthetic learners. To add, **words** (in the spoken and listened-to form) can be considered as ferries, which transport the images from one's brain to another person's brain (Buzan, 2010).

Concerning **visual** learners, the research has suggested that the use of images can **enhance memory, creative thinking, improve problem solving and communication,** and over time also **increase people's perception** (Buzan, 1988; Buzan, 2010). It has also been suggested that for the best effect, the **visuals used in presentations should enhance the words used**, not duplicate them – this should increase the recall of the given information from 10 to up to 65 percent (Gallo, 2014). The visual stimulation of learners is natural in (foreign language) classes. The textbooks used are full of pictures. The teachers use a whiteboard to write on.

Auditory stimulation is automatic, too. In (foreign language) classes **both the teacher and learners talk**. Also, the textbooks used for foreign language learning usually contain **audio recordings**. It should be also emphasised that learners listen not only through ears but also through their eyes (when watching) and their hearts (when they are so immersed in the action that they lose track of time) (Tišťanová, 2012).

Kinaesthetic stimulation might seem more demanding. Some students simply need to touch and move to learn best. In fact, this can increase their **bloodflow** and thus their **awakeness and alertness** (Helgesen, 2022). Thus, the teachers should bear in mind that their students need to stand up and move as a part of the lesson, not just passively sit on their chairs. Also, the use of **Prezi** presentations can bring a sense of movement to the class (Kamenická and Kováčiková, 2019). It has been also suggested that the use of **rhythm** in the forms of rap[16] or jazz chants can create a sense of movement (Kamenická and Kováčiková, 2019; Helgesen, 2022).

Again, we would like to emphasise that **our brain rarely perceives sensory sensations separately**. An example of how our brain perceives and processes sensory stimuli is offered by Kelly (2016) – when we see a photo of a singer, we recognise him as a male of a certain age; then we recognise who he is; and although we cannot hear him singing, when looking at that picture, we can imagine based on our memories what his voice sounds like.

Concerning the brain, **the more senses** we engage in the process of learning, **the more associations** our brain creates. However, for the teacher, creating a multisensory experience for learners can be very demanding in terms of both effort and time management. An answer to the question of how to engage learners of all learning styles (and their various combinations) can be **emotions**, or rather, **emotion-involved processing** (Kamenická and Kováčiková, 2019; Kanazawa, 2020). A whole chapter will be devoted to the complex phenomenon of emotions. Also, **visualisation** in a form of **guided imagery** can be used to engage learners of all learning styles at the same time.

[16] For this purpose, there is a number of videos on YouTube, where a beat can be played. Or, the following drum machine can be used: www.drumbit.app

Visualisation (Guided Imagery) as Multisensory Experience

Visualisation, also known as guided imagery or guided meditation, was usually designed as a technique to better manage stress – which includes positive and peaceful settings (e.g. a peaceful meadow or a peaceful beach). It is a type of focused relaxation or meditation and it involves concentrating on specific experiences, objects and sounds in order to calm one's mind.

Guided imagery is a simple and low-cost (in terms of time-saving, effort, and finances) method for managing your stress. It is a relaxation technique that involves visualising positive, peaceful settings (e.g. a beautiful beach or a peaceful meadow) and stories. This technique is also known as visualisation or guided meditation (Healthline, 2020).

In fact, our body and mind can become tense based on our thoughts about a stressful situation – our heart rate and blood pressure might increase as a result. On the other hand, if we think about a pleasant scenario, our mind and body can feel relaxed – both our mind and body can feel calmer.

According to research (ibid.), guided imagery may help:

- reduce anxiety,
- reduce stress (including mental, emotional, and physical),
- reduce pain,
- promote relaxation,
- ease various symptoms related to stress (such as depression and sleep disorders).

Several studies from the medical environment, which dealt with health impact of guided imagery, report significant improvements, for instance, in the decrease of stress, anxiety, fatigue, pain, and depression (Menzies et al., 2014; Patricolo et al., 2017; Santos Felix et al., 2018; Tusek et al., 1997). There is also a study, which suggests that guided imagery can reduce pre-test anxiety of students (Grammatica, 2018).

In class, it is important to make sure that the learners are calm and quiet to start this technique. Then, the teacher should try to persuade them to concentrate and visualise a short imaginary experience, through which they are guided by their teacher. It can be a memory, a dream, or a story. For the teacher, it is recommended to (Donald, n.d.):

- have a clear idea and aim for the visualisation;
- pre-teach the vocabulary items with which the learners might not be familiar;
- explain what visualisation is and why you are planning to use it;
- use a script;
- set the scene for the story (place, weather, environment, etc.);
- make sure that learners remain silent (as not to disturb classmates – if they do become noisy, it is recommended to wait until they relax again);
- allow the learners to relax;
- encourage the learners to close their eyes during the visualisation (it works with open eyes, but it is recommended to close them);
- stay relaxed and calm yourself, and do not rush the presentation of the visualisation script;

- make the visualisation multisensory by including information not only about images, but also about sounds, smells, tastes, haptic experiences, and emotional feelings;
- also include suggestions which do not automatically produce images (e.g. in the visualisation, the learners will be reading a magazine, but do not include the details about the type of magazine, etc.)
- keep your voice calm and do not add drama or emotions to your words;
- mark the points where a pause is needed;
- give the learners a few seconds to open their eyes and come back to the classroom after the visualisation;
- give the learners opportunities to share and discuss (with their classmates) what they saw and experienced in the spoken or written form.

2.1.5 Index of Learning Styles

Another classification of learning styles is provided by Öniz (2004). She distinguishes the following index of learning styles:

1. **Active and reflective learners,**
2. **Sensing and intuitive learners,**
3. **Visual and verbal learners,**
4. **Sequential and global learners.**

1. Active and reflective learners

Active learners absorb and understand information best, when they use it actively – for instance, discuss it, apply it, or explain it to others. They especially benefit from problem-solving activities and discussions in classes. If these are not often part of the class, they can compensate for this deficit by studying in a group in which learners take turns explaining different topics.

However, **reflective learners** need to think the information through quietly first. They like to work alone – unlike active learners, who prefer group work. They especially benefit from writing their own short summaries of the content of classes in their own words. If there is little space for thinking about new information in the classes, they should try to compensate for this deficit by reviewing what they read about and thinking about possible questions and applications.

It is important to emphasise that everybody is active sometimes and reflective other times – therefore, we should strive to find a proper balance between the two.

2. Sensing and intuitive learners

Sensing learners prefer learning through facts, they like problem solving by well-established methods and dislike unexpected complications and surprises. They dislike being tested on information, which has not been explicitly covered in classes. They are very patient with details, memorising, and doing hands-on tasks. They are more practical and careful than intuitive learners. They dislike courses, which apparently do not connect to the real world. Especially if the materials in classes are too abstract and theoretical, they might have difficulties. They need specific examples of concepts, procedures, and how they apply in practice.

On the contrary, **intuitive learners** prefer if they can discover relationships and possibilities, they like innovation and dislike repetition. They are comfortable with abstractions and mathematical formulations and are better at grasping new concepts than sensing learners. They are faster and more innovative than sensory learners. However, they might make careless mistakes on tests, because often they are impatient with details and do not like repetition – in this case, in form of checking the completed answers. They dislike courses, which involve a lot of memorisation and routine calculations – especially because they might cause boredom for them. They should try to find interpretations, theories, and connections, which link the facts presented.

Again, every learner can be sometimes more sensing, other times more intuitive. To be effective, each learner should be able to function both ways. Being overly intuitive might lead to missing important details or making careless mistakes in calculations and/or hands-on tasks. Being overly sensing and relying too much on memorisation and familiar methods might lead to neglecting concentration on understanding and innovative thinking.

3. Visual and verbal learners

Visual learners benefit mostly from visually presented information – in form of pictures, timelines, diagrams, flow charts, films, and demonstrations. Most learners are visual, therefore, teachers should include more of the visuals in their classes. If that is not possible, it would be beneficial for these learners to list the key points enclosed in boxes or circles and draw connections between them (for instance, in the form of a mind map) or to colour-code their notes with a highlighter.

Verbal learners remember words best – both in the form of written and spoken explanations. In classes, they benefit from lectures and information included in textbooks, handouts, or written on boards. For this type of learners, it might be beneficial to write summaries of the presented information in their own words and work in groups – to listen to classmates' explanations or to give explanations themselves.

In general, the combination of both types of presenting information is desirable – as it allows dual coding of information and thus leads to better remembering (Paivio, 2006).

4. Sequential and global learners

Sequential learners learn linearly – step by step, each following from the previous one. They follow logical paths in finding solutions. They might not fully understand the material but are still able to partially work with it, for instance, in the form of homework. This is because the pieces of information they absorbed are logically connected. Although they prefer to learn in a sequential manner, it is recommended for them to relate each new topic they study to things they already know – to get a deeper understanding.

Global learners absorb the new material rather randomly – without recognising connections, they suddenly "get it". They might be able to solve complex problems quite fast provided that they have understood the big picture – but at the same time, might have a problem explaining how they got to that solution. They might have problems understanding a concept unless they have the big picture. Just after seeing the big picture, they are able to master details. It might be helpful to skim through the entire chapter in a textbook to get a general idea first and just then start studying the first section.

To help the learners to understand how they learn better, it is recommended to use the **self-test index of learning styles questionnaire** (Appendix D).

2.1.6 Multiple Intelligences

Similarly to the previous classifications of types of learners, the researchers tried to classify the learner types based on their type of intelligence. Based on this classification, the following types are distinguished (McKenzie, 1999; Davis et al., 2011; Gardner, 2011; Pokrivčáková, 2012):

- **Visual/spatial** – people who learn visually and organise ideas spatially.
- **Verbal/linguistic** – people who learn through spoken and written texts.
- **Mathematical/logical** – people who learn through logical reasoning and problem solving, and need to follow strict rules (exceptions are very confusing for them).
- **Bodily/kinaesthetic** – people who learn through interaction with their environment.
- **Musical/rhythmic** – people who learn through patterns, music, and rhythms.
- **Intrapersonal** – people who learn through interaction with self – i.e. feelings, values, and attitudes.
- **Interpersonal** – people who learn through interaction with others and are able to understand their moods, motivations, and intentions.
- **Naturalist** – people who learn through classifications, categories, and hierarchies.

To help the learners to find their intelligence type/types, it is recommended to use the **multiple intelligences test** (Appendix E).

2.1.7 The Hemispheric Dominance

Besides other aspects, the focus of neuropedagogy is to study and emphasise the importance of using both cerebral hemispheres when it comes to the process of learning.

The general understanding in pedagogy is that the **left cerebral hemisphere** is more **rational** and is active mostly when the content is presented in the **spoken form**, when we **process information**, **analyse**, **produce logical judgements** and **do mathematical operations**. It processes the information in **chunks** and it does so **sequentially** (Jensen, 2008).

On the other hand, the **right cerebral hemisphere** is rather **emotional** and interprets **non-verbal information**, focuses on **creativity** and is **more divergent**. It controls **emotions** and **imagination**. It processes information **holistically** and it does so **randomly** (Jensen, 2008).

However, we cannot understand their functioning as separate, since they are interconnected and cooperate. In practice, each learner is unique and they rely on the former or latter hemisphere differently. Some of them are more **left-brain-dominant**, while others are **more right-brain-dominant**. Jensen (2008, p. 20) offers a detailed description of both types of learners, which is presented in the following table:

Table 6. Comparison of left and right-brain-dominant learners

Left-brain-dominant learners, more often than not, may:	**Righ-brain-dominant learners**, more often than not, may:
• prefer things in a sequence	• be more comfortable with randomness
• learn best from parts to wholes	• learn best from wholes to parts
• prefer a phonetic reading system	• prefer a whole-language reading system
• like words symbols, and letters	• like pictures, graphs, and charts
• rather read about a subject first	• rather see or experience a subject first
• want to gather related factual information	• want to gather information about relationships among things
• prefer detailed orderly instructions	• prefer spontaneous, go-with-the-flow, learning environments
• experience more internal focus	• experience more external focus
• want structure and predictability	• want open-ended approaches, novelty, and surprises

As demonstrated above, the left and right hemispheres of the human brain process information in different ways. Every individual has a dominant side and they tend to rely on it more when processing information. Nonetheless, the process of learning is enhanced when we use all of our senses, which includes using the other, i.e. non-dominant, hemisphere.

To help the learners to define their hemispheric dominance, they can use a short **self-test of the hemispheric dominance** (Appendix F).

Listed below are **processing styles**, which are characteristic **for left-hemisphere and right-hemisphere dominant individuals** (Öniz, 2004):

1. Linear and holistic processing.

The left-brain hemisphere processes information linearly. It processes from specific to general information, i.e. from parts to whole. It arranges pieces of information in a lined-up logical order and then it draws conclusions.

The right-brain hemisphere processes information holistically, i.e. from whole to parts, from general information to specific. It needs a big picture first to understand the details, which is especially important when it comes to lectures at school. Simply put, right-brained learners need to know why they are doing something.

2. Sequential and random processing.

The left-brain hemisphere processes in sequence, or rather, in order. Therefore, an individual with left-brain dominance can be called "a list maker" who prefers learning in a linear manner, in a sequence. For example, such individuals enjoy making schedules and daily planning and tend to complete individual tasks in order and take extra pleasure in checking them off when they are accomplished. They are good at spelling, math, and following directions.

The right-brained learners' approach is more random. These learners might flit from one task to another without setting their priorities. They might have problems completing assignments – not because they were not working, but because they were working on something else. Because of their random nature, lists and schedules can help them, when it comes to academic success.

3. Symbolic and concrete processing.

The left-brain hemisphere has no trouble when it comes to processing symbols, such as letters, words, and mathematical notations. Therefore, left-brained learners are more at ease with linguistic and mathematical problems than right-brained learners as they are more likely to memorise vocabulary items and mathematical formulas.

The right-brain needs information to be concrete. The righ-brained learner needs to see, feel, or touch the real object. They need to see vocabulary items in context and see how mathematical formulas work in practice.

4. Logical and intuitive processing.

The left-brained learners process information in a logical manner, which is linear and sequential. They use information piece by piece to solve mathematical problems or work out a scientific experiment. When they read and listen, they look for smaller pieces so that they can draw more general logical conclusions. Their decisions are made on logic-proof. In writing, they tend to pay more attention to mechanics – including spelling, agreement, and punctuation.

The righ-brained learners rely more on intuition. They might know the answer to a mathematical problem but will not be sure how they got it. They have a gut feeling about what answers are correct and they are usually right. Often, it is beneficial for them, if they have the

answer first and work backwards. In writing, they pay more attention to coherence and meaning. In other words, their right brain tells them that it "feels" right – so that is why they base their decisions on feelings.

5. Verbal and non-verbal processing.

The left-brained learners can express themselves in words quite efficiently. When giving directions, the left-brained individual will say something like: "From here, go west three blocks and turn north on Vine Street. Go three or four miles and then turn east onto Broad Street." (Öniz, 2004).

The right-brained learners might have trouble finding the right words when it comes to expressing their ideas. When giving directions, the right-brained person will say something like: "Turn right (pointing right) by the church over there (pointing again). Then you will pass a McDonalds and a Walmart. At the next light, turn right toward the BP station." (Öniz, 2004). In fact, these individuals need visual support. If it is not written down, they might have problems remembering it. It would be even better for them to illustrate it. Especially when writing a paper, they will need more revision and more time time to do the revision.

6. Reality-based and fantasy-oriented processing.

The left hemisphere prefers to deal with information the way it is – in reality. When left-brained learners are affected by the environment, they will usually adjust. These individuals want to know the rules so that they can follow them. If there are no rules, they are very likely to create them, so that they can follow them. They are well aware of the consequences of not keeping the deadlines and/or failing tests.

The right-brained learners might have problems with adjusting to the environment – rather, they try to change it. When it comes to not keeping the deadlines and failing a test, these individuals might sometimes not be aware that there is anything wrong. Thus, they should make sure to constantly ask for feedback and reality checks. The fantasy-orientation does not mean a disadvantage, though. These individuals are very creative. If they need to learn about the digestive system, they might decide to become a piece of food in their imagination (Öniz, 2004). Like this, they experience emotions as a part of the learning process, which allows them to remember anything, as long as they are emotionally engaged.

Since the distinction between the individual processing styles is not black-and-white, these processing styles cover several areas of processing. It is especially important for a learner to pay attention to their less dominant style so that they can learn how to improve it.

However, at the same time, Jensen (2008) emphasises **the complexity** of the concept of **brain-side specificity** and adds several examples:

1. **Listening to someone speak.** This might seem like an activity typical for **left-hemisphere** activity because it includes the processing of words, definitions, and language. However, at the same time, **the right hemisphere** processes elements that are beyond the words and are even more critical to the meaning of a conversation – such as the tempo, tonality, inflection, and volume of the communication. There is also evidence that when it comes to processing, the gender might be an important factor as well – since

the female brain seems to be far more efficient when it comes to processing of not only language, but also emotions at the same time (Jensen, ibid.).

2. **Listening to music.** This is even stronger evidence of the fact that the human brain is bilateral most of the time. When listening to music, it can be said that the rational **left hemisphere can be creative**. While non-musicians rely more on the right hemisphere when they are listening to music, the musicians analyse the music more – thus, they rely more on the left hemisphere.
3. **Drawing, composing, and painting.** These might seem like right-hemisphere activities. However, there is evidence of bilateral activity. When artists plan their artwork, they follow their own logic and rules (about colours, shapes, and sounds). They express their ideas on canvas, clay, glass, metal, and paper. However, for the masses to accept them, the artists must consider very specific rules of colour, balance, order, and proportionality (which are often unwritten).
4. **Visualisation.** Again, there is evidence of bilateral activity – as it combines left and right-brain functions, such as language and imagination (Donald, n.d.).

It can be concluded that the human brain processes both parts and wholes, or rather, specific and holistic information at the same time. So, when it comes to processing, both hemispheres cooperate and influence each other. Therefore, as teachers, we should **prevent presenting the information isolated or taken out of context** and **allow the interaction of the brain with the environment**.

In ideal education, both **hemispheres should be active**, although we tend to process information using our **dominant side**. The good news is that this is no *rocket science*, but **rather an automatic phenomenon occurring naturally in the human brain**. Although education has mostly concentrated on the left hemisphere (i.e. logical thinking) and the right hemisphere has been rather neglected (i.e. emotions, imagination, etc.) (Petlák, 2009), the right hemisphere is active along with the left one all the time despite the apparent lack of pedagogical focus. A simple example of this phenomenon can be watching a video in English (as a foreign language) which is accompanied by music. Although we concentrate mostly on the language and facts, at the same time, the music influences our affective side. Music has the power to evoke emotions (both positive and negative), which happens along with our logical processing of the content of the video. Therefore, both hemispheres are active at the same time and cooperate in the processing of the video as well as in memory formation. To our advantage, emotions can facilitate learning especially among teenage and older learners (Kanazawa, 2020; Kráľová, Kamenická, and Tirpáková, 2021), however, they can also hinder it – if dealt with improperly. Thus, it is essential for each teacher to understand the power of emotions and know how to work with them in a sensitive way.

2.2 Real-Life Orientation

When it comes to education, often, it is difficult to achieve that learners are willing to engage in the given tasks, or do not have the motivation to participate in classes actively. Instead of taking part in the activities, they rather passively endure the lesson. While there might be a number of reasons for their inactivity, it has been suggested that **the real-life orientation** of the content-to-be taught helps to **promote attention and motivation to learn** (Merrill, Barclay, and Van Schaak, 2008; Pelikán, 2011; Kráľová, Kamenická, and Tirpáková, 2021). McEown and Takeuchi (2012) add that if the teacher provides the learners with some additional background knowledge or extra information during EFL classes, it can boost their motivation to learn.

The problem with many textbooks, which EFL teachers use is that despite the fact that they are aimed at a particular language level of a learner, they might quickly become outdated. For EFL teachers, this fact is extremely important to consider. To our advantage, we live in times of the ever-present Internet, which provides teachers with countless possibilities for how to make their EFL classes more up-to-date – for instance, *YouTube*, various podcasts, games and softwares for practising English, to name a few.

To ensure the real-life orientation of EFL classes, the teachers should strive for their classes to be *EMA*[17]:

- **Engaging** – promoting curiosity (bearing in mind learners' interests and experiences).
- **Meaningful** – the content should be presented in meaningful context and associations.
- **Authentic** – the content should be based on real-life experiences and examples.

Even though this might be extremely demanding to ensure for every single EFL class, it is recommended to follow the ***Three Reals Principle*** **(3R)** (Kamenická, 2019):

EFL learners should learn

about *real* life, using *real* language in *real* contexts.

Real life = things and phenomena we encounter every day. It is very concerning if teachers prioritise teaching and expecting learners to memorise vocabulary items about things and abstract concepts they never encountered, if they cannot use "everyday" language (e.g. name everyday items in their surroundings, use simple grammar tenses, etc.).

Real language = authentic language, not just artificially pre-arranged texts. Although they are very helpful at the initial stages of FL learning, teachers should strive for their learners to aim higher.

Real contexts = teaching isolated vocabulary items or grammar rules is not enough. They should be presented in realistic sentences. A great help for the teacher are reading and listening tasks included in textbooks or those created from authentic materials – as they allow the FL learners to experience the language in a realistic context naturally.

[17] *EMA* = mnemonic device for *engaging-meaningful-authentic*

Every language can be compared to **a living organism**. They are evolving, constantly growing and changing, sometimes even dying. It is only natural that the information included in a textbook becomes outdated when the world and languages evolve so fast. That is the reason, why it is so important to add the missing 3R elements to FL classes – in order to make them **engaging, meaningful, and authentic**. That is the way to ensure long-lasting effects on learners' memories, on their emotional engagement, and thus, on their overall approach to learning. Like this, it is possible to build a positive relationship not only towards the process of learning but also with a particular school subject, which can be EFL, for instance.

Engaging

With regard to the real-life orientation of FL classes, teachers should bear in mind the importance of **emotional engagement** of their learners. This is possible to achieve by bearing in mind their **interests and experiences** (Kelly, 2013; Kamenická and Kováčiková, 2019).

A study by Stockwell (2010) revealed that thanks to convenient access, **learners are willing to spend more time on mobile devices than on computers**. This can be used to benefit education, as mobile applications, games, and social networks became part of learners' everyday reality. Regarding FL learning, it is through these platforms that learners experience authentic language in an engaging form outside the classroom. Moreover, they allow learners to communicate with people from all around the world and thus to create a global community. Their everyday potential for the creation of meaningful language contexts for FL should be recognised and wisely used by their teachers.

Emotions can be considered an equally important pillar of learning as cognition. We will devote an individual chapter in this work to shedding more light on the vast universe of emotions. When it comes to emotional engagement, according to Mercer, MacIntyre, Gregersen, and Talbot (2018), the following competences form the heart of positive education and should be incorporated in classes: **hope, gratitude, growth, positivity, kindness, optimism, tolerance, empathy, and meaning**. To add, if teachers achieve **dopamine release** in their learners' bodies through emotional engagement, they will **significantly affect their memories and deeper learning** (Kelly, 2016). Furthermore, this will add to the process of building a positive relationship towards FL learning.

Meaningful - Associations and Contextualising

When learning, the human brain creates neural connections between the synapses of individual neurons. In fact, it operates through **associations** – this process can be compared to **a mind map creation**. With every new incoming information, the brain tries to determine how it should be sorted and dealt with.

With regard to brain-based learning, therefore, it is beneficial to **present the big picture first and just then the new information**. This will ensure **the meaningful contextualisation and creation of associations**. Thanks to this, the brain will have a chance to go through the existing knowledge first and thus prepare for receiving and processing new information better – which will help it to integrate it within the map of the existing knowledge.

To add, it is essential to emphasise that **not only the content of the new information is important**, but also **meaningful integration in the system of existing knowledge**. For instance, when it comes to EFL, it is not enough to learn a new vocabulary item in its written and spoken form. Unless a learner cannot use the vocabulary item actively, the knowledge is still very limited. Even more so, when a learner knows the theory behind a particular grammar rule and cannot use it actively, the knowledge of the theory is not applicable for real-life use of the language. For this, it is essential to notice and experience the vocabulary item or a piece of grammar in various contexts so that the learner gets practical examples of how to use it in practice.

In the context of TEFL, Scrivener (2011) suggests **presenting new lexical items so that there is a connection between them**. He lists several contexts in which the new lexical items can be connected, for instance:

- **a location or an event** – e.g., shopping vocabulary, wedding vocabulary, family vocabulary, etc.;
- **the same grammar and similar use –** e.g., adjectives describing people, movement verbs, etc.;
- **successful achievement of a specific task –** e.g., persuading, arguing, etc.

Authentic

When it comes to the authenticity of material used for EFL classes, the teachers can choose to use either adapted materials or authentic ones. Here, it is important to note, that **it is possible to bring authenticity to EFL classes with adapted materials, too** – especially with less proficient FL speakers, the options with authentic materials are very limited.

The adapted materials were created for didactic purposes, i.e. intentionally adapted with EFL teachers and learners in mind. They include textbooks, readers (i.e. books adapted to a particular language level), didactic videos, etc.

Pokrivčáková (2012) lists several **advantages** of adapted materials:

- they are carefully designed and aimed to fit learners of a particular **level of English**,
- they have been **revised for correctness** by scholars,
- their **level of difficulty is increasing –** which is based on the presumption of learners' continual progress,
- they are **always available** for teachers,
- their English should be **comprehensible** to learners of a particular level of English, which is ensured by recordings of suitable language and accent difficulty.

The author (ibid.) also lists several **disadvantages** of adapted materials:

- they are **fixed and artificial** – which happens often in listening exercises due to the fact that the speakers in the recording just read prearranged texts,
- the **interactions are not spontaneous** – they are created for didactic purposes, so they are not real-life situations,

- they may easily become **out of date and stop corresponding** with reality (e.g. facts, numbers, etc.) after some time.

The authentic materials were created for and with native speakers of a particular language in mind, i.e. they are not adapted for didactic purposes. They include **reading and listening materials**, such as newspapers, books, podcasts, *YouTube* videos, films, songs, radio and television programmes, public announcements at train stations and airports, etc. – whose English was not adapted or simplified for educational purposes.

Pokrivčáková (2012) lists several **advantages** of authentic materials:

- they **bring up-to-date reality** into classes and thus make interactions meaningful,
- they **bring a wide range of language in its natural form** into classes,
- they **make language learning different, rather than just memorising facts** for exams,
- they **develop communicative skills**,
- they are **always available and free**,
- **all language levels** can benefit from them.

The author (ibid.) lists several **disadvantages** of authentic materials:

- it is very difficult to choose the right type of material to match the learners' **level of English**,
- they contain **complicated and colloquial language elements** – for instance, slang, strange grammar, redundancy of speech, etc.

Again, we would like to emphasise how important it is to consider the language level of the FL learners first. **Less proficient FL users will have problems comprehending the authentic materials** and thus the whole "authentic" experience of language might be spoiled.

We would like to propose several ideas on how to make the most of watching videos. However, these instructions can be applied to the work with authentic materials in EFL classes in general:

1. **Introductory tasks**. They should be very simple. The aim is to familiarise the learners with the presented material and to answer a number of very simple questions to check their comprehension. These might include questions about the names of the characters, the number of characters, predicting what is going to happen, etc.
2. **Main tasks**. These directly deal with the material presented and include:
    - answering true/false questions,
    - answering multiple choice questions,
    - putting jumbled sentences of a story outline in the correct order,
    - asking learners to fill in empty speech bubbles,
    - putting speech bubbles with parts of the discourse presented in the material in the correct order,
    - presenting the outline of the story with some incorrect details and asking learners to spot and correct the mistakes,

- asking learners to mark vocabulary items or phrases, which they heard/read in the presented material, in the list provided by the teacher.

3. **Further language tasks**. The teacher can also:
    - pause the activity at a certain language point they want to focus on and discuss it with learners,
    - pause the activity before the practised structure and let the learners predict what is going to be said,
    - ask learners to dramatise a scene from the presented material in a role play or using puppets.

2.3 Active Learning

Another aspect of brain-based learning is **active learning**. In the context of TEFL, this goes hand in hand with the **real-life orientation** of the target information. By active learning, we understand using teaching techniques by which **learners actively receive information and form their own judgments** based on it. They process the new information and subsequently incorporate it into their existing knowledge. The central aspect of this type of learning is the **active involvement of each learner in the entire learning process**. In fact, the learner becomes **a co-creator of the class and content taught/learnt** and they participate in the evaluation of class work and self-evaluation.

The aim of active learning is to create opportunities for learners to:

- be more **active** in class,
- encourage **discovery**,
- encourage their **creativity**,
- encourage their **critical thinking**,
- **express** their **opinions** more freely,
- **discuss** their **opinions** with classmates,
- **submit to criticism**,
- **evaluate** and **form new conclusions**.

Brown (2000) adds that active learning is characterised by a learner's own discovery, assessment, comparison, and incorporation of new information into the already existing knowledge – by individual decision of using or rejecting the new information. Very typical forms of active learning used are **problem-based learning** and **project-based learning**, which can employ the creativity of learners both in individual and group work.

2.4 Memory Strategies

When it comes to brain-based TEFL, **mnemonics** (also known as memory strategies), are considered a powerful mental tool which helps learners with remembering various aspects of a foreign language. Moreover, they can make learning faster, easier, more enjoyable, self-directed, and transferable to various situations (Oxford, 1990; Henson and Eller, 1999).

A mnemonic **is a technique, which uses some sort of formula, which aims to improve the memory of a learner** (Oaks, 1995). This formula aims to **systematically organise** the material-to-be-learnt in a memorable way and involves **mental imagery**. This formula can be:

- a newly created word,
- an acronym,
- a simple rhyme,
- a set of pictures,
- a story based on the items to be remembered, etc.

Mnemonics as a memory tool originated in ancient **Greece** when scholars used them to memorise their **lengthy speeches**. According to a legend, it was ancient Greek poet **Simonides** who invented this technique. He found out that he was able to identify the bodies of a roof-crushing accident in a hall based on their location in the hall while delivering his poem. According to this legend, a sudden realisation hit him, when he realised **that memory can be closely linked to a specific physical location**. This type of mnemonic device is nowadays called a *location* or *loci* (pronounced as *low-sigh*) *mnemonic*.

However, one of the first modern scientific studies was conducted in 1973 (Bower, 1973), in which the research participants were asked to remember 100 unrelated items (in the form of 5 lists consisting of 20 items). The participants of the experimental group, who were asked to use mnemonics, remembered an average of 72 items. The participants of the control group, who were asked to use simple rehearsal, remembered an average of 28 items.

Later, in 1975 (Atkinson, 1975), a study in the context of foreign language learning was conducted with college undergraduate students, who were trying to remember FL vocabulary items. Similarly, this study confirmed that **mnemonics helped to promote FL vocabulary learning and improved memory capacity**. Even more, they helped to **connect the newly learnt vocabulary items** with the information, which was stored through **visual and acoustic cues**.

Several modern studies conducted in various cultural contexts confirmed that mnemonics based on **keywords** significantly **improve recall and both immediate and delayed retention of FL vocabulary** (Wyra, Lawson, and Hungi, 2007; Chen and Hsiao, 2010; Soleimani, Saeedi, and Mohajernia, 2012; Marzban and Amoli, 2012; Davoudi and Yousefi, 2016).

Concerning another type of mnemonics, the **story maps** were confirmed to be equally **effective in memory and retention improvement** – both in the mother tongue of research participants and in EFL (Corazzi and Jin, 2007). It has been concluded that research participants in this study benefited mostly from telling their own **personal stories**. In fact, when telling a

personal story, the emotional engagement of the story-teller is granted. Oaks (1995) adds that **storytelling is a form of a natural mnemonic** because it:

- helps attention,
- organises information in a logical sequence,
- helps imagination,
- creates visual images,
- and delivers meanings.

These are also the aspects of a good mnemonic and grant a successful recall of the target information.

In general, authors distinguish several types of mnemonics – some of which were mentioned above. We will present and discuss them in the following pages and explain how they work on simple examples. All of them can be used for TEFL classes, however, some of the examples will be used with regard to various subjects (not always covering TEFL aspects) in order to present them in the most comprehensible way.

1. Musical Mnemonics

When learning, it is possible to make a song of any target pieces of information. The most popular examples in TEFL, which can be included in this category, are the **"A-B-C" song** for learning the English alphabet and spelling, and the **"Head, Shoulders, Knees, and Toes" song** for learning body parts vocabulary in English. To be the most successful, the catchier the song, the better. Examples of very catchy songs can be the following songs about the planets and dwarf planets of the Solar System:

"Planet Song"

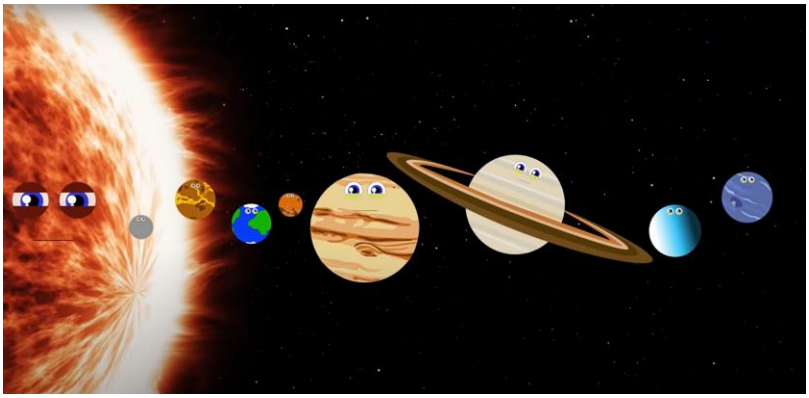


Figure 11. Planet Song[18]

Available at: https://www.youtube.com/watch?v=mQrlgH97v94&ab_channel=KLT

"The Dwarf Planet Song"

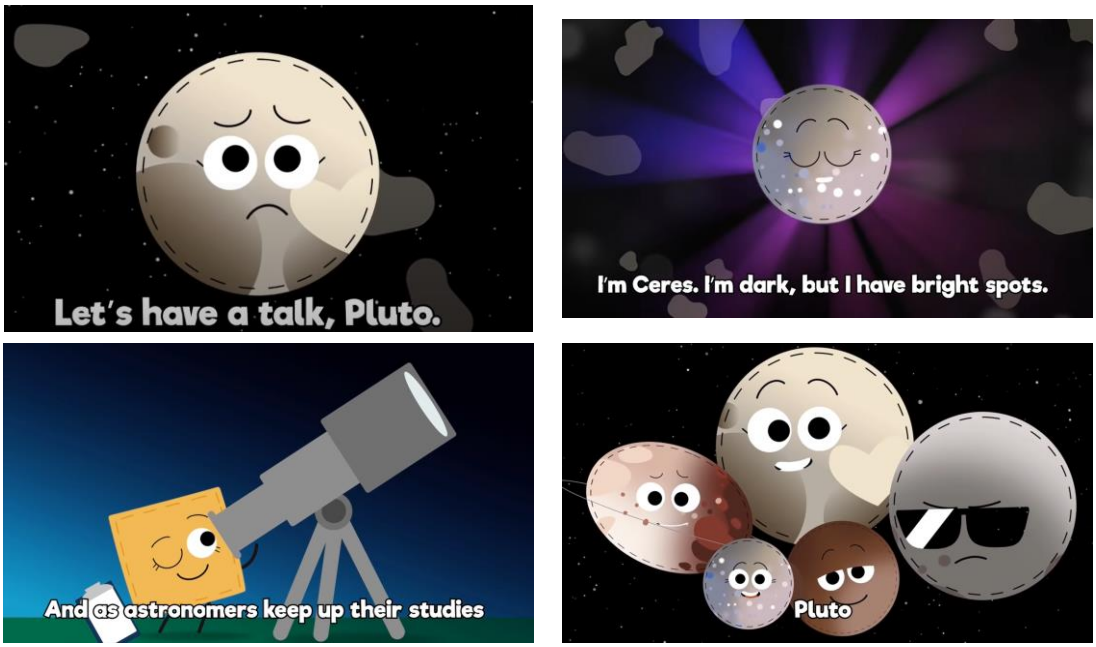


Figure 12. The Dwarf Planet Song

Available at: https://www.youtube.com/watch?v=ws3kWuMi0Y8&ab_channel=Hopscotch

[18] Source: https://www.youtube.com/watch?v=mQrlgH97v94&ab_channel=KLT

2. Rhyme Mnemonics

Rhymes can be used as a mnemonic to help us learn and recall information, whether it is factual information, a piece of FL grammar, or FL vocabulary items. Sometimes, it is possible to rearrange words or substitute some of them to make them rhyme. One of the very popular rhyme mnemonics is the following:

30 days have September, April, June and November. All the rest have 31, fine!

