GOOD PRACTICE GUIDE

Teach Me Differently – TMD

Autori

Centrul de Educație Incluzivă Nr.1
GOOD PRACTICE GUID

This guide was developed during the implementation of the activities connected with "Teach me differently - TMD", no. 1-2019-AT01-KA229-051500, strategic partnerships project, KA2, co-funded by the Erasmus+ Programme of the European Union.

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CONTENT

Partner institutions presentation

Project summary

Project objectives

Project activities

Project themes overview

Practical activities

PROJECT COORDINATOR:

BUNDESHANDELSAKADEMIE LAA

Laa an der Thaya, Austria

Bundeshandelsakademie is a business vocational school with about 30 teachers and around 200 students aged 14-20 years. The motivation for joining the project was to find like-minded people, to work together on a bigger vision, to benefit from different points of views, to share experiences and to experiment together and to create something bigger and better in education.

School has experience in Erasmus+ projects, being coordinator for KA2 strategic partnership projects like REDIC (Responsible Digital European Citizen) and GAMES (Game-based learning).

PROJECT PARTNERS:

AGIOS GEORGIOS LYCEUM

Larnaca, Cyprus

The Agios Georgios Lyceum is a public secondary school (16+). It offers general education courses that contribute to the fulfillment of requirements that apply to the national School Leaving Certificate (Apolytirion). The courses offered are divided into different directions among which are Classical Studies, Science Studies, Economic Studies, Foreign Language Studies, and arts industry.

The school is one of the largest lyceums in Cyprus. It hosts about 600 students and 87 teachers, part timers and full-timers and promotes a flexible approach to learning and tries to build educational networks at the national and international level. Besides the supply of solid knowledge to their students, school put efforts in promoting an open and inclusive culture. Through different educational initiatives as well as social actions, schools' priority is to motivate students and staff to get involved in volunteering actions of all manners.

The school itself, as well as through cooperation with other entities (organizations, local community, other schools), aims at creating opportunities for the whole school community to get involved.

2nd GYMNASIUM OF XANTHI

Xanthi, Greece

The 2nd Gymnasium of Xanthi is a typical Greek middle school. Currently, it employs 47 teachers and has 360 pupils.

The school follows the standard curriculum, which has been designed by the authorities of the Ministry of Education, nevertheless, staff members try to develop activities that will enhance the learning process. The school has a general interest in new teaching methodologies and their impact on the teaching process. Personalized learning is a very modern approach to teaching that takes into consideration the needs of each and every pupil. Therefore, the school like to experiment with personalized learning and then to apply in the teaching process.

The school has participated in projects about the application of new educational methodologies in schools and so they can use their past experience in the new project.

ESCOLA SECUNDÁRIA DE
FRANCISCO FRANCO

Funchal, Portugal

Escola Secundária Francisco de Franco is a public secondary school with approximately 2000 students, and it is located in the center of Funchal. Students age range is from 15 to 19 years old.

It´s an inclusive school which means it combines normal students and students with disabilities in the same classes. It has many already at first sight different learning types of students and offer alongside the studies program a big number of extra-curricular activities like sports, theater class, hiking club, informatics club among others.

The school would like to adopt new methodologies that can shorten the learning curve of the school students. Therefore, the participation in this project is of paramount importance. The staff is willing to share all their experiences and are also willing to work hard so to make this project a success story.

CENTRUL ȘCOLAR DE EDUCAȚIE INCLUZIVĂ NR. 1

Bucharest, Romania

Centrul Școlar de Educație Incluzivă Nr. 1 is a secondary special school from Bucharest, located in the center of the capital of Romania. It is a school for pupils SEN(D) and has 200 pupils enrolled, with the age range from 4 to 18 years old. The school has 88 staff members: special education teachers, support teachers for pupils with special education needs integrated in mainstream schools, psychologists, speech therapists, physiotherapists, physical education teachers and technology teachers. Teaching strategies are based on a special education curriculum or using an adapted curriculum for pupils integrated in regular schools, through frontal teaching, or differentiated, individualized, personalized teaching.

Teachers are interested in using modern teaching and learning technologies, for making the teaching process more attractive, and the given information to be more easily understood and assimilated by pupils with SEN(D). In order to facilitate school integration of pupils with SEN(D), school has implemented European projects, Leonardo daVinci or Erasmus program.

All teachers recognize the importance of improving teaching and learning strategies in classroom, to adapt to new pedagogical methods and tools that can be used in classes with special needs pupils, and, how to integrate differentiated, individualized or personalized teaching.

TEHNICKA SKOLA VLASOTINCE

Vlasotince, Serbia

Tehnicka Skola Vlasotince is a technical school in Vlasotince and has 600 pupils and about 80 teachers. Through the project ″Vocational Education Reform″, realized by Ministry of Education, German development agency – GIZ and the municipality, the school workshops were reconstructed, and the companies donated the equipment.

Nowadays the first-year pupils of the school have practical training in workshops with modern equipment. After that, they complete apprenticeships in companies, which employ them if they reach the required level of competence. During the time spent in companies, besides acquiring practical knowledge and skills, pupils learn business communication and work discipline. The school has been cooperating with the German school ″Hugo Eckener″ within the project ″Partnership at work″. First target group is final-year pupils in primary schools who like professional orientation. Another target group is companies which recognize the importance of active participation in youth education as the necessary workforce. Pupils are offered apprenticeships in 12 domestic and international companies from Germany, Slovenia, and Italy.

In order to further develop professional competences of the staff and the students, school cooperates with schools from more developed countries with better educational systems in areas most relevant is the need to adjust the teaching techniques and methods to very heterogeneous skills, capacities, and motivation of our students.

PROJECT SUMMARY

A basic objective of every educator and every educational institution is to make learning as easy as possible. Each responsible educator has at least one goal: to make sure that his students gain several pieces of knowledge after each class. In practice, many educators make a compromise and consider it a success if a number of students have mastered a number of things. This compromise is done in order to ease the development of lessons plans but doesn't take in consideration the fact that learners have different social backgrounds, personal learning pace, vested interests, preferred learning styles, etc. Is there a single strategy that can be used to tackle all these factors? To the best of our knowledge, the answer is NO. Nevertheless, it is possible for educators/teachers to tackle the diversity in the classroom by using various methods and techniques that can help pupils and students to learn easier.

As a result of this knowledge the main objective of the project was to make learning easier and more attractive to different types of pupils by improving the learning process, the long-term integration of knowledge and the long-term enthusiasm for learning hoping that in the long run school dropouts will diminish. To reach this objective the teachers involved in the project chouse to examine how differentiated, individualized, and personalized learning can be used to improve the learning process and to explore various innovative educational approaches.

Differentiated, individualized, and personalized strategies are used to develop educational activities tailored to pupils needs, interests and abilities. The first approach is based on the assumption that the "one-size-fits-all" approach to teaching is conceptually wrong. The second approach places more focus on student pacing and the third approach empower pupils to have an active role in designing lessons and projects while teachers act more as guides than curators of information and learning experiences.