February 28 except when 29.

Another example of rhyme mnemonic can be **jazz chants**, originally "invented" by Caroline Graham. Some might argue that chanting a jazz chant is similar to rapping – since it does not include *real* singing nor music. In fact, in a traditional jazz chant, the natural language is expressed rhythmically in the rhythm of traditional American jazz. However, it is upon the creativity of the teacher, what kind of rhythm they use. The importance lies in the content of the jazz chant, not in the type of rhythm. For instance, **jazz chants can teach**:

- **vocabulary** – this can include individual vocabulary items or idioms, for instance: family, animals, food, occupations, hobbies, days of the week, etc.
- **grammar** – for instance: tenses, questions, answers, imperatives, etc.
- **phonology** – i.e. rhythm, stress, and intonation of words and sentences – this can be used with words/sentences with a similar or completely different rhythm, stress, and intonation patterns.

An example of jazz chant teaching questions can be as follows:

Figure 13. Jazz chants[19]

Available at: https://www.youtube.com/watch?v=lv9OltGdzw4&list=PLauwxQ-VGyUvLfP5Ckk_ajLSmH0fIuibj&index=2&ab_channel=LookListenLearn

[19] Source: https://www.youtube.com/watch?v=lv9OltGdzw4&list=PLauwxQ-VGyUvLfP5Ckk_ajLSmH0fIuibj&index=2&ab_channel=LookListenLearn

3. Name Mnemonics

Creating a name from the initial letters of certain items is another mnemonic technique. For instance, ROY G. BIV – this is not a real name, but a mnemonic device to remember the colours of the rainbow in the right order.

ROY G. BIV

R = red
O = orange
Y = yellow
G = green
B = blue
I = indigo
V = violet

Figure 14. Rainbow colours[20]

4. Word Mnemonics

Similarly as in the previously mentioned type, when creating word mnemonics, the first letter of each item-to-be-remembered is used to arrange a new word or phrase. For instance:

FANBOYS

There are 7 coordination conjunctions in English – **F**or, **A**nd, **N**or, **B**ut, **O**r, **Y**et, **S**o = *FANBOYS*.

EMA

This word can be used to remember the three aspects of real-life oriented EFL classes: **E**ngaging, **M**eaningful, **A**uthentic (as mentioned in one of the previous chapters of this work).

3R

This term can be used to remember the *Three Reals Principle* (Kamenická, 2019), that is, EFL learners should learn **about *real* life, using *real* language in *real* contexts**.

[20] Source: https://www.farmersalmanac.com/all-about-rainbows-17600

5. Expression Mnemonics

Similarly as in the previously mentioned types, when creating expression mnemonics, the first letter of each item-to-be-remembered is used to arrange a new word or phrase. For instance:

Laco doma.

This is a very popular Slovak mnemonic device, which literally says: “Laco (name) is at home.” It is used to remember the order of roman numerals in the correct order:

La**C**o **D**o**M**a:

L = 50
C = 100
D = 500
M = 1000

Please Excuse My Dear Aunt Sally.

This phrase can be used to remember the order of operations in algebra. It stands for:

Please = parentheses
Excuse = exponents
My = multiplication
Dear = division
Aunt = addition
Sally = subtraction

My Very Educated Mother Just Served Us Nachos

This phrase can be used to remember the planets of the Solar system in order starting with the one, which is closest to the Sun.

My = Mercury
Very = Venus
Educated = Earth
Mother = Mars
Just = Jupiter
Served = Saturn
Us = Uranus
Nachos = Neptune

6. Keyword Mnemonics

In the context of FL learning, this technique uses a similarity between the foreign word and a certain word which you are already familiar with. When trying to learn and recall this word, we need to:

1. Find a keyword we already know, which gives us a cue to think of the foreign word.
2. Imagine that keyword connected with the meaning of the new word.
3. When trying to recall the target word, use the same visualisation and association as in the previous step. This should help with the recall.

For instance, the Japanese word ***migi*** means "right" in English. The keyword, which *migi* reminds me (*me* as the author of this work) of is a supersonic interceptor aircraft **MiG-31**. Even more so, it also reminds me of another keyword, **Biggi** (as a name), who was a rescue helicopter pilot in the German series *Medicopter 117*. So, I imagine Bigi flying in the aircraft MiG-31 to the right sight of my field of vision in the sky.

7. Chunking Mnemonics

This mnemonic strategy is based on organising target information into smaller parts, which will be more easily learnt. This can be used both for words, or numbers.

For instance, German prepositions can be learnt in chunks.

- used with Dativ: **aus, bei, mit ----- nach, von, zu**
- used with Accusative: **durch, für, gegen ----- ohne, um**

Similarly, with numbers, mobile phone numbers can be memored more easily with chunking. For instance, number 00421915291491 can be divided into: **00421-915-291-491**.

8. Making Connections

This strategy can be used in various contexts – not only in FL learning.

Lazy Lucy

When trying to remember a name of a person we are being introduced to, we can try to remember it in connection to their characteristic. For instance, the new person is *Lucy* and we notice that her shoelaces are untied. We can imagine Lucy being too lazy to tie them, so we create the connection **"Lazy Lucy"**. However, do not use the helping word, when greeting the person.

Black

Also, when trying to remember colours in English, we can connect it with the fact that younger learners do not usually like the ***black*** colour. We can use this knowledge to help them to remember the pronunciation of this word /blæk/. When doing so, do not hesitate to exaggerate the pronunciation, so that it sounds as if you were feeling sick and wanted to vomit (because you do not like the colour ☺).

9. Spelling Mnemonics

Especially useful in TEFL are spelling mnemonics, which are used to remember a difficult spelling correctly. For instance:

*Never be**lie**ve a **lie**.*

*There's a **rat** in sepa**rat**e.*

***Because:** **B**ig **E**lephants **C**an **A**lways **U**nderstand **S**mall **E**lephants.*

10. Imagery Mnemonics

This technique uses images as memory clues. They can be real or imaginary and can be helpful with remembering meanings, sets of figures, lists of items, etc.

Vertical and horizontal

To remember the difference between these two directions, it is beneficial if we imagine the simple sketch of a bed, for instance like this:

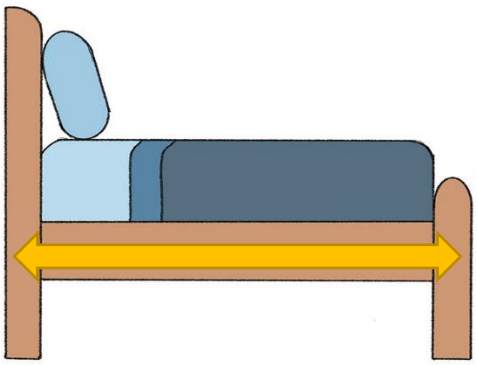


Figure 15. A bed to remember the word *horizontal*[21]

Now, can you see the letter "H" hidden in the figure? The middle part of this letter, or rather, the part of the bed, which we lie on and where the mattress is placed is the direction of the word *horizontal* (ADJ).

Similarly, for the word *vertical* (ADJ), we can imagine the letter "V" pointing upwards and downwards. It will look like a double arrow pointing in the direction of this word, like this:

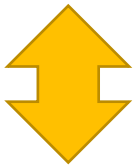


Figure 16. A double arrow to remember the word *horizontal*

[21] Source: https://howtodrawforkids.com/how-to-draw-a-bed/

Concave and convex

When trying to understand these words, we can imagine the following:

Concave (ADJ) means that a mirror or lens has an outline or surface, which curves inwards like the inner part of a circle. The word *con**cave*** contains a *cave*, so we can imagine the opening of a cave in the shape like this:

Figure 17. A cave opening to remember the word *concave*

Convex (ADJ) means that a mirror or lens has an outline or surface, which curves outwards like the outer part of a circle. Therefore, we imagine the remaining shape, which is:

Figure 18. A shape to remember the word *convex*

PIN codes

When trying to remember PIN codes, it is very helpful if we can imagine them. For instance, the combination of digits "2387". First, imagine the numeral keyboard of a computer or a mobile phone.

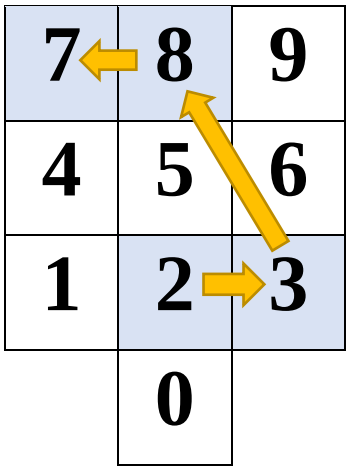


Figure 19. A numeral keyboard to remember digits

The numbers-to-be-remembered are highlighted in colour. It is helpful to imagine them in the correct order, one by one: 8 – 7 – 2 – 3. When trying to recall the correct combination of digits, just follow this order.

11. Location Mnemonics

This technique comes under several names, such as the "loci mnemonics", the "memory palace", the "journey technique", or the "mental walk strategy". This is the type of mnemonics, which is believed to be the oldest of all, invented by ancient Greek poet Simonides. It includes the following steps:

1. Learners **visualise a room or a path** inside or outside a building, which they are very familiar with.
2. Learners **mentally associate the target information or items** with specific places along the way.
3. When trying to recall the learnt information, the learners try to **re-visualise moving through that path and stop at each location**, which should trigger the pieces of target information.

This mental walk can be imagined in both **2D and 3D formats** and is especially beneficial for **remembering lists** of EFL vocabulary items, such as when packing a suitcase for a vacation. With each item, the learner can imagine its exact location in their flat/house and re-imagine this path when trying to recall the specific items.

12. Number Peg Mnemonics

Similarly, as in the previous type of mnemonics, this type includes memorising certain images, which are called *number pegs.* It requires memorising the following list, which will later help you to order the target information.

one = *gun*
two = *shoe*
three= *tree*
four = *door*
five = *hive*
six = *sticks*
seven = *heaven*
eight = *gate*
nine = *wine*
ten = *hen*

If there is a list of items to memorise (e.g., a list of things to pack for a vacation or a shopping list), you can associate each item with the item from the list presented above. In practice, if you need to memorise a shopping list, which includes *bananas*, *oil*, *rice*, *bread*, etc., you can make associations as follow:

Number one is *gun* – here, imagine a gun shooting at a bunch of bananas, which are the first item on the shopping list.

Number two is *shoe* – here, imagine how you are cleaning your shoes with cooking oil.

Number three is *tree* – here, imagine rice growing on a tree.

Number four is *door* – here, imagine that you are trying to stuff a loaf of bread into the small gap under a door and thus pressing it very flat.

Even though these images might seem silly, the human brain cannot ignore things that stand out. So, the silliest images, the better remembered.

Some learners, however, might find the added words (i.e. gun, shoe, tree, door, etc.) confusing. It might be beneficial for them to associate the items on the shopping list with the numbers only.

13. Model Mnemonics

This mnemonic technique uses models in addition to words and lists, which organise the target information into meaningful units or sequences and make the recall easier. Some of the instances are:

Pyramid Model

The pyramid model can be used when there are several items to be remembered in a certain hierarchy, as in the following example:

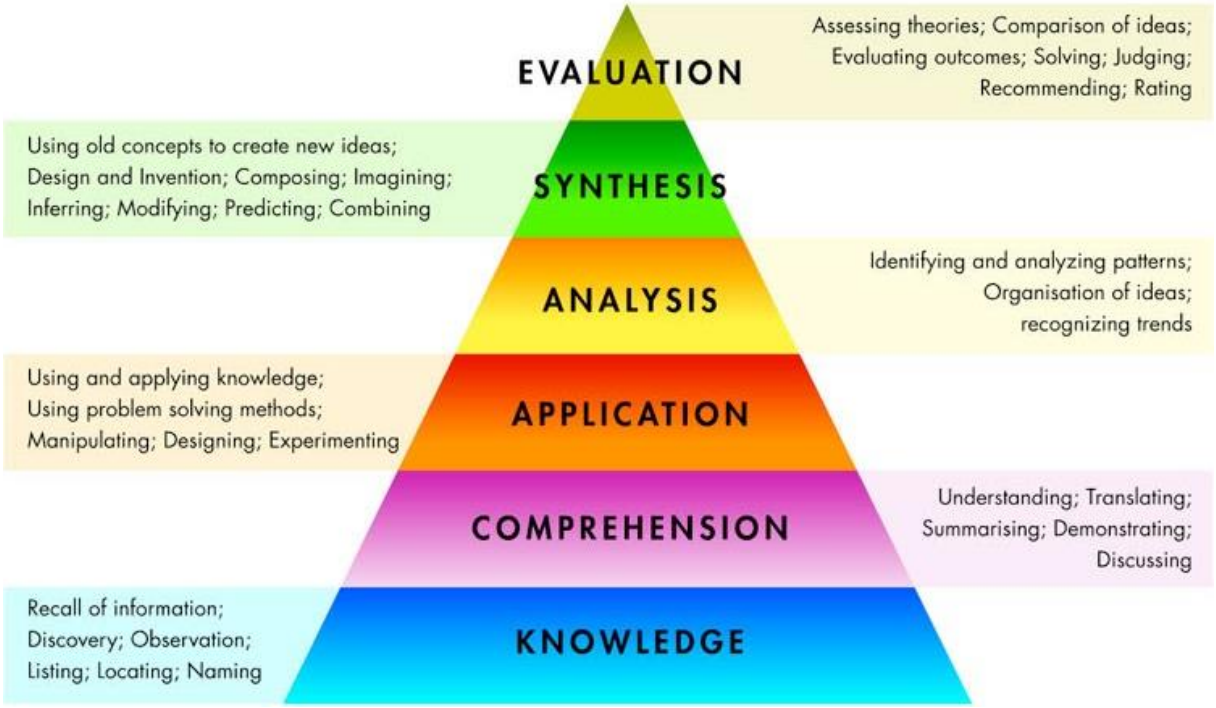


Figure 20. A pyramid model of Bloom's Taxonomy[22]

For the brain, it is easier to remember the pyramid and the items in the correct hierarchy than if they were listed in a line – like this: knowledge, comprehension, application, analysis, synthesis, evaluation.

Organisation Chart

[22] Source: https://sites.google.com/site/theamazingworldofteaching/topics-of-del-ii/bloom-s-taxonomy

Organising items-to-be-remembered in a systematic chart is another way how to help the brain with remembering and recalling. An example of an organisation chart is presented below, which can serve to better remember Piaget's theory of cognitive development stages:

Figure 21. An organisation chart of Piaget's theory of cognitive development[23]

[23] Source: https://sites.google.com/site/theamazingworldofteaching/topics-of-del-ii/bloom-s-taxonomy

Mind Maps

Another technique, how to organise the items-to-be-remembered in a memorable way is mind mapping. Simply, the learners create a map of the items in certain associations – for example, like this:

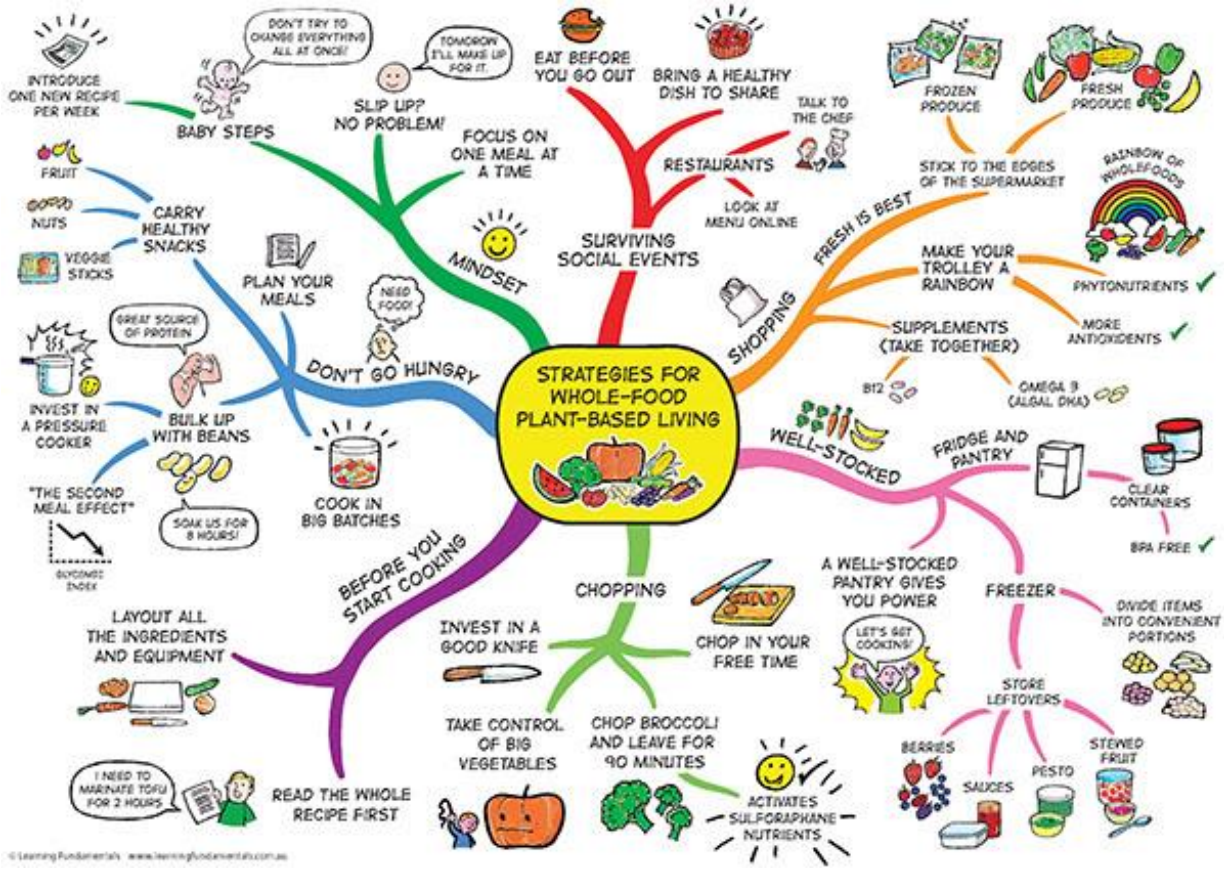


Figure 22. A mind map to remember specific items[24]

It is easier to mentally follow the target information in the form of individual branches of a mind map. Note that each branch is coloured in a different colour and includes both pictures and words – this is aimed to help remembering and recalling.

[24] Source: https://learningfundamentals.com.au/resources/

14. Story Mnemonics

This technique is also known as "chaining". Its main idea is that the learner develops a story, which connects the target pieces of information-to-be-remembered.

For instance, we can imagine that we need to bring the following list of items with us to school in the morning: ***keys, homework, gym clothes, wallet, lunch***. We can create the following story to help us remember the items:

*There was a little anarchy in my school bag. My **keys** decided to destroy my **homework**. The **gym clothes** only watched and never admitted that they also saw **my wallet** making love with **my lunch**.*

(Remember: The more absurd and funny the story, the easier it will be to remember. Often, when constructing these stories, learners might use taboo words or topics to help them with remembering. Therefore, it is better for teachers not to try to find the original stories behind the target information, which the learners constructed.)

Similarly, we can use this technique to link up the idioms and expressions connected to any topic – for instance to school and bullying, as in the following example:

*Betty was a bigger girl, who **attended a secondary school**. However, due to her plus size, she **was bullied by some of her classmates**. Because of this, she was not able **to pay attention** during the classes. Therefore, she started to **skip classes** and **play truant**. When the teacher announced she wanted to **examine students**, they were expected to **memorise several definitions**. However, Betty was not able **to learn them by heart** and decided **to cheat with cribsheets** instead. The teacher caught her and Betty **did not pass the exam**. She was afraid that she might **get expelled from school**. All she wanted, was **to apply for a university study** and **get a granted scholarship**.*

Storytelling

Storytelling or texts in a narrative format (both in written and spoken form) have the ability to **stimulate imagination**, a **sense of wonder**, and **inspire creativity** (Oaks, 1995). Several researchers confirmed the following effects of storytelling when compared to expository texts:

- **improved recall** – recall 2x higher than in the experimental (i.e. story) group than in the control (i.e. expository) groups in immediate post-tests and delayed post-tests (3 weeks later and 5 weeks later) (Berkowitz and Taylor, 1981; George and Schaer, 1986; Oaks, 1995; Kelly, 2016); recall 6-7x better in the story group (Bower and Clark, 1969); recall 2-7x better in the story group (Higbee, 1996)
- **twice as fast reading of narrative texts** – when compared to expository texts (Graesser, Hoffman, and Clark, 1980);
- **a strong correlation between narrativity and the amount of information recalled** = 0.92 (Graesser, Hoffman, and Clark, 1980);

To conclude, in the worst case, the story group participants remembered 2x more information than the participants in the control group, i.e. their retention was increased by 100%. This fact should not be forgotten, especially, when it comes to FL vocabulary learning.

Storytelling as an Ideal Format for the Brain

Both in its general understanding and in TEFL use, **storytelling is an ideal format** for all of the age groups of learners, which is natural to humankind (Hardy, 1968) – because we dream, remember, plan, revise, learn, etc. by narratives. It is easily understandable for the human brain because it:

- presents the information in **associations** and thus aids remembering and recall (Kelly, 2016);
- creates a **meaningful context**, which allows learners to understand the unknown language items (Georgopoulou and Griva, 2012);
- has the power **to arouse emotions** in learners by identifying with the characters and connecting with their learning (Kalantari and Hashemian, 2016);
- creates **heightened interest** (Cliatt and Shaw, 1988; Leonard, 1990; Hamilton, 1991; Nietzke, 1998; Yang, 2011), **higher engagement**, and more **positive attitudes** (Cliatt and Shaw, 1988; Leonard, 1990);
- adds **affective value** to learning (Egan, 1992);
- creates a **motivating environment** and makes **learning more enjoyable** (Ellis and Brewster, 2002);
- boosts the learners' **confidence** (Kalantari and Hashemian, 2016);
- creates **a safe and relaxing environment** for learners (Shin, 2006);
- **lowers** learners' **negative emotions** – especially **stress** and **anxiety** (Mixon and Temu, 2006);
- **teaches abstract concepts** in a more understandable way (Martinez, 2007);
- promotes **a natural, meaningful, and interactive context** for learners (Kalantari and Hashemian, 2016);
- encourages learners' **imagination and creativity** (Haliwell, 1992; Kalantari and Hashemian, 2016);
- brings **authentic language and conversation** (Richards, 2006);
- serves as a natural agent of **repetition** (Raines and Isbell, 1994);
- teaches about **different cultures and customs** (Garvie, 1990; Mello, 2001) – i.e. things that stand out;
- facilitates **active learning** (Haven, 2000).

Especially in FL learning, a study conducted by Mello (2001) that storytelling improved not only the research participants' recall, but also their **fluency**, **vocabulary acquisition**, and **writing skills –** along with their **self-awareness**, **visual imagery**, and **cultural knowledge**.

How to Tell Stories

When it comes to storytelling, we concluded the following principles, which should be followed in order to maximise its effects (Kamenická and Kráľová, 2021, pp. 62-66):

- **Stories should not be too long.** In order to use the maximal attention of learners, the story should not be longer than 5 minutes (Adair-Hauck and Donato, 2002).
- **Stories should be narrated, not read** (Adair-Hauck and Donato, 2002)**.** The narrator can hold the attention of learners with the power of body language and eye contact – and at the same time monitor how well they are following the story (Mixon and Temu, 2006). To add, stories are easier to remember if they are told and then read (Isbell, Sobol, Lindauer, and Lowrance, 2004).
- **The language used should be simple** (Kelly, 2016)**.**
- **Repetition, various sounds and gestures should be used to aid memory** (Isbell, Sobol, Lindauer, and Lowrance, 2004; Kelly, 2016)**.**
- **Visuals can be used to help narrate the story** (Adair-Hauck and Donato, 2002)**.**
- **Use of drama helps the listeners to visualise the action of the story** – this can be done by using sensory words, phrasing, long pauses, voice changes (e.g., speed, volume, pitch, and tone, etc.) (Kelly, 2016)**.**
- **The level of language used should be adapted to fit the audience** – i.e., if needed, give a short summary in the learners' mother language (Kelly, 2016)**.**
- **After initial telling, let the learners retell it** (Mixon and Temu, 2006).

Telling Stories for Pleasure

Stories in FL classes can be told not only for **educational purposes** but also for the **pure enjoyment** of learners. In the second case, the fact that they are able to understand the story can be very motivating and can boost their language egoes, too. Scrivener (2011) suggests that five steps should be followed when telling a story for pleasure:

1. **Prepare the story in advance** – think about moods, smells, looks, colours, events, and words and expressions included in the story.
2. **Prepare skeleton notes if needed** – a few are allowed, but not too many.
3. **Inform the learners about the fact that this story will be told for their pleasure and that there will be no comprehension tasks.** This will reduce tension in the class and often sighs of relief can be heard, and a change in learners' posture and relaxing of facial expressions can be noticed.
4. **Tell the story –** reading is not allowed.
5. **Allow free discussion and interpretation of the story** – this is not supposed to be a comprehension task, but rather a genuine reaction to the story.
6. **Go on to another activity.**

Types of Stories Suitable for TEFL

There is an unlimited number of stories, which can be used for the purposes of TEFL. As we concluded earlier, some of the types include the following (Kamenická and Kráľová, 2021, p. 67):

- **Personal stories.** They can be used as manuals of life and help learners "grow in areas they intuitively know are crucial" (Kelly, 2016, p. 85). Or, slightly dramatized small incidents from our own life can be used as well (Scrivener, 2011).
- **Stories that teach moral values.** They can be used to teach the learners to understand what is right and what is wrong (Kelly, 2016).
- **Local or national stories.** These stories ensure familiarity with background culture, which can reduce FL anxiety and stress (Mixon and Temu, 2006).
- **Fairy tales and legends, esp. the rare ones** (Scrivener, 2011) – for instance, Asian, Arab, or African tales.
- **Ghost and mystery stories** (Scrivener, 2011).
- **Single incidents from longer biographies and novels** (Scrivener, 2011).
- **Versions of stories from newspapers or magazines** (Scrivener, 2011).
- **Versions of stories from soap operas, films, or TV shows** (Scrivener, 2011).

As we concluded (Kamenická and Kráľová, 2021, p. 67) based on Kelly's (2016) recommendations, it is convenient to use the following types of stories with regard to **age groups of FL learners**:

- **For teenagers and young learners:** stories about love (romantic or platonic), devotion to friends, power, seeing the world differently, conflicts, stories which reveal internal strengths of their characters, stories about understanding, kindness, and helping.
- **For adult learners:** stories about marital relationships, perseverance, tolerance, and social change.
- **For working people:** stories about the challenges of business leaders and how they overcame them.

2.5 Intervals for Learning

To create a brain-friendly environment for any learner, each teacher should be aware of the right intervals for learning, especially with regard to the **attention curve**, as presented below.

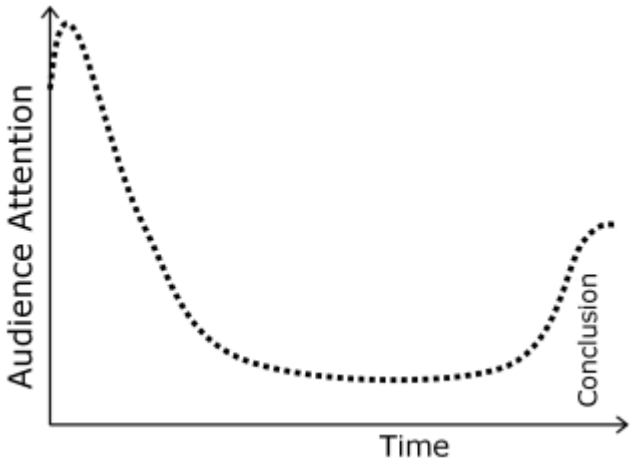


Figure 23. Typical attention curve applicable to any audience[25]

From the figure, it is obvious that the attention of learners is at its highest at the beginning of a lesson/lecture/talk, etc. Over time, the attention rapidly decreases and there is only a slight increase at the end of the lesson/lecture/talk, etc. However, if the brain is not present and is preoccupied by other thoughts or under time pressure, it is impossible to achieve the desired effect.

Of course, the attention span of learners differs – especially when it comes to various age groups of learners. Young learners can be attentive for very short periods – when compared to teenage or adult learners. Nevertheless, teachers should be aware of this fact and **alter the activities**, **forms of work**, etc., accordingly.

Therefore, in the context of education, including TEFL, it is efficient to **repeat short learning intervals** and use the time, when the attention of learners is at its highest. More specifically, learning a great amount of information in one single block is ineffective for the brain and it is advised to rather distribute the learning over a longer period of time. This learning strategy is known as the **principle of distributed practice**. The main idea of this strategy is to break up the practice into a number of short sessions over a longer time period – and can be applied both short-term and long-term.

In the practice of TEFL, especially when it comes to vocabulary teaching, teachers might tend to provide learners with long lists of vocabulary items (e.g. 30 items) in one lesson and expect them to know them by the time of the following lesson. The truth is that the brain does not work like that. As we mentioned earlier, **the brain does not work in lists, but in associations**. Therefore, it is very important to teach vocabulary items in real contexts, so that we create opportunities for the brain to create the much-needed associations. Moreover,

[25] Source: https://www.scientificleaders.com/presentations/

expecting that learners will be able to learn 30 items in a 45-minute lesson is unrealistic – regardless of the age group. Rather, it is better if the items are divided into smaller chunks and learnt over several sequences.

Even though teachers might not put much importance on reviewing in their class (often because of limited time possibilities), it is essential to emphasise that the content taught/learnt from the previous lesson should be **reviewed** in the next lesson, **to reinforce the newly created neural connections** in the brain – which is **crucial for the brain**.

Even more broadly, the brain needs **a systematic approach**, when it is allowed **breaks between the learning sessions** and **sufficient practice**. Unfortunately, the school systems are often goal-oriented and teach learners to study for the exam, not for real life and long-lasting knowledge.

Not to mention the fact that the exam-oriented approach creates ideal conditions for **procrastination**[26] and thus for **time pressure**. Learners experience time pressure when they worry about not having enough time for their studying. In some cases, they might experience stimulating **eustress**[27], which forces them to work even more effectively. However, more often, the learners feel very intense **distress**[28] – which makes them feel unhappy, trapped, hopeless, and even paralysed – because of earlier procrastination.

Finally yet importantly, when it comes to the appropriate intervals for learning, the importance of **regular breaks** should be emphasised. This applies not only to **individual study** but also to regular breaks **at school**. Often, teachers do not respect or realise how important the breaks are and continue with the lesson during the breaktime – depriving the learners (and themselves) of the time needed for healthy psychohygiene.

[26] For more information about procrastination and how to fight it, we recommend *Konec prokrastinace*, a book written by P. Ludwig (2013), which is included in the *Recommended Literature* section of this publication.
[27] We will discuss eustress in more detail in one of the following chapters.
[28] We will discuss disstress in more detail in one of the following chapters.

2.6 Repetition and Practice

With regard to brain-based learning, it is essential to pay attention to the important role of **repetition** of the content-to-be-learnt. Scrivener (2011) recommends using a so called ***PPP approach*** (presentation-practice-production) **–** where the new FL item is **presented** first, followed by **practice**, and just then the learners **produce** the language. The *practice* part is definitely intertwined with the repetition of the content-to-be-learnt. The PPP approach is originally associated with teaching **grammar**, but it can be easily applied to other systems in any FL, including **vocabulary** and **pronunciation**.

According to Jensen (2008), the optimal number of repetitions to successfully remember certain information differs from a person to person – yet, the number can vary from **1 to 20 repetitions**. In the context of TEFL, Gondová (2012) suggests that **8 to 25 varied exposures** are needed to remember a certain vocabulary item.

When it comes to repetitions, there are various ways how to do them – for instance, **choral repetitions in class**, **written repetitions in exercises done in class or as homework**, etc. However, especially with more difficult concepts/pieces of information, it is beneficial to use even more sophisticated and effective ways – i.e. the **mnemonics**. In fact, they act as natural agents of repetition, especially storytelling (Raines and Isbell, 1994).

Furthermore, to ensure successful language acquisition, **feedback** is essential for the learner, so that they know if they are approaching a certain content correctly and if not, what they need to improve or change. The feedback can be provided by:

- **the teacher** – the most reliable type; however, it is not good if learners rely on teachers only, because in real life, there will not be a teacher nearby every time;
- **the learners themselves** – it is not always reliable; yet, it teaches the learners to build a healthy self-confidence;
- **the classmates** – it is not always reliable; yet, it is very beneficial to see through the peers' eyes and get various opinions and viewpoints.

2.7 Forms of Work

For many learners, the form of work can be crucial, when it comes to successful language acquisition. Undisputably, their preferences are influenced by their personality and learning styles. To ensure effective education, each teacher needs to create suitable learning and working environment. On one hand, it is very important to let the learners experience **independence** in the co-creation of the environment. On the other hand, they need to feel **responsibility** for the creation of the environment. In addition, the teachers, especially FL teachers, should aim for **active learning** of each learner – to ensure successful FL acquisition. This can be achieved through various forms of work, including the three basic forms:

- **individual work,**
- **pair work,**
- **teamwork.**

Individual Work

Individual work requires an extra portion of both independence and responsibility from each individual learner in the class. Everyone is responsible for their own actions and therefore, for the outcomes of their activities. There are several facts, which teachers should count with if they decide to use this form of work. Some learners might argue that this form of work is too demanding and might be unable to complete the tasks successfully. Others might find the extra responsibility on their shoulders invigorating. Extroverted learners might find it too boring. However, there will also be introverted learners in the group, who will especially thrive under these conditions.

Table 7. Individual work – advantages and disadvantages

INDIVIDUAL WORK	
ADVANTAGES	**DISADVANTAGES**
• the extra responsibility can be invigorating • the introverted learners will thrive	• too demanding for some learners – they might not be able to complete the tasks successfully • too boring for extroverted learners

Pair Work

Pair work divides the **responsibility between two learners** and thus requires **less independence**. Many learners might find this form of work very **helpful**, especially with **longer and more complex tasks**.

On the other hand, problems might occur when it comes to the level of skills of the two partners in the group. It has been a widely used practice for teachers to **pair a stronger with a weaker learner** – believing that the stronger one will help the weaker one. It might work efficiently in some cases – teaching learners the principles of teamwork. However, in other cases, the stronger learner might simply decide to complete the task individually and let the weaker classmate watch passively or complete the task on their own. Alternatively, the stronger learner might feel hindered by the weaker classmate, or, the weaker classmate might feel rushed by the stronger partner and will get lost as a result. Although the teachers might wrongly assume so, we would like to emphasise that **the stronger learner** in the pair **does not guarantee the successful knowledge acquisition of the weaker learner**. It is not the stronger learners' obligation nor responsibility. The stronger learner will not miraculously transmit their knowledge onto their classmate. **Every learner is responsible for their own learning.** The first step to success is wanting to learn and actively participate in learning. After all, it is their brain, which needs to create the new neural pathways, not their classmate's.

Another interesting combination of learners in a pair, which is not often used by teachers, can be the combination of two strong learners or two weaker ones. The **two strong learners in a pair** can especially benefit from this combination and surprise the teacher and the whole class with especially smart solutions for the given tasks. In other cases, they might be competitive, consider their colleague as a rival, and thus resort to individual work instead. The **two weaker learners in a pair** can surprise, as they will be forced to try harder since there will not be a stronger learner to rely on. In other cases, however, they might not be able to complete the given task due to their lack of knowledge.

Table 8. Pair work – advantages and disadvantages

PAIR WORK	
ADVANTAGES	**DISADVANTAGES**
• helpful in more complex tasks • divided amount of responsibility • two strong learners in a pair can come up with very smart solutions • two weaker learners might try harder when there is no stronger learner to rely on	• learners might not be willing to cooperate and will work individually • the stronger learner in the pair might feel hindered • the weaker learner in the pair might feel rushed and will get lost • two strong learners might see each other as rivals • two weaker learners might not be able to complete the given task due to their lack of knowledge

Teamwork

Teamwork is very helpful in more complex tasks, as it divides **responsibility between several people**, does not require so much independence and thus might be tempting for certain learners to simply **let others do all the work** – which is its main disadvantage. We should aim for **active learning of each learner**. Therefore, a solution to this problem could be finding an optimal number of learners for each team/group. Often, teachers split a class into halves – for instance, there are 12 people in a group, but only 4 are working and the rest is watching. Obviously, the number will differ from class to class, for instance, for EFL classes group discussions, 3-5 learners in a group should be enough. When deciding on the grouping of learners in each team, the FL teachers should consider **including both stronger and weaker learners** in a group. Also, it is important to consider, if we want **separate groups of males and females** or **mixed groups**. Especially with the first type, the learners might get quite competitive. The second type creates an interesting and healthy dynamic, as in real life, the learners will most probably work in mixed teams.

On the other hand, teamwork brings a high number of advantages – including the fact that learners learn how to be reliable, how to do effective planning, how to make decisions, how to communicate effectively, how to be persuasive, how to solve problems, how to resolve conflicts, to listen to others' opinions, and how to be tolerant towards others' opinions, with which they do not agree.

To ensure the active learning of each learner, teamwork can be used for various tasks, including:

- **working on projects** (including presentations) – here, it is extremely important for each teacher to explain the importance of balanced teamwork to the learners – i.e. a reasonable work division;
- **games** – all learners love them, regardless of their age; they create a relaxing environment, reduce their anxiety and emotionally engage them – because when playing, even the serious language tasks look like nothing serious is going on;
- **competitions** – they can especially aid teamwork; however, in each group, there will be more competitive learners and that might cause trouble in between the competing teams or within a team itself; therefore, the healthy management of each competition is especially important.

Table 9. Teamwork – advantages and disadvantages

TEAMWORK	
ADVANTAGES	**DISADVANTAGES**
• helpful in more complex tasks • divided amount of responsibility • mixed sex groups create an interesting and healthy dynamic, as it prepares learners for real-life working conditions • teaches learners to be reliable • teaches how to plan effectively • teaches decision-making • teaches effective communication • teaches how to be persuasive • teaches problem-solving • teaches how to resolve conflicts • teaches to listen to others' opinions • teaches the learners how to be tolerant towards opinions they do not agree with • emotional engagement, esp. when playing games	• tempting for certain learners to let others do all the work • too high level of competitiveness both between the teams or within one team

There is a popular aphorism, which says that ***happiness shared is doubled and sadness shared is halved***. With regard to teamwork, interestingly, the recent research findings support this truth and suggest that with regard to the emotions experienced, EFL learners enjoyed teamwork activities more than individual activities (Kráľová, Kamenická, and Tirpáková, 2021).

As we can see in the tables presented above, there is a high number of both advantages and disadvantages with regard to each form of work. Hence, it can be concluded that **no form of work should be considered as *the correct one***. Our advice for teachers is to alter the forms of work in the class often. It can be beneficial to discuss and agree on the form of work which the learners prefer. Our advice for learners is to choose the form of work they prefer, any time they have the opportunity to choose – e.g. when the teacher asks them or when they are working on their homework or studying in their after-school time.

TEFL is not an exact science like mathematics or physics. Rather, TEFL is based on the work with **human beings** – with both teachers and learners – who **differ in many ways** (as discussed in the previous chapters). Therefore, there are no granted generalisable rules, which will work and can be applied to every single individual in the group. Even if there are certain rules, the exceptions prove the rules and it is twice so true in the context of TEFL.

2.8 Emotionally safe environment

Creating an emotionally safe environment for their learners is another aspect, which helps the brain to function properly and successfully in knowledge acquisition. Creating such an environment for each learner is a very complex task, which **relies mainly on the teacher**, but also on **other learners** in the group – especially when it comes to TEFL. The unwillingness of learners to participate in tasks, especially the speaking tasks, might be caused by the fact that they do not feel emotionally safe in the class (e.g., are afraid of being mocked, devaluated, etc.). **The key factors needed for the creation of an emotionally safe environment** include the following (Dörnyei and Csizér, 1998; Arnold, 1999; Dörnyei and Murphy, 2003; Williams et al., 2004; Borg, 2006; Gregersen and MacIntyre, 2014; Baider, Cislaru, and Coffey, 2015; Dewaele, 2015):

- **enjoyable process of learning** – the process of new knowledge acquisition should be associated with positive emotions rather than negative ones; the teachers should aim for their learners to enjoy the process of learning and discovering;
- **reasonable classroom management –** spending the whole class giving a monologue about a new piece of grammar and leaving the last 5 minutes of the class for practice, or even worse, using the following break between the classes for practising what should have been practised *in* the class, does not add to an emotionally safe environment;
- **healthy classroom climate –** it is essential to rule out any signs of fear, threats, mockery, devaluation, etc. – produced either by the teacher or other classmates; group solidarity should be promoted by teachers – as respect, understanding, consideration, acceptance, and tolerance will make the environment more humane and emotionally safe;
- **choice of suitable techniques –** for all the stages of TEFL, suitable and non-threatening techniques should be used – including presentation, practice, production of language, as well as assessment and evaluation.

Inevitably, it is impossible to rule out stress in its various forms (including eustress and distress), the feelings of responsibility and feelings connected to the anticipation of a future exam. These feelings are an unavoidable part of education, however, ensuring an emotionally safe environment will make even these inevitable aspects of education more bearable.

3 EMOTIONS:
The Key Aspect of Brain-Based Learning

3.1 Definitions

Emotions are "the primary human motive" (MacIntyre, 2002, p. 61). They play a key role, when it comes to **motivation**, **learning**, **remembering** – and thus the formation of **neural pathways**. However, there is no unified definition of emotions. MacIntyre and Gregersen (2012a) define **emotions** as **feelings** and **feelings** as **emotional states**.

Goleman (1997) defines emotions as **feelings accompanied by thoughts, mental and physical states, as well as motives for certain actions**. He adds that emotions are created in the **limbic system** of the brain. Several authors agree that the human brain is an emotional brain (LeDoux, 1998; Lewis, Haviland-Jones, and Barrett, 2008; Johnson, 2014).

According to Reeve (2008), emotions consist of **four components**:

- **feeling component** – reflects the subjective experience that we consider as an emotion,
- **arousal component** – reflects physical responses that accompany emotions (e.g. heart rate, blood pressure, breathing, etc.),
- **purposive component** – reflects the fact that each emotion exists for a reason and has a certain purpose,
- **expressive component** – reflects social and communicative dimensions of emotions – they express what is happening in the body to the outside world.

Reeve (ibid.) emphasises that we should not understand emotions just as a sum of these components – as emotions emerge from their coordination.

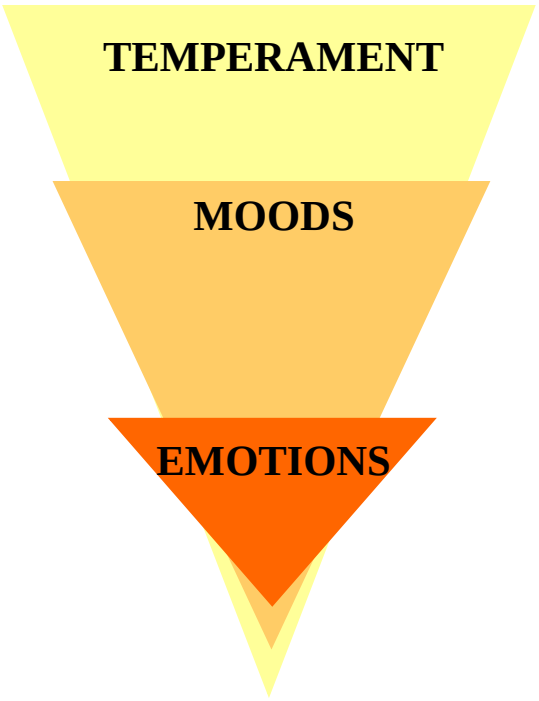
Calvo and Mello (2010) tried to conclude the basic directions in theories of emotions. According to them:

- **physiological theories** – suggest that the human body's responses are responsible for emotions,
- **neurological theories** – suggest that the activity in the brain leads to the construction of emotions,
- **cognitive theories** – suggest that thoughts and other mental activity lead to the construction of emotions.

According to MacIntyre and Vincze (2017, p. 63), emotions are **"reactions to the outside world"**. According to them, emotions have both physical and psychological dimensions – which is in line with Goleman's (1997) notion of emotions presented above.

However, Barrett (2017) proposes that **emotions are predictions formed in our minds**. She argues that the human brain predicts and constructs the experience of the world – based on our experiences from the past. She emphasises that the actions and the experiences we make today will become our brain's predictions for the future – and that can be also applied to emotions.

Regardless of whether emotions are reactions to the outside world, or indeed the predictions formed in our mind, there are three concepts, which are important to distinguish from one another: **emotions, moods, and temperament**. MacIntyre and Gregersen (2012b) explain that:



TEMPERAMENT:

- stands above moods and emotions
- is a personality-level construct
- is a person's stable tendency to experience moods and emotions

MOODS:

- are more diffuse experiences than emotions
- last longer than emotions
- do not carry the potential for specific actions
- always operate in the background of our consciousness

EMOTIONS:

- are short-lived reactions to events of personal significance
- carry the potential for specific actions
- always stand in in the foreground of our consciousness

Figure 24. Temperament, moods, and emotions

To conclude, although the definitions of emotions differ, they can be considered as a **basis of our every action**, including **thinking** (Maturana and Bloch, 1998). Damasio (1998, 2000) adds that emotions are fundamental components of our **reasoning**.

3.2 Classifications

Even though emotions accompany us every day and we cannot hide from them – as they happen in our inside, their role in the FL learning context has been underestimated (MacIntyre, Baker, Clément, and Donovan, 2003; Dewaele, 2005a, 2011, 2013; Arnold, 2011). **Emotions play a key role in motivation** (Reeve, 2013), however, researchers in the field of FL learning have started to research them in this context only relatively recently (Dewaele, Witney, Saito, and Dewaele, 2018; Saito, Dewaele, Abe, and In'nami, 2018; Kanazawa, 2021; Kráľová, Kamenická, and Tirpáková, 2021). In the following lines, we will present the basic classifications of emotions, which will be followed by phenomena that are often associated with or considered as emotions.

Positive and Negative Emotions

Experiencing emotions, both positive and negative, is conditioned by many factors and biochemical processes. These can either **hinder or facilitate the creation of synaptic connections** and thus the cognitive processes as such and the storage of information in long-term memory.

While the focus of **general psychology** has mostly been on negative aspects of human lives (including mental illnesses and disorders, abnormalities, reducing pain, and coping with negative experiences), a new branch of **positive psychology** emerged in the 1990s focusing on positive emotions (including tools to create them, engagement and appreciation of meaning in life and its activities) (MacIntyre and Mercer, 2014). As a result, also in the context of **TEFL**, the attention of researchers has:

- **moved away from the focus on negative emotions** (esp. foreign language anxiety), which has been present in this context since the 1970s (Dewaele and MacIntyre, 2014, 2016; Kráľová, 2016; Gkonou, Daubney, and Dewaele, 2017; Kráľová and Kamenická, 2019),
- **towards positive emotions** (esp. foreign language enjoyment) (Dewaele and MacIntyre, 2014, 2016; Dewaele, MacIntyre, Boudreau, and Dewaele, 2016; Dewaele, Witney, Saito, and Dewaele, 2018; Kamenická and Kráľová, 2021; Kráľová, Kamenická, and Tirpáková, 2021).

Despite the fact that there is no unified opinion on and/or clear definition of what emotions are, there is a plethora of classifications of emotions. For the purpose of this work, we chose the **classification of emotions** based on Fredrickson's (2013) *Differential Emotions Scale*. On this scale, she chose 10 representative **positive** and 10 representative **negative** emotions. They are listed in the following table:

Table 10. Classification of emotions (Fredrickson, 2013)

EMOTIONS	
POSITIVE	**NEGATIVE**
joy	anger
gratitude	shame
serenity	contempt
interest	disgust
hope	embarrassment
pride	guilt
amusement	hate
inspiration	sadness
awe	feeling scared
love	stress

As mentioned above, **emotions play a key role in motivation** (Reeve, 2013). This includes both positive and negative emotions. The research conducted by MacIntyre and Vincze (2017) suggests that:

- **motivation-related constructs** – including the image of **future ideal-self** and positive **contact** between language groups, more strongly and consistently **correlate with positive rather than negative emotions**;
- there are only two negative emotions, which have a motivating factor, **anger** and **hate** – due to their intensity;
- **the strongest emotions**, which affect motivation, are **amusement** and **anger**;
- **feeling peaceful** (i.e. serene and content) creates conditions for **better competence**, **confidence**, and **lower FL anxiety**.

To add, the research dealing with **positive emotions** suggests that they:

- **contribute to recovery from cardiovascular issues**, which are related to negative emotions (Fredrickson and Levenson, 1998);
- **support emotional well-being** (Fredrickson and Joiner, 2002);
- **widen the scope of attention** (Fredrickson and Branigan, 2005);
- **support resilience** (Fredrickson, Tugade, Waugh, and Larkin, 2003; Fredrickson, Waugh, and Tugade, 2008);
- **support remembering and recall of information** (Kanazawa, 2021; Kráľová, Kamenická, and Tirpáková, 2021; Kráľová, Kamenická, and Tirpáková, 2022);
- **help with the understanding various FL contexts** (Kamenická and Kováčiková, 2019);
- **increase motivation** (Kelly, 2016; Kamenická and Kováčiková, 2019; Kráľová, Kamenická, and Tirpáková, 2021);

- **support creativity** (Kráľová, Kamenická, and Tirpáková, 2021);
- **support perserverance** (Kelly, 2016);
- **increase learners' self-confidence** (Kelly, 2016);
- **support learners' active participation in classes** (Kelly, 2016; Kamenická and Kováčiková, 2019; Kráľová, Kamenická, and Tirpáková, 2021);
- **increase learners' satisfaction with learning** (Kelly, 2016; Kamenická and Kováčiková, 2019; Kráľová, Kamenická, and Tirpáková, 2021).

On the other hand, it has been suggested that **negative emotions** (esp. anxiety in FL learning context):

- **impair cognition and achievement** (Gardner, Tremblay, and Masgoret, 1997; Horwitz, 2001, 2007; MacIntyre, 2002),
- **impair the ability to create associations and recall information** (Arnold, 1999; Gkonou, Daubney, and Dewaele, 2017),
- **lead to negative attitudes towards the language** (Dewaele, 2005b),
- **result in decisions to drop learning of the language** (Dewaele and Thirtle, 2009),
- **decrease willingness to communicate** (MacIntyre, Baker, Clément, and Donovan, 2003),
- **decrease self-confidence, lower personal agency and control** (Horwitz and Young, 1991; Horwitz, 2007).

Nonetheless, we should not look at positive and negative emotions as black-and-white. Research suggests that **language anxiety** can be **helpful and stimulating** in certain situations (Marcos-Llinas and Juan Garau, 2009). Also, there is evidence that emotions have various shades – as **anxiety** can be negatively expressed as **angst**, but can be expressed also positively as **excitement** and **anticipation** – and thus **improve performance** (Scovel 1978, 1991; Kráľová and Kamenická, 2019).

First Order Emotions and Complex Emotion Schemas

Izard (2011) presents a more complex view of emotions and distinguishes between **first-order emotions** and more **complex emotion schemas**.

The **first-order emotions** are triggered automatically in response to stimuli from the environment. They require minimal cognitive processes and spark a rapid and sometimes automatic action. They often occur without our awareness – especially when it comes to children. They include (Izard, 2011):

- **interest,**
- **enjoyment/happiness/contentment,**
- **sadness,**
- **anger,**
- **disgust,**
- **fear,**
- **contempt.**

The more **complex emotion schemas** comprise the **interaction between emotions and higher-order cognitive processes** (which include thoughts, strategies, and goals). These can be **combinations of emotions** (simple or more complex) **mixed with cognitive and self-regulation elements**.

3.3 Phenomena associated with emotions

Flow

Flow is **a state of complete immersion into an action** when we even forget hunger, discomfort, fatigue, and we do not show interest in other actions until we finish our work (Csikszentmihalyi, 2008). We would like to emphasise that flow is **an active state** (it is not a passive or a relaxing state), which is considered as **an optimal experience** (Csikszentmihalyi, 2008) or as a **mature form of happiness** (MacIntyre and Gregersen, 2012b). It occurs when our **mind and body are stretched to our limits** in a quest to **achieve or complete something difficult and worthwhile** (Csikszentmihalyi, 2008).

When we experience flow, the following phenomena accompany this experience (Csikszentmihalyi, 1998, 2008, 2013; Csikszentmihalyi and Csikszentmihalyi, 2006):

- **complete engagement**,
- **merging of action and awareness without distraction**,
- **intrinsic motivation** (or the desire to do the task because it is enjoyable),
- **balance between challenge and skill** (that occurs when the task difficulty is appropriate),
- **heightened control** (that is characterised by the feeling of security and lack of fear of failure),
- **effortlessness**,
- **lack of self-consciousness**,
- **altered perception of time** (that is characterised by slowing down or speeding up).

Flow occurs when someone's **skill level and the challenge of a task are in balance**. When this balance is disturbed, a lack of flow appears, and as a result, it is possible that one of the following **negative emotional states** will occur as well (Nakamura and Csikszentmihalyi, 2005):

- **anxiety** (when challenge is higher than skill level),
- **boredom** (when challenge is lower than skill level),
- **apathy** (when both challenge and skill levels are low).

It has been suggested (Peterson, 2006) that in the moment of experiencing, the flow is itself **non-conscious** and thus **non-emotional** – however, its **aftermath is invigorating**. In other words, the feeling of joy is not immediately present when we are experiencing flow and are immersed in an activity – but the feelings of pleasure, joy, and excitement are produced afterwards. On the other hand, Csikszentmihalyi (2008) and MacIntyre and Gregersen (2012b) argue that we **do experience happiness when in the state of the flow**. They argue that we can

all be experiencing a form of happiness even though we might not seem happy at that moment – as in the following examples:

- a mathematician, who is trying to solve a difficult equation;
- a composer, who is working on a new melody;
- a scholar, who is dealing with research data;
- a runner, who is exhausted and approaching the finish line.

Stress

Everyone is well familiar with stress. No one can avoid it – whether they are pupils, students, working adults, etc. Stress accompanies us throughout our lives – regardless of age and social status. However, the difference is how individuals react to stress and that significantly impacts their overall well-being. *World Health Organization* (2021) defines stress as:

- "**any type of change that causes physical, emotional or psychological strain**"
- and also that "**stress is your body's response to anything that requires attention or action**".

So, if stress prompts us to action, it can be considered an **emotion**. Also, Fredrickson (2013) considers stress as **one of the 10 representative negative emotions** in her *Differential Emotions Scale*.

And, if stress is an emotion, the following elements of the definition of emotions by MacIntyre and Gregersen (2012b) should be applicable. According to this definition, emotions:

- **carry the potential for specific actions** – which is true for stress, but stress can also lead to **paralysis**;
- **always stand in in the foreground of our consciousness** – which is true for stress;
- **are short-lived reactions** to events of personal significance – however, stress can have a shorter, but also a **longer or a very long duration** (e.g. chronic stress).

The issue of stress is rather complex – both for individuals experiencing it as well as for researchers. Especially due to the fact that there are several types of stress and several biological, psychological, and environmental factors which affect it.

Distress

When speaking about emotions, undoubtedly, it is also **distress**, **the negative form of stress**, which significantly affects learning. According to Jensen (2008), stress is the human body's **reaction to perceptions, not to reality**.

Distress mostly **arises when we:**

- **feel threatened (physically or emotionally),**
- **are intimidated,**
- **face difficulties,**
- **are afraid of losing prestige,**
- **are afraid of being ridiculed,**
- **feel fear of rejection,**
- **are afraid of failure,**
- **are under unrealistic time pressure,**
- **feel cornered.**

Jensen (2008) concludes that distress (along with anxiety) emerges from the following **situations**:

- **when we are confronted with a problem, which we do not want to solve;**
- **when we cannot see or find solutions to a problem;**
- **when we lack resources to solve the problem;**
- **when we feel that the levels of risk we have to take are unacceptable;**
- **when we have little or no control over a situation;**
- **when we experience repeated situations of intense long-lasting stress.**

Petlák (2009) adds that the **brain reacts** to the threat we perceive in the following ways:

- it loses the **ability to interpret the signals** from the surrounding environment appropriately;
- it switches over to its **well-known and proven behaviours**;
- its ability to **sort, store, and access information** becomes limited;
- its reactions become more **automatic and limited**;
- its ability to **perceive relationships and patterns** becomes limited;
- its ability to use **higher-order cognitive processes** (i.e. analysis, evaluation, and synthesis – including critical thinking and problem solving) becomes **limited**;
- it loses the ability to store the information **in long-term memory**;
- it tends to **dramatise stimuli in a phobic manner**.

Simply put, when we feel under pressure or threatened, **our brain switches its functioning to a survival mode driven by autopilot**. When in survival mode, the conditions for ideal (i.e. brain-based or brain-friendly) learning and remembering are not created. The distress **negatively affects the functioning of memory and attention** – as it hinders the creation of **memory traces** and impairs the ability to **recall** the information and **its use in relevant contexts** (Lojová, 2021). Several researchers agree that excessive stress levels can **hinder** or

even completely **block** the functioning of **cognitive processes** (McEwen, 2007; Lupien et al., 2009; Škoda and Doulík, 2011; al'Absi and Flaten, 2016; Murison, 2016).

To add, the **chronical form of distress** results in learners being more **susceptible to diseases**. A study from 1998 (Johnson-Brooks et al., 1998) revealed that the exams at school depressed the immune system of research participants reducing the level of antibodies in their bodies and thus their susceptibility to illnesses. As a result, the learners can get caught in the vicious **"3L" cycle** of ***low* ability, *low* confidence, and *low* motivation** (Kelly, 2013). Simply put, exam distress might lead to learners being more often ill, miss classes, which will eventually lead to lower test scores and the cycle of failure is repeated. To add, when we feel threatened, the **limbic system of the brain "shuts off"** – this happens often when someone is in fear of being bullied by their classmates, of getting a bad grade, of a future exam, etc. (Petlák, 2009).

It would be incorrect to perceive or understand stress as a static phenomenon. In fact, **stress is very dynamic**. It is triggered by various stimuli and has various levels – which affect learning and memory differently. According to Shors (2004), a **very low level of stress** leads to boredom thus hindering remembering. On the other hand, **moderate levels of stress** improve remembering – especially **eustress**. However, **extreme level of stress** significantly **impairs remembering** – as the memory becomes very selective or significantly worsened.

In the school environment, teachers might not always be aware of how easily they can trigger distress in their learners (Petlák, 2009):

1. Obviously, the learners will be stressed from an upcoming **exam** – but it is not only the **exam itself** but also **the fear of the exam** that stresses them.
2. Also, the **responsibility** and knowledge that a certain **exam will decide their final mark** can cause very strong distress in learners.
3. A very often used **discouraging sentence** such as "*The content of today's curriculum is very difficult to understand and will be crucial for your final evaluation*." does definitely not add to the learners' mental comfort. Especially at Slovak secondary schools, the teachers often inform the learners at the beginning of their studies, that "*All the fun had ended at the primary school and now is time for the hard work.*", which is very discouraging, too.

It is especially important to understand that all these situations can lead to worsened cognition because when the brain feels under pressure, it switches to its **survival mode**. Especially when feeling **threatened and stressed**, a higher amount of **cortisol** is present in the body, which can limit some of the functions in the brain. Obviously, it is not possible to reduce all the stressful factors, but we suggest **using positive motivation instead of motivation by fear**. Learning, especially FL learning, *can* be fun at any level of education.

However, it should be emphasised that stress hormones (i.e. cortisol, adrenaline) together with hormones of happiness (e.g., oxytocin) are of great importance when it comes to **happiness control** (Dfarhud, Malmir, and Khanahmadi, 2014). To add, when we experience stressful events, both types of hormones were found in the human body (i.e. dopamine, oxytocin, and cortisol) (Kelly, 2013).

In conclusion, if we create an **emotionally safe environment** with a relaxed atmosphere for learners – when they know that they are free to **express themselves without being judged or ridiculed**, where **they will not feel threatened**, many learners might surprise by a positive change of their attitude towards learning and thus also with their study results (Kelly, 2013; Kamenická and Kováčiková, 2019). Not only that, but also their cognition and problem-solving skills can be improved and there will be fewer problems with their behaviour (Petlák, 2009).

Eustress

Usually, everyone tends to avoid stressful situations. However, as mentioned above, a proper 'amount' of pressure can be beneficial – it can have a facilitating effect as it can aid our awakeness, focus, receptivity, awareness, and motivation. On the contrary, too low stress levels, which occur in emotionally poor situations (such as in situations of boredom or in a less stimulating environment), can worsen memory functions (Lojová, 2021).

This 'healthy' amount of stress, or rather a **positive form of stress**, is called **eustress**. This good stress is not acute or chronic and arises when **we feel slightly threatened** but at the same time believe that **we can handle the situation** (Jensen, 2008). Also, when under eustress, the body releases stress hormones (i.e. cortisol, adrenaline, and noradrenaline), which increase our perception, our motivation and strengthen our bodies (ibid.). As a result, learning is improved. According to Jensen (2008), **eustress arises when we:**

- **actively want to solve** the problem,
- have the **ability** to solve the problem,
- feel that we have **control over the situation**,
- **rest enough** between challenges.

Therefore, it is beneficial, if teachers try to eliminate the stimuli on the part of both learners and teachers themselves, which could cause an extreme form of negative distress and thus inhibit their efforts in learning or solving given tasks. On the other hand, **a complete absence of stress might lead to indiscipline and boredom in the class**. Thus, the teachers should not try to eliminate every sign of stress, but **instead of inducing distress, eustress is more appropriate** – as it makes the learners more focused and motivated.

Foreign Language Anxiety and Foreign Language Enjoyment

Foreign Language Anxiety (FLA)

In the context of foreign language learning, the attention of researchers has been oriented towards negative emotions, generally referred to and studied most often as (**foreign) language anxiety (FLA)** (Horwitz, 2010; Dewaele, 2013; MacIntyre, 2017). MacIntyre and Gardner (1989) define language anxiety as a **situation-specific anxiety, which is developed because of negative language experiences and difficulties – and thus leads to anticipation of further ones**. This negative emotion includes a wide range of elements – including **anxiety, fear, worry, nervousness, stress, frustration, and self-doubt** (Lojová, 2021). It has been mostly considered a burden, which hinders FL learning by (Gardner, 1985; Horwitz, Horwitz, and Cope, 1986; Gregersen and MacIntyre, 2014):

- decreasing the learners' motivation,
- disrupting the learning process.

With regard to the educational environment, foreign language anxiety negatively affects learners in the following ways:

- **they have difficulties in processing linguistic material** (MacIntyre and Gardner, 1994),
- **they have a lower academic success** (Horwitz, Horwitz, and Cope, 1986; Aida, 1994),
- **they experience disrupted social-communicative processes**, which go hand in hand with **language development** (Dewaele, 2002, 2007, 2010),
- **they experience a lower willingness to communicate** using the target foreign language (MacIntyre, Baker, Clément, and Donovan, 2003).

In general, it is believed that FLA inhibits FL learning – however, in certain cases, it can also have slight facilitating effects (Schumann, 1997; Arnold, 1999; DeVignemont and Singer, 2006; Horwitz, 2010; Gabris-Baker and Bielska, 2013; Kráľová, 2016; Gkonou, Daubney, and Dewaele, 2017; Gkonou and Mercer, 2017; Kruk, 2018; Lojová, 2021; etc.).

Foreign Language Enjoyment (FLE)

On the other hand, in the context of FL learning, the learners can experience also **foreign language enjoyment (FLE)**[29]. Ainley and Hidi (2014) define enjoyment as **a sense of satisfaction and reward generated from an activity and/or its outcome**. When it comes to FL learning, FLE has been understood by researchers either as **a trait-like emotional experience** (i.e. dispositions of individuals to react with a specific level of enjoyment to specific situations in the educational context) or **a state reaction to learning tasks** (Goetz et al., 2006).

Piechurska-Kuciel (2017) suggests that **FLE occurs when learners**:

- feel they are in **control** of foreign language learning activities,
- feel the **value** of the language that is being learnt.

It is believed that from the learners' point of view, FLE determines the degree to which enjoyable episodes in language learning situations are experienced (Jin and Zhang, 2018).

Independent, Interrelated, and Overlapping Dimensions

In the context of FL learning, it is essential to **look at both positive and negative emotions simultaneously –** this fact has been, to our best knowledge, first discovered by Dewaele and MacIntyre (2014, 2016), who developed the *Foreign Language Enjoyment Scale* (FLES) (Appendix G). This scale can be used to study the relationship between FLA and FLE in FL classes. The research (Dewaele, Witney, Saito, and Dewaele, 2018) suggests that:

- **FLE and FLA are not positive and negative poles of some generic emotion dimension;**
- **FLE and FLA are two separate and independent dimensions of emotions, which are interrelated and do overlap in a very small amount**;
- **increasing FLA enhances the experiencing of positive emotions** – but does not reduce negative emotions.

Jin and Zhang (2018) suggest that FLA and FLE can **neutralise** each other to a certain degree. However, we would like to emphasise that in FL learning, the learners **cannot avoid either of the two** – as over time, they experience both **difficulties** as well as **successes**. According to Fredrickson (2011), to truly value positive emotions, people should experience also negative ones – as suggested by the ***positivity ratio***, which should be 3:1 in favour of positive emotions.

[29] See: Appendix G. Foreign Language Enjoyment Scale

3.4 Effects of Emotions on Human Psyche

Motivation

One of the most important aspects of learning, which is associated with emotions, is motivation. Kelly (2015a) compares motivation to **a heartbeat, which drives information into learning**. In the context of FL learning, it has been proven that **emotionally engaging activities increase the motivation and recall of the target information** (Kamenická and Kováčiková, 2019; Kanazawa, 2021; Kráľová, Kamenická, and Tirpáková, 2021; Kráľová, Kamenická, and Tirpáková, 2022). On the other hand, **very intensive emotions** (both positive and negative) as well as **emotionally mundane activities** can **hinder and decrease** not only motivation but also the quality of cognitive processes (Lojová, 2021). Wigzell and Al-Ansari (1993) agree that low productivity in FL courses can be caused by a lack of motivation. Therefore, when it comes to **emotional engagement** and its role in motivation, it is crucial to achieve a suitable balance. However, the right balance is conditioned by various multispectral factors, about which we still have very limited knowledge.

From a neuroscientific point of view, it is important to understand what happens in the brain when we experience motivation. Most importantly, the control of our motivational drive is ensured by **dopamine** (Kelly, 2015a, 2015b). Individuals who naturally have higher levels of dopamine tend to be more motivated and in their professional careers act as **'go-getters'** – on the contrary, individuals who have naturally lower levels of dopamine tend to be less motivated and act as **'slackers'** (Treadway et al., 2012). Dopamine is **crucial for survival**, as proven by Zak (2015) – the animals which lack dopamine have no desire to eat, which results in their starving to death.

When it comes to motivation, we generally recognise the two types of **extrinsic and intrinsic motivation**:

- **extrinsic motivation** – is a result of specific external factors – such as an upcoming exam, financial reward, prospects of future travelling, order from a superior, a fine, hope for praise, etc.;
- **intrinsic motivation** – is an individual's internal drive, which comes from within them – the individuals are motivated for a specific action because they enjoy the activity, want to feel good, want to feel content and fulfilled, want to feel relaxed, calm, happy, etc.

Especially when it comes to FL learning, the motivation of learners is often of the extrinsic nature. However, it is desirable to **transform the extrinsic motivation into the intrinsic one** (this is possible especially if the learners enjoy the learning process) as it increases the chances of successful language acquisition (Harmer, 2001).

It has been suggested (Harmer, 2001) that there are **four sources** of motivation for individuals **to learn a foreign language**:

- **society** – or rather, the attitudes of society to learning of the particular FL;
- **significant others** – or rather, the individuals who are in a very close relationship with learners and as a result, have a strong influence on their attitudes (including parents, peers, partners, etc.);
- **teachers** – or rather, teachers' attitudes and behaviours which directly impact the learners' motivation and/or demotivation;
- **methods** – which are used for teaching and learning – the chances of successful FL acquisition are increased provided that both the teacher and learners are comfortable with a chosen method.

Indeed, to ensure the proper level of motivation, it is essential to bear in mind that **learning should always combine cognition and emotions** – as affective engagement motivates learners to invest their energy and attention in the learning process (Piaget, 1981; Bolitho et al., 2003; Lewis, 2005; Kamenická and Kováčiková, 2019).

To ensure the motivation of learners to learn (both in general and in the context of TEFL), it has been suggested that they should do **authentic and real-world tasks** (Greenspan and Benderly, 1997) as they can strengthen the synapses in learners' nervous systems (Frick, 2015). This is in line with the **Three Reals principle** presented earlier (Kamenická, 2019) and discussed also in this work.

Concerning motivation in TEFL, the authors discussed it in the following contexts and models:

Integrative motive

According to Gardner (1985, 2010) the following factors are the drivers of motivation to learn a foreign language:

- **attitudes of FL learners –** towards the teacher, course, and target language;
- **positive emotions** – esp. the interest in and desire to learn a foreign language;
- **negative emotions** – esp. the foreign language classroom anxiety and language use anxiety;
- **a desire to meet and communicate with FL speakers** – these interactions can lead to a variety of emotion schemas;
- **pragmatic reasons for FL learning** – esp. getting a job.