21st century educational approaches which imply the use of modern technology (e.g., virtual reality tools, computer software, artificial intelligence etc.) are related to open education in a digital era and are not yet thoroughly studied therefore our teams explored, debated, documented, and reported on how can these approaches can be used in an efficient safe way.

During the meetings:
- we examined Project-Based Learning;
- we saw how augmented and Virtual Reality can be combined with Personalized Learning;
- we saw how Computational Thinking can be made easier;
- we investigated how Mobile Technologies can support learning;
- we examined Computer-Aided Learning.

- in the final meeting, we explored how differentiated, individualized, and personalized learning can help special pupils.

To explore and examine the usefulness of these approaches in practice each partner school designed a short course using one of these approaches or a combination of them. The proposed activities were presented and taught to pupils and teachers from the partner schools during the short-term mobilities for students. At the end of each meeting, participating teachers evaluated the results. Discussions about the methodologies and the techniques as well as useful links about articles, books, and interviews were posted to the eTwinning project "Making e-Learning Easier with Differentiated, Individualized, and Personalized Learning".

Naturally, these instructional approaches are not a panacea, but one needs to use them in order to see which approaches suit one best. Unfortunately, most schools in Europe follow a curricula designed by ministries, and have to engage pupils with classical teaching methodologies and usually experimentation is not encouraged.

Thanks to the Erasmus+ framework, we were able to connect and find kindred spirits ready to experiment new strategies and break new ground together as a team. Teachers and pupils (10-19 years old) worked alongside during the hole project to adapt and differentiate learning instructions. With opened minds, curiosity and inspiration from experts such as Carol Ann Tomlinson and Tanja Westfall Greiter we are now able to present our results.

PROJECT OBJECTIVES

The main objective is to make learning easier and more attractive to different types of pupils. A direct consequence of this improvement in the learning process is that the long-term knowledge will increase, the enthusiasm to learn will not vanishing more with each year of being at school and the rate of early school leavers will decrease. So, the big objective aimed is to make education more efficiently.

There are different strategies that aim to make learning easier. We have opted to examine differentiated, individualized, and personalized learning because they are very popular in many schools in the USA and many other countries and because they aim to maximize the efficiency of the teaching process. For each instructional approach, there are different strategies and examples, and we would like to use and evaluate most of them.

- The first objective is to get aware of significant differences among our students.
- The second objective is to identify various strategies to deal with these challenges.
- The third objective is to give selected strategies a try.
- The fourth objective is to share and discuss our experiences.
- The fifth objective is to let all participating students get aware of what learning strategies match perfectly with them, so they will be able to redesign and optimize their learning in the future by themselves.

PROJECT ACTIVITIES

SHORT-TERM JOINT STAFF TRAINING EVENT
CENTRUL ȘCOLAR DE EDUCAȚIE INCLUZIVĂ NR. 1

Bucharest, Romania – 27-31 January 2020

Theme: Teach me differently

In this staff training event, participants learnt through lectures, participative presentations, and workshops about:

- Learning styles, teaching styles, adapting teaching styles according to learning styles;
- Differentiated, individualized, personalized teaching strategies;
- Adaptation and management for an inclusive classroom;
- Assessment adaptation to different types of learners;
- Traditional and modern teaching strategies for making learning easier (game-based education, e-platforms, e-tools, VR, educational software);
- Non-formal education (outdoor activities), support for formal education.

Outdoor activities showed how non-formal education can be integrated and be complementary to formal education. The teachers had the chance to ask questions of personal interest about classroom diversity and got customized answers to the challenges they are facing.

The benefit for the involved participants consists of:

☞ getting more and more aware of the differences in every single class;

☞ gaining knowledge about different learning and teaching styles, about differentiated, individualized, personalized teaching strategies that can be used in class, about integrating non-formal activities (outdoor activities) in formal education;

☞ getting customized answers from experts for the challenges they are facing;

☞ sharing experiences with colleagues;

☞ getting inspired to use different ways of teaching;

☞ understanding the importance of the European Union as an entity that promotes cooperation and understanding between its citizens and combats social exclusion and discrimination.

Participants: 10 teachers (2 from each partner institutions).

Teach me differently-TMD, no. 2019-1-AT01-KA229-051500

2. SHORT-TERM EXCHANGE OF GROUPS OF PUPILS

2nd GYMNASIUM OF XANTHI

Xanthi, Greece – 16-20 May 2022

Theme: Computational Thinking Made Easier

Computational Thinking is a set of problem-solving methods that involve expressing problems and their solutions in ways that a computer could execute.

However, even today many pupils find it difficult to write even simple programs. In addition, we have noticed that personalized learning can be of great help to pupils try to learn programming mainly because each pupil has her/his own way to understand things.

In this meeting, we explored a number of platforms that have been designed to allow pupils to learn to programme using personalized learning. In addition, we taught pupils elements of Python programming (values, variables, for loops, and if command) using the idea that each pupil should type code and try it. Finally, we investigated how differentiated and individualized learning can be used in this context.

Learning basic programing is a very important part of STEM education which is a very modern approach to learning, thus all school strives to include STEM education in their curricula.

The benefit for the involved participants consists of:
☞ colaborative learning through discussions and pairing in team for solveing different tasks;
☞ being confronted with different teaching strategies and school systems;
☞ cross-national experiences, learning about other countries and different ways of living;
☞ using English all the time;
☞ establishing long-lasting friendships in Europe;
☞ understanding the importance of the European Union as an entity that promotes cooperation and understanding between its citizens and combats social exclusion and discrimination.

Participants: 11 students and 8 teachers from partners institution (The Romanian partner attended virtually).
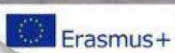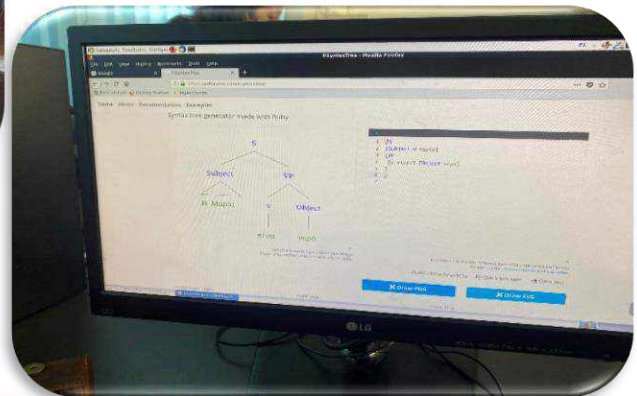
3. SHORT-TERM EXCHANGE OF GROUPS OF PUPILS

ESCOLA SECUNDÁRIA DE FRANCISCO FRANCO

Funchal, Portugal – 26-30 September 2022

Theme: Mobile Technologies Supporting Learning

In this mobility we examined how mobile technologies (e.g., tablets and mobile phones) can be used to assist a seamless learning process design where students are empowerd to develop personalized and diversified understanding of the learning materials. In addition, we have decided to follow the methodology presented in Song, Y., Wong, LH. & Looi, CK. Education Tech Research Dev (2012) therfore we learned together about the life cycles of various living things.