Socio-contextual model

Proposed by Clément (1980, 1986), this model is **similar to the integrative motive** in its key features. This model adds additional drivers of motivation to learn a FL, including:

- **acculturation and fear of assimilation** – in practice, if an individual from a minority group tries to learn the language of a majority group, they have a strong desire to move towards the new target language. However, they might also fear losing their heritage in form of their first language and culture – and this is where the **internal conflict** of that individual arises.
- **self-confidence** – which is understood **as a secondary motivational process –** simply put, lower anxiety and higher perceived FL competence of learners can facilitate their FL acquisition.

The role of teachers

The important role of teachers in the learners' motivation has been emphasised in recent research findings (Dewaele, Witney, Saito, and Dewaele, 2018; Kráľová, Kamenická, and Tirpáková, 2021; Kráľová, Kamenická, and Tirpáková, 2022). It has been suggested that **FL anxiety seems less related to teachers and their practices** and that it is **FLE, which is related to them more significantly** (Dewaele, Witney, Saito, and Dewaele, 2018). In fact, the teachers play a key role at several levels, including (Arnold and Fonseca, 2007):

- **production of comprehensible discourse**;
- **creation of an environment, where learners:**
  - **believe in the value of learning a FL,**
  - **where they feel that they can face that challenge,**
  - **where they understand the benefits of their succeeding.**

L2 self-system

This model was proposed by Dörnyei (2005, 2009) and works with three interrelated **components regarding the language learner:**

- **an ideal self** – as an ideal future self-image of the learner,
- **an ought-to self** – as the obligations placed on the learner by others,
- **the role of prior experience** – as the past experiences with a foreign language – both positive and negative.

These factors shape the viewpoint of FL learners on their future self-images of themselves as FL speakers. The **future self-image** itself is a very powerful source of motivation, too – as it drives the learners **to narrow the gap between their present selves and their visions of ideal future selves**. MacIntyre and Gregersen (2012b) add that the image itself can create **very strong emotions** and as a result **enhance learners' efforts**.

Well-Being

Well-being with regard to individuals' surroundings and rather their lives as a whole have been the centre of attention of several researchers. There are several concepts dealing with well-being, including the following:

Subjective Well-Being (SWB)

This concept was created by Diener, Oishi, and Lucas (2011). The authors explain that this concept refers to **cognitive and affective evaluations of an individual's life**. In order to experience well-being, the most desirable is the **combination of a relative lack of negative emotions** and the **presence of positive emotions**, and the presence of **life satisfaction** (Kahneman, Diener, and Schwartz, 1999). Even though the lack of negative emotions has been mentioned, this concept does not exclude them completely – which is in line with Fredrickson's (2011) ***positivity ratio*** (which is 3:1 in favour of positive emotions).

PERMA Model

This model was created by Seligman (2011), who proposed that well-being is a component of a good life of each individual. The word ***PERMA*** refers to:

- **Positive emotion –** especially the ability to remain optimistic and to view one's past, present, and future from a constructive perspective;
- **Engagement –** especially allowing ourselves to be absorbed in a current moment, creating the *flow* experience to flood the body with positive neurotransmitters and hormones;
- **(positive) Relationships** – on instinct, we want to be connected to a group; we need to know that we belong, which helps us feel safe, valued, wanted, and included; strong social circles prove support in difficult times and help us build resilience;
- **Meaning** – there are things which provide many people with meaning, such as religion and spirituality, working for a good company, raising children, creative expression, volunteering for a greater cause, etc.;
- **Accomplishment (Achievement)** – ambitions and goals in life can help us achieve things that can give us a sense of accomplishment – especially finding a purpose in life gives us direction, focus, passion, and a sense of achievement.

Probably the most significant characteristic of this model is its **social aspect** – i.e. positive relationships. So, well-being is conditioned not only by aspects directly related to the individual but also to the aspects of social nature.

PERMA-V Model

Recently, the sixth aspect has been added to the PERMA model **vitality**' (although theoretically only, as there is an absence of empirical research) (Seligman, 2011):

- **Positive emotion**;
- **Engagement**;
- **(positive) Relationships**;
- **Meaning**;
- **Accomplishment (Achievement)**;
- **Vitality –** a good night's sleep, the right nutrition, and regular exercise have a significant impact on all the other elements of well-being and are crucial for building resilience.

We would like to emphasise that, interestingly, Seligman's model **unites body and mind** and emphasises **the link between physical and mental well-being** (Diener and Chan, 2011; Veenhoven, 2008; Xu and Roberts, 2010). For more detailed information about this model, see the following figure.

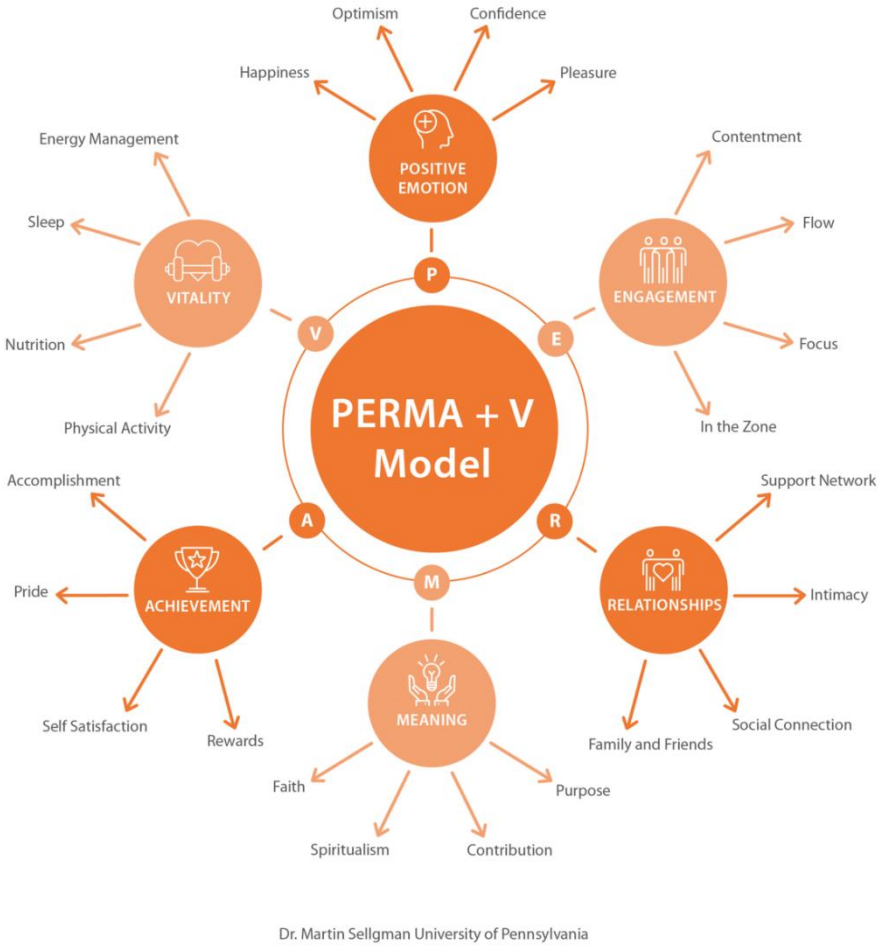


Figure 25. PERMA + V Model by Seligman[30]

[30] Source: https://www.itsmental.co.uk/PERMA-V-MODEL

Broaden and Build Theory

According to this theory (Fredrickson, 2003), certain discreet **positive emotions**, such as **joy, interest, contentment, pride,** and **love**, can ***broaden*** **people's repertoires** and ***build*** **their enduring personal resources** (such as physical, intellectual, social, and psychological resources).

Regarding *Broaden and Build Theory*, we benefit from positive emotions, as they (Fredrickson, 2001, 2006):

- **broaden attention and thinking** – this leads to **exploration and play**, which results in **new experiences and new learning**;
- **help to reverse the longer-lasting effects of negative emotional arousal**;
- **promote resilience –** as they **trigger productive reactions to stressful events** (e.g. improvement of cardiovascular recovery, notable feelings of happiness and interest when under stress);
- **promote the building of personal and intellectual resources**;
- **actively contribute to health and well-being** – they are a part of an imaginary upward spiral toward future well-being **– they facilitate the acquisition of resources, which endure long after an emotional reaction has ended**.

3.5 Effects of Emotions on Memory

Undoubtedly, emotions affect us in uncountable ways. One of their most significant characteristics is their ability to affect human memory. As mentioned earlier, with regard to attention and remembering, it is **reticular activating system** (RAS) in our brain that defines to what extent the incoming information will be processed. Simply put, if an information-to-be-processed is meaningful and has an emotional component, our brain will pay attention to it. Sanchez (n.d.) suggests that **emotions are catalysts of the learning process**, which should be remembered by all teachers, including EFL teachers. They should aim for their learners to have emotional experiences in their classes so that they will enjoy the process of learning, and their RAS will be more than happy to tag such memories as worthy of their attention and remembering. This can be translated into a simple formula:

MEMORY = emotion → motivation → attention → retention

Bearing in mind this formula, in the following lines, we will offer a closer perspective and discuss concepts, which are related to emotions and their powerful effects on the memory.

Affective Filter Hypothesis

Already in 1982, Krashen created the very popular ***Affective Filter Hypothesis***. According to this hypothesis, each learner has **an affective filter in their brain**, which decides **if and to what extent the brain is open to new information**. This filter is governed by the learner's **inner feelings and attitudes** – it is them that determine to what extent information is received and further processed. To put it even more simply, it can be concluded that all of cognitive processes use emotions. In fact, we remember things better, if we are emotionally engaged with them – including situations with various types and ranges of emotions - whether we like, admire, or hate something.

Emotionally Enhanced Vividness

Medina (2008) suggested that **emotional components of experiences are remembered better than any other aspect**. For instance, many adults are able to recall a negative experience from their school times – based on the negative emotion experienced. What is more, they still feel a pang of pain in their stomach or their blood boiling when they recall that particular memory – or, in other words, they relive the emotions again even after decades. This works with positive experiences, too. This phenomenon is called **emotionally enhanced vividness** (Todd et al., 2012; Todd, 2013) – but is also referred to as **a flashbulb memory**, or **the vividness of the experience** (Todd et al., 2012; Todd, 2013; Gallo, 2014). It works as a **flash of a flashbulb**, which can illuminate specific events which are captured in our memories. Thanks to this flash, some information stands out. When recalling a certain event and reliving the emotions, we experience **emotional arousal**, which acts as the mentioned **flash** and enables us to recall the events (or things, information, etc.) more easily and with greater clarity. This vividness **activates the amygdala** – which is responsible for emotional processing in the brain and makes it possible for certain events to burn more vividly in our perceptual awareness.

Emotionally Competent Stimuli

To create memories that will persist in our brains longer, we should try to unleash so-called **emotionally competent stimuli (ECS)** (Medina, 2008), also referred to as **emotionally charged events** (Medina, 2008; Gallo, 2014). These events are emotional experiences, which, as the neuroscientific research suggests, are **the best-processed kind of external stimuli for our brain**, which have ever been measured (Medina, 2008). Medina (ibid.) argues that when compared to emotionally 'neutral' memories, emotionally charged events not only **persist in the human memory longer** but are also **recalled with greater accuracy**.

This is again possible thanks to dopamine and the amygdala, which significantly aid memory and information processing. Emotions tag specific information by dopamine, which helps the amygdala to notice them and as a result, the brain remembers them better. In other words, **emotions improve the taste of the information** – and thanks to its improved taste, the information will be processed more robustly. Medina (2008) compares such information to **post-it notes**, which are often used by secretaries in offices or by students. We write certain information on the colourful paper to notice them more often and to remember their content better.

A very nice example of an emotionally charged event could be the *TED Talks* presentation done by **Bill Gates**. During his speech about how mosquitoes transmit malaria, he released several of them in the auditorium and thus created a very emotionally charged event. Journalists refer to such deed as *a shtick* (Gallo, 2014). The presentation is available at the following link: https://www.ted.com/talks/bill_gates_mosquitos_malaria_and_education

Figure 26. Bill Gates' *TED Talks* presentation about malaria[31]

[31] Souce: https://www.ted.com/talks/bill_gates_mosquitos_malaria_and_education

Bill Gates did this presentation in 2009. It went **viral**. The original video on the *TED.com* website has attracted 5.2 million views (at the time of writing this publication), and that does not include the other websites that link to it. Bill Gates spoke for approximately **18 minutes**. The mosquito part took up **20 seconds** of his total speaking time – yet, today the mosquito moment is the part of the presentation people remember the most. Yet, even today, **13 years later**, it is noticed, discussed, and shared.

The question for educators is what can be taken from this example. We are not suggesting that every teacher should bring a jar of mosquitoes, spiders, snakes or other wild animals to their classes. Rather, we would like to suggest that teachers should think about the content they teach and **identify the most important points** they need to make and then **find a novel and memorable way to communicate those messages** – which is what the best presenters in the world do with their presentations (Gallo, 2014). To be honest – we, as educators, know that sometimes we need to surprise our learners in order to make them care. And based on the neuroscientific, psychological, and journalistic evidence presented in this work, emotionally charged events are the perfect solution for catching the attention of our listeners.

Since these experiences come under many names, from now on, in the context of education, including FL teaching and learning, we will refer to these experiences as ***emotional hooks***. In this context, we will discuss them in more detail in chapter 3.6.

Brain-to-Brain Coupling

Although this phenomenon is not directly associated with memory, it has been found that the human brain has the ability to 'link up'. This phenomenon is called **brain-to-brain coupling** (Hasson et al., 2012). The researchers (ibid.) asked a person to tell a story and a group of people to listen to that story – and examined both the speaker's and listeners' cerebral activity. What they found is that their brains **synchronised and mirrored each other**. The overlap of speaker-listener neural activity is presented in the following figure:

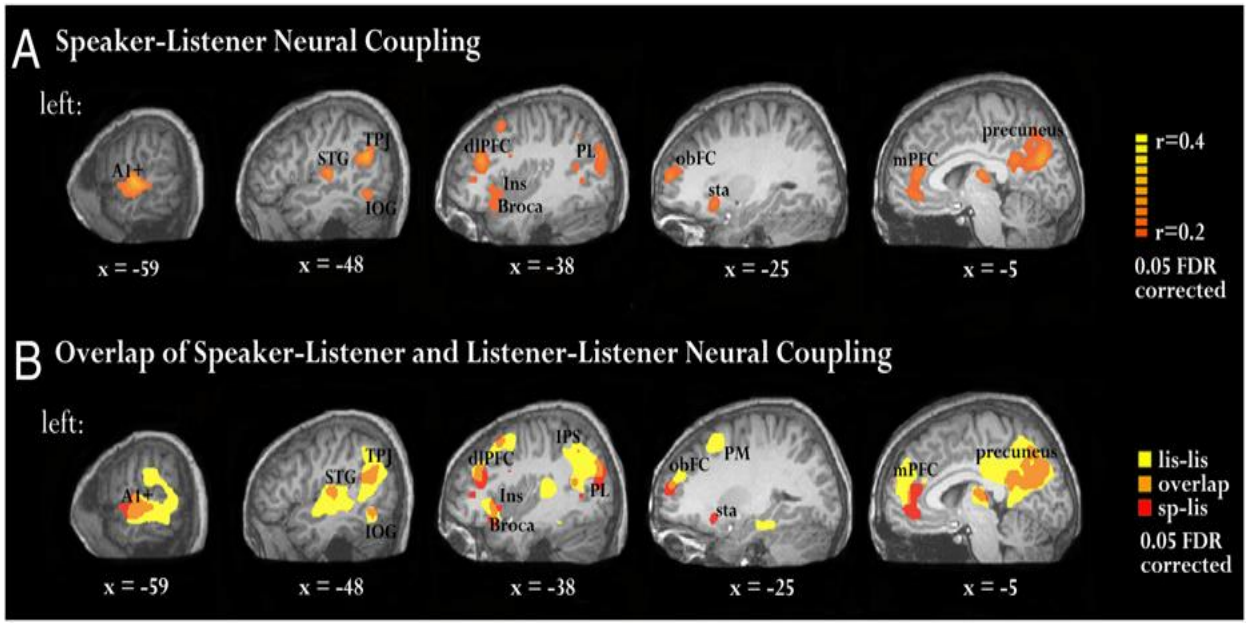


Figure 27. The Speaker–Listener Neural Coupling (Stephens, Silbert, Hasson, 2010) [32]

In other words, the brains of the speaker and the listeners started to do the same things in exactly the same order. It has been discovered that the same parts of the participants' brains were active. Even more interestingly, the **areas responsible for emotional processing** have been activated. Thus, it can be concluded that as simple as listening to a story can have a very significant impact in educational contexts, due to the fact that it can **elicit emotions** – which leads as far back as the formula we mentioned earlier in this chapter:

MEMORY = emotion → motivation → attention → retention

[32] Source: https://www.pnas.org/doi/full/10.1073/pnas.1008662107

Levels of Processing Theory

Craik and Lockhart (1972) suggested that if we want to remember certain information properly, deeper processing of the information is required. According to their theory, only if we involve **the deepest form of processing**, i.e. **semantic processing**, we will be able to recall certain information. In their complex analysis, Craik and Lockhart (ibid.) suggested that there are two levels of processing – *Type I* and *Type II*, and called this concept the **Levels of Processing Theory**.

Type I processing includes:

- **structural processing** – the processing of how things look, which results in a very fleeting short-term memory store (Treisman, 1964; Schulman, 1971);
- **phonetic processing** – the processing of how things sound, i.e. tunes and voices, which results in a very fleeting short-term memory, too (Treisman, 1964).

On the other hand, ***Type II*** processing includes:

- **semantic processing** – the only type of deep mental processing of meaning, which leads to long-term memory store (Treisman, 1964; Schulman, 1971; Craik and Lockhart, 1972).

With regard to deep processing, Craik and Lockhart (ibid.) emphasise that **retention of information** is conditioned by the following factors:

- **familiarity**,
- **meaningfulness**,
- **attention devoted to a stimulus,**
- **processing time available.**

Interestingly, the authors of this concept further inform that the human brain has **long-term memory for non-verbal information**, as we are able to recognise pictures, faces, tunes, and voices even after a longer period of time.

Based on the analysis of Craik and Lockhart (1972) as well as the research findings by Treisman (1964), Schulman (1971), and Glanzer (1972), in the following figure, a graphical summary of *Levels of Processing Theory* is provided:

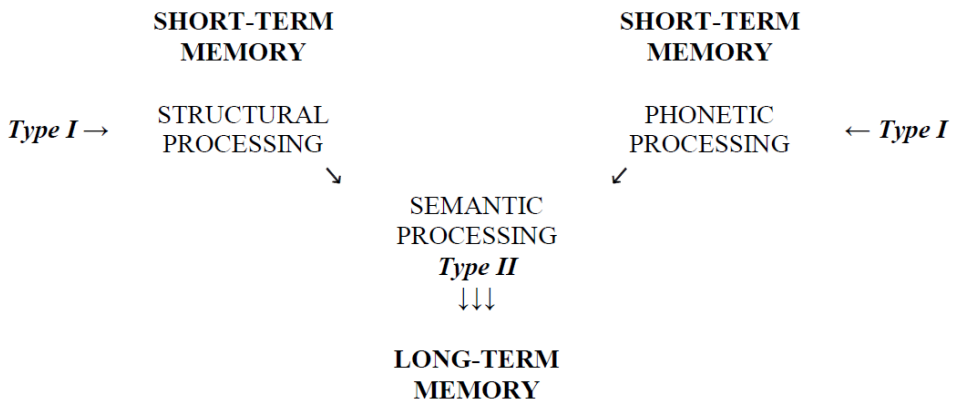


Figure 28. Levels of Processing Theory Scheme (adapted from Craik and Lockhart, 1972)

Especially with regard to long-term memory store in the context of TEFL, it is essential to emphasise the importance of **repetition and language drills**. On the other hand, **repetition without the intention to learn does not facilitate learning** (Tulving, 1966) – which, again, leads us to the formula presented earlier in chapter 3.5. – without motivation to learn, learners do not deem to pay attention, without which memory storing and retention is impossible.

Dual Coding Theory

The basics of this theory date back to Ancient Greece and the origins of mnemonics, when **imagery** was recognised as a memory aid (Yates, 2014). The **dual coding theory** was first proposed by Paivio (Paivio, 1975, 1990, 1991; Clark and Paivio, 1991), when it was suggested that cognition happens through **verbal** and **non-verbal coding systems**. The two systems can be characterised as follows (Rowe and Paivio, 1972; Clark and Paivio, 1991; Sadoski, 2005):

The verbal system:

- its building blocks are so called ***logogens***,
- is represented by both **written and spoken language codes**,
- is concerned with representing and processing of language.

The non-verbal system:

- its building blocks are so called ***imagens***,
- is represented by **imagery**,
- is concerned with dealing with experiences, events, emotions, and memories of sensory perceptions (including sound, smell, taste, etc.).

These two systems can be **activated independently** of each other. However, ideally, we should aim for so called **referential processing –** i.e. the situation when the processing happens with **both systems activated** so that the **connections can be formed** between them. This **increases the chances of remembering** (Paivio, 1990). To be more specific, this allows the brain to assign linguistic references to pictures as well as to assign mental images to words (Paivio, 2006). This can be exemplified on a simple example (Kamenická and Kráľová, 2021, p. 46-47):

> *"The word* rose *is just a representation of an object and does not include any intrinsic connection to it. However, with regard to non-verbal code, the images of an actual plant – for instance, the baby pink rose bush, which grows in your grandma's garden, appear in your mind. Furthermore, some more images and feelings can appear – including its smell, grandma taking care of it, grandpa disposing of the coffee sludge – claiming it gives the plant extra nutrition, the memory and feeling of pain experienced when you were hurt by its thorn, etc."*

Interestingly, if we cannot retrieve information from one system, the other one can compensate for it and deliver it instead. For instance, we can remember an image of a certain object, but will not be able to recall the word for it – or, we might even remember certain phrases and words without being able to recall their meanings (e.g., Paivio, 1965; Dilley and Paivio,

1968; Begg, 1972; Sadoski, 1985). In other words, it is possible to **compensate low activity of one system with the other one** (Paivio and Clark, 1986; Paivio and Walsh, 1993; Sadoski and Paivio, 2013). A graphical summary of this theory is provided in the following figure:

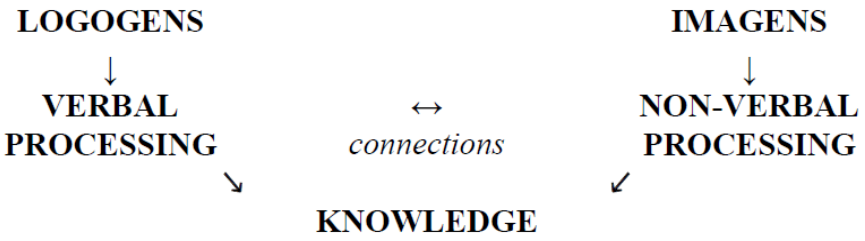


Figure 29. Dual Coding Theory Scheme (adapted from Paivio, 2006)

There is also empirical evidence that when learners were instructed to form **mental images during reading activities**, their **comprehension** of the text and vocabulary significantly increased (Paivio, 2006). Moreover, this technique was effective for **learners of various age groups** – from primary school pupils to university students (ibid.). However, in the context of education, including TEFL, we should always remember the important role of sufficient **practice**, which is equally important to achieve high-level performance (Ericsson, 1996).

Undeniably, the verbal system of ***logogens*** and the non-verbal system of ***imagens*** can be considered the two pillars of learning – as demonstrated above. However, we propose that there is also a third pillar, in the form of **feelings and emotions experienced**. The author of the *Dual Coding Theory* included emotions in the system of *imagens*. As it was demonstrated in the example with *rose*, this third entity plays a very important role when it comes to memory formation. To add, research suggests that the **non-verbal code is even stronger** than verbal code and can significantly **enhance memory traces** (Paivio, 1975; Paivio and Lambert, 1981; Paivio, 2006). This phenomenon will be discussed in more detail in the following lines.

Emotion-Involved Processing Hypothesis

Based on the results of an experiment conducted by Ferré (2003), it has been proven that **lexical valence** (= the perceived emotionality of lexical items by the learner) **influences how lexical items are processed and learnt**. This is a very significant finding in the context of FL learning, which has been proven by several other studies conducted later in this context (Ayçiçeği and Harris, 2004; Ayçiçeği-Dinn and Caldwell-Harris 2009).

Most recently, Kanazawa (2016) studied how different lexical valence of FL vocabulary items affects incidental retention and recall among the research participants. Interestingly, the research participants learnt positive words (in terms of lexical valence) significantly better than negative words. When the learning of positive and neutral words was compared, the results suggested only marginal differences.

In line with the *Levels of Processing Theory* and based on his research findings, Kanazawa (2020) proposed ***Emotion-Involved Processing Hypothesis***. This hypothesis suggests that **processing, which involves emotions, is the deepest form of processing**, (even deeper than the semantic one) – because it facilitates the long-term retention of information. A graphical summary of this hypothesis is provided in the following figure:

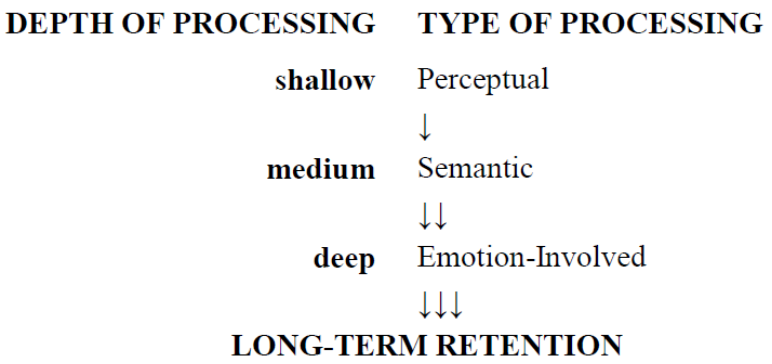


Figure 30. Emotion-Involved Processing Hypothesis Scheme (adapted from Kanazawa, 2020)

Apple Tree Model of Emotion-Involved Processing

Over the years the research of cognitive processes progressed to the stage when both theorists and researchers recognise the significant role of emotions in the process of learning. Based on the research findings (Kanazawa, 2020; Kamenická, Kráľová, and Tirpáková, 2021), we proposed the ***Apple Tree Model of Emotion-Involved Processing***. This model is based on Kanazawa's ***Emotion-Involved Processing Hypothesis*** (2020), in which he proposed that the **perceived emotional valence of lexical items** affects their processing and recall. In our model, we expand this notion and propose that also **emotions experienced in the process of learning** affect the processing of the language items and their recall in the future. We understand **emotions** as complex psychological elements, which can **arise in education**:

1. when dealing with certain content to be learnt – for instance the **lexical items** (as proposed by Kanazawa, 2020),
2. when being (emotionally) **engaged in an activity** – for instance in an ***emotional hook*** (Kamenická and Kováčiková, 2019; Kráľová, Kamenická, and Tirpáková, 2021; Kráľová, Kamenická, and Tirpáková, 2022),
3. from **aspects of education**, **which do not have to be explicitly bound to the process of learning** – for instance, praise, devaluation, classroom atmosphere generated by a teacher and learners, non-verbal communication, etc.

As proven by the previous research and in the following chapters, *emotional hooks* are **easily applicable and transferable across various contexts**. Although the research of this concept has covered only TEFL contexts, we suggest the use of *emotional hooks* for other school subjects, too. With regard to these activities, the research findings emphasise the very important role of the **teacher in the regulation of the learning atmosphere** in the class (Horwitz, Horwitz, and Cope, 1986). With this in mind, we proposed the ***Apple Tree Model of Emotion-Involved Processing*** (Kamenická, 2021a; Kamenická, 2021b) as presented in the following schemes:

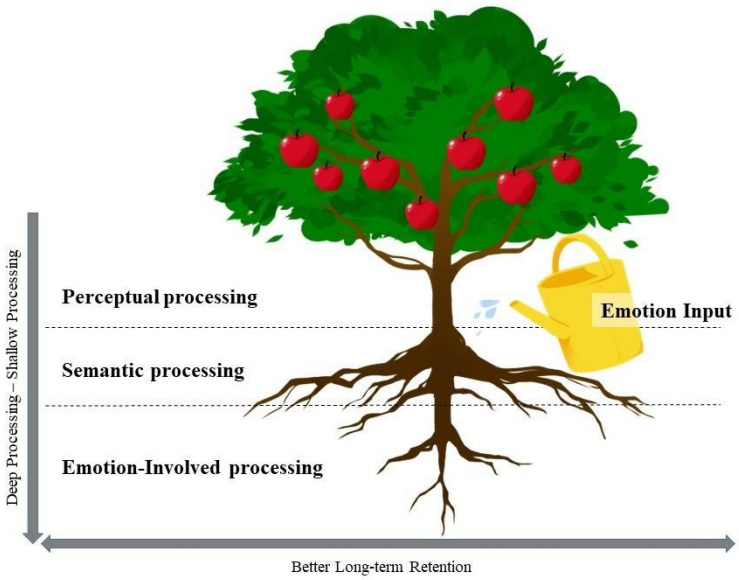


Figure 31. The Apple Tree Model of Emotion-Involved Processing

As a reaction to the theories mentioned earlier in this chapter, but mostly the *Levels of Processing Theory* (Craik and Lockhart, 1972) and the *Emotion-Involved Processing Hypothesis* (Kanazawa, 2020) the schemes of the *Apple Tree Model of Emotion Involved Processing* (Kamenická, 2021a; Kamenická, 2021b) presented above symbolise the **apple tree** divided into **three parts**:

- **the above-ground part = branches and trunk** – this part represents the perceptual processing (as the most shallow type of processing),
- **the shallow root system** – this part represents the semantic processing (as the type of processing of medium depth),
- **the deepest roots** – this part represents the emotion-involved processing (as the deepest type of processing).

Similarly, as the tree needs all of its parts to survive (they co-exist, cooperate, and form one body), **all types of processing** have to be included in education **to achieve long-term retention**. Therefore, we cannot understand them as separately functioning systems. Rather, as presented in the schemes above, they are **layers**, which **co-exist and cooperate in memory formation and learning**.

As depicted in the following figure, to ensure the best-quality fruits, we need to provide the tree with sufficient care, water, and nourishment. It is very similar to processing – to **enable the incoming information to soak into every level of processing** (including the deepest layer) we need to ensure that learners experience **emotional engagement** in the process of learning. Although, when it comes to fruit trees, the sunlight, water, and nourishment do occur in nature naturally, a caring gardener can provide the tree with even more nutrients and care, and thus ensure the tree's health and high quality of its fruits. In the context of education, **teachers should provide extra nutrients for their learners**, as they play a key role in the regulation of the learning atmosphere (Horwitz, Horwitz, and Cope, 1986). As the gardeners have the power to support the whole tree, including its deepest foundations – so do the **teachers have the power to support their learners' psychological foundations and ensure the cognitive harvest** (Kamenická and Kráľová, 2021).

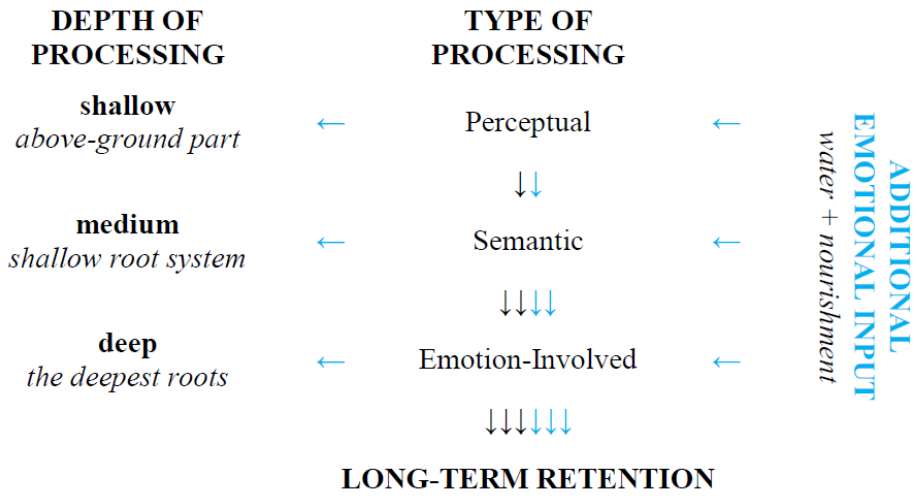


Figure 32. The Apple Tree Model of Emotion-Involved Processing Scheme

With regard to the most recent research findings, upon which the *Apple Tree Model of Emotion-Involved Processing* has been built, it has been suggested that **emotionally competent stimuli** used in the form of ***emotional hooks*** for TEFL:

- **bring emotional engagement** to FL classes (Kamenická and Kováčiková, 2019),
- **bring positive emotions** to classes (Kamenická and Kováčiková, 2019),
- **eliminate boredom** in classes (Kamenická and Kováčiková, 2019),
- provide **a meaningful context** for information-to-be-learnt (Kamenická and Kováčiková, 2019),
- help with **semantic processing** (Kamenická and Kováčiková, 2019),
- **significantly improve declarative knowledge** of the target vocabulary items (Kráľová, Kamenická, and Tirpáková, 2021),
- **increase foreign language enjoyment** of learners (Kráľová, Kamenická, and Tirpáková, 2021),
- are appreciated by FL learners for being **fun and multi-sensory** (Kráľová, Kamenická, and Tirpáková, 2021),
- are beneficial to and appreciated by all of the **VAK learning styles learners**[33] (Kamenická and Kováčiková, 2019),
- are beneficial to and appreciated by all of the **multiple intelligence types learners**[34] (Kráľová, Kamenická, and Tirpáková, 2022),
- **engage also the usually neglected learners** of musical and kinaesthetic learning styles (Kráľová, Kamenická, and Tirpáková, 2022).

Apparently, *emotional hooks* can be considered a direct application of neuroscientific and pedagogical research findings in the practice of TEFL. We will discuss this technique in more detail in the following chapter.

[33] Classification by Scrivener (2011)
[34] Classification by McKenzie (1999)

3.6 Emotional Hooks

With regard to all the information about emotions and the human brain presented in this work, especially to **emotion-involved processing** (Kanazawa, 2020; Kráľová, Kamenická, and Tirpáková, 2021), we propose that teachers should intentionally include ***emotional hooks*** in their classes. In the context of TEFL and education as such, **emotional hooks are activities, which aim to bring emotional charge and engagement to classes – with the intention to:**

- **increase learners' attention,**
- **increase learners' motivation,**
- **aid learners' remembering,**
- **aid learners' retention,**
- **increase foreign language enjoyment,**
- **and decrease foreign language anxiety.**

The emotional hooks do not necessarily have to bring only fun and positive emotions to the classes. Some positive emotions (e.g. empathy) arise when seeing others in need (i.e. in an unfavourable situation). Therefore, **each teacher should contemplate which emotion** and **how they want to pass it** to their learners **in a sensitive way** – should it be awe, empathy, fun, shock, anger, wonder, etc.

The emotional hooks **can be used at any point of the lesson**, but the teachers should bear in mind that it is beneficial if they **engage their learners first** and thus **spark their interest**, and just then do the less engaging tasks. The emotional hooks can be the following activities, but the list is undisputably endless – depending on the teachers' knowledge of their learners:

- **delivering wow moments,**
- **doing creative tasks,**
- **playing games,**
- **competing in competitions,**
- **doing visualisations (guided imagery),**
- **exploring,**
- **multisensory experiences,**
- **watching interesting videos,**
- **listening to engaging stories,**
- **etc.**

However, a few questions remain unanswered and we would like the readers of this work to decide on the answer – as there are no correct or incorrect answers, when working with very complex human beings.

Should emotional hooks be targeted at positive emotions only?

Where is the border between positive and negative emotions?

Are the negative emotions truly negative if they trigger empathy towards others?

4 EMOTIONAL HOOKS FOR TEFL: Towards the Emotionalisation of Education

In this section, we offer a collection of activities carefully and specifically designed to promote **brain-based learning** and demonstrate the use of **emotional hooks**. Our aim is to provide the readers of this work with exemplary activities, or rather, *emotional hooks* suitable for EFL classes, which are versatile and adaptable to any suitable form. They are especially aimed at the previously presented brain-based learning points – including various learning styles of learners, real-life orientation, creation of associations, active learning, various forms of work, and the much-needed emotional engagement.

The emotional hooks presented were created[35] with the age group of teenage learners and older in mind. We are aware of the fact that there are plenty of engaging and entertaining activities for younger learners available. However, when it comes to teenage learners, young adults and adults, the fact that everyone loves to play (despite their age), is often somehow forgotten. Especially in Slovakia, primary school education tends to be more engaging, however, at secondary schools, engagement is often forgotten in the sake of preparation for final exams – which leads to overall dissatisfaction with the process of learning, including foreign language learning (Kamenická and Kováčiková, 2019). We are strongly convinced that **learning a foreign language can be fun at any stage, age and proficiency level**, and it does not have to be about "serious stuff" only. In fact, the foreign language teacher has a plethora of possibilities (in fact, more than any other teacher does), when it comes to the topics, through which the language content can be taught. And since language has no borders, we can teach FL learners about the world and inspire them by using our own life experience and knowledge.

For each activity presented, we will include a short description and information about suitability for a particular proficiency level (according to CEFR) and age group. It is recommended to consider the indication only as a guide since the activities presented are adaptable. The only limitation is the teachers' creativity. Thus, it is up to the teacher, who knows their class best, to decide which activity is suitable for their learners and/or how it should be modified to suit the best – depending on their maturity and language skills. Also, the timing of the activity is only a suggestion. Most of the activities do not include any additional materials needed apart from those which are readily available in the usual classroom (such as a computer with an Internet connection, data projector, sheets of paper, pens, etc.). Any time the activity requires some additional materials, it will be denoted in its description. These activities can be used with versatile aims, for instance:

- to incorporate and teach certain vocabulary items / grammatical structures / pronunciation,
- to learn the vocabulary items / grammatical structures / pronunciation from these activities,

[35] Most of the presented *emotional hook* activities were originally designed by the author of this publication – with the exception of *Digitale* and *Treasure Hunting*. The authors of the two activities are cited in the individual chapters denoted to them.

- to help the learners' brains to learn easier by creating emotionally charged events,
- to spark the motivation to explore and to know about things,
- to support foreign language enjoyment,
- etc.

The presented emotional hooks can be used **at any point of the lesson**, but the teachers should bear in mind that it is beneficial if they engage their learners first (to spark their interest) and just then do the the less engaging tasks. Once again, we would like to emphasise their versatility and the fact that they can be adapted – for various age groups, proficiency levels of learners, as well as to a variety of topics and language points, and especially for CLIL lessons.

Each task will be described in several steps. Every task contains a "Productive part", where practical use of language can be practised and problem-solving facilitated. In this part, it is recommended to employ speaking or writing as productive language skills – depending on the possibilities of the particular lesson and/or the needs of learners. Also, the form of work can vary and it is up to the teacher to decide if they find individual work, teamwork, or group work most beneficial in that particular context. Recent research findings suggest that learners mostly appreciate cooperative tasks (Kráľová, Kamenická, and Tirpáková, 2021), however, also individual work has its benefits, for instance, it requires a very high degree of responsibility and does not create space for slacking.

Last, but not least, every link included in the following section is made clickable on purpose – so that the reader can be effortlessly redirected to the target web location.

4.1 Touching Stories to Spread Awareness

In this section, we provide the reader with emotional hooks of a rather receptive nature. However, when it comes to foreign language learning, **RECEPTIVE INPUT HAS TO BE FOLLOWED BY PRODUCTIVE OUTPUT** to reach the most desirable effect. Therefore, we also suggest several ideas on how to follow the presented receptive inputs. These receptive inputs are especially suitable for frontal teaching, as reception is not a pair or group process, but rather occurs in every individual's awareness. To ensure the emotional engagement of learners, we offer several touching stories to spread awareness among learners and to teach them not only language but also to be humane.

Shin Lim

Figure 33. Shin Lim's card magic performance[36]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through storytelling and video watching, to teach vocabulary specific to health issues, to promote further exploration

Extra materials: none

[36] Source: https://www.youtube.com/watch?v=VXuqGHBD2G4&t=2s&ab_channel=BreakingTalentsShowcase

Procedure:

I. Activating prior knowledge and associations

1. Start a discussion about learners' hobbies, for instance, by asking the following questions:

What are your hobbies?

How long have you been pursuing them?

How much effort does it cost to pursue your hobbies?

II. Receptive part

2. Set the right atmosphere by telling the learners that you are just about to tell them a story. For the best effect, you should be *telling* the story, not *reading* it. Short notes are allowed, but eye contact with learners is equally important. Alternatively, you can print the text of the story provided in this work, but make sure you are not too dependent on it. During the storytelling, make sure you stand, move around the classroom, or sit less formally or lean against the teacher's desk. This will literally remove the barrier between you and your learners and they will be able to connect with you as the storyteller better (Zak, 2015).

3. Then tell the story. You can make it more interactive by including the question and letting the learners answer it as proposed.

This is a story of a young man, who was a huge music fan for a long time. Therefore, he decided to study to play the piano at the age of nine. When he was 20 years old, he was studying at the School of Music at Lee University in Tennessee. However, all changed when he was diagnosed with carpal tunnel syndrome (= a major nerve in the wrist is squeezed as it travels through the wrist). Because of the diagnosis, he was forced to choose between playing the piano and his second hobby – magic.

------ *Which one do you think he chose?* ------

Eventually, he chose magic and promptly dropped out of the School of Music.

He decided to do magic professionally. Thus, he appeared on the show ***Penn and Teller Fool Us*** *– which brought him popularity. But unfortunately, he injured himself while rehearsing an illusion. As a result, he had severed two of his thumb tendons (= cords of strong collagen tissue attaching a muscle to a bone). That could potentially mean that his career was over. Fortunately, he got them sewn back together, but he couldn't do magic for more than a month – because most of his magic was with his hands and he couldn´t really use them.*

However, he was determined to get better. He pushed through and underwent extensive therapy. It took him six months to fully recover.

This is the story of Shin Lim, who is 31 years old and this is a video about his persistence despite adversity…

4. Now, play the video of Shin Lim's performance at *America's Got Talent 2018*.

https://www.youtube.com/watch?v=VXuqGHBD2G4&t=2s&ab_channel=BreakingTalentsShowcase

After the video watching, inform the learners that Shim Lim's hard work and persistence ensured that he became an absolute winner of the show in 2018.

III. Productive part

5. Ask learners to:

- formulate strategies on how they think the presented magic tricks work – they might not be able to answer this question;
- browse the internet, using their own mobile devices, to find the explanations of some of the magic tricks (the tricks do not have to be identical to those from the video) and present them to the class;
- ask them to prepare some easy magic tricks for one of the following lessons.

For these tasks, the form of work should be decided by the teacher. These tasks can be done both co-operatively and individually.

Otis Johnson

Figure 34. Otis Johnson's story[37]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through storytelling and video watching, to teach vocabulary specific to crime, punishment, social changes, and technological progress, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Start a discussion about injustice, for instance, by asking the following question:

Have you ever been a victim of injustice? Explain.

II. Receptive part

2. Set the right atmosphere by telling the learners that you are just about to tell them a story. For the best effect, you should be *telling* the story, not *reading* it. Short notes are allowed, but the eye contact with learners is equally important. Alternatively, you can print the text of the

[37] Source: https://www.youtube.com/watch?v=wraqVKh5NYk&ab_channel=AlJazeeraEnglish

story provided in this work, but make sure you are not too dependant on it. During the storytelling, make sure you stand, move around the classroom, or sit less formally on or lean against the teacher's desk. This will literally remove the barrier between you and your learners and they will be able to connect with you as the storyteller better (Zak, 2015).

3. Then tell the story.

On 5 May 1970, a 25-year-old martial arts teacher was arrested in New York for an attempted murder of a police officer.

The incident had happened after an anonymous call, which alerted police about a possibly armed man in a beige coat selling drugs in a hallway. When two police officers arrived at the scene to arrest that man, the suspect resisted and shot one of the officers in the stomach before fleeing. Less than an hour later, a man who was wearing a brown leather jacket was stopped on the street, pushed up against a wall and arrested. His name was Otis Johnson.

Luckily, the police officer survived the shooting but was hospitalised for weeks.

However, Otis was the only suspect and a trial followed. Despite the lack of evidence and credible eyewitnesses, he was rejected parole 7 times for refusing to confess! The jury found him guilty and the judge sentenced him to 25-to-life prison. (= That means he could not get out of prison on bail.)

Otis never confessed. The 9th parole hearing was positive 44 years later. And in 2014, he was released from prison at the age of 69. He was left on Times Square with 40 dollars in his pocket and without any of his personal documents, as the police officers changed his name to James Williams during the arrest. He was back in society… And he was shocked…

(Adapted from: https://www.dazeddigital.com/art-photography/article/37077/1/what-s-it-like-to-do-40-years-for-a-crime-you-deny)

4. Now, introduce and play the video about Otis Johnson. Ask learners to notice things that changed over time as well as those that did not change at all according to him.

So let's have a look at what he found there and how society changed over those 44 years.

https://www.youtube.com/watch?v=wraqVKh5NYk&ab_channel=AlJazeeraEnglish

After the video watching, inform the learners that:

These days Otis works hard to help other people in need. There are also people who are working on reopening his case.

III. Productive part

5. Ask learners to:

- explain, how the society changed over those 44 years;
- name things that did not change at all;
- suggest steps Otis should follow to re-integrate into society (it is recommended to use a cooperative learning technique at this point, e.g. *buzz groups*)

The Real Love Story

Figure 35. The Real Love Story[38]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through storytelling and video watching, to teach vocabulary specific to relationships, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Start a short discussion about online dating, for instance, by asking the following question:

Have you ever dated online?

Do you know someone who did?

Would you like to share some of your or their experience with online dating?

II. Receptive part

2. Set the right atmosphere by telling the learners that you are just about to tell them a story about teenagers Alejandro and Mia. For the best effect, you should be *telling* the story, not *reading* it. Short notes are allowed, but the eye contact with learners is equally important.

[38] Source: https://www.youtube.com/watch?v=e8kls4Oec9k&ab_channel=JustCreativo

Alternatively, you can print the text of the story provided in this work, but make sure you are not too dependant on it. During the storytelling, make sure you stand, move around the classroom, or sit less formally on or lean against the teacher's desk. This will literally remove the barrier between you and your learners and they will be able to connect with you as the storyteller better (Zak, 2015).

3. Then tell the story. You might include some of the idioms denoted in bold.

*I **heard it on the grapevine** that Alejandro has fallen in love with Mia. The gossipers say they met online and soon found out **they were on the same wavelength**. Alejandro **did not beat around the bush** and asked Mia out.*

However, something went terribly wrong…

***To put it in a nutshell**, if you think it was a regular date, you **get the wrong end of the stick**.*

Let´s watch a video now to find out, what happened…

https://www.youtube.com/watch?v=e8kls4Oec9k&ab_channel=JustCreativo

Just after both the teenagers are done with their preparations for the date, pause the video and ask learners to predict what is going to happen. Then play the rest of the video.

III. Productive part

4. Ask learners to:

- explain, what went wrong (possible answer: two pedophiles accidentally deceived one another)
- answer the following questions:
  I. Do you always accept friend requests on social networks?
  II. Do you accept friend requests from your teachers?
  III. Do you accept friend requests from strangers?
- suggest how can similar situations be prevented (possible answers: having a phone and a video call first, meet at busy places, have someone accompany you, etc) (it is recommended to use a cooperative learning technique at this point, e.g. *buzz groups*).

20 Minutes

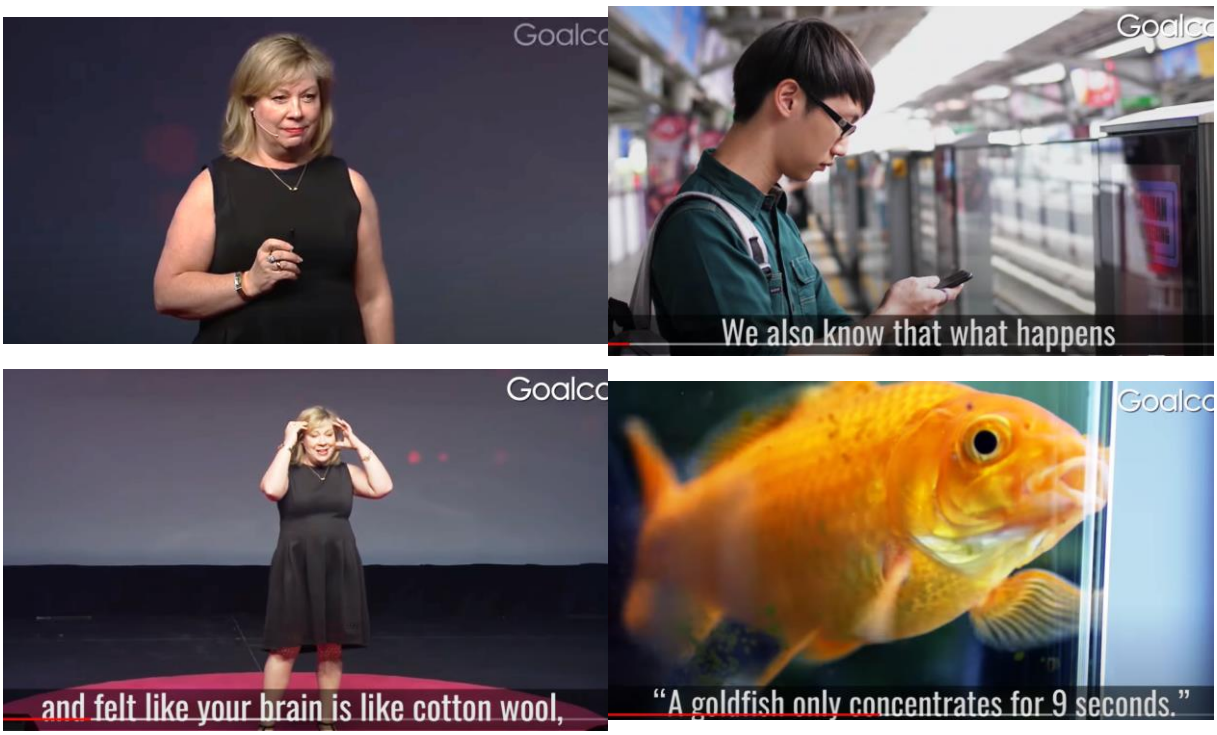


Figure 36. 20 Minutes[39]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to hobbies and lifestyle, to promote further discussion on how to effectively use the time

Extra materials: none

Procedure:

I. Activating prior knowledge and associations.

1. Introduce the video by asking:

What is the average attention span of humans?

Hear the answers of learners out, but do not inform them about the correct answer yet.

[39] Source: https://www.youtube.com/watch?v=Lt6WCdhq7qs&ab_channel=Goalcast

II. Receptive part

2. Inform them that they will find the correct answer in the video you are just about to play.

3. Now, play the video:

https://www.youtube.com/watch?v=Lt6WCdhq7qs&ab_channel=Goalcast

III. Productive part

4. Ask learners to:

- provide examples of their multi/micro-tasking;
- devote 20 uninterrupted minutes to a task, as suggested in the video; inform them that you will ask them about how they fulfilled the task during the following lesson;

5. The following lesson. Ask learners if:

- it was difficult for them to start the 20 minute task and what their task was;
- it was difficult for them to concentrate on the task for 20 minutes;
- it was difficult for them to stop doing the task after the 20 minutes;
- they stopped after 20 minutes or continued even longer.

Modern Slaves

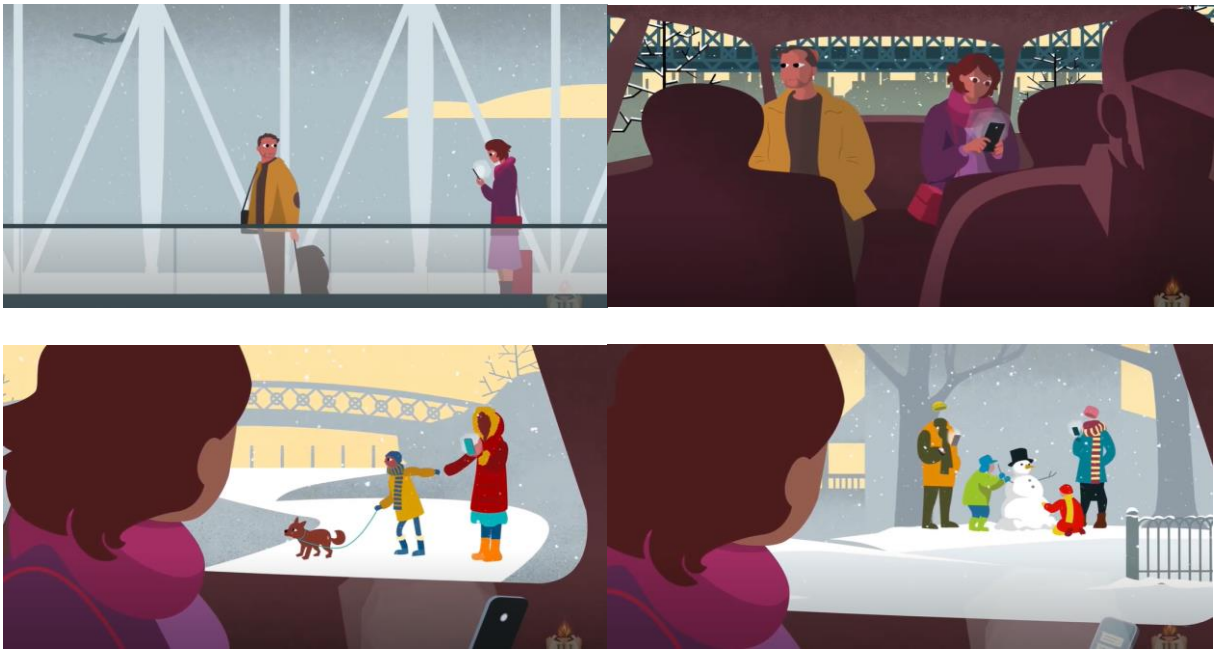


Figure 37. Modern Slaves[40]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to hobbies and lifestyle, to promote further discussion on how to effectively reverse the negative effects of smartphones

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion, asking:

How much time do you spend using your smartphone daily?

Hear the answers of learners out. It is very probable that they will not be able to calculate the overall time spent, so try to be helpful with the counting (starting in the morning until they go to school, then after they come back from school until they go to sleep).

[40] Source: https://www.youtube.com/watch?v=c_W6SX6SLdg&list=PLAX8962UozqsyYFEei6_CYol2F7bjo7Wx&index=15

2. Then ask:

Do you think it is a healthy amount of time?

II. Receptive part

3. Now, introduce the video by explaining that nowadays most people spend a similar amount of time using the smartphone – as shown in the following video.

4. Play the video:

https://www.youtube.com/watch?v=c_W6SX6SLdg&list=PLAX8962UozqsyYFEei6_CYol2F7bjo7Wx&index=15

III. Productive part

5. Ask learners to:

- suggest what amount of time spent using smartphones can be considered healthy;
- suggest how people similar to the ones from the video can re-integrate into society.

Dan Lok

Figure 38. Dan Lok's story[41]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to education and bullying, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion, asking:

Have you ever been a witness to bullying?

Have you ever tried or seen someone try to stop the bullies? How?

Hear the answers of learners out. If they were the witnesses, ask them about their experiences. It might be tempting to ask them, if they were victims, too. However, it might be too sensitive to discuss, because no one is proud of the fact that they were bullied at some point. It is a safer

[41] Source: https://www.youtube.com/watch?v=Y6x0idtBVPI&t=1s&ab_channel=Goalcast

option to ask about witnessing bullying. The victims might tell their stories by interpreting them from the witness's point of view – without feeling distressed and/or humiliated.

II. Receptive part

2. Now, introduce the video by explaining that you are going to play them a story of an Asian boy, who moved to the USA with his family and was disgustingly bullied for being an Asian person. This, however, did not break him and he worked even harder and later became a millionaire.

3. Play the video:

https://www.youtube.com/watch?v=Y6x0idtBVPI&t=1s&ab_channel=Goalcast

III. Productive part

3. Ask learners to:

- come up with examples of how the bullying might impact the performance at school (for this purpose, the mind map technique can be used and the teacher might lead the learners to the use of specific phrases connected to education – e.g. *to acquire knowledge, to attend a school, to bully a classmate, to grant a scholarship, to pass an exam, to play truant, to mark essays/tests, to pay attention, to examine students, to skip classes, to be expelled from school, to cheat with crib sheets, to apply for a university study, to memorise definitions, to learn by heart*, etc.);
- create several pieces of advice for young Dan to help him deal with his bullies.

The Bald Girl

Figure 39. The Bald Girl[42]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to education, bullying, and healthcare, to promote further exploration

Extra materials: none

Procedure:

This activity can be used as an alternative to the previous one about Dan Lok.

I. Activating prior knowledge and associations

1. Start with a short discussion, asking:

Have you ever been a witness to bullying?

Have you ever tried or seen someone try to stop the bullies? How?

Hear the answers of learners out. If they were the witnesses, ask them about their experiences. It might be tempting to ask them, if they were victims, too. However, it might be too sensitive

[42] Source: https://www.youtube.com/watch?v=bk3L1zk14c4&list=PLAX8962UozqsyYFEei6_CYol2F7bjo7Wx&index=5

to discuss, because no one is proud of the fact they were bullied at some point. It is a safer option to ask about witnessing bullying. The victims might tell their stories by interpreting them from the witness's point of view – without feeling distressed and/or humiliated.

II. Receptive part

2. Now, introduce the video by explaining that you are going to play them a story of a young girl, who got bullied at school.

3. Play the video:

https://www.youtube.com/watch?v=bk3L1zk14c4&list=PLAX8962UozqsyYFEei6_CYol2F7bjo7Wx&index=5

III. Productive part

4. Ask learners to:

- come up with examples how the bullying might impact the performance at school (for this purpose, the mind map technique can be used and the teacher might lead the learners to the use of specific phrases connected to education – e.g. *to acquire knowledge, to attend a school, to bully a classmate, to grant a scholarship, to pass an exam, to play truant, to mark essays/tests, to pay attention, to examine students, to skip classes, to be expelled from school, to cheat with crib sheets, to apply for a university study, to memorise definitions, to learn by heart*, etc.);
- create several pieces of advice for this girl to help her deal with her bully;
- write a follow-up story.

The Man in the Iron Lung

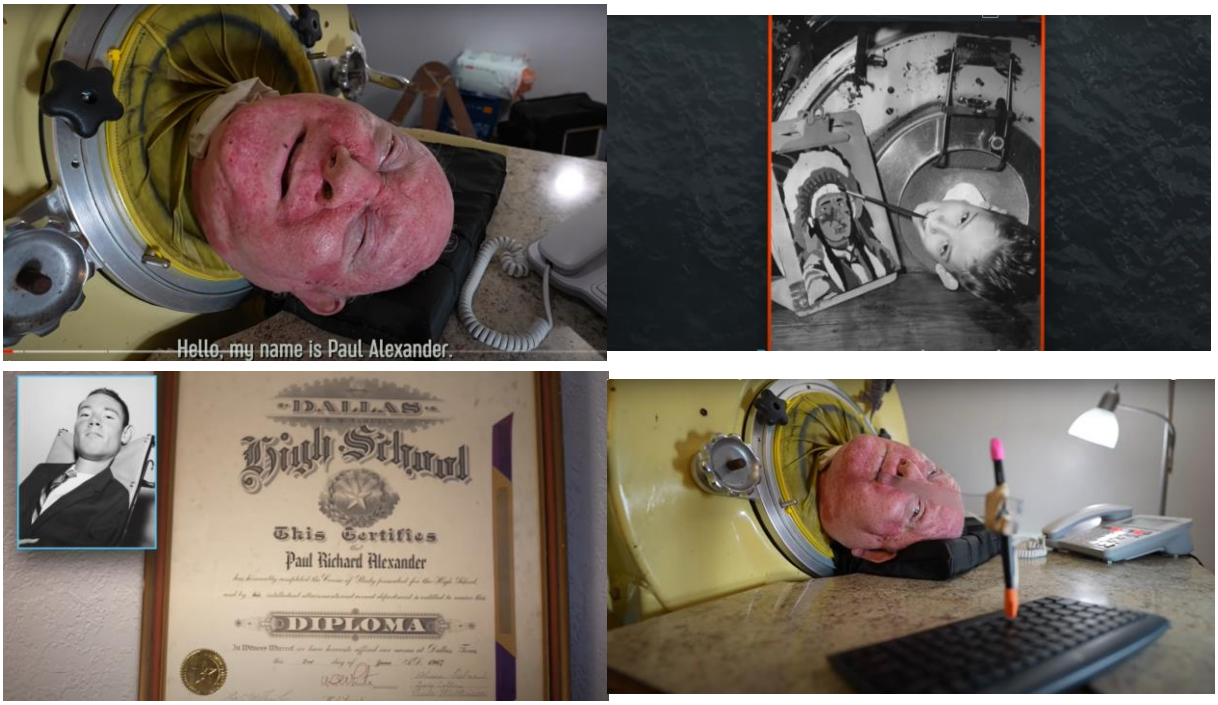


Figure 40. Paul Alexander's story[43]

Level: B1+

Age group: teenagers and older

Time: 10 minutes – up to whole class and longer

Objectives: to promote emotional engagement and feelings of compassion through video watching, to teach vocabulary specific to healthcare, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion. You can ask the following questions:

Have you ever been infected with COVID-19? What were the consequences you suffered?

Do you know some other people who got infected? What consequences did they suffer from?

Hear the answers of learners out and write the symptoms they mention on the whiteboard.

[43] Source: https://www.youtube.com/watch?v=xowUq7JgFeQ&list=PLAX8962UozqsyYFEei6_CYol2F7bjo7Wx&index=7

II. Receptive part

2. Now, introduce the video by explaining that the COVID-19 pandemic is not the only pandemic that the world had to face. Inform the learners that there has been a similar pandemic around 100 years ago and lasted for decades. The virus was called *polio* and along with breathing, it affected also muscles and nerves. Tell the learners that you are going to play them a video of one of the most famous polio survivors in the world, Paul Alexander, who was born in 1946 and has not been able to breathe since 1952.

3. Play the video:

https://www.youtube.com/watch?v=xowUq7JgFeQ&list=PLAX8962UozqsyYFEei6_CYol2F7bjo7Wx&index=7

III. Productive part

Ask learners to:

- create several pieces of advice for Paul, what he could do to enjoy his life even more, even though he is in the iron lung;
- write a supportive letter to Paul, where they will write about their genuine reactions to the video and his story, they can also include the pieces of advice from the previous point – inform the learners that the letter will be sent to Paul afterwards; the following video can be used as an inspiration for learners:

  https://www.youtube.com/watch?v=he4zla4SsM4

- after writing the letters, the teacher should collect them and try to contact Paul Alexander, for instance, through the author of the *YouTube* channel, who uploaded the video about Paul (Mitch Summers), and ask him to deliver the letters to Paul (e.g., in the scanned versions); also a group class photo can be included for Paul to see the class with their teacher.

The Role of the Parent

Figure 41. Derek Redmond's race[44]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to family and sports, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion on the following statement:

"In time of test, family is best."

Ask learners if they agree or disagree with the statement. Ask them to provide examples to support their answers.

II. Receptive part

2. Introduce the video by explaining to learners that the Olympics is the goal of every top sportsperson. Tell them that often unexpected situations might occur in the Olympics, however, in 1992 happened something which the world had not experienced before nor has

[44] Source: https://www.youtube.com/watch?v=xa5_j-LaxuQ&ab_channel=DerekRedmond.TV

experienced since. Tell them that you will play them a video about Derek Redmond, a very perspective athlete.

3. Play the video:

https://www.youtube.com/watch?v=xa5_j-LaxuQ&ab_channel=DerekRedmond.TV

III. Productive part

4. Ask learners to:

- decide if Derek's father had the right to intervene;
- propose other examples, when parents' intervention can be considered acceptable – not just sports, but also other areas;
- think about and share their experiences with their parents – when they helped them in difficult situations.

Missing Colours

Figure 42. Colour-blind people seeing colour for the first time[45]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to healthcare, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Ask the learners if they know what colour-blindness is. If they do not, explain what colour-blindness is. Present them with the following statistics:

1 in 12 men and 1 in 200 women suffer from colour-blindness.

[45] Source: https://www.youtube.com/watch?v=6M4Qpm4IQUE&ab_channel=InspirationalVideosforTEFL

Ask them if they know someone who is colour-blind and if they could tell the class more about them. You can also tell them about a colour-blind person you know (if you do).

2. Do the colour-blindness test with your class (Appendix E). Ask them to write down, what number or animal they see. Then compare their answers with the key. This test should give them an idea on how impoverished the colour-blind people might feel.

II. Receptive part

3. Inform the learners that there is a solution for colour-blind people, which allows them to see colours. It is the *EnChroma® Color Blind Glasses*. Tell your learners that some people get to see the colours for the first time at a very high age and that you are going to play them a video about colour-blind people seeing the colour for the first time.

4. Play the video:

https://www.youtube.com/watch?v=6M4Qpm4IQUE&ab_channel=InspirationalVideosforTEFL

III. Productive part

5. Ask learners to:

- plan a party for a colour-blind friend, which would celebrate the first time they will see colours; include the information about:
    - where the party will take place,
    - food,
    - decorations,
    - guests invited,
    - activities/games played,
    - music,
    - etc.

Ripple

Figure 43. Ripple[46]

Level: B1+

Age group: teenagers and older

Time: 10 minutes up to whole class

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to social issues, shopping, finances, to promote further exploration

Extra materials: none;

OPTIONAL: tempera or watercolours, brushes, palettes, several sheets of paper of a larger size – at least A2

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion of the statement:

"A simple act of caring creates an endless ripple – that comes back to you."

Ask learners if they understand the meaning of the statement and if they agree or disagree with it. Ask them if there are any similar sayings or stories, which are based on this wisdom, in English or in their mother tongue. If they are not able to produce similar examples, provide them with the following one and try to elicit some more:

"You Reap What You Sow."

[46] Source: https://www.youtube.com/watch?v=ovj5dzMxzmc&ab_channel=Viddsee

II. Receptive part

2. Inform the learners that you are going to play them a video where this wisdom is exemplified.

3. Play the video:

https://www.youtube.com/watch?v=ovj5dzMxzmc&ab_channel=Viddsee

Ask the learners if they ever experienced something similar.

III. Productive part

4. Ask learners to:

- propose how they as a class could help similar families in their town;
- find if there are any people or institutions already helping the families in need and how they are doing it (some of the answers might include charities providing homeless people with clothes, food, etc., or churches collecting financial or other donations for socially-disadvantaged families);
- OPTIONAL: using tempera or watercolours, create a ripple made of handprints – the teacher's handprint should be in the centre of the ripple, the learners' handprints should follow in all directions to form a circle or a semicircle; the choice of colours depends on the teacher, for instance, the colours of the rainbow can be used as in the following picture:

Figure 44: The ripple[47]

The finished artwork can be displayed somewhere in the classroom, to remind learners of the endless ripples their acts of kindness create.

[47] Souce: https://www.bellaandbow.co.uk/pages/handprint-rainbow-art-competition

True Value

Figure 45. True Value[48]

Level: B1+

Age group: teenagers and older

Time: 10-20 minutes

Objectives: to promote emotional engagement through video watching; to teach vocabulary specific to cooking, social issues, and healthcare; to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Present the following picture to the learners and ask them to guess the price of one portion of the dish presented:

[48] Source: https://www.youtube.com/watch?v=iVrQqWIs6ZE

Figure 46: Kuey Teow Soup[49]

Let the learners make their guesses. After that, inform them that it is a Thai soup called *Kuey Teow* and that the price of one portion would be approximately 50 Thai Baht = approximately 1,30 €.

II. Receptive part

2. Inform the learners that the price of this soup is very relative, as for some people, it might be priceless – as shown in the following video.

3. Play the video:

https://www.youtube.com/watch?v=iVrQqWIs6ZE

III. Productive part

4. Ask learners to:

- find how many times did the soup pay off the debt (the medical expenses were 792 000 Thai Baht = approximately 21 500 €);
- find out if there are similar soups in other countries (consisting of a strong broth, noodles, and several toppings, including meat and vegetables) – the use of online search engines is highly recommended (but the teacher needs to monitor the learners if they are really working on the task given)
  (some of the possible answers might include – traditional Slovak chicken soup, Vietnamese *Pho*, Japanese *Ramen*, Japanese *Udon*, Philippine *Batchoy*, Korean *Jjamppong*, etc.);

[49] Source: https://eatwhattonight.com/2017/07/fishball-kway-teow-soup/

American vs. British English

Figure 47. The Jonathan Ross Show[50]

Level: B1+

Age group: teenagers and older

Time: 5-10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to American and British English, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Prepare a list of words in the learners' mother tongue, which are used only in certain local dialects and let them guess the meaning (or rather, the officially used form of the given word). For instance, if the mother language was Slovak, the list could look as follows:

[50] Source: https://www.youtube.com/watch?v=5wSw3IWRJa0&ab_channel=TheJonathanRossShow

Table 11. Word differences

Locally used word	Official form	Translation to English
švábka	*zemiak*	*potato*
fijok	*šuplík*	*drawer*
valal	*dedina*	*village*
motor	*auto*	*car*
petruška	*petržlen*	*parsley*

Inform the learners that there are even more differences in English – especially when it comes to American and British English.

II. Receptive part

2. Tell the learners that you are going to play them a funny video where differences between American and British words will be presented. Ask them to remember as many words as possible – without writing them down.

For less proficient learners, it is recommended to play the video at a slower pace. *YouTube* allows this option. Alternatively, the teacher can download the video and use free online tools to slow down the video a little bit.

3. Play the video:

https://www.youtube.com/watch?v=5wSw3IWRJa0&ab_channel=TheJonathanRossShow

After watching the video, ask learners to name the words mentioned in both their American and British forms.

III. Productive part

4. Ask learners to:

- find as many as possible vocabulary differences between American and British English – without the use of the Internet; for this purpose, the learners can be divided into teams – and the team, which comes up with the highest number of words, wins the competition

Today it is them. Who will be next?

Figure 48. Kiribati[51]

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to nature and environment, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Present the learners with the following pictures saying:

[51] Source: https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab_channel=DWDocumentary

Figure 49. Kiribati beach[52]

Now imagine that: You are standing on this beach. You can smell the sea. Gentle breeze is playing with your hair. Waves are breaking and as they break, they form a drizzle which is falling as light rain.