The learning process consisted in:

- in-class enculturation and question posing;
- out-of-class field trip observation;
- on site reflection after observation;
- data collection and conceptualization of life cycles in a field trip;
- hands-on experiments;
- creation of animations and compositions based on the hands-on experience individually either at home or in class to re-conceptualize the life cycles of various living things;
- sharing the results of the research and exploration in class.

We thought that this can be easily integrated into usual activities of the involved schools as it is possible to go in a field trip to learn new things. The important thing was to examine something that has been proved useful and adapt it to the peculiarities of each participating school.

The benefit for the involved participants consists of:

☞ discussions and working together on different tasks
☞ being confronted with different teaching strategies and school systems;
☞ cross-national experiences, learning about other countries and different ways of living;
☞ using English all the time;
☞ establishing long-lasting friendships in Europe;
☞ ustanding the importance of the European Union as an entity that promotes cooperation and understanding between its citizens and combats social exclusion and discrimination.

There are many topics that can be taught better when pupils visit museums, exhibitions, or on a field trip. This project activity demonstrates how to maximize the gains from s.uch a visit. We believ this is important because school excursions are part of school life.

Participants: 13 students and 8 teachers from partners institution (The Romanian partner did not plan to attend this meeting).

Teach me differently-TMD, no. 2019-1-AT01-KA229-051500

4. SHORT-TERM EXCHANGE OF GROUPS OF PUPILS

AGIOS GEORGIOS LYCEUM LARNACA

Larnaca, Cyprus – 7-11 November 2022

Theme: Computer-Aided Learning

In this meeting pupils were exposed to the different learning approaches by using of software to allow each pupil to proceed through a predetermined body of knowledge at his or her own pace. The proposed activities put teachers in a new role, the role of mediator of learning, where they only oversee the process and help pupils only on technical matters related to the use of software or web page.

One could use such a system to evaluate the understanding of pupils and to design tests and/or homework. Thus it is fairly easy to integrate this activity with the day to day activities of the involved schools. By useing this approach pupils learn how to use computers for learning purposes and can see how personalized learning works in a real-world environment where one expects results almost immediately. Therfore Participants saw how they can learn and how they can teach using this technology to develop a deep understanding of the use of simple software tools in education.

The benefit for the involved participants consists of:
☞ discussions and working together on different tasks;
☞ being confronted with different teaching strategies and school systems;
☞ cross-national experiences, learning about other countries and different ways of living;
☞ using English all the time;
☞ establishing long-lasting friendships in Europe;
☞ understanding the importance of the European Union as an entity that promotes cooperation and understanding between its citizens and combats social exclusion and discrimination.

Participants: 16 students and 11 teachers from partners institution.

Teach me differently-TMD, no. 2019-1-AT01-KA229-051500

5. SHORT-TERM EXCHANGE OF GROUPS OF PUPILS

TEHNICKA SKOLA VLASOTINCE

Vlasotince, Serbia – 12-16 December 2022

Theme: Project-based Learning

In this nobility we explored project-based learning (PBL) startig with the idea to show how we can move the focus from rote memorization to understanding complete concepts. In order to do this pupils were involved in the decisions by chooseing topics and dig deep into information to find answers. Depending on the subject, teachers choosed to develop projects starting from an extended question, a unique challenge, or an interesting problem.

Once a topic was chosen, pupils used a variety of resources that included online research, reading articles, or even interviewing people to complete the project.

The end goal was for students to learn how to learn and for teachers to be aware and evaluate the final results less on the content and more on the processes. Obviously, this activity was easily integrated into the activities of all schools. Teachers had to slightly adapt their teaching methodology and embrace this idea.

The benefit for the involved participants consists of:
☞ discussions and working together on different tasks;
☞ being confronted with different teaching strategies and school systems;
☞ cross-national experiences, learning about other countries and different ways of living;
☞ using English all the time;
☞ establishing long-lasting friendships in Europe;
☞ understanding the importance of the European Union as an entity that promotes cooperation and understanding between its citizens and combats social exclusion and discrimination.

Participants: 9 students and 6 teachers from partners institution (The Austrian and the Romanian partners did not plan to attend this meeting).

6. SHORT-TERM EXCHANGE OF GROUPS OF PUPILS

BUNDESHANDELSAKADEMIE LAA

Laa an der Thaya, Austria – 30 January - 3 February 2023

Theme: The Use of Augmented and Virtual Reality in Learning

Virtual reality is a computer-generated simulation of a 3D environment. It requires special equipment, which comes in the form of a headset. The Austrian school has this kind of equipment and so they were prepared to offer this kind of activity.

Personalized learning systems are designed to the number of variables and VR can be used to achieve this goal. The real benefit is that pupils get immersive experience and "feel" the concepts they are learning of, so it's easier for them to remember and express what they learned. This way we achieve more immediate engagement of the learner.

There exists the preconception that it is not easy to integrate the use of VR in normal activities of all but the host school.

But there are also low-cost alternatives. The Austrian school is going demonstrate this and encouraged the others in this field. However, if a school can find a way to get financial assistance so to get high-quality equipment, then it is straightforward to integrate this methodology in any school activities.

All participants know what VR is but no one has actually used it in the learning process. Thus, this meeting was a first class opportunity to see this method in action and to experience immersive and interactive VR visualization.

The benefit for the involved participants consists of:
☞ discussions and working together on different tasks;
☞ being confronted with different teaching strategies and school systems, cross-national experiences, learning more about other countries and different ways of living;
☞ using English all the time;
☞ establishing long-lasting friendships in Europe;
☞ understanding the importance of the European Union as an entity that promotes cooperation and understanding between its citizens and combats social exclusion and discrimination.

Participants: 15 students and 11 teachers from partners institution.

PROJECT ACTIVITIES

DURING PANDEMIC PERIOD

International online lessons

International teacher conference

The Globetrotter Challenge

PROJECT THEMES OVERVIEW

A basic objective of every educator and every educational institution is to make learning as easy as possible. Unfortunately, there is no way to "implant" knowledge into one's brain so educators must use various methods and techniques that can help pupils and students to focus and actively participate in their own learning.

John Hattie in his book Visible Learning observed the fact that "Many students are physically present in the classroom, and psychologically absent." This absence became more visible today due to a complex of factors, from which we remind the changes in the pedagogical act, the pupil development dynamics, and the teacher's capacity to adapt to fast changes.

- the contemporary pedagogical act is focused on the children and their individual needs. Teachers can see better the lack of attention in pupils than in the time pedagogy was oriented toward the teacher.