Now, you turn around and see this:

Figure 50. Drowning Kiribati[53]

The whole island is sinking. It is a result of global warming and the rising of the sea level.

These are the photos from the satellite from Google Maps.

[52] Source: https://wallpapercave.com/kiribati-wallpapers
[53] Source: https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab_channel=DWDocumentary

Figure 51. Kiribati map[54]

Figure 52. Kiribati satellite map[55]

You can see the parts of the island covered by water. Those are not lakes. It is the sea that is slowly swallowing the whole island.

[54] Source: https://www.google.com/maps
[55] Source: https://www.google.com/maps

II. Receptive part

2. Tell the learners that you are going to play them a video about people living in Kiribati islands who have to face this situation every day.

A shortened version of the following video can be used, especially parts 4:56-7:14 and 14:39-16:28 are recommended, ending with the quote *"Today it's them, who will be next?"*:

https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab_channel=DWDocumentary

III. Productive part

3. Ask learners to:

- name the consequences of global warming, other than the rising of the sea level;
- propose how the affected families living in Kiribati should deal with their situation;
- propose how the government of Kiribati should aid their citizens.

Gender Selection of Babies

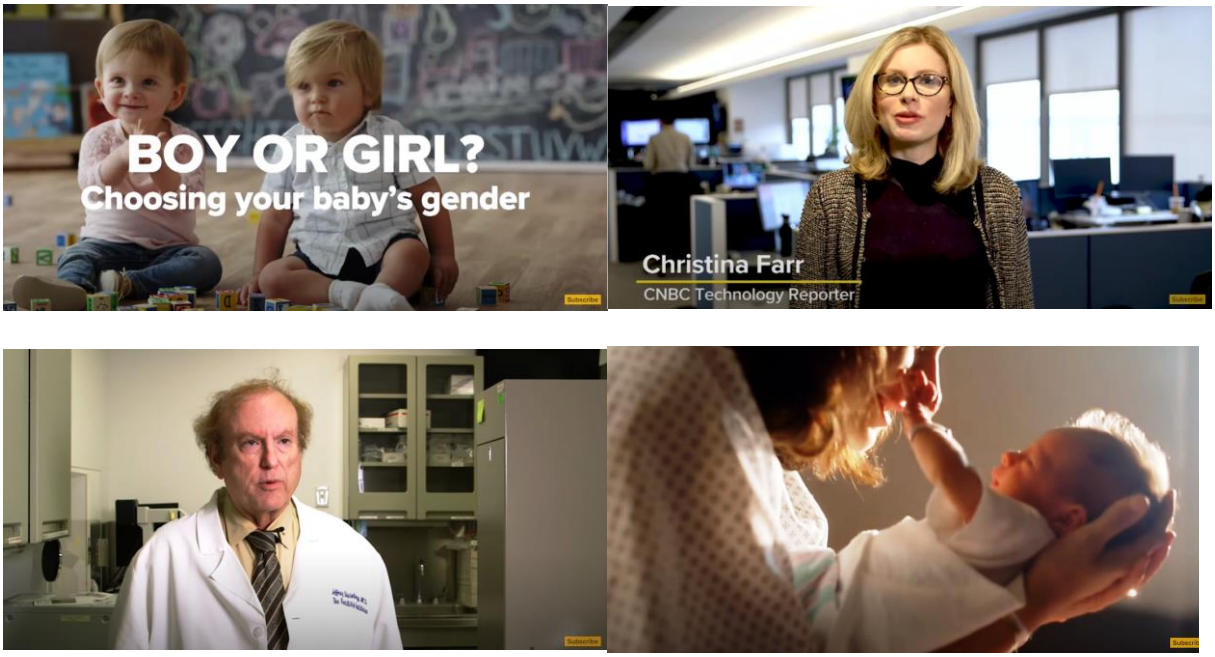


Figure 53. Gender selection of babies[56]

Level: B1+

Age group: teenagers and older

Time: 5-10 minutes

Objectives: to promote emotional engagement through video watching, to teach vocabulary specific to family and healthcare, to promote further exploration

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion using the following questions:

How many siblings do you have?

How do you get on with your brothers/sisters?

II. Receptive part

2. Inform the learners about a growing trend of the gender selection of babies.

3. Play them the following video:

https://www.youtube.com/watch?v=U6MtXl-mjHI&ab_channel=CNBC

[56] Source: https://www.youtube.com/watch?v=U6MtXl-mjHI&ab_channel=CNBC

III. Productive part

4. Start a free discussion and ask the learners about their genuine reactions to the content of the video presented. You can ask the following questions:

- Do you think the parents have the right to choose?
- Do you think it is ethical to choose?

Note: This is a very sensitive topic. Remember, there can be learners who will not want to answer your questions – do not push them to answer! Also, remember that there are no correct or incorrect answers to these questions. The aim of this activity is to raise awareness.

Somewhere in Slovakia

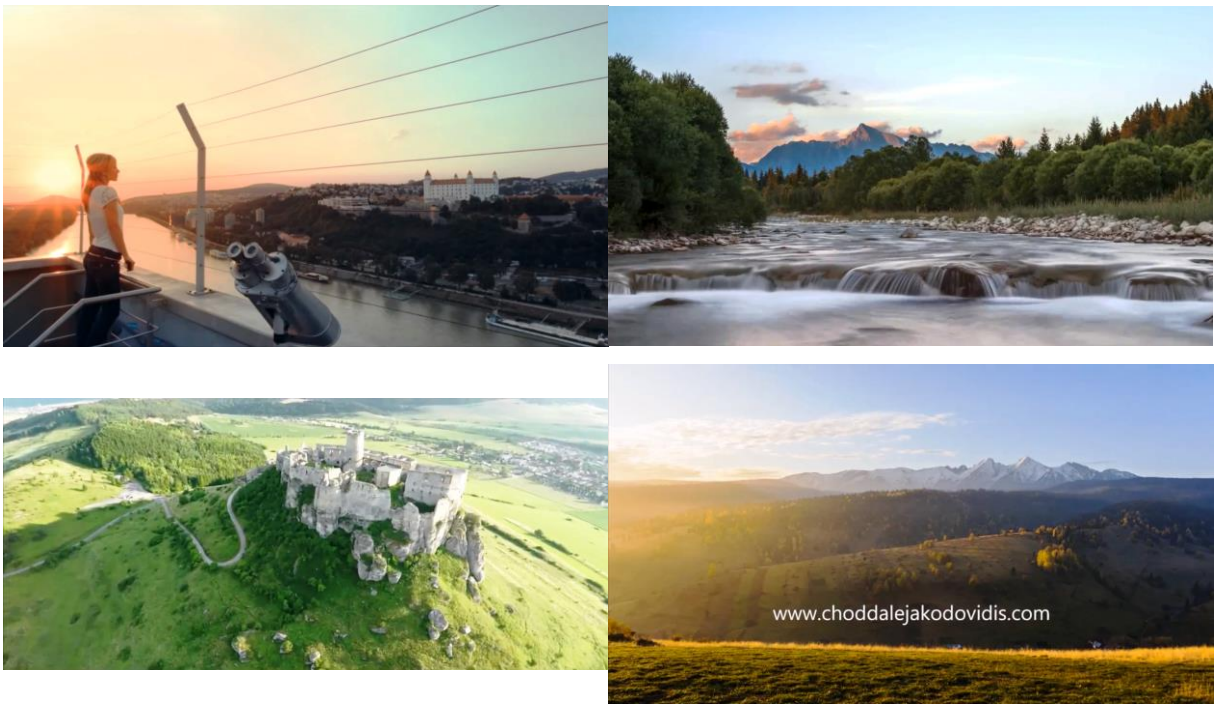


Figure 54. Somewhere in Slovakia[57]

Level: B1+

Age group: teenagers and older

Time: 5-10 minutes

Objectives: to promote emotional engagement through competition, to promote pairwork/teamwork, to encourage communication in English

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion, for instance, by asking the following question:

Is there any place in Slovakia you have never visited and would like to?

II. Receptive part

2. Competition:

- Divide the learners into pairs or groups of 3.
- Tell them that you are going to play them a video which will present several popular places in Slovakia and their task will be to write down their names on a piece of paper.

[57] Source: https://www.youtube.com/watch?v=svYx5CY3y2E&ab_channel=InspirationalVideosforTEFL

- The pair or the group with the highest number of correct names will be the winner.
- Play the video 2x:

  https://www.youtube.com/watch?v=svYx5CY3y2E&ab_channel=InspirationalVideosforTEFL

- After the second playing, give the learners a few minutes to compare their answers within pairs/groups.
- Inform the learners that you are going to read the complete list of places (Appendix E).
- Ask the learners to put "✓" or "X" to their answers, once they hear them.
- Read the complete list.
- Compare the numbers of correct answers of the pairs/groups.
- The pair/group with the highest number of correct answers is the winner.

Note: In this activity, the photos of popular places in Slovakia are used for presentation. The activity can be adapted for various countries and places in the world. Also, for the purpose of this activity, a video will be used. However, teachers can create either a PowerPoint or Prezi presentation, where they can include the photos – similarly as it is done in the presented video.

III. Productive part

3. Ask learners to:

- choose which of the presented places they find most interesting + explain why;
- talk about their experiences if they already visited the place;
- choose a place they have not visited yet and would love to.

4.2 Creative Activities

The following activities reflect the social dimension of positive psychology and the recent research findings, which suggest that when it comes to emotional engagement, the learners appreciate activities, which are done in pairs and groups the most (Kráľová, Kamenická, and Tirpáková, 2021).

On the one hand, the presented activities are designed as pair-work or group-work activities and it is the teacher's decision how many students will be placed in individual groups. On the other hand, these activities can be used as individual activities, which might be more suitable for certain learners, although more effort will be needed from them to complete the task individually.

The Protective Gear for Humpty Dumpty

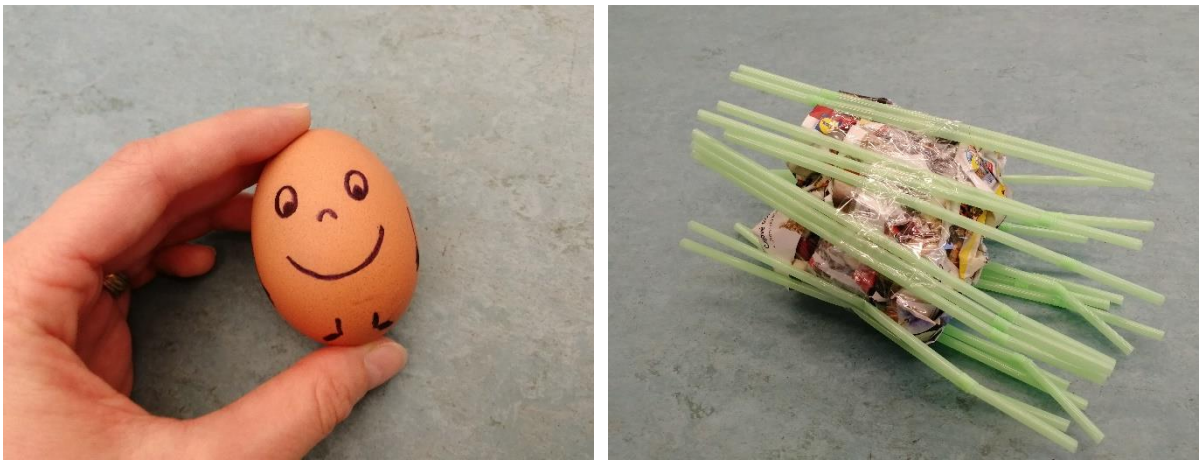


Figure 55. A protective gear for Humpty Dumpty[58]

Level: B1+

Age group: teenagers and older

Time: 20 minutes

Objectives: to promote emotional engagement through a creative activity and competition, to practice vocabulary specific to sports and literature, to promote pairwork/teamwork, to encourage communication in English

Extra materials: an egg (raw or boiled), a marker (to draw a face on the egg) old magazines or newspapers, straws, stationery tape, scissors, etc.

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion. Ask the learners if they know the story of *Alice in Wonderland*.

[58] Source: the author's private teaching journal

- If they do, discuss what they like/dislike about the story, their favourite characters, etc.
- If they do not, tell them a short summary of the story.
- Lead the conversation towards the egg character, Humpty Dumpty.

II. Receptive part

2. Using a projector or printed hand-outs, present the poem to the learners and ask someone to read the poem out loud for the whole class to listen to.

Humpty Dumpty sat on a wall,

Humpty Dumpty had a great fall;

All the King's horses

And all the King's men,

Couldn't put Humpty together again.

Make sure that the learners understand that the *fall*, which is mentioned in the poem, means very bad consequences for Humpty Dumpty.

III. Productive part

3. Competition:

- Divide the learners into pairs or groups of 3 people.
- Each group should be given an egg with a face drawn over it (raw or boiled – it is the teacher's choice, but raw eggs or if the learners believe that the eggs are raw will make them even more motivated in the following steps).
- Give each group old magazines, newspapers, straws, stationery tape, scissors, etc. Explain to them that their task will be to create protective gear for Humpty Dumpty – using the given items.
- Set a time limit, during which they will have to complete the protective gear – each group will start at the same time and will have an equal amount of time to complete the task. For this purpose, you can play the *Mission Impossible* theme, which is approximately 3,5 minutes long.
- After the protective gear is completed, ask the learners to discuss in the groups the purpose of the individual components of the gear – this should not take longer than 5 minutes. Support their creativity – the explanations can be made-up, fictional, not based on the laws of physics.
- Ask each group to present their padded gear to the class and explain the purpose of its individual components.
- After the presentations are over, let each group throw down their Humpty Dumpty in the padded gear from the window/staircase/a higher place, to see if he survives the fall. (The layer of paper, which each protective gear consists of will protect the raw eggs from making the place of the impact dirty if they crack.)
- In the last step, let the learners check if their Humpty Dumpty survived the fall unharmed.

A Half-Artist

Level: B1+

Age group: teenagers and older

Time: 20 minutes

Objectives: to promote emotional engagement through a creative activity, to practice vocabulary specific to arts, to promote pairwork/teamwork, to encourage communication in English

Extra materials: tempera or watercolours, brushes, palettes, several sheets of paper of a larger size – at least A2

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion. Ask the learners what kind of art is their favourite and if they do it.

II. Receptive part

2. Any reading or listening task available in the generally available EFL textbooks, which deals with arts and culture, can be used at this point.

III. Productive part

3. Competition:

- Divide the learners into pairs or groups of 3 people.
- Give each group the tempera or watercolours, a brush, a palette, a sheet of paper of a larger size – at least A2.
- Explain to them that their task will be to create a drawing. The learners in each pair/group will have to take turns when drawing. Each learner has only one stroke of a brush – however long/short and of whatever shape. So, they will have to cooperate to create the final drawing.
- Give the learners 2 minutes to discuss their ideas about the final drawing – it can be something concrete or abstract.
- Set a time limit, during which they will have to complete the drawing – each group will start at the same time and will have an equal amount of time to complete the task. For this purpose, you can play any relaxing music – it is advisable to use *YouTube* and to project the video for this purpose, so that the learners will have the possibility to check how much time they still have left.
- Start with the activity.
- At the end, let the learners present their final drawings and their meanings to the class.
- Display the final drawings somewhere in the classroom.

My Future

Level: B1+

Age group: teenagers and older

Time: 20 minutes

Objectives: to promote emotional engagement through a creative activity, to practice vocabulary specific to future plans, to encourage communication in English

Extra materials: none

OPTIONAL: sheets of blank paper, colourful crayons

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion. Ask the learners what their childhood dream jobs were.

II. Receptive part

2. Any reading or listening task available in the generally available EFL textbooks which deals with future plans (e.g., study, jobs, family life, etc.) can be used at this point.

III. Productive part

3. Using colourful crayons, any pencils, or pens, and a blank sheet of paper (can be provided by the teacher), ask your learner to draw how they imagine their future – ask them to include their life dreams, plans, etc. (they can also draw an abstract drawing).

4. Ask the learners to show their drawings to the class and let the classmates guess the meanings of the drawings.

5. Ask the authors of the drawing to explain the meanings behind their drawings.

6. Ask your learners to put the drawing in the textbook of the subject they have most difficulties with, or to display it somewhere, where they can often look at it. Encourage them to look at the drawing every time they lack the motivation to move forward.

Digitale

Level: B1+

Age group: teenagers and older

Time: whole class and longer

Objectives: to promote emotional engagement through storytelling, to teach vocabulary specific to any topic of the teacher's choice, to promote further exploration

Extra materials: a device to take photos, objects used for the creation of scenes, computer, *PowerPoint* or *Prezi* software

Procedure:

I. Activating prior knowledge and associations

1. Start with a short discussion about any topic you are supposed to cover within the curriculum for the given EFL subject.

II. Receptive part

2. Any reading or listening task available in the generally available EFL textbooks, which deals with the target topic, can be used at this point.

III. Productive part

3. Ask the learners to create or digitalise a story they already read on the given topic. Ask them to find the photos of individual scenes and then to put them to the form of a *PowerPoint* or *Prezi* presentation. For the creation of scenes, various objects can be used – for instance, plush toys, toy cars, dolls, etc.

The finished product should consist of several slides telling the story – each slide should contain one or two sentences, together with an illustration or a photo. More advanced computer users can add an interesting soundtrack or use software for video production instead of presentation software.

For this activity, it is advised to work in pairs or groups of 3 people.

4. When finished, the learners should share their stories with their classmates. After presentations, ask the learners to give feedback to their classmates' presentations.

The finished product can look like this:

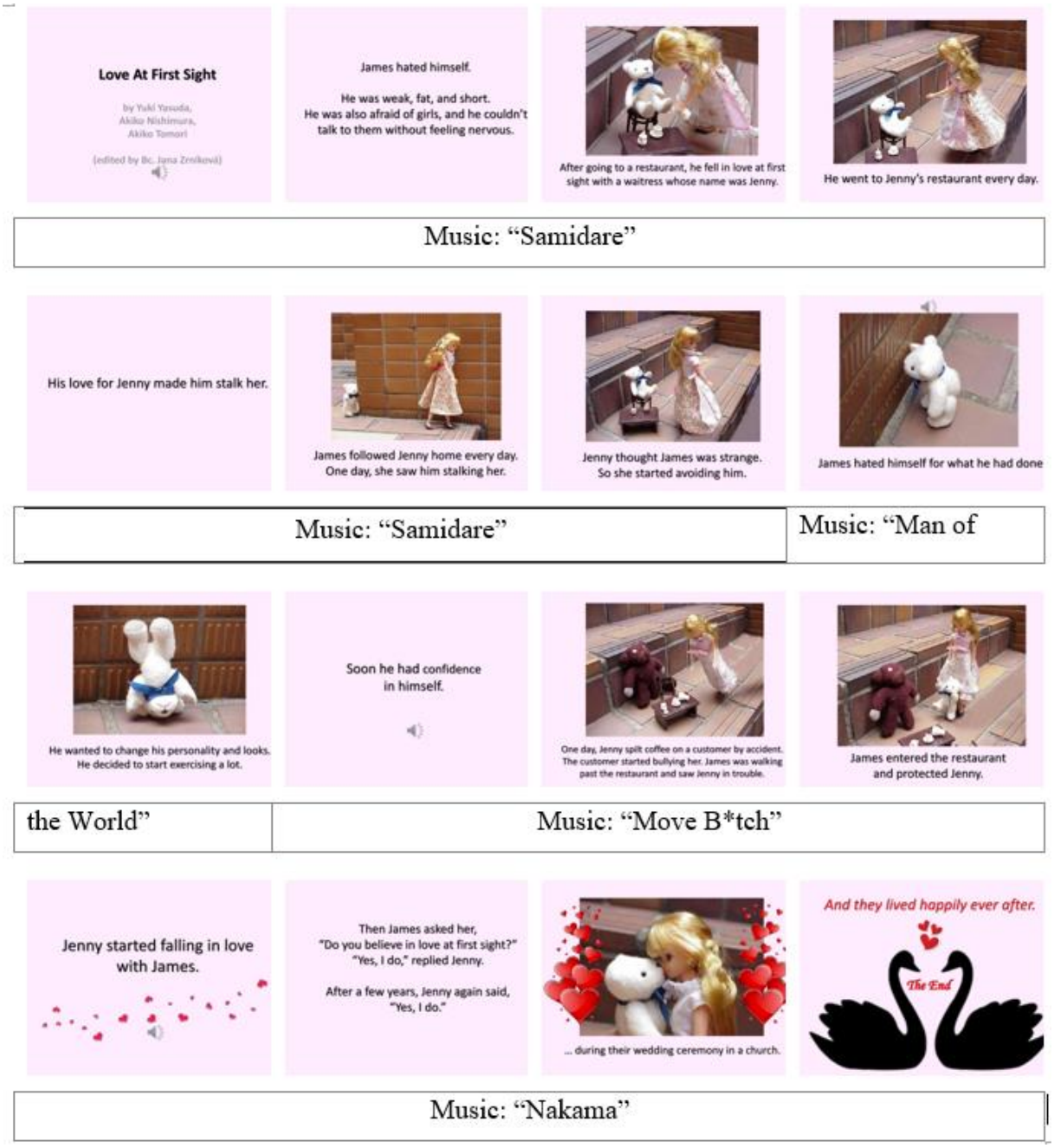


Figure 56. Digitale "Love at First Sight" overview [59]

Note: This technique is especially suitable for a FL classroom, as it uses multisensory materials for both expression and comprehension. We would like to emphasise that when stories are put in this form, they especially rely on sensory sensations.

[59] Source: Story provided by Kelly, 2016; Overview was created by the author of this work. This technique was originally developed by Rex Tanimoto at Osaka Gakuin University, Japan.

Peekers

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through exploration of unknown places, to teach vocabulary specific to real-life objects (or travelling, holidays, etc.), to describe common objects, to encourage communication in English (esp. picture description and speculating about pictures)

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. This activity can be used as a quick warm-up for any EFL class despite the topic.

Alternatively, for a class dealing with travelling, holidays, environmental issues, etc., it is advised to start with a short discussion on the given topic.

II. Receptive part

2. Using *Google Street View* in *Google Maps*, choose a random location on the map. You can do so yourself as the teacher – you might choose a certain area intentionally. Alternatively, you can ask a volunteer from the class to choose a random location themself.

3. Explore the area with the learners.

III. Productive part

4. Ask the learners to:

- write the list of as many things as possible they can see;
- if they cannot name them in English, ask them to write the word in their mother tongue;
- go through the list of the words, check if they used them correctly, help them with the English terms for items they could not name;
- ask the learners to form sentences (using the words from their list) to describe the scene they see through *Google Street View*;
- ask the learners to form sentences (using the words from their list) to speculate about the scene they see through *Google Street View*;

Note: This activity can be done individually, in teams, or in groups – as a competition or as a simple practice.

Peekers and Spies

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through exploration of unknown places, to teach vocabulary specific to real-life objects (or travelling, holidays, etc.), to describe common objects, to encourage communication in English

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. This activity can be used as a quick warm-up for any EFL class despite the topic.

Alternatively, for a class dealing with travelling, holidays, environmental issues, etc., it is advised to start with a short discussion on the given topic.

II. Receptive part

2. Using *Google Street View* in *Google Maps*, choose a random location on the map. You can do so yourself as the teacher – you might choose a certain area intentionally. Alternatively, you can ask a volunteer from the class to choose a random location themself.

3. Explore the area with the learners.

III. Productive part

4. "*I spy with my little eye*" activity:

- present the scene of a random location using *Google Street View* to learners;
- act as a "spy" – look around the location and choose one object; then announce: "I spy with my little eye something purple.";
- the learner who guesses the object becomes the next spy.

Note: The aim for learners is to guess, which object the spy has on their mind, based on the colour description. However, it is possible to substitute the colours with shapes, material, the beginning letter of the target word, or other characteristics – based on what language item you want your learners to practice.

Peekers and Word Bingo

Level: B1+

Age group: teenagers and older

Time: 10 minutes

Objectives: to promote emotional engagement through exploration of unknown places, to teach vocabulary specific to real-life objects (or travelling, holidays, etc.), to describe common objects, to encourage communication in English

Extra materials: none

Procedure:

I. Activating prior knowledge and associations

1. This activity can be used as a quick warm-up for any EFL class despite the topic.

Alternatively, for a class dealing with travelling, holidays, environmental issues, etc., it is advised to start with a short discussion on the given topic.

II. Receptive part

2. Using *Google Street View* in *Google Maps*, choose a random location on the map. You can do so yourself as the teacher – you might choose a certain area intentionally. Alternatively, you can ask a volunteer from the class to choose a random location themself.

3. Explore the area with the learners.

III. Productive part

4. "*Word Bingo*" activity:

- present the scene of a random location using *Google Street View* to learners;
- draw the following grid on the board:

Figure 57. The grid for "Peekers and Word Bingo" activity

- ask the learners to copy the grid;
- ask the learners to write the words they remember from the presented location into their grid;
- then, present the location again and name the items you see out loud;
- ask the learners to cross the words you name off their grid (provided that the words are included there);
- the learner, who will be the first to cross all six words, should shout "Bingo!" and becomes the caller for the next round of the game.

Note: This game can be adapted for any context (including stories, videos, describing objects in the classroom, etc.), not just with the use of Google Street View.

Treasure Hunting

Level: B1+

Age group: teenagers and older

Time: 20 minutes up to whole class and longer

Objectives: to promote emotional engagement through creative writing and treasure hunting, to encourage communication in English

Extra materials: a treasure (i.e. a box containing chocolate, candies, etc.) – it can be provided by the teacher or by learners themselves (the teacher can divide them into groups on the previous class and ask them to prepare the treasure for the next class)

Procedure:

1. Divide the learners into groups of 3+ learners – it is recommended to make sure that there is an even number of groups in the class (step no. 6 will be easier). Tell them they are going to write a poem with the directions to find the treasure they are going to hide somewhere in the school building.

2. Ask the learners in groups to agree on a specific place and to start writing the poem. It should be 4-8 lines long. Recommend them to use *www.rhymezone.com* to find proper rhymes if they have problems with creating rhymes themselves. Give them a time limit and inform them about how much time they have left in the course of writing sensitively – i.e. not every minute.

The poems can look like this:

Where the Snow White weeps,

the cherry trees bloom.

The hidden treasure sleeps

in a secret tomb –

hidden by the petals fallen,

never ever to be stolen.[60] [61]

3. When the poems are completed, ask one person from each group to hide the treasure.

4. After the learners come back to the classroom, decide which groups will swap their poems with each other.

[60] The poem was written by the author of this publication. EXPLANATION: The treasure is hidden in the office of EFL teacher (hopefully, she does not really weep there, but has some privacy at least), who looks like a Show White. She has a decorative sakura branch in the office. The treasure is hidden in the box placed under this branch. (The author of the poem is the author of this publication.)

[61] This activity has been adapted from an unpublished material created by Štefančíková (2018).

5. It is time for reading the poems and deciding where the treasures are hidden.

6. Let the groups look for the treasures. Inform them that they are not allowed to unpack/open them – unless they are back in the classroom.

7. Let the learners enjoy the treasures they found.

4.3 Activities Aimed at Multisensory Experiences

Backpack Story

Level: B1+

Age group: teenagers and older

Time: 10-20 minutes

Objectives: to promote emotional engagement through haptic perception, to present/revise specific vocabulary (e.g. travelling, airport, food, etc.), to encourage communication in English on a specific topic (e.g. travelling, airport, food, etc.)

Extra materials: a backpack, items to place into a backpack

Procedure:

1. Tell the learners a story about the problem you encountered when travelling, for example, like this:

This summer, I wanted to visit my cousin, who lives in Edinburgh. I decided to fly there. However, at the safety control at the airport, I was stopped and informed that there were certain problematic items in my backpack, which I wanted to take with me to the cabin of the aircraft.

I really did not understand, where the problem was, because I always pack these items when I travel.

Can you help me and explain what was wrong?

2. Unzip the backpack so that the opening is big enough for a hand to slip through. Ask if there are any volunteers, who want to examine the contents of the backpack using their haptic perception only. Alternatively, you can ask every learner to investigate.

3. Inform the learners about the number of items in the backpack. Ask them to only touch the items, not to shout their names out.

4. After the volunteers (or willing learners) examined the contents of the backpack, ask them to name the items – one by one. When they guess correctly, take the item out of the backpack and show it to them. Make sure that you repeat its name out loud for the whole class to hear.

The items can include something stereotype-oriented, or typical for a certain region in your country – but make sure that you include both allowed and prohibited items – such as:

- a bacon (allowed),
- a sausage (allowed),
- a bottle of beer (prohibited),
- a wooden cutting board (allowed),
- an onion (allowed),
- a block of local cheese (allowed),

- a signal whistle (allowed),
- a hand knife in a sheath (prohibited) – make sure you will not cause any harm to learners, prevent them from touching the blade !!!

5. After all the items have been named, ask the learners, which of the items were the problematic ones and why.

- a hand knife – sharp objects are not allowed in the cabin of the aircraft;
- a bottle of beer – liquids are not allowed in the cabin of the aircraft unless they have 100 ml or less in volume and are put in plastic zip-lock bags;

6. At the end of the activity/class, the teacher might consider sharing the food items with the class.

My Face

Level: B1+

Age group: teenagers and older

Time: 10-20 minutes

Objectives: to promote emotional engagement through sensory perception, to encourage communication in English, to practice a target grammar, to practice a target vocabulary relating to senses, to break the ice if used in the introductory EFL lesson

Extra materials: none

Procedure:

PART 1

Ask the learners to:

1. Draw a picture of their face on a sheet of paper (at least A5 size).
2. Next, create a label for every part of their face: eyes, nose, mouth, ears, cheeks, and forehead.

   Every part of their face will represent their senses and the forehead will be the symbol of their mind:

   - eyes = sight,
   - nose = smell,
   - mouth = taste,
   - ears = hearing,
   - cheeks = touch,
   - forehead = mind.

3. Fill in the empty labels with things they like (with regard to their senses) and match them to the individual parts of the drawing of their face. For instance, like this:

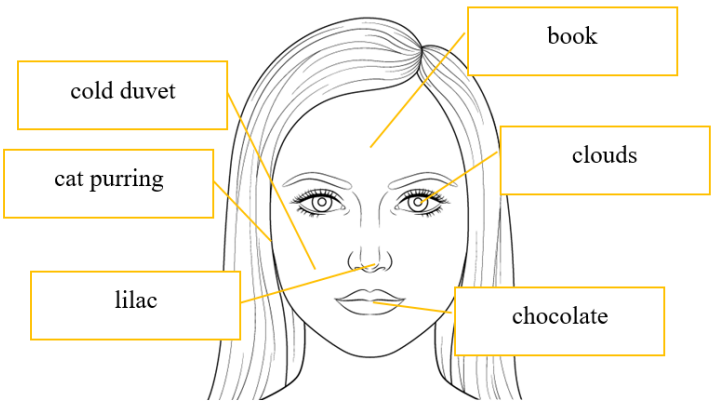


Figure 58. My face drawing[62]

[62] Source: https://www.easydrawingtips.com/how-to-draw-female-face-step-by-step-tutorial/

4. Complete the following sentences.
    - **EYES** – *I like **to watch...***
    - **NOSE** – *I like **to smell/the smell of...***
    - **MOUTH** – *I like **the taste of...***
    - **EARS** – *I like **to listen to...***
    - **CHEEKS** – *I like **to touch/the touch of...***
    - **FOREHEAD** – *I often **get lost in thoughts about...***
5. Move around the classroom and discuss their sentences with a random classmate – at least 3 classmates (1 person at a time !!!).
6. Sit down and share their sentences with the rest of the class publicly (you can choose just several learners for each of the senses).

PART 2

This part can be used as a follow-up activity in the class or as homework.
Ask the learners to:

1. Using the same picture, think about things they would like to experience (with regard to their senses).
2. Fill in the empty labels with things they would like to experience (with regard to their senses) and match them to the individual parts of the drawing of their face.
3. Complete the following sentences, discuss with the partner sitting next to them, and share with the class.
    - **EYES** - *I would like **to watch/see...***
    - **NOSE** - *I would like **to smell...***
    - **MOUTH** – *I would like **the taste...***
    - **EARS** - *I would like **to listen to/ to hear...***
    - **CHEEKS** - *I would like **to touch...***
4. Discuss their sentences with the partner sitting next to them (provided that this activity is not done as homework).
5. Share their sentences with the class (you can choose just several learners for each of the senses).

The Place I Call Home

Level: B1+

Age group: teenagers and older

Time: 10-20 minutes

Objectives: to promote emotional engagement through visualisation, to practice the listening skill in English, to practice creative writing, to practice specific vocabulary, to practice picture/scene description, to break the ice if used in the introductory EFL lesson

Extra materials: description of the place the teacher calls home for visualisation (prepared in advance)

Procedure:

This activity can be used as an ice-breaker at the beginning of an EFL course. Alternatively, it can be used as a part of EFL class, when the topic "Home" will be discussed.

I. Activating prior knowledge and associations

1. Start with a short discussion about *what makes a home a home*.

II. Receptive part

1. Tell the learners you are going to describe the place you call *home*.

2. Ask them to close their eyes and visualise as you will read.

3. Read your description in a calm voice and at a rather slower pace. For instance, the description can look like this:

Now, close your eyes and imagine:

A forest. There are pine trees and oaks. The smell of those pines, oak leaves and bark is everywhere. When you look around, there are also ferns in the forest. There are loads of them…

Next, you notice a travertine rock formation. It forms an overhang – or rather, a small cave. It is not very deep, rather shallow, probably 2 meters. The cave opening is the size of an adult person or a little bit bigger. The mouth of the cave is overgrown with ivy and other forest plants.

There is a small waterfall hitting the upper part of the back cave wall. It hits the rocks and forms a second waterfall, which falls straight to the ground and forms a small stream.

As this stream flows out of the cave, there is a stone bridge. It was formed naturally by the stream itself. You follow the stream and you notice that it forms a small pond. You are standing there and you decide to crouch and touch the water with the fingers of your right hand. The water is cold, yet crystal clear. You can see the small stones at the bottom of the stream.

But just then you notice that there is a lot of rubbish everywhere… old bottles, tins, plastic wrappings…

All of a sudden, you see an old man, who is walking in the forest. You can see it in his face, that he is a good man. He has something in his hands. He stops at an old tree which grows beside the pond and he nails a picture of a beautiful angel to that tree. Then you see him picking up the rubbish and cleaning the place.

Just then you notice a small fair-haired girl joining the old man. She is hopping around the tree, she is singing and holding a bouquet of wild flowers in her hands. She puts the bouquet under the tree and the picture in a plastic container with water from the stream the old man passes to her. She smiles at the old man lovingly. He lovingly smiles back. Just then you notice the similarities in their facial features. They are grandfather and granddaughter.

The girl is an adult now. The old man died 10 years ago. The people who lived near that place continue the old man's legacy. They even replaced the old picture of the angel with a new one. They bring flowers and plant them there even these days.

This place feels like a home to me. This was the story of my grandfather and me.

III. Productive part

4. Ask the learners to create a similar story about the place they call *home*.

5. Ask learners to present their stories to the class.

Imaginary Ball

Level: B1+

Age group: teenagers and older

Time: 5-10 minutes

Objectives: to promote emotional engagement through miming and sensory perception, to encourage communication in English, to practice a target grammar, to practice a target vocabulary, to break the ice if used in the introductory EFL lesson

Extra materials: none

Procedure:

This activity can be used as a warm-up or active brainstorming, which involves movement and lots of imagination from learners.