- children use devices in an unstructured chaotic way and this has an impact on the capacity to orient and maintain focus as well as the attention span and working memory which directly affects the way information is assimilated, processed and actualized

- the use traditional, frontal pedagogical approaches which aren't effective in an inclusive environment. With the help of technology, teachers can access new ways to give tasks, ways that are closer to the pupils and can help to structure the way they use media.

Various approaches aim to tackle the problem of active participation in the inclusive classroom and the development of competencies for life or 21 century skills.

How does an inclusive approach to teaching differ from a traditional one?

TRADITIONAL	INCLUSIVE
differences between students are masked (pedagogical intervention takes place only when they become visible)	the differences between students are fundamental for the didactic design
assessment is done at the end of a learning cycle (summative)	continuous evaluation to understand the needs of the students and to adapt the way and dynamics of teaching
few learning profiles are considered for the didactic design	the focus is on different learning profiles for the didactic design
the learning pase is relativly inflexible	the learning pace is adapted to the pupils learning needs
uses o type of educational resource, usualy the textbook	more educational materials and resources are provided

the teacher directs the students' learning behavior	the teacher stimulates independent learning skills
the teacher shows how problems are solved	the teacher helps pupils to discover how to solve the problems
the teacher provides unique standards for grading	teachers and pupils tugheter set individual and group grading criteria

In an inclusive environment, depending on the classroom demographic and the subject to teach, a differentiated, individualized, or personalized approach to teaching and learning can be used.

The first approach is based on the assumption that the "one-size-fits-all" approach to teaching is wrong. The second approach places more focus on student pacing and in the third approach pupils have an active role in designing lessons and projects while teachers act more as guides than the curators of information and learning experiences.

DIFFERENTIATED	INDIVIDUALIZED	PERSONALIZED
the adaptation of the curriculum at the level of: content, process, product and learning environment, depending on the different learning needs;	similar to differentiation but places more emphasis on the process of learning and the students' pace;	the adaptation off the educational process to all the needs and interests of a child (what/ how/ when/ where they learn);
the teacher designs lessons where the teaching method varies according to the needs of pupils;	the teacher customizes lessons and assignments for pupils who need individual support, then gives them direct instruction while the other pupils follow the standard material;	the teacher guides and provides learning experiences that help pupils orient their education towords domains they feel closer;
learning objectives are the same for all students;	learning objectives are the same for most pupils, but specific objectives appear for pupils receiving individual support;	pupils play an active role in designing lessons and choosing objectives based on their own interests, aspirations and passions;
pupils are grouped according various crireria to facilitate the teacher decision regarding teaching methods and tools;	the teacher selects the methods and tools according to individual learning needs as well as group needs;	pupils select resources and tools and build a social network to support and guide their learning;
a dynamic process involving continuous evaluations and adjustments.	a dynamic process involving continuous evaluations and adjustments.	pupils continuously self-assess their learning.

"Teachers in differentiated classroom are more in touch with their students prepare themselves to be ready to engage students in instruction through approaches that appeal to a big range interests, and abilities. There is no single „right way" to create an effectively differentiated classroom" (Carol Ann Tomlinson – The Differentiated Classroom

Why the inclusive approach?

"There is no formula or recipe that works for all learners in all time. There is no set of lesson plans or units that can engage the range of learning styles, approaches, and intelligences that are likely to gather in one classroom." (Wiliam Ayres–To Teach: The Journey of a Teacher).

Learning Style approach

According to Kirby (1979) The term Learning Style came into use when researchers began looking for ways to combine learning methods, materials and tools to match the needs of each learner.

Reichmann (1978) defined learning style as a particular set of behaviours and attitudes related to the learning context. Not much time later Keefe (1979) referred to the learning style concept as the: cognitive, affective, and physiological factors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. In 1985, Scarpaci and Fradd managed to summarize the definition learning styles as" ways in which individuals perceive, organize, and recall information in their environment". The most common learning styles are connected to the main sensorial pathways that humans use to explore the environment:

LEARNING STYLES		
Visual	**Auditory**	**Kinaesthetic**
• use images, pictures, colours, and maps to organize information and communicate with others. • remember what they read or see in a presentation. • can think in images and pictures. • associate easily colour with information. • prefer written tasks better than verbal ones.	• perceive and process very well auditory information. • remember what they hear in a lecturer presentation, or during a conversation. • can talk while they write to support memorization. • are sophisticated speakers. • remember by listening, and therefore get the most out of lectures.	• learn best through a hands-on approach and are well coordinated. • need to move to learn how things work; • "doers" not big "talkers". • need concrete experiences to function as learning aides.

LEARNING STRATEGIES

Visual	Auditory	Kinaesthetic
• To write down things that they want to remember using colours and drawings and mind maps. • To take notes, restructure information and add details when studying. • To use colours to highlight main ideas and pictures. • To make task cards, flash cards, card games, floor games, etc, when learning new information.	• To talk about the information and hear it, too. • To recite out loud the information they want to remember several times. • To records of important points to remember and listen to it repeatedly. • To set goals and verbalize them at the beginning of work on a particular assignment.	• To walk around while reciting or using flashcards or notes. • To try studying while sitting in a comfortable position, lying on stomach or back. • Colour grounding – use coloured paper to cover the desk or even decorate the learning area.

Children with SEN(D)

Children and young people with special educational needs and disabilities (SEND) present learning difficulties that make it harder for them to memorize, re-actualize and use learned skills and information in an adaptive way.

SEN(D) can manifest in four main ways:

1. Difficulties in communicating and interacting
2. Developmental delays in cognition and learning abilities
3. Social, emotional, and mental health difficulties
4. Sensory or physical needs

NOTE: Not all children with special educational needs have a disability and not all children with disability have special educational needs. For example, sensory children who have health conditions such as asthma, epilepsy and cancer do not necessarily have special educational needs.

Communication and interaction	Sensory or physical
• speech and language impairments that affect the quality of communication • motor speech disorders • rhythm and fluency disorders • difficulties in phonemic awareness Require extra Speech Therapy support.	• Sensorial processing disorders • Visual or hearing impairments • Neuro-motor impairments • Serious health conditions Require extra ongoing support and equipment.

Developmental delays	Social, emotional, and mental health
• slower pace of learning than others their age (delay in cognitive development) • memory and cognition deficits and information-processing problems • lack of cognitive strategies for learning • reading difficulties • reading comprehension • written language problems • mathematical understanding disorders Require extra cognitive stimulation and support	• difficulty in developing, managing and maintaining relationships • social anxiety and withdrawal in social contexts • difficulty in focusing and maintaining attention • disruptive behaviour that causes problems for themselves and others Require extra psychological support

NOTE: Special Educational Needs manifest themselves in diverse ways. Symptoms might not look the same from one child to another, and some will present support needs in more than one of the areas above.

Learning Disabilities

- **Dyslexia**

Dyslexia is a learning disability in reading. People with dyslexia have trouble reading at a good pace and without mistakes. They may also have a hard time with reading comprehension, spelling, and writing.

NOTE: It`s important to know that wile dyslexia impacts learning, it`s not a problem of intelligence. Children with dyslexia are just as smart as their peers.

- **Dysgraphia**

Many experts view dysgraphia as an issue with a set of skills known as transcription. These skills include handwriting, typing, and spelling. (Trouble expressing yourself in writing isn't part of dysgraphia. But when kids have to focus so much on transcription, it can get in the way of thinking about ideas and how to convey them.)

NOTE: Having dysgraphia doesn't mean a child isn't smart. And when kids with dysgraphia struggle with writing, they're not being lazy. But they do need extra help and support to improve.

- **Dyscalculia**

Dyscalculia is a learning disability in math. It is characterized by impairments in learning basic arithmetic facts, processing numerical quantities, and performing accurate and fluent calculations. These difficulties are below what is expected for the individual's chronological age and are not caused by poor education or intellectual deficits.

NOTE: In the long term, living with dyscalculia can be difficult and if no intervention is provided it may affect the emotional well-being of children and adults. Difficulties corelated with dyscalculia can vary from remembering phone numbers to paying right amounts and checking the change, to tasks such as cooking and planning appointments.

Key skills kids with learning disability may struggle with:

LEARNING DISABILITIES		
Dyslexia	**Dyslexia**	**Dyscalculia**
• phonemic awareness (the ability to recognize the sounds in words) • decoding words (matching letters to sounds) • reading pace and fluency (often read slowly and make mistakes) • complex language skills including grammar and reading comprehension (if they hear what is read they have no problem understanding the text.) • sentence structure, and more in-depth writing.	• forms and sizes of letters (can have an impact on learning how to spell) • spacing letters and words correctly on a page • writing in a straight line • managing the paper by holding it with one hand while writing with the other • holding and controlling a pencil or other writing tool • putting the right amount of pressure on the paper with a writing tool • maintaining the right arm position and posture for writing • writing pace	• retrieving arithmetic facts from memory (they rely on immature strategies such as finger counting) • learning how to count • comprehension of numbers • classification and measurement (difficulties in associating numbers with a real-life situation) • recognizing symbols associated with numbers (e.g. inability to associate "4" to the concept "four") • errors related numbers' symbols when they are written or copied (confusing 9 with 6, or 3 with 8) • correct writing of numbers' symbols (e.g. upside down writing)

Learning disabilities are biologically based developmental disorders. They manifest as deep learning struggles and are not correlated with a low IQ. The difficulties that can be observed are centred around the ability of reading and writing or the ability to interpret numeric symbols and arithmetical operations. Usually those who suffer from a learning disability have a hard time completing assignments and homework, they avoid tasks related to their struggles and get anxious or frustrated when others can observe their inability. On the long run these behaviours, if not addressed, will impact their social interaction and their capacity of dealing with stress.

NOTE: There are teaching approaches and strategies that can help people with learning disabilities improve their skills and manage the challenges.

Attention deficit and hyperkinetic disorder (ADHD)

ADHD is one of the first things that is suspected when a child's behaviour in class, or performance on schoolwork, is problematic. A child who can't seem to sit still, who blurts out answers without expecting their turn, who doesn't finish homework, who seems to be daydreaming when the teacher gives instructions, these are well-known symptoms of ADHD.

There are three kinds of behaviours involved in ADHD: inattention, hyperactivity and impulsivity. By the way of the manifestation of the symptoms ADHD is divided in two groups – inattentive (ADD) and hyperactive-impulsive (ADHD).

Inattentive	Hyperactive-Impulsive
• Makes careless mistakes in schoolwork, overlooks details.	• Often fidgets or squirms.
• Is easily distracted or side tracked.	• Has trouble staying in his seat?
• Has difficulty following instructions.	• Runs and climbs where it is inappropriate.
• Does not seem to be listening when spoken to directly.	• Has trouble playing quietly?
• Has trouble organizing tasks and possessions.	• Is extremely impatient, cannot wait for his turn.
• Often does not finish work in school or chores in the classroom.	• Always seems to be "on the go" or "driven by a motor".
• Often avoids or resists tasks that require sustained mental effort, including doing homework.	• Talks excessively.
• Often loses homework assignments, books, jackets, backpacks, sports equipment.	• Blurts out answers before a question is completed.
	• Interrupts or intrudes on other conversations, activities, possessions

NOTE: Just because a child has symptoms of inattention, impulsivity, or hyperactivity does not mean that they have ADHD. Certain medical conditions, psychological disorders, and stressful life events can cause symptoms that look like ADHD.

Autism Spectrum Disorders (ASD)

Autism is a complex developmental disability with symptoms that typically appear during the first three years of childhood and continue throughout life. It is the most severe disorder within a group of developmental disorders called autism spectrum disorders (ASDs) or pervasive developmental disorders (PDDs) that cover a wide range of behaviours and symptoms, all related to a lesser or greater extent to impaired social and communication skills .

The symptoms of autism occur in a wide variety of combinations, from mild to severe and are caused by physical disorders of the brain. According to the ASA, they may include any combination of the following in varying degrees of severity:

- insistence on rotine resistance to change
- difficulty in expressing needs; using gestures or pointing instead of words
- repeating words or sentences instead of using normal, responsive language (echolalia)
- laughing, crying, showing distress for reasons not apparent to others
- aloof behavior, seeking solitude
- tantrums
- refusal to cuddle or be cuddled
- little or no eye contact
- unresponsiveness to normal teaching methods
- sustained odd play
- inappropriate attachments to objects
- apparent over-sensitivity or under-sensitivity to pain
- no fear of danger
- uneven gross/fine motor skills
- not responsive to verbal cues; acts as if deaf although hearing tests in normal range

NOTE: In its most severe form, autism may include extreme self-injurious, repetitive, highly unusual, and aggressive behaviors.

What inclusive strategies can a teacher use with children with SEN(D)?

"Classrooms are a whirlwind of learning styles, needs, interests, genes and skills. Students need to be educated not only in the place where they are, but they must also be trained for the future. Fortunately, teachers have access to a multitude of instructional approaches that, if implemented effectively, will provide students with the appropriate level of learning they need to succeed." Lauren Davis: Differentiated, Individualized, and Personalized Learning Explained

Successful strategies for effective education for students SEND include a triad of academic instruction, behavioural interventions, and classroom accommodations. When these strategies are applied more regularly in the classroom, they will benefit not only pupils with SEND but also the entire learning environment.

General guidelines for teachers:
Presence
• Be calm and positive.
• Promote a welcoming environment and provide opportunities for your pupils to strive.
• Allow times for students to work in pairs and/or small groups.
• Give positive directions; minimize the use of "don't" and "stop".