1. Ask the learners to stand up and form a circle.

2. Tell them that you are going to ask them several questions and their task will be to answer them.

3. Mime/show them that you have a ball in your hands and you are going to throw it. The person who catches the ball will be expected to answer your question and throw the ball to another classmate to answer the same question, too.

4. Ask the question – just then throw the ball. (This will make every single learner in the group think about the answer. If you threw the ball and just then asked the question, only one learner will be thinking about the answer.)

Remind the learners that if the imaginary ball falls down, they will need to pick it up. Encourage their creativity by asking them to *throw* the ball in a funny way, etc.

Stories around the fire

Level: B1+

Age group: teenagers and older

Time: 20 minutes up to whole class and longer

Objectives: to promote emotional engagement through a cosy atmosphere and sensory perception, to encourage communication in English, to practice a target grammar, to practice a target vocabulary

Extra materials: a candle/candles, a glass/glass or a jar/jars to put the candle/candles in, matches to light the candle/candles

Procedure:

This activity can be used on multiple occasions. Several ideas will be presented – it is advised to use just one per class.

1. Ask the learners to sit in a circle.
2. Light a candle/candles and place them in the middle of the circle to create a cosy atmosphere.
3. Present them one of the following photos – you can use the projector to project the photo.
4. Inform them that the photo they see is a photo of a real place on Earth.
5. Ask them to write a short story about the place presented. Ask them to be creative. They can write about how that place came into existence.
6. Play white noise, which would complement the atmosphere caught in the photo.
7. After they finish writing, ask them to read their stories for the class to listen to.
8. At the end of the activity, you can consider playing the learners a video where the name of the place discussed will be revealed together with some more information about the place.

Firefly Forest

Figure 59. Firefly Forest[63]

White noise:

https://www.youtube.com/watch?v=-ax9ogqG8FE&ab_channel=TOMOKINatureSounds%26Landscapes

Video about the place:

https://www.youtube.com/watch?v=CiB4BdZCduE&ab_channel=EdwinLee%28FalloutMedia%29

[63] Motosu Hotaru Park, Japan. Source: https://blog.japanwondertravel.com/best-places-to-see-fireflies-in-japan-23885

Crystal Cave

Figure 60. Crystal Cave[64]

White noise:

https://www.youtube.com/watch?v=dzV3o8zr5Hw&ab_channel=MichaelGhelfiStudios

Video about the place:

https://www.youtube.com/watch?v=fXo60AuCSwc&list=WL&index=1&t=24s&ab_channel=TOPBOXTV

[64] Naica Crystal Cave, Mexico. Source: https://www.geologyin.com/2014/11/the-huge-cave-mines-at-naica-mexico.html

Sea of Stars

Figure 61. Sea of Stars[65]

White noise:

https://www.youtube.com/watch?v=ttsZY1Rgl_c&ab_channel=HopeMaker2021

Video about the place:

https://www.youtube.com/watch?v=vOPliKfxk8Y&ab_channel=WonderWorld

[65] Vaadhoo Island, Maldives. Source: https://www.atlasobscura.com/places/sea-of-stars

Lake of Many Colours

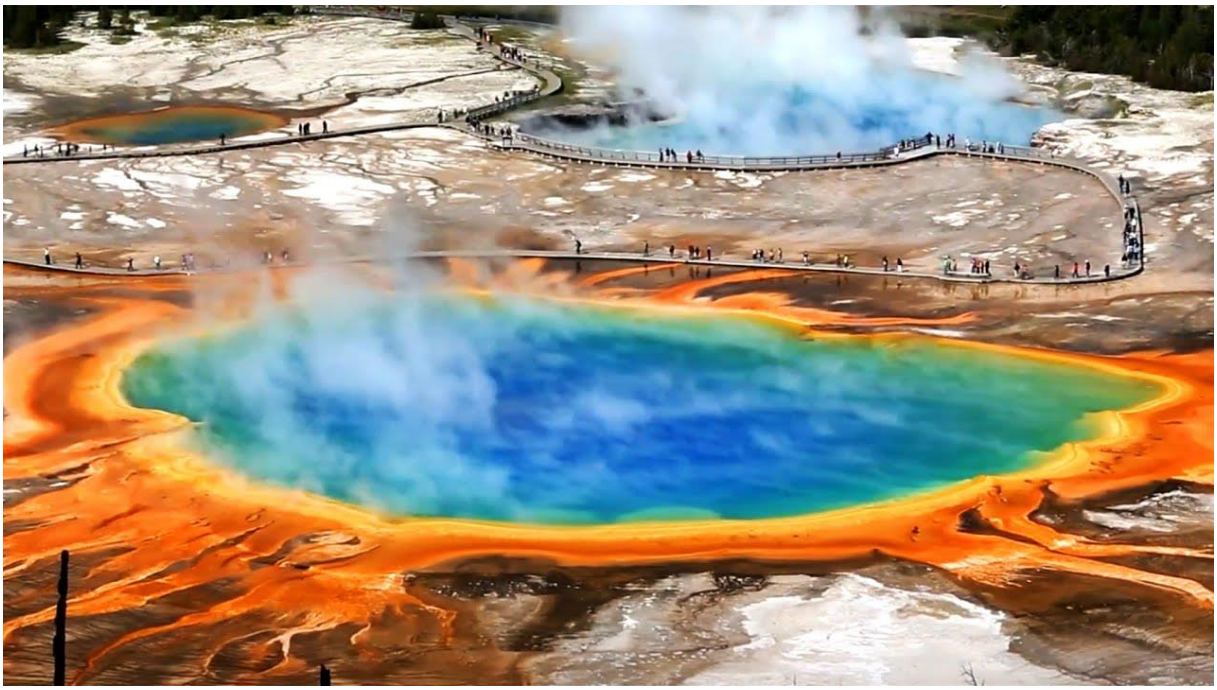


Figure 62. Lake of Many Colours[66]

White noise:

https://www.youtube.com/watch?v=_YO8rKMCeck&ab_channel=NatureSoundscapes

Video about the place:

https://www.youtube.com/watch?v=t5IDzsVTf-Q&ab_channel=SmithsonianChannel

[66] The Grand Prismatic Spring, Yellowstone. Source: https://www.travelinusa.us/grand-prismatic-spring/

Cave of Stars

Figure 63. Cave of Stars[67]

White noise:

https://www.youtube.com/watch?v=4M5TG6SfWx0&ab_channel=AmbientRealm

Video about the place:

https://www.youtube.com/watch?v=JC41M7RPSec&ab_channel=StokedforSaturday

[67] Waitomo Caves, New Zealand. Source: https://twitter.com/fieggentrio/status/955366122647445504/photo/1

Heaven's Gate

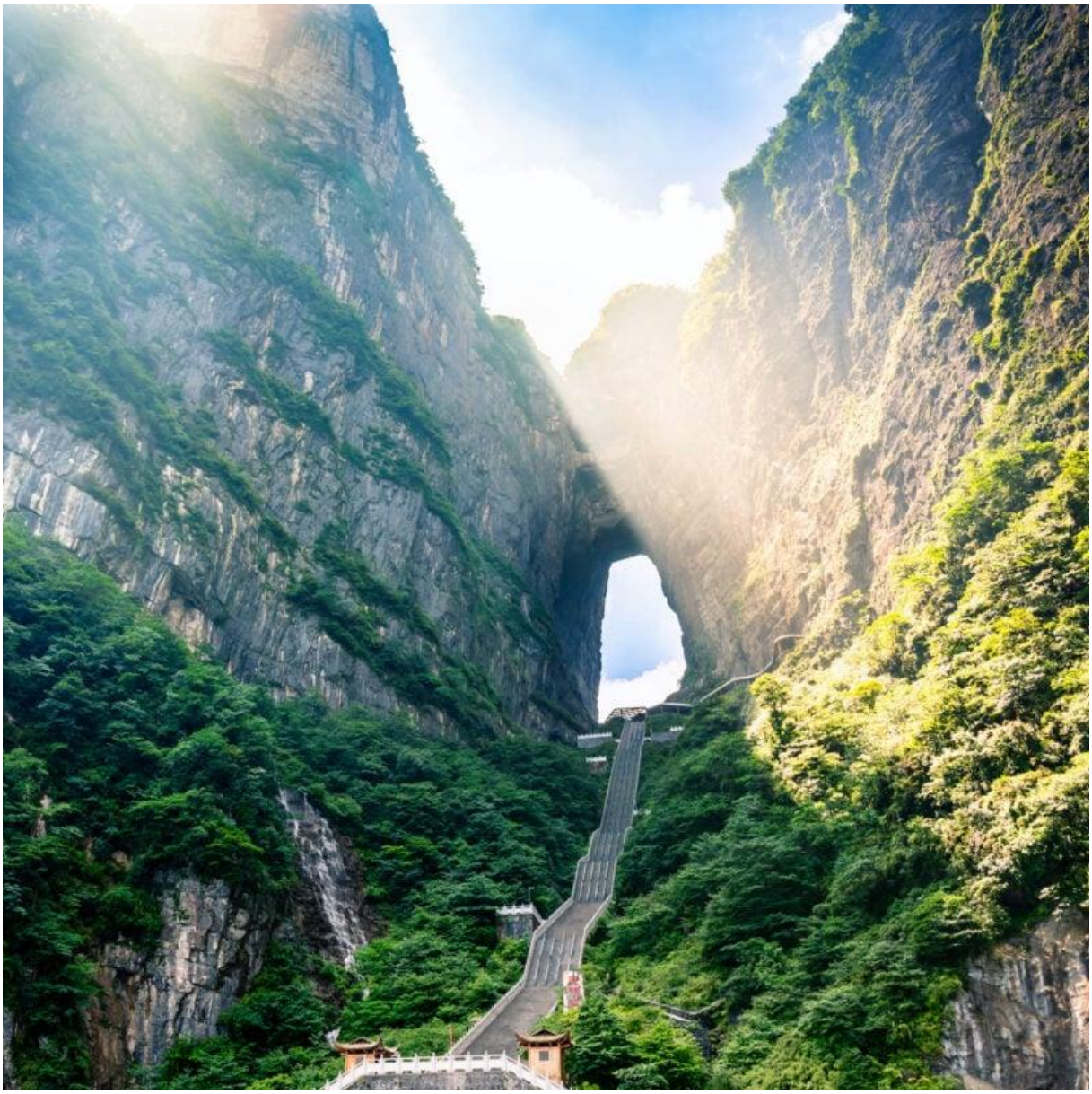


Figure 64. Heaven's Gate[68]

White noise:

https://www.youtube.com/watch?v=ND3dfvaHV20&ab_channel=earthfm%3Anaturesoundsforsleep%2Ccalm%2Cconnection

Video about the place:

https://www.youtube.com/watch?v=7-_zV-VxoE8&t=63s&ab_channel=GrandTravel

[68] Tianmen Mountain, China. Source: https://www.travelawaits.com/2559685/tianmen-mountain-how-to-visit/

Silken Castle

Figure 65. Silken Castle[69]

White noise:

https://www.youtube.com/watch?v=EAwZk0a208U&ab_channel=PowerfulMeditation

Video about the place:

https://www.youtube.com/watch?v=BGywGrkdmeU&ab_channel=GeologyHub

[69] Pamukkale, Turkey. Source: https://www.kamzakrasou.sk/cestovanie/pobyty-a-vylety/cestovanie/72/galeria/2575/3/#galeria

4.4 2-Click Emotions through Music

In many cases, the educators might feel too bound by the curriculum given by the Ministry of Education of their country so that they do not have time for the type of activities presented above with their learners – especially when it comes to teenage learners and older.

The great news is that even with activities from textbooks, it is possible to bring emotional engagement to classes – for instance, by using ***2-Click Emotions through Music***[70]. This technique is very simple. It includes only a very little extra effort from the teacher but has a great effect. It can be used in the following instances:

1. When working on a task, we can set **a time limit** for the learners. We suggest:
    - First, project the stopwatch for all the learners to check how much time they have left.
    - Second, play a certain soundtrack while the learners are working to remind them of the time limit – for instance, *Mission Impossible* main theme, *Pirates of the Caribbean* main theme, etc.
2. When **learners are reading their final products** in the form of stories, poems, etc., play a certain soundtrack to set the right mood. It can be very enriching to ask learners what soundtrack they would like you to play – for instance, *Avengers* main theme, *Titanic* main theme, *Harry Potter* main theme, etc.
3. When learners are working on **productive tasks**, esp. the longer ones – both in spoken and written form, play study music. You can type *study music* or *ambient music* phrase to *YouTube* and you will see that there are plenty of options from which you can choose. This music should not be too disturbing and should create a pleasant atmosphere for the learners. Some of the recordings include even the white noise sounds – such as fire cracking, raindrops, sounds of the ocean, etc. Note: This does not have to be suitable for every learner, but is definitely worth the try.

Feel free to incorporate music in your classes anyhow you find suitable as an educator. The filmmakers use music to intensify our experiences when watching their films. However, there is not much research done on the effects of music in the context of TEFL. We would appreciate it if you decided to share your experience with us – by contacting the author of this publication.

[70] This term was coined for the purpose of this publication by the author. In fact, this technique can include more than two clicks of the mouse or the keyboard of a computer, but is still very simple, yet effective in the creation of emotional charge.

4.5 Media with a Potential to Create Emotional Hooks

The list of activities with the potential to emotionally engage EFL learners is endless. However, it is not only the activity itself but also the media which have this potential. In the following pages, some of the media, which are especially suitable for TEFL classes – regardless of the age of the learners, will be listed and briefly discussed.

Prezi

Prezi is a software used for making **presentations** and **videos**, which is considered very attractive and uses a lot of engaging visuals. Unlike *PowerPoint*, it does not work linearly – using slides, but rather as a mind map – using **zooms**, to create topics, subtopics, etc.

Probably the most noticeable difference is that the zooms in *Prezi* move in a pre-defined **path** on a picture, map, photo, etc. It is up to the user's choice, if they decide to use pre-defined templates or their own design for their presentation. Furthermore, it allows zooming through **several layers**. For instance, the user can be presented with a photo of a woman. Firstly, the user will zoom in to see her face more closely. Then, the user will zoom in to see her right eye more closely. Next, the user can zoom in to see the detail of the iris in her eye.

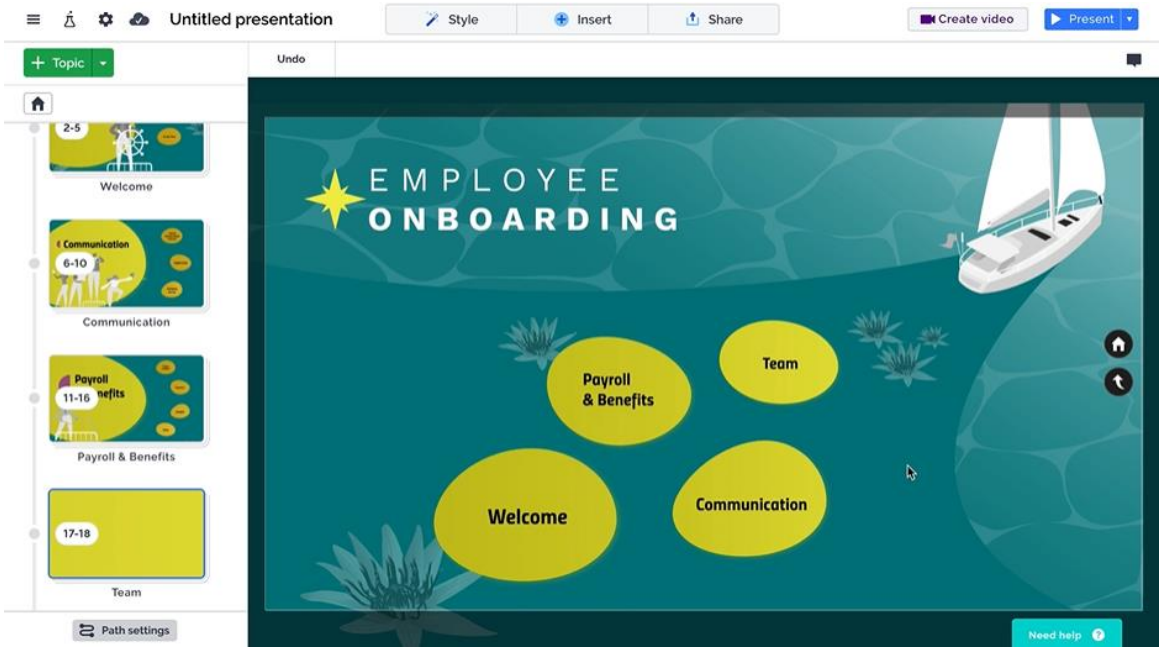


Figure 66. Prezi presentation[71]

[71] Source: https://prezi.com/

WocaBee

WocaBee is an application, which can be used for learning the **vocabulary** of any foreign language. It is especially useful for revision and competitions between learners. It works on every device – smartphones, tablets, and computers.

One of its greatest benefits is the fact that the **teacher can manage their class** – for instance, by adding vocabulary packages. Learners practice the vocabulary in a playful way, they can be asked to complete the practice as homework within the assigned deadline. The teacher can see the completed homework.

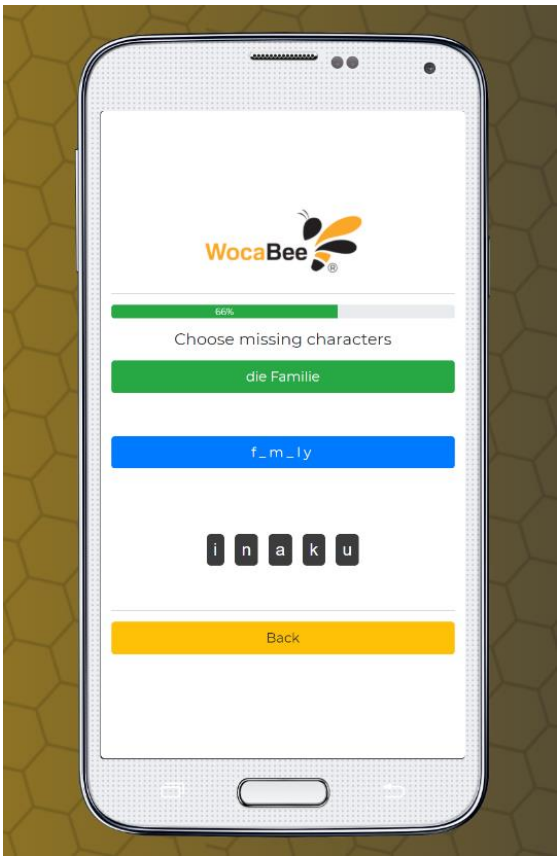


Figure 67. WocaBee[72]

[72] Source: https://www.wocabee.app/?lang=EN

Kahoot

Kahoot is a tool for the creation of learning games or quizzes on any topic, in any language. It allows the user to **host** a live game with questions they created on a big screen or **share** the game with other remote players. Any user can join a *Kahoot* game with a PIN provided by the host. After that, they will be able to answer questions on their device (e.g. a smartphone).

It operates on the principle of **competition**, when after answering the question, the players will be informed who answered correctly and the fastest person to answer correctly will get the highest number of points. Everyone loves to play – regardless of their age.

Figure 68. Kahoot[73]

[73] Source: https://kahoot.com/home/kahoot-plus/

FlySky – The Interactive Floor

FlySky is a multimedia product, which makes learning more engaging for any age group of learners. The learners learn any subject, including foreign languages through playing. This device uses a projector to project the images on the floor, a processing unit, and a camera with a dedicated software. The projection on the floor is activated and responds to the users' movements – they trigger the change of images.

This device allows the use of a wide range of **games**, **applications**, and websites – which are targeted at specific school subjects.

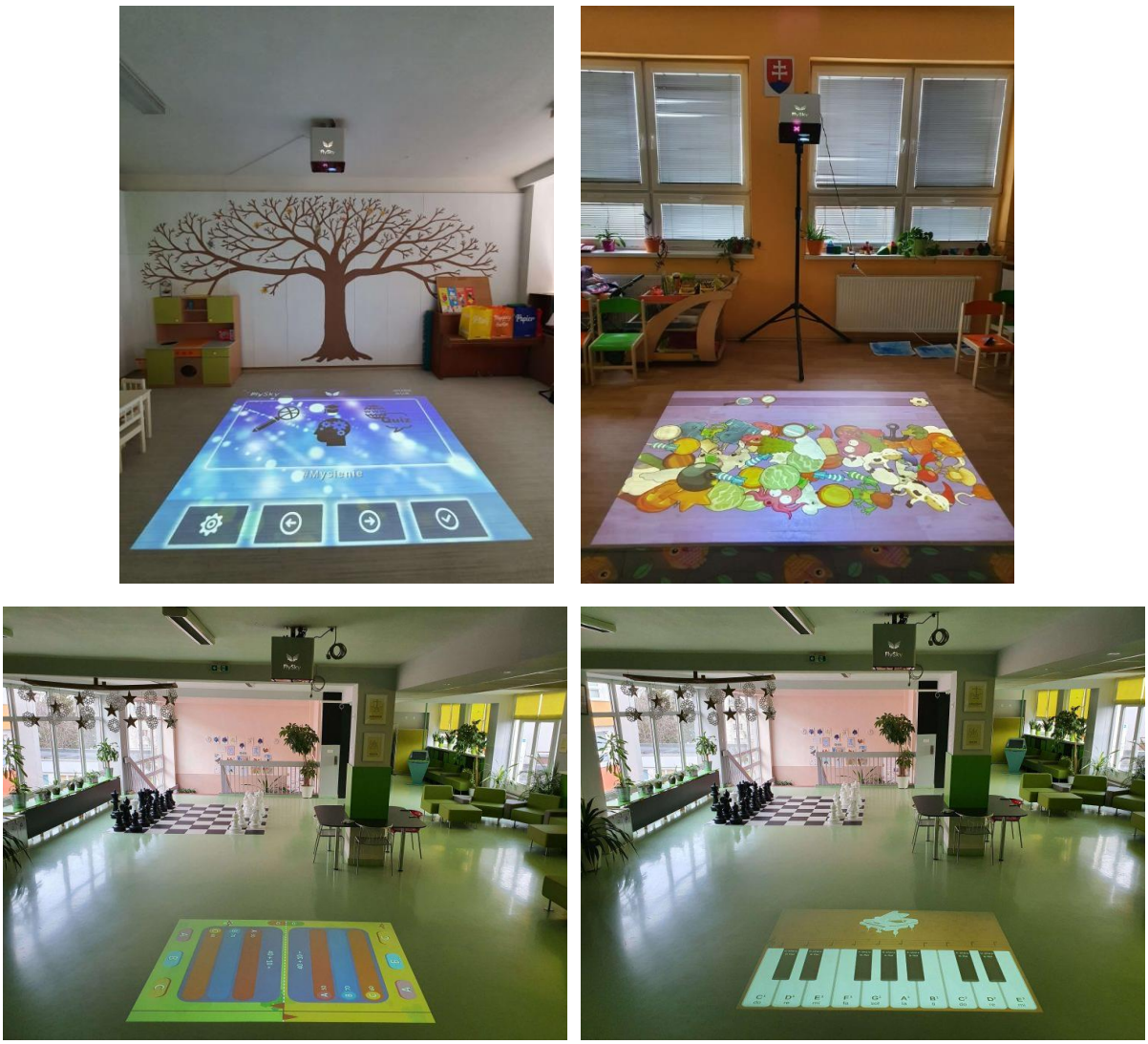


Figure 69. FlySky[74]

[74] Source: https://unikor.sk/interaktivna-podlaha-flysky/

Conclusion

The human brain is still too complex for scientists to fully understand how it functions and the complexity of its processes. Similarly, despite a huge amount of scientific data, we still have not been able to fully grasp the human psyche.

In this work, we presented and discussed the most popular and recent theories and principles of neuropedagogy and psychopedagogy based on scientific data. We hope that their understanding will help with both teaching and learning – not only in the context of TEFL but also in the context of other subjects – as they are applicable in various contexts.

Obviously, for the teacher in the traditional classroom full of learners with individual differences, it is not possible to always please everyone. However, we hope that understanding these differences will help both the teachers and learners to cope with various situations that can arise in the educational contexts – as well as make education more effective and enjoyable for both sides.

Once again, we would like to emphasise that neither neuropedagogy nor psychopedagogy are exact sciences. It is essential to understand that the teachers do not work with numbers and formulas, but with human beings, who are unique, differ in many ways, can/do change, and develop over time. Hence, there are no granted rules and definitions, which can be generalised and applied for every single learner in the group. Even if there are certain rules, which we can use as guidance, there will always be exceptions – including in the context of TEFL.

The presented *emotional hooks* were designed especially with the presented neuropedagogical and psychopedagogical principles in mind for the context of TEFL – but are applicable in other contexts, too. We hope that the readers of this work will find them useful in diverse contexts – including their own learning, as a part of their preparation for their teaching career or in their teaching practice, as well as in other non-educational contexts. We would appreciate it if the readers decide to share their own experiences or provide us with feedback – by contacting the author of this publication.

Certainly, the information presented in this work is neither exhaustive nor definite to understand the human psyche and the human brain in the educational context, including TEFL. Nonetheless, we hope that this work will add more systematised information in the field of neuropedagogy and psychopedagogy in the context of TEFL.

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Appendices

Appendix A. Introversion and Extroversion Test

Appendix B. The Four Temperaments Test

Appendix C. VAK Learning Styles Questionnaire

Appendix D. The Index of Learning Styles Questionnaire

Appendix E. Multiple Types of Intelligence Test

Appendix F. Hemispheric Dominance Test

Appendix G. Foreign Language Enjoyment Scale

Appendix E. Colour-Blindness Test

Appendix F. Somewhere in Slovakia

Appendix A. Introversion and Extroversion Test

Source: https://students.bowdoin.edu/peer-health/wp-content/uploads/sites/10/2012/09/IntroExtroQuiz.pdf

*To find out where you fall on the introvert-extrovert spectrum, answer each question **True** or **False**, choosing the one that applies to you more often than not.*

1. _____ I prefer one-on-one conversations to group activities.
2. _____ I often prefer to express myself in writing.
3. _____ I enjoy solitude.
4. _____ I seem to care about wealth, fame, and status less than my peers do.
5. _____ I dislike small talk, but I enjoy talking in depth about topics that matter to me.
6. _____ People tell me that I am a good listener.
7. _____ I am not a big risk-taker.
8. _____ I enjoy work that allows me to "dive in" with few interruptions.
9. _____ I like to celebrate birthdays on a small scale, with only one or two close friends or family members.
10. _____ People describe me as "soft-spoken" or "mellow".
11. _____ I prefer not to show or discuss my work with others until it is finished.
12. _____ I dislike conflict.
13. _____ I do my best work on my own.
14. _____ I tend to think before I speak.
15. _____ I feel drained after being out and about, even if I have enjoyed myself.
16. _____ I often let calls go through to voice mail.
17. _____ If I had to choose, I would prefer a weekend with absolutely nothing to do to one with too many things scheduled.
18. _____ I do not enjoy multitasking.
19. _____ I can concentrate easily.
20. _____ In classroom situations, I prefer lectures to seminars.

The more often you answered **True**, the more introverted you are.

This is an informal quiz, not a scientifically validated personality test. The questions were formulated based on characteristics of introversion often accepted by contemporary researchers.

Excerpted from: "Quiet: The Power of Introverts in a World That Can't Stop Talking" by Susan Cain

Appendix B. The Four Temperaments Test

Source: https://www.history.org.uk/

For each table, circle the words that best describe you. At the bottom of each table record the number of words you circled. Calculate which table you scored highest on and then check which temperament type you are!

Type 1	
persistent	likes to take charge
confident	determined
firm	enterprising
enjoys challenges	competitive
problem solver	productive
bold	purposeful
driven	adventurous
strong-willed	independent
self-reliant	controlling
authoritative	goal oriented
Total number of words:	

Type 2	
enthusiastic	risk taker
visionary	motivated
energetic	chatty
promoter	friendly
sociable	enjoys being popular
fun-loving	likes variety
spontaneous	enjoys change
creative	group oriented
optimistic	initiator
laughs a lot	inspirational
Total number of words:	

Type 3	
detailed	accurate
consistent	controlled
reserved	predictable
practical	orderly
factual	conscientious
perfectionist	discerning
enjoys instructions	analytical
inquisitive	precise
persistent	organised
sensitive	deliberate
Total number of words:	

Type 4	
sensitive	loyal
calm	well-balanced
easy-going	gives in easily
avoids confrontation	indecisive
enjoys routine	dislikes change
warm	dry humour
adaptable	sympathetic
thoughtful	nurturing
patient	tolerant
good listener	peace maker
Total number of words:	

KEY:

Type 1 – choleric temperament
Type 2 – sanguine temperament
Type 3 – melancholic temperament
Type 4 – phlegmatic temperament

Appendix C. VAK Learning Styles Questionnaire

Source: https://www.businessballs.com/freepdfmaterials/vak_learning_styles_questionnaire.pdf

1. When I operate new equipment I generally:
    a) read the instructions first
    b) listen to an explanation from someone who has used it before
    c) go ahead and have a go, I can figure it out as I use it

2. When I need directions for travelling I usually:
    a) look at a map
    b) ask for spoken directions
    c) follow my nose and maybe use a compass

3. When I cook a new dish, I like to:
    a) follow a written recipe
    b) call a friend for an explanation
    c) follow my instincts, testing as I cook

4. If I am teaching someone something new, I tend to:
    a) write instructions down for them
    b) give them a verbal explanation
    c) demonstrate first and then let them have a go

5. I tend to say:
    a) watch how I do it
    b) listen to me explain
    c) you have a go

6. During my free time I most enjoy:
    a) going to museums, watching films or reading books
    b) listening to music or talking to my friends
    c) playing sport or doing DIY

7. When I go shopping for clothes, I tend to:
    a) imagine what they would look like on
    b) discuss them with the shop staff
    c) try them on and test them out

8. When I am choosing a holiday I usually:
    a) read lots of brochures
    b) listen to recommendations from friends
    c) imagine what it would be like to be there

9. If I was buying a new car, I would:
    a) read reviews in newspapers and magazines or online
    b) discuss what I need with my friends
    c) test-drive lots of different types

10. When I am learning a new skill, I am most comfortable:
    a) watching what the teacher is doing
    b) talking through with the teacher exactly what I'm supposed to do
    c) giving it a try myself and work it out as I go

11. If I am choosing food off a menu, I tend to:
    a) imagine what the food will look like or look at the picture (if available)
    b) talk through the options in my head or with my partner
    c) imagine what the food will taste like

12. When I listen to a band, I can't help:
    a) watching or visualising the band members and other people in the audience
    b) listening to the lyrics and the beats
    c) moving in time with the music

13. When I concentrate, I most often:
    a) focus on the words or the pictures in front of me
    b) discuss the problem and the possible solutions in my head
    c) move around a lot, fiddle with pens and pencils and touch things

14. I choose household furnishings because I like:
    a) their colours and how they look
    b) the descriptions the sales-people give me
    c) their textures and what it feels like to touch them

15. My first memory is of:
    a) looking at something
    b) being spoken to
    c) doing something

16. When I am anxious, I:
    a) visualise the worst-case scenarios
    b) talk over in my head what worries me most
    c) can't sit still, fiddle and move around constantly

17. I feel especially connected to other people because of:
    a) how they look
    b) what they say to me
    c) how they make me feel

18. When I have to revise for an exam, I generally:
    a) write lots of revision notes and diagrams
    b) talk over my notes, alone or with other people
    c) imagine making the movement or creating the formula

19. If I am explaining to someone I tend to:
    a) show them what I mean
    b) explain to them in different ways until they understand
    c) encourage them to try and talk them through my idea as they do it

20. I really love:
    a) watching films, photography, reading books, looking at art or people watching
    b) listening to music, the radio or talking to friends
    c) taking part in sporting activities, eating fine foods and wines or dancing

21. Most of my free time is spent:
    a) watching television or reading books
    b) talking to friends
    c) doing physical activity or making things

22. When I first contact a new person, I usually:
    a) arrange a face to face meeting
    b) talk to them on the telephone
    c) try to get together whilst doing something else, such as an activity or a meal

23. I first notice how people:
    a) look and dress
    b) sound and speak
    c) stand and move

24. If I am angry, I tend to:
    a) keep replaying in my mind what it is that has upset me
    b) raise my voice and tell people how I feel
    c) stamp about, slam doors and physically demonstrate my anger

25. I find it easiest to remember:
    a) faces
    b) names
    c) things I have done

26. I think that you can tell if someone is lying if:
    a) they avoid looking at you
    b) their voice changes
    c) they give me funny vibes

27. When I meet an old friend:
    a) I say “it’s great to see you!”
    b) I say “it’s great to hear from you!”
    c) I give them a hug or a handshake

28. I remember things best by:
    a) drawing, writing notes or keeping printed details
    b) saying them aloud or repeating words and key points in my head
    c) doing and practising the activity or imagining it being done

29. If I have to complain about faulty goods, I am most comfortable:
    a) writing a letter or an email
    b) complaining over the phone
    c) taking the item back to the store or posting it to the head office

30. I tend to say:

a) I see what you mean
b) I hear what you are saying
c) I know how you feel

Now add up how many A's, B's and C's you selected.

A's = B's = C's =

If you chose mostly A's you have a **VISUAL** learning style.
If you chose mostly B's you have an **AUDITORY** learning style.
If you chose mostly C's you have a **KINAESTHETIC** learning style.

Some people find that their learning style may be a blend of two or three styles, in this case read about the styles that apply to you in the explanation below.

When you have identified your learning style(s), read the learning styles explanations and consider how this might help you to identify learning and development that best meets your preference(s).

Now see the VAK Learning Styles Explanation.

VAK Learning Styles Explanation

The VAK learning styles model suggests that most people can be divided into one of three preferred styles of learning. These three styles are as follows, (and there is no right or wrong learning style):

- Someone with a **visual** learning style has a preference for seen or observed things, including pictures, diagrams, demonstrations, displays, handouts, films, flip-chart, etc. These people will use phrases such as 'show me', 'let's have a look at that' and will be best able to perform a new task after reading the instructions or watching someone else do it first. These are the people who will work from lists and written directions and instructions.
- Someone with an **auditory** learning style has a preference for the transfer of information through listening: to the spoken word, of self or others, of sounds and noises. These people will use phrases such as 'tell me', 'let's talk it over' and will be best able to perform a new task after listening to instructions from an expert. These are the people who are happy being given spoken instructions over the telephone, and can remember all the words to songs that they hear!
- Someone with a **kinaesthetic** learning style has a preference for physical experience - touching, feeling, holding, doing, practical hands-on experiences. These people will use phrases such as 'let me try', 'how do you feel?' and will be best able to perform a new task by going ahead and trying it out, learning as they go. These are the people who like to experiment, hands-on, and never look at the instructions first!

People commonly have a main preferred learning style, but this will be part of a blend of all three. Some people have a very strong preference; other people have a more even mixture of two or, less commonly, three styles.

When you know your preferred learning style(s) you understand the type of learning that best suits you. This enables you to choose the types of learning that work best for you.

There is no right or wrong learning style. The point is that there are types of learning that are right for your own preferred learning style.

Appendix D. The Index of Learning Styles Questionnaire

Source:
https://users.metu.edu.tr/home404/suzanoni/wwwhome/Learning%20styles%20inventories.htm#Hemisphericinfo

Circle "a" or "b" to indicate your answer to every question. Please choose only one answer for each question.