Classroom rules

• Clear, concise, and reviewed regularly with the pupils.

• Provide written rules or pictures of expectations of behaviour in the classroom, including 'unwritten' conventions if necessary.

• Posted prominently in the classroom.

Position of the child in the classroom:

• close to the teacher

• away from easy distractions, such as doors, windows.

Feed-back

• frequent and immediate feedback

• catch the student being good and give him immediate praise.

• ignore negative behaviours that are minimal and not disruptive.

• Avoid punishment by using rewards and incentives effectively (objective: to motivate and to support a positive feeling about the school).

• Change up the rewards often to help maintain interest.

• Place a hand on the student's shoulder, hand or arm while talking to him in order to keep him focused on the information.

Learning content and instructions

• Schedule the most difficult subjects in the morning time when the student (and the whole class) is fresher and less fatigued.

• Reduce the student's total workload. Break work down into smaller sections.

• Give concise one or two steps direction. Avoid "overloading" with too much info.

• Use timers, taped time signals, or verbal cues to show how much time the student has remaining for an activity.

• Pair the student with a "study buddy"—a kind and mature classroom peer who can help give reminders or refocus the child when he gets off track.

• Pair the student with peers who are positive role models.

Specific Teaching Strategies for Students with Memory Difficulties:

• Chunking - the grouping of large strings of information into smaller, more manageable "chunks".

• Rehearsal - repetition, either oral or silent, of the information to be remembered.

• Elaboration - weaving of the material to be remembered into a meaningful context.

• Categorization – organizing the information to be learned by the category to which it belongs.

Specific Teaching Strategies for Students with Attention Difficulties:

• Breaking long tasks or assignments into smaller segments (administer the smaller segments throughout the day)

• Presenting limited amounts of information on a page

• Gradually increasing the amount of time, a student must attend to a task or lecture

• Use prompts and cues to draw attention to essential information. Types of cues include:

• Written cues, such as highlighting directions on tests or activity sheets • Verbal cues, such as using signal words to let students know they are about to hear essential information • Instructional cues, such as having a student paraphrase directions or other information to you • Teach students a plan for identifying and high-lighting important information for themselves
Specific Teaching Strategies for Students with hyperactivity:
• Allow student frequent physical breaks to move around (to hand out or collect materials, run errands to the office or other areas in the school building, erase the board, get a drink of water at the water fountain, etc.). • Allow the student to hold a small "skoosh ball" or silly putty or something tactile. • Do not use loss of recess as a consequence for negative behaviour. (ADHD kids benefit from the physical movement that occurs during recess and can usually focus better following this exercise).
Specific Teaching Strategies for Students with Perceptual Difficulties:
• Do not present two pieces of information together that may be perceptually confusing. For example, do not teach the spelling of i.e., words (believe) and ei words (perceive) in the same day. • Highlight the important characteristics of new material. For example, underline or use bold letters to draw a student's attention to the same sound pattern presented in a group of reading or spelling words (mouse, house, and round).
Specific Teaching Strategies for Students with Autism:
• Establish clear routines and habits to support regular activities and transitions. • Be tuned into sensory issues that may affect the student in your class. • Use descriptive praise to build desired behaviours.

NOTE: The general strategies are relevant for every inclusive classroom regardless of the presence of a child with SEN(D). If in a classroom a child with a more severe disability, such as Infantile Autism, is integrated all the strategies above will be used in the teaching process and the permanent presence of a shadow is mandatory.

Inclusive methods

The methods that facilitate integration and inclusion promote the expression of individuality and the support of students' strengths. These require an experiential student-centered approach.

In the experiential setting:

1. **The teacher** proposes questions, problems or scenarios (does not present already established facts) and facilitates learning;
2. **The students** play the role of investigators, artists, or actors:
   - looking for solutions to problems;
   - ask and perfect questions;
   - debate ideas;

- make predictions;
- designs plans and/or experiments;
- collect and analyze data;
- draw conclusions;
- communicate ideas and findings;
- create products or shows.

Computational Thinking (CT)

Computational Thinking (CT) is a creative problem-solving competence essential for the so-called twenty-first century skill set. It can be defined as cognitive and metacognitive strategies used by the learner in the active creative process of solving fuzzy defined problems.

"Computational thinking is a way of solving problems, designing systems, and understanding human behaviour that draws on concepts fundamental to computer science." (Jeannette Wing, n.d.)

We use elements of computational thinking on a daily basis without even thinking about it.

- **Logical thinking** - considering all the pro's and con's to something in order to decide what is the best action to take.
- **Algorithms** - An *algorithm* is the set of instructions that one has to follow when solving a problem.
- **Inputs and Outputs** - An *input* is the process of entering data into your computer. An *output* is the way the data is presented to the viewer.
- **Sequence** - A *sequence* is following a set of instructions in a particular order. If you want the computer to output something specific, the input and set of instructions must be in the correct order.
- **Repetition** - *Repetition* means repeating a sequence of instructions a certain number of times, or until some specific result is achieved.
- **Variables** - A *variable* is something that is likely to change or vary. It is used for storing information or data that is going to be used at a later date.
- **Selection** - *Selection* is choosing an action to take that based on the previous decisions.

What are the CT skills?

CT requires logical and algorithmic thinking to transpose abstract meaning into concrete problem-solving actions.

Decomposition - breaking down a complex problem or system into smaller, more manageable parts	
Everyday Example:	making cookies - mixing up the dough, forming into shapes via cookie cutters, and baking.
Academic Example:	drafting an essay - developing a thesis, gathering evidence, and creating a bibliography page.

Pattern Recognition - looking for similarities among and within problems	
Everyday Example:	obeying the basic green – yellow – red pattern for traffic signals ensures that traffic moves safely through an intersection.
Academic Example:	pattern recognition is needed when categorizing rocks as either igneous, metamorphic, or sedimentary.
Abstraction - focusing on the essential information only and ignoring irrelevant detail;	
Everyday Example:	any map with a compass rose can be interpreted if you are familiar with North, South, East, and West directions.
Academic Example:	classification on the most relevant criteria: fruit - seed-bearing.
Algorithm Design - developing a step-by-step solution to the problem, or the rules to follow to solve a problem	
Everyday Example:	getting ready in the morning is a multi-step process with a specific order of actions (socks before shoes).
Academic Example:	using mnemonic techniques to remember the order of mathematical operations, for example.

The fundamental CT skills can be easily learned through a series of interesting and engaging steps or activities.

Step 1 > Breakdown a problem:
- Take a large and complex problem, and break it down into smaller, more manageable problems or steps;

Step 2 > Look for patterns or trends among the problems
- Identify or generate data which is useful to the problem;

Step 3 > Abstraction
- Remove unnecessary detail from the problem.

Step 4 > Format a general solution
- Once the problem is broken down take the pieces, solve them individually, and put them together logically into a complete solution.