If both "a" and "b" seem to apply to you, choose the one that applies more frequently.

1. I understand something better after I
   (a) try it out.
   (b) think it through.

2. I would rather be considered
   (a) realistic.
   (b) innovative.

3. When I think about what I did yesterday, I am most likely to get
   (a) a picture.
   (b) words.

4. I tend to
   (a) understand details of a subject but may be fuzzy about its overall structure.
   (b) understand the overall structure but may be fuzzy about details.

5. When I am learning something new, it helps me to
   (a) talk about it.
   (b) think about it.

6. If I were a teacher, I would rather teach a course
   (a) that deals with facts and real life situations.
   (b) that deals with ideas and theories.

7. I prefer to get new information in
   (a) pictures, diagrams, graphs, or maps.
   (b) written directions or verbal information.

8. Once I understand
   (a) all the parts, I understand the whole thing.
   (b) the whole thing, I see how the parts fit.

9. In a study group working on difficult material, I am more likely to
   (a) jump in and contribute ideas.
   (b) sit back and listen.

10. I find it easier
    (a) to learn facts.
    (b) to learn concepts.

11. In a book with lots of pictures and charts, I am likely to
    (a) look over the pictures and charts carefully.
    (b) focus on the written text.

12. When I solve math problems
    (a) I usually work my way to the solutions one step at a time.
    (b) I often just see the solutions but then have to struggle to figure out the steps to get to them.

13. In classes I have taken
    (a) I have usually gotten to know many of the students.
    (b) I have rarely gotten to know many of the students.

14. In reading nonfiction, I prefer
    (a) something that teaches me new facts or tells me how to do something.
    (b) something that gives me new ideas to think about.

15. I like teachers
    (a) who put a lot of diagrams on the board.
    (b) who spend a lot of time explaining.

16. When I'm analyzing a story or a novel
    (a) I think of the incidents and try to put them together to figure out the themes.
    (b) I just know what the themes are when I finish reading and then I have to go back and find the incidents that demonstrate them.

17. When I start a homework problem, I am more likely to
    (a) start working on the solution immediately.
    (b) try to fully understand the problem first.

18. I prefer the idea of
    (a) certainty.
    (b) theory.

19. I remember best
    (a) what I see.
    (b) what I hear.

20. It is more important to me that an instructor
    (a) lay out the material in clear sequential steps.
    (b) give me an overall picture and relate the material to other subjects.

21. I prefer to study
    (a) in a study group.
    (b) alone.

22. I am more likely to be considered
    (a) careful about the details of my work.
    (b) creative about how to do my work.

23. When I get directions to a new place, I prefer
(a) a map.
(b) written instructions.

24. I learn
(a) at a fairly regular pace. If I study hard, I'll "get it."
(b) in fits and starts. I'll be totally confused and then suddenly it all "clicks."

25. I would rather first
(a) try things out.
(b) think about how I'm going to do it.

26. When I am reading for enjoyment, I like writers to
(a) clearly say what they mean.
(b) say things in creative, interesting ways.

27. When I see a diagram or sketch in class, I am most likely to remember
(a) the picture.
(b) what the instructor said about it.

28. When considering a body of information, I am more likely to
(a) focus on details and miss the big picture.
(b) try to understand the big picture before getting into the details.

29. I more easily remember
(a) something I have done.
(b) something I have thought a lot about.

30. When I have to perform a task, I prefer to
(a) master one way of doing it.
(b) come up with new ways of doing it.

31. When someone is showing me data, I prefer
(a) charts or graphs.
(b) text summarizing the results.

32. When writing a paper, I am more likely to
(a) work on (think about or write) the beginning of the paper and progress forward.
(b) work on (think about or write) different parts of the paper and then order them.

33. When I have to work on a group project, I first want to
(a) have "group brainstorming" where everyone contributes ideas.
(b) brainstorm individually and then come together as a group to compare ideas.

34. I consider it higher praise to call someone
(a) sensible.
(b) imaginative.

35. When I meet people at a party, I am more likely to remember
    (a) what they looked like.
    (b) what they said about themselves.

36. When I am learning a new subject, I prefer to
    (a) stay focused on that subject, learning as much about it as I can.
    (b) try to make connections between that subject and related subjects.

37. I am more likely to be considered
    (a) outgoing.
    (b) reserved.

38. I prefer courses that emphasize
    (a) concrete material (facts, data).
    (b) abstract material (concepts, theories).

39. For entertainment, I would rather
    (a) watch television.
    (b) read a book.

40. Some teachers start their lectures with an outline of what they will cover. Such outlines are
    (a) somewhat helpful to me.
    (b) very helpful to me.

41. The idea of doing homework in groups, with one grade for the entire group,
    (a) appeals to me.
    (b) does not appeal to me.

42. When I am doing long calculations,
    (a) I tend to repeat all my steps and check my work carefully.
    (b) I find checking my work tiresome and have to force myself to do it.

43. I tend to picture places I have been
    (a) easily and fairly accurately.
    (b) with difficulty and without much detail.

44. When solving problems in a group, I would be more likely to
    (a) think of the steps in the solution process.
    (b) think of possible consequences or applications of the solution in a wide range of areas.

SCORING SHEET

1. Put "1"s in the appropriate spaces in the table below (e.g. if you answered "a" to Question 3, put a "1" in Column "a" by Question 3).

2. Total the columns and write the totals in the indicated spaces.

3. For each of the four scales, subtract the smaller total from the larger one. Write the difference (1 to 11) and the letter (a or b) with the larger total.

For example, if under "ACT/REF" you had 4 "a" and 7 "b" responses, you would write "3b" on the bottom line under that heading (3 = 7- 4, and the "b" total was the larger of the two.)

ACT/REF	SEN/INT	VIS/VRB	SEQ/GLO
Q a b	Q a b	Q a b	Q a b
1. __ __	2. __ __	3. __ __	4. __ __
5. __ __	6. __ __	7. __ __	8. __ __
9. __ __	10. __ __	11. __ __	12. __ __
13. __ __	14. __ __	15. __ __	16. __ __
17. __ __	18. __ __	19. __ __	20. __ __
21. __ __	22. __ __	23. __ __	24. __ __
29. __ __	30. __ __	31. __ __	32. __ __
33. __ __	34. __ __	35. __ __	36. __ __
37. __ __	38. __ __	39. __ __	40. __ __
41. __ __	42. __ __	43. __ __	44. __ __

Totals in the columns:

ACT/REF		SEN/INT		VIS/VRB		SEQ/GLO	
a	b	a	b	a	b	a	b
(Larger - Smaller) + Letter of Larger (see e.g.below*)							

***Example: If you totaled 3 for a and 8 for b, you would enter 5b.**

a	b	Score: 5b
3	8	

EXPLANATION OF SCORES

If your score on a scale is 1-3, you have a mild preference for one or the other dimension but you are essentially well balanced. (For example, a 3a in the ACT/REF category indicates a mild preference for active learning.)

If your score on a scale is 5-7, you have a moderate preference for one dimension of the scale and will learn more easily in a teaching environment which favours that dimension.

If your score on a scale is 9-11, you have a strong preference for one dimension of the scale. You may have real difficulty learning in an environment which does not support that preference.

Appendix E. Multiple Types of Intelligence Test

Source: McKenzie, W. 1999. Multiple Intelligences Survey. Adapted and translated to SK by I.Turek. The adapted version translated to EN by J. Kamenická.

Circle only the statements reflecting your interests, activities and learning. Fill it in sincerely and responsibly because there are no right or wrong answers.

1. I enjoy making things with my hands.
2. I spend a lot of time outside, in the open air.
3. I prefer learning together with other learners.
4. I like things being neat and orderly.
5. Musicals are more engaging to me than dramatic plays.
6. I enjoy reading books.
7. Foreign languages interest me.
8. I am willing to protest or sign a petition to right a wrong.
9. I remember texts by putting words in a rhyme.
10. I can visualize ideas in my mind.
11. I am good at reading maps.
12. I have problems sitting idle for a longer time.
13. Dividing tasks into steps makes the solution easier for me.
14. I enjoy studying botany and zoology.
15. Rearranging a room is fun for me.
16. I agree with the saying “the more, the better”.
17. I like “talk shows” on TV or radio.
18. I have firm moral principles.
19. Social justice issues interest me.
20. I enjoy categorizing things by common traits.
21. Moving to a beat is easy for me.
22. I am dissatisfied when I do not know the sense (do not understand logic) of things.
23. Remembering song lyrics is easy for me.
24. Taking notes helps me understand and remember the content.
25. I am a “team player”.
26. Fairness is very important to me.
27. I like sports.
28. I consider non-verbal communication (gestures and mimics) very important.

29. Animals are important in my life.
30. I easily recognise patterns and models (of behaviour, clothes, fabrics and so on).
31. Ecological issues are important to me.
32. I keep a journal
33. I get easily frustrated with disorganized people.
34. I can complete calculations quickly in my head.
35. I enjoy creating my own works of art (decorations, statuettes and so on).
36. I learn by doing, for example touching and moving things.
37. I learn best when I have an emotional attachment to the subject.
38. I write for pleasure.
39. I remember content with figures, diagrams, and schemes better.
40. I enjoy discussions.
41. I would like our house to have a recycling system.
42. Problem solving comes easily to me.
43. Studying in a group (cooperative learning) is very effective for me.
44. I enjoy video clips.
45. I can recognise sounds well.
46. I consider political commitment important.
47. I like camping.
48. I enjoy doing puzzles where I have to think.
49. I live a very active lifestyle.
50. I enjoy expressing emotions by dancing.
51. I can recall things vividly in my memory.
52. I enjoy working in a garden.
53. I have always been interested in playing a musical instrument.
54. I cannot begin an assignment until I have all my related questions answered.
55. I dislike working (studying) alone.
56. I need to know why I should do something before I agree to do it.
57. Motivation influences my school achievement a lot.
58. I think that building and preserving national parks is very important.
59. When reciting, I am interested in the intonation.
60. Working alone can be just as productive as working in a group.
61. I enjoy content with diagrams, schemes and tables.
62. Puns are much fun.

63. It is easy for me to explain my ideas to others.
64. Putting things in hierarchies helps me understand things better.
65. When I believe in something, I give 100% effort towards it.
66. Ballet and dancing are a great pleasure.
67. Concentration is difficult for me if I listen to the radio or watch TV.
68. Healthy body is very important for a healthy mind.
69. Arts and crafts are enjoyable leisure activities.
70. I enjoy playing with words, for example, ambiguous words, anagrams.
71. I like to be involved in causes that help others.
72. I enjoy public speaking.
73. I like working with tools.
74. I like various kinds of music.
75. I enjoy doing extra-curricular activities, for example going to clubs.
76. I understand structured content better.
77. I am interested in social issues.
78. I faithfully contact friends through letters and/or e-mail.
79. I enjoy working with computer databases.
80. I enjoy playing with three-dimensional puzzles like the Rubik's Cube.

Questionnaire evaluation

Mark the numbers of statements you have circled in the questionnaire in the following lines (1 – 8). Each marked number represents 1 point. Count points in each line.

Lines with the highest number of points mark the types of intelligences (and learning styles) which suit you best during learning.

I. 6, 7, 24, 32, 38, 62, 63, 70, 72, 78 ……points
verbal intelligence – verbal (language) learning style

II. 4, 13, 22, 33, 34, 42, 48, 54, 76, 79 …….points
logical intelligence – logical (mathematical) learning style

III. 10, 11, 15, 35, 39, 44, 51, 61, 66, 80 …...….points
visual intelligence – visual (spatial) learning style

IV. 1, 12, 27, 28, 36, 49, 50, 68, 69, 73 …...…points
kinesthetic intelligence – kinesthetic (physical) learning style

V. 5, 9, 21, 23, 30, 45, 53, 59, 67, 74 ...…….points
musical intelligence – musical learning style

VI. 3, 16, 17, 25, 40, 43, 46, 55, 75, 77 ….....points
interpersonal intelligence – interpersonal learning style

VII. 8, 18, 19, 26, 37, 56, 57, 60, 65, 71 ……....points
intrapersonal intelligence – intrapersonal learning style

VIII. 2, 14, 20, 29, 31, 41, 47, 52, 58, 64 ...…..….points
naturalist intelligence – naturalist learning style

Appendix F. Hemispheric Dominance Test

Source: https://users.metu.edu.tr/home404/suzanoni/wwwhome/Test%20L%20&%20R%20brain.htm

1. In school, which lessons did you use to prefer?
   a) art-oriented lessons: such as literature, history of art, music, drawing/art classes
   b) science-oriented lessons: such as math, geometry, physics

2. Which types of sports do you prefer?
   a) Team sports b) Those done alone

3. How frequently can you remember what you dreamed vividly?
   a) Rarely or never b) Very often

4. How much do you use your hands and arms while talking?
   a) A lot b) Very little

5. Clasp your hands (interlocking the fingers of both hands).
   Which thumb is on top?
   a) Left b) Right

6. WITHOUT looking at your watch, try to guess the right time. Is your guess
   a) wrong by more than 10 minutes b) accurate within 10 minutes

7. Which do you remember better?
   a) Names b) Faces

8. Hold up a pencil parallel to a window or bb frame with both eyes open.
   Close your left eye only: How much did the pencil move?
   Now close your right eye only: How much did the pencil move?
   In which position did the pencil move the least?
   a) With the left eye closed b) With the right eye closed

CALCULATING YOUR SCORE:

Write the letter 'R' for right and 'L' for left in the answers below.
Then count up your 'L' ve 'R' answers.

RIGHT	LEFT
1a	1b
2b	2a
3b	3a
4a	4b
5b	5a
6a	6b
7b	7a
8a	8b

Appendix G. Foreign Language Enjoyment Scale

Source: Based on Dewaele and MacIntyre (2014).

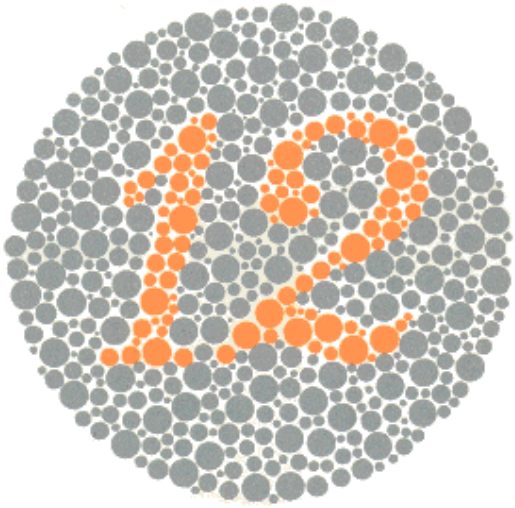
To what extent do you agree with the following statements with regard to FL classes?

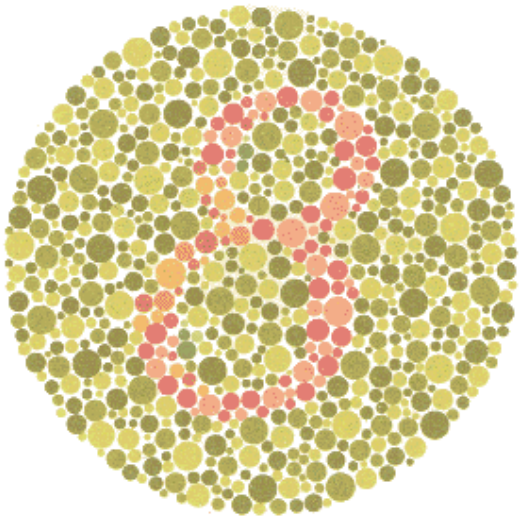
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I can be creative.					
I can laugh off embarrassing mistakes in the FL.					
I don't get bored.					
I enjoy them.					
I feel as though I'm a different person during the FL class.					
I learnt to express myself better in the FL.					
I'm a worthy member of the FL class.					
I've learnt interesting things.					
In class, I feel proud of my accomplishments.					
It's a positive environment.					
It's cool to know a FL.					
It's fun.					
Making errors is part of the learning process.					
The peers are nice.					
The teacher is encouraging.					
The teacher is friendly.					
The teacher is supportive.					
There is a good atmosphere.					
We form a tight group.					
We have common "legends," such as running jokes.					
We laugh a lot.					

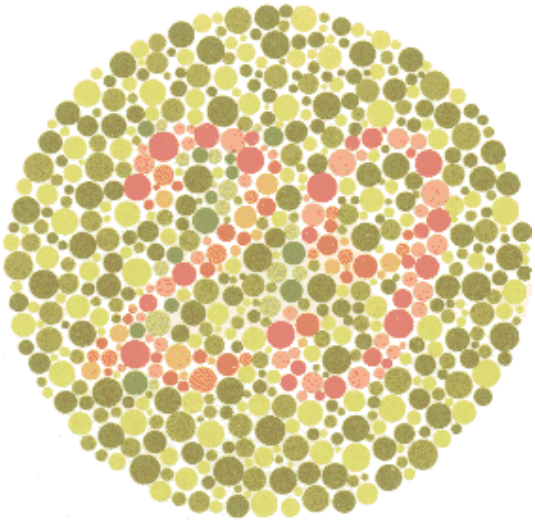
Appendix E. Colour-Blindness Test

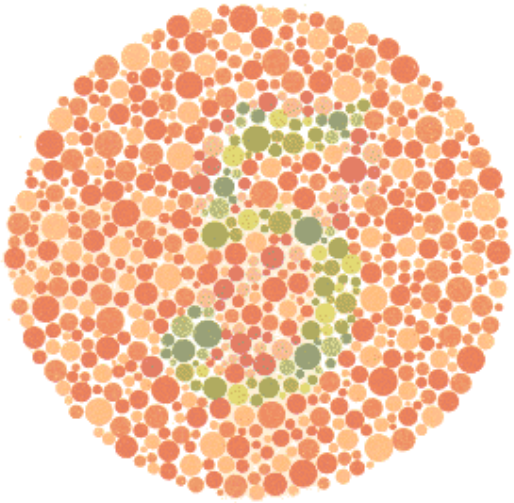
PART 1

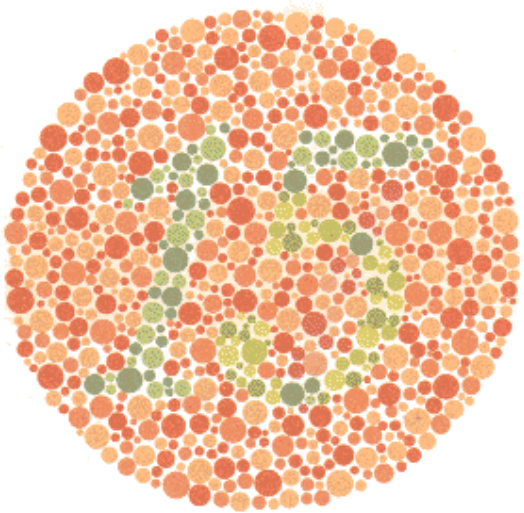
Source: https://colormax.org/color-blind-test/

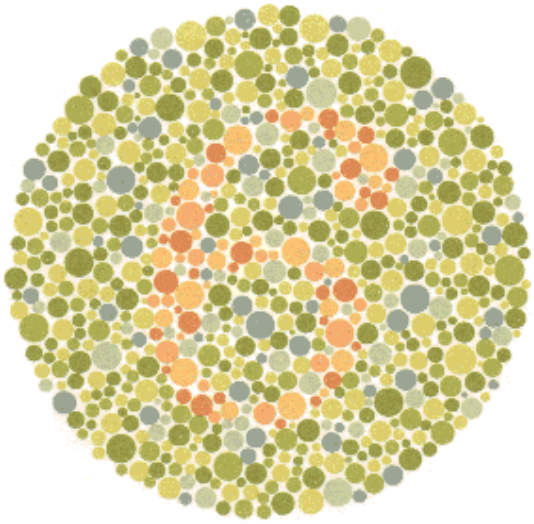


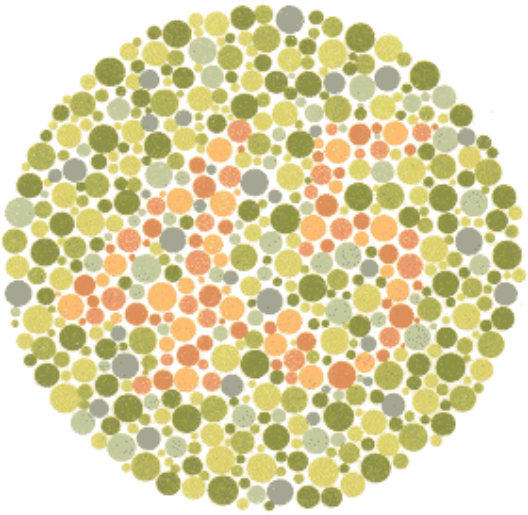


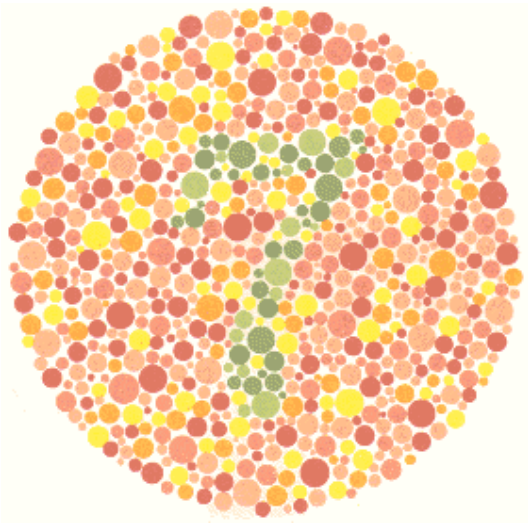


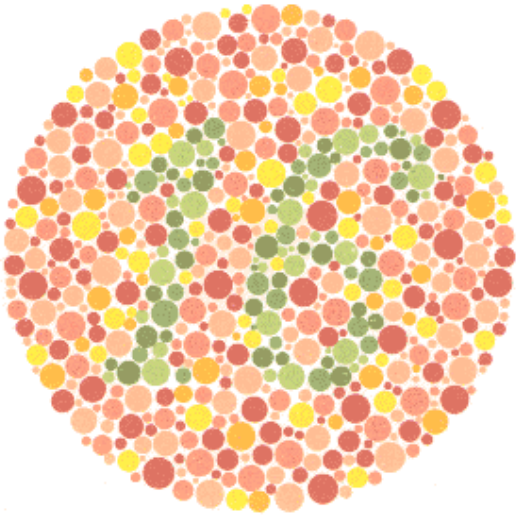


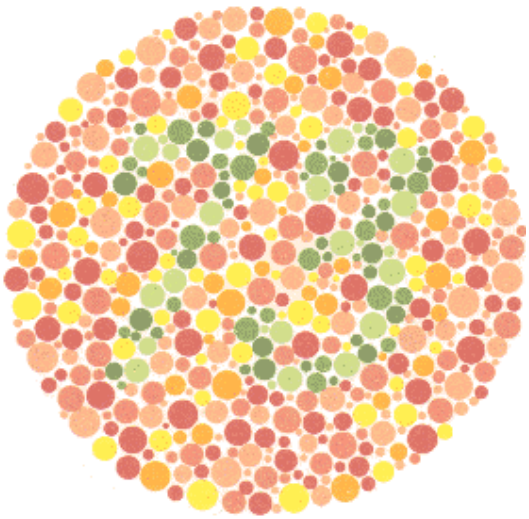






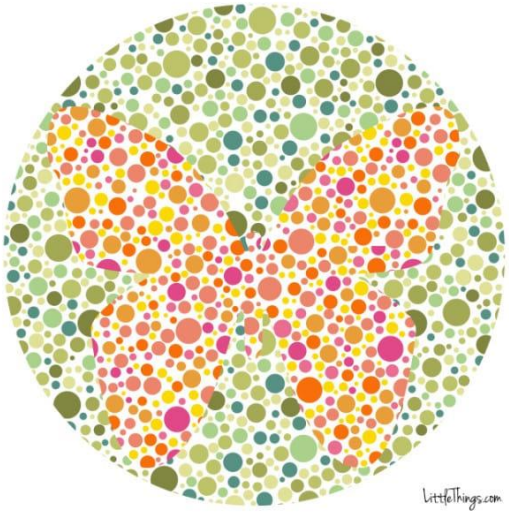


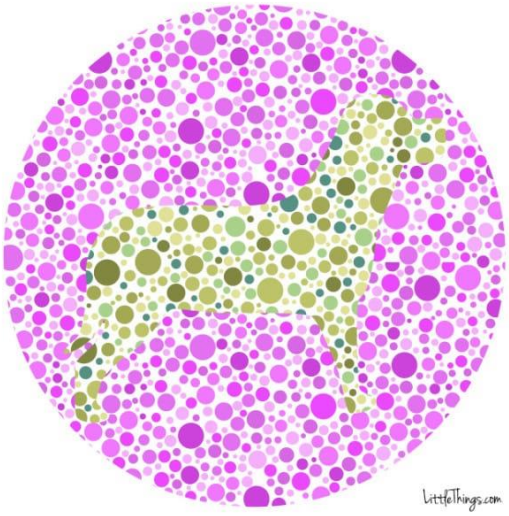


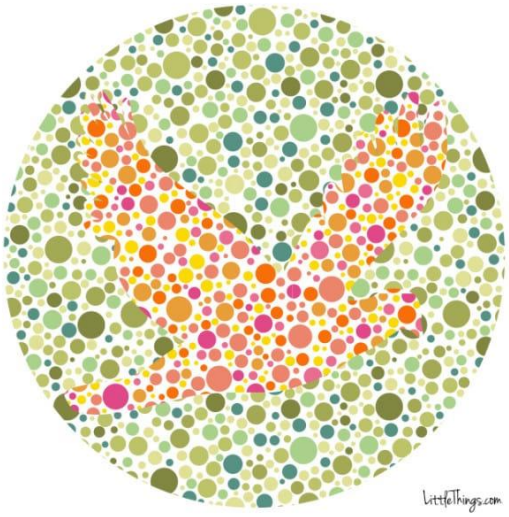


PART 2

Source: https://littlethings.com/lifestyle/color-blind-test



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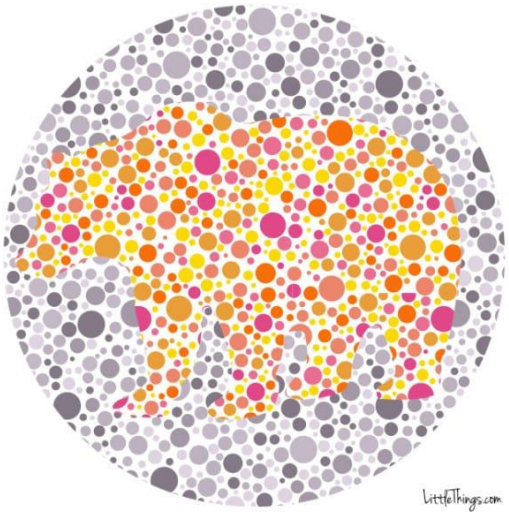
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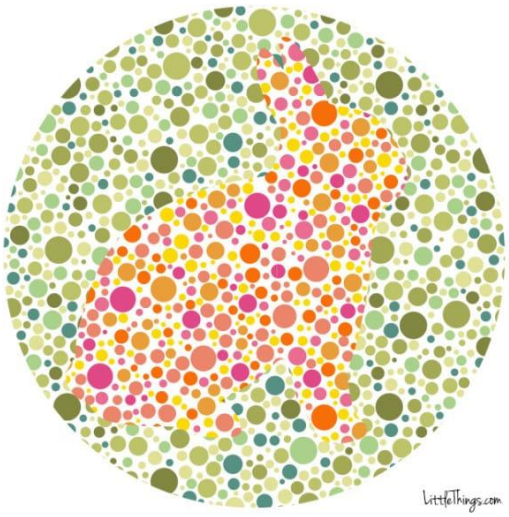
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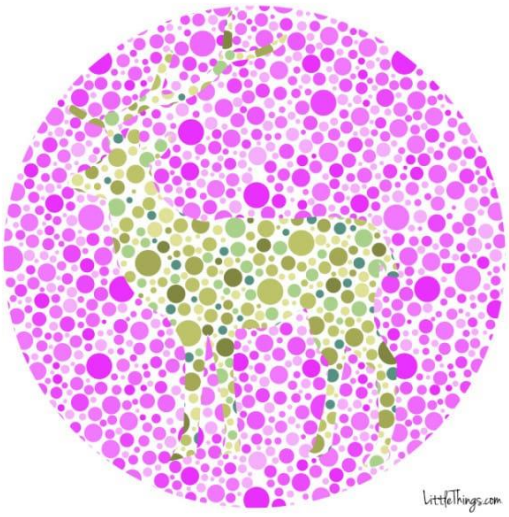
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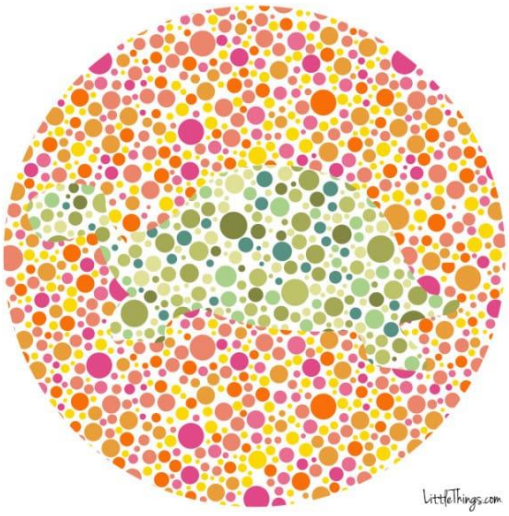
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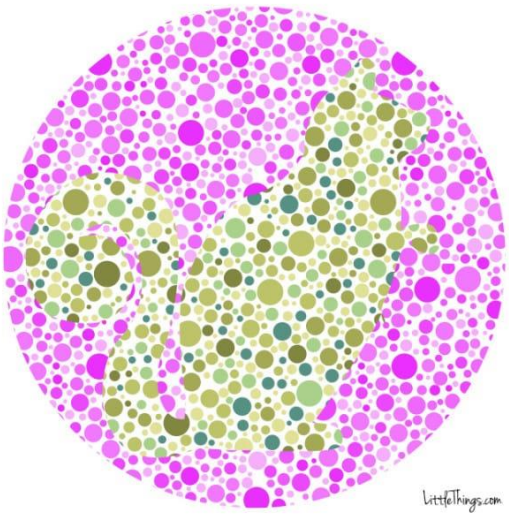
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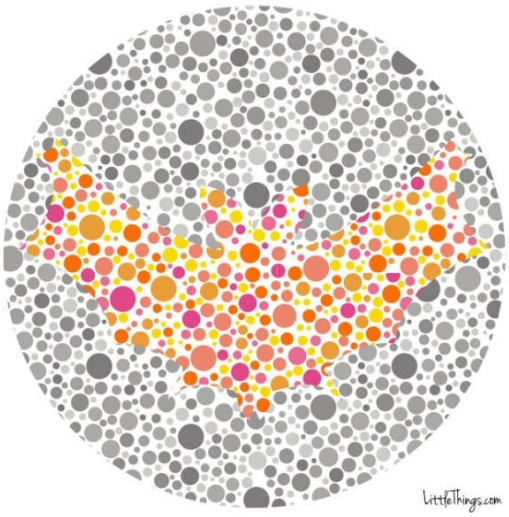
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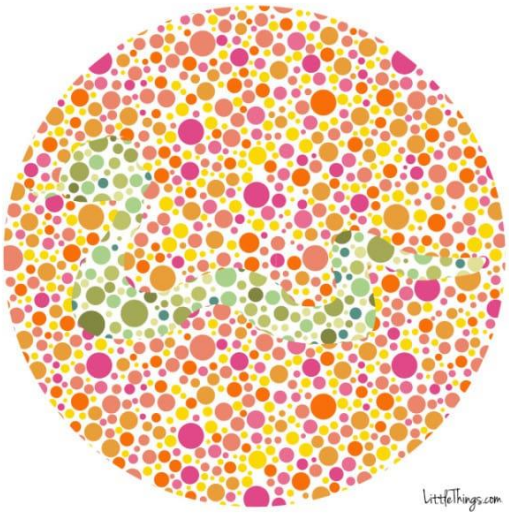
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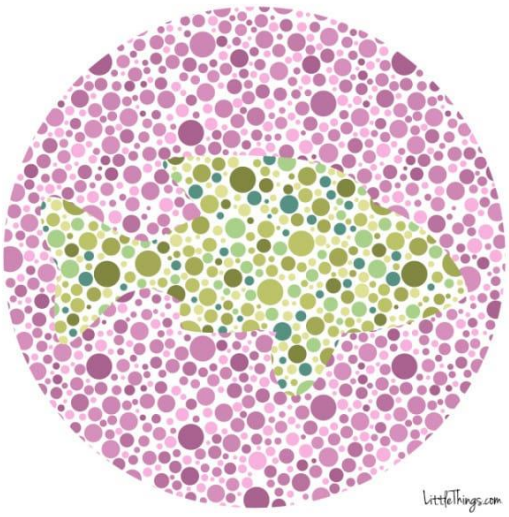
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Appendix F. Somewhere in Slovakia

Key – in the order as the pictures appeared in the video:

	Original Slovak name	English translation/explanation
1.	Bratislavský hrad	Bratislava Castle
2.	Veža Kamzík v Bratislave	Kamzík tower in Bratislava
3.	Veľkotatranský Kriváň	Kriváň mountain in the High Tatras National Park
4.	Vysoké Tatry	The High Tatras National Park
6.	Spišský hrad	Spiš Castle
7.	Tomášovský výhľad v Slovenskom raji	"Tomášovský výhľad" view in The Slovak Paradise National Park
8.	Slovenský raj	The Slovak Paradise National Park
9.	Velické pleso vo Vysokých Tatrách	"Velické pleso" tarn in the High Tatras National Park
10.	Vodná nádrž Čierny Váh	"Čierny" Váh water reservoir (dam)
11.	Spišská Kapitula (+ Spišský hrad)	Spiš Chapter House (with its cathedral) (+ Spiš Castle)
12.	Oravský hrad	Orava Castle
13.	Nábrežie Dunaja v Bratislave (+Bratislavský hrad)	Danube waterfront in Bratislava (+ Bratislava Castle)
14.	Devínsky hrad	Devín Castle
15.	Lúčanský vodopád	Lúčky waterfall
16.	Šútovské jazero	Šútovo lake
17.	Travertínový kráter vo Vyšných Ružbachoch	Travertine crater in Vyšné Ružbachy
18.	Termálny prameň v Kalamenoch	Kalameny thermal spring
19.	Národný Park Malá Fatra (pohorie)	Malá Fatra National Park (mountain range)
20.	Vysoké Tatry	(High Tatras)
21.	Chodník v korunách stromov v Bachledovej doline	The treetop walk in Bachled valley
22.	Hričovské podhratie	Hričov village under Hričov castle
23.	Chmarošský viadukt in Telgárt	Chmarošský viaduct in Telgárt
24.	Skanzen v Čičmanoch	Čičmany – the open-air museum of traditional folk architecture
25.	Bojnický hrad (+ Vysoké Tatry)	Bojnice Castle (+ the High Tatras National Park)
26.	Skalnaté pleso vo Vysokých Tatrách	"Skalnaté pleso" tarn in the High Tatras National Park
27.	Lomnický štít s hvezdárňou vo Vysokých Tatrách	"Lomnický štít" peak with the observatory in the High Tatras National Park