Step 5 > Analyse and evaluate the solution.
- What new insights do you have based on the solutions to your problem?

By teaching computational thinking, we are providing the essential and fundamental skills for lifelong learners. CT empowers the student to take control over their own cognitive development by encouraging questions like:

➢ How can we take complex problems/topics and break them down into simpler tasks?
➢ What similarities, differences, or patterns exist within the problem/topic?
➢ What general principles exist and what unimportant details can be ignored?
➢ What steps are needed to solve the problem/to cover the topic and how can the steps best be organized?

The ability to solve problems, critically analyse information, communicate and think creatively, are invaluable skills in our ever changing digitally-powered world.

Project-Based Learning (PBL)

Project-based learning (**PBL**) is a student-cantered method that involves a dynamic classroom approach where deep understanding of a subject is ensured by active exploration and investigation. By activating reflection through questions, problems or scenarios it contrasts with paper-based, rote memorization, or teacher-led instruction.

Blumenfeld *et al.* elaborate on the processes of PBL: *"Project-based learning is a comprehensive perspective focused on teaching by engaging students in investigation. Within this framework, students pursue solutions to problems by asking and refining questions, debating ideas, making predictions, designing plans and/or experiments, collecting and analysing data, drawing conclusions, communicating their ideas and findings to others, asking new questions, and creating artefacts. "*

Wood (2003) shapes the principles of a project:
1. Goals and outcomes must be learner-driven and self-identified;
2. Students must do independent, self-directed study before returning to a larger group;
3. Learning is done in small groups with a tutor to facilitate discussions;
4. Trigger materials such as paper-based clinical scenarios, lab data, photographs, articles, or videos can be used;
5. It must allow knowledge acquisition through combined work and intellect;
6. All members of the group must play a role in the final product;
7. The scenario must be built by respecting the curriculum;

The Maastricht 7 provide teachers with the most important elements of PBL modelling that helps them to develop a tutorial process:
1. A Need to Know;
2. A Driving Question;
3. Student Voice and Choice;
4. 21st Century Skills;
5. Inquiry and Innovation;
6. Feedback and Revision;
7. A Publicly Presented Product.

A well-designed and well-implemented project needs to approach a personally meaningful theme, and an educational purpose. Without a driving question, students may not understand why they are undertaking a project, and without student voice and choice their work will seem meaningless because they don't perceive "the need to know" of the information being taught.

PBL represents a learning journey for both students and teachers. Teachers are trying new ways to engage with the students, making a stronger student - teacher bound. They take risks as learners, engage in discussions with colleagues and share project journeys and good practices resulting in a better experience for everyone. As for students, PBL can help them develop according to the needs of a 21st century society:

- **Time management** - working for an extended period of time with terms and intermediary feedback;
- **Recourses management** - active exploration often requires students to integrate lessons from several disciplines and apply them in a practical way;
- **Team work and leadership** – working as a team to find a common perspective and understanding differences between peers;
- **Assuming responsibility for learning** – developing more autonomy and responsibility in learning while being engaged in an extended process of inquiry, critique, and revision;
- **Expressing their individuality** - learners "shape their projects to fit their own interests and abilities" (Moursund, 1998, p. 4). Creating personally meaningful artefacts that enables the expression of diversity in learners (interests, abilities, learning styles).

Mobile Technologies Supporting Learning

Students of all ages bring mobile technology (m-tech) to school, especially devices such as smartphones and tablets. These allow them to carry out various activities such as listening to music, watching videos, using a GPS, taking (and editing) photos and videos, taking notes, and playing games.

Teachers could use the familiarity with m-tech to motivate today's digital natives to learn in new and innovative ways. By incorporating digital materials into lessons (apps, videos, news stories or online discussion groups) students will be more open and active throughout the learning process.

Since m-tech has changed the way we work, live, and play, it is possible for it to exist in the classroom, the challenge is to make sure that students are using it for school-related tasks.

What exactly makes m-learning new and different from previous technologies for learning? John Cook considers that the "learner-generated contexts" is defining for mobile learning. And Jones, Issroff et al. (2007) suggest that the main characteristic of mobile technologies is to offer motivated, digitally facilitated, and site-specific learning.

The m-learning process offers:
- control (over goals);
- ownership (of acquisitions);
- fun;
- communication;

- learning-in-context;
- continuity between contexts.

Learning activities facilitated by M-tech

M-learning aims to bring the best possible support to the learning process by integrating activities such as (CSCL - Computer-Supported Collaborative Learning – "Inquiry Learning and Mobile Learning", 2006):

- exploring and investigating;
- discussing;
- recording, capturing data;
- building, making, modelling;
- sharing;
- testing
- adapting reflecting

Pupils enjoy this kind of learning process because it reduces the time for tedious work, it engages and facilitates collaborative learning and gives them the opportunity for personalized learning.

Advantages of using M-tech

Expanding opportunities and ensuring equal access to education - mobile technology is an excellent learning tool for students who are deprived of the opportunity to receive quality education.

- E.g. The BridgeIT project for Latin America and Asia – aimed to help geographically isolated educational institutions is implemented through mobile communication.

Learning at anytime and anywhere - mobile technology allows to conduct the learning process at any time and in any place.

- E.g. The UNESCO – aimed to increase literacy using mobile technologies. Attended by 250 teenage girls from remote areas of Pakistan, implemented through mobile technologies.

Learning personalization - mobile technologies provide more opportunities for personalization and helps to eliminate the constraints faced by students with different learning styles, different skills, and different knowledge levels.

Instant feedback and evaluation of learning results - mobile technology accelerates the assessment of knowledge and gives students and teachers the opportunity to track progress. This allows students to identify their weaknesses and repeat the key concepts.

Computer-aided Learning (CAL)

Computer-aided learning (CAL) has developed by combining knowledge from all fields of education, human computer interaction (HCI) and cognition. The main advantage is the capacity to individualize instructions to meet the specific needs of the learner (Rasmussen and Davidson, 1996).

Computer Aided Learning describes an educational environment where a computer program, or an application, is used *to assist* the user in learning a particular subject. The key issue is the word "*assist*" which means that the computer program is not alone in the educational process and that there are other methods involved. This assistive method can provide either directed learning (directed by the teacher) or self-study both of which can take place during the classes or "outside".

Computer aided learning (CAL) is often confused with Computer Based Learning (CBT) but these are very different concepts:

Computer-Based Learning (CBL) – uses computer programs aimed to replace current methods.

Computer-aided learning (CAL) – incorporates technological tools into the course as learning resources.

With the help of computer software CAL aims:

- to stimulate and develop the assimilation/learning capacity of students;
- to increase teachers' effectiveness and productivity;
- to update students' knowledge to current trends.

Providing attractive materials is an integral part of CAL but the most important objective of the teacher is that the students learn and understand what is being taught. Tools like the ones bellow can help exercise and asses the understanding of concepts.

CAL Tools		
Multiple Choice Questions;	Scrabble/Crossword Puzzles;	Web-Quest;
Fill-in the Gap;	Online Interactive Chat;	Adventure Games;
Find the Answers;	Drills;	Listening Exercises.

Advantages of CAL

The ability to present content in various ways (text, video, sound, graphics) makes CAL an effective medium for learning. Learning becomes more attractive and dynamic therefore students become active. It boosts their confidence in solving tasks and improves the quality of what they have learnt.

CAL provides many advantages to the education sector	• Adaptability to students needs and understanding level;
	• Self-Paced/ Self-Directed Learning;
	• Improved Computer Skill;
	• Visualization;
	• Learning Efficiency;
	• Sensory Stimulation;
	• Communication Development;
	• Content/Lesson-Centred;
	• Enthusiasm;
	• Flexible evaluations of the student's performance.

Virtual Reality (VR)

The term "Virtual Reality" has been used first in the 60s, even if its roots date back to the 19th Century when the first 360-degree art through panoramic murals began to appear. Since then, VR has evolved in several ways becoming more and more similar to the real world. In recent years, VR is defined as:

- a three-dimensional, participatory, multi-sensory, computer-based simulated environment occurring in real time (D.Passig and A. Sharbat, 2001)
- a "computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors." (Online Oxford Dictionary)

VR in education has to provide students with an opportunity to experience a sensory interactive learning environment, enabling the student to move from passive to active learning.

The basic characteristics of VR are:

- **Immersion** - a perception of being physically present in a computer-generated reality with which the user interacts.
- **Simulation** - surrounding the user with sound or other stimuli and giving exciting scenarios that lead to exploration and discovery.
- **Interaction** – the possibility to navigate, select, move, and manipulate objects.

Even if immersion seems to be a crucial element, as Robertson et al. say (1993), VR can also be non-immersive when it "places the user in a 3D environment that can be directly manipulated, but it does so with a conventional graphics-workstation using a monitor, a keyboard, and a mouse".

The main motivation for using VR is that it gives to the user the opportunity to live and experiment those situations that "cannot be accessed physically" such as (L. Freina, M. Ott, 2005):

➢ **time problems**: e.g. travelling in time allows students to experiment different historical periods;
➢ **physical inaccessibility**: e.g. exploring the solar system by freely moving around planets;
➢ **limits due to a dangerous situation**: e.g. training fire fighters on the decision-making process in a situation of simulated firefighting situation;
➢ **ethic problems**: e.g. performing a serious surgery by non-experts as is the case with neurosurgery.

Advantages of using VR in the classroom

VR applications have exciting potential especially in those domains in which visualization, simulation, or "learning by doing" activities are essential. Steve Bambury in the annual GESS Conference in Dubai (2019) presented the top advantages that VR can bring in education:

1. **Global Teleportation** - VR breaks down geographical boundaries (e.g. Google Earth VR)
2. **The Time Machine Effect -** VR allow students to experience the past first hand (e.g. Timelooper)
3. **Contextualised Learning** – VR allow students to view and explore objects/buildings in a real-like way (e.g. Athenian Acropolis)
4. **Multi-Sensory Experiences** – VR can provide kinaesthetic experience by moving and engage within a virtual space (e.g. Hold The World)
5. **Extraordinary Abilities** –VR allows us to break the laws of physics and opens up new learning possibilities in the classroom (e.g. Tilt Brush)
6. **Active Autonomy** – VR provides a great deal of autonomy in how students can engage with the content this way he can explore freely their own flow of information and learning. (e.g. Titanic VR)
7. **Virtual Rehearsal** - VR can help students build up confidence by practicing skills without fear of failure (e.g. VirtualSpeech - to practise public speaking or Frog Dissection app - to develop skills in the Biology classroom)
8. **Remote Presence** - using multi-user VR and social VR platforms can connect students with peers as well as facilitating attendance to lectures and lessons delivered by educators (e.g. Engage, AltSpace)

PRACTICAL ACTIVITIES

Exploring Laa/Thaya with Action Bound

OBJECTIVE:
Students will use mobile devices to learn about the city of Laa/Thaya, improve their English language skills, and create videos showcasing their experiences and the city's attractions.

MATERIALS:
- Mobile devices (phone, tablet, etc.) with internet access and video recording capabilities
- Handouts with information about Laa/Thaya and its landmarks and attractions
- Writing materials (paper, pens/pencils)

WARM-UP (10 MINUTES):
- Ask students what they know about Laa/Thaya.
- Lead a brief discussion about the city's history, culture, and attractions.

DIRECT INSTRUCTION (20 MINUTES):
- Distribute the handouts to students and have them read through the information about Laa/Thaya's landmarks and attractions.
- Discuss the information as a class, highlighting key points and asking questions to encourage student engagement.

GUIDED PRACTICE (30 minutes):
- Have students work in pairs or small groups to choose a landmark or attraction in Laa/Thaya that they would like to learn more about.
- Using their mobile devices, students should research the chosen landmark or attraction and make a list of interesting facts and information that they want to include in their video.

INDEPENDENT PRACTICE (30 minutes):
- Have students use their mobile devices to record a video exploring the landmark or attraction that they chose. Encourage them to use the information that they gathered during the research phase to guide their narration and include interesting facts and details about the place.
- Students should aim to use clear, concise language and proper grammar in their narration, and incorporate visual elements (such as photos or video clips) to enhance their presentation.

CONCLUSION (10 minutes):
- Have students watch and critique each other's videos, giving feedback on the content, language use, and overall effectiveness of the presentation.

- Lead a discussion about the importance of using mobile devices as a learning tool and the value of exploring and learning about new places.
- Encourage students to continue using their mobile devices to learn about and document their experiences in Laa/Thaya and beyond.

ADVANTAGES:
- If it was effective, it would help students to better understand complex concepts and retain information.
- If using this method, the proposed objectives of the lesson would be reached more easily, as students are more engaged and involved in the learning process.
- The added value of the method is that it helps to make lessons more interactive and hands-on, encouraging students to think critically and creatively.

DISADVANTAGES:
- It may require additional resources and preparation time for the teacher.
- It may not be suitable for every subject or every student, as some may benefit more from traditional teaching methods.
- It may also be difficult to manage in a large class setting, as it requires a certain level of student participation and engagement.

STUDENT REACTIONS TO ACTION BOUND:
- If they liked it, students often find that action bound lessons are more engaging and interactive than traditional teaching methods.
- If they enjoy the lesson, students are often more motivated to participate and learn, as they feel more connected to the subject matter.
- If they feel more motivated, students often report that they are more interested in the topic and are better able to retain the information.

Action bound can be used in a variety of subjects, including but not limited to:
- Science: to help students understand and remember concepts related to physics, chemistry, and biology.
- Social Studies: to help students learn about history, geography, and cultural differences.
- Mathematics: to help students learn and apply mathematical concepts and formulas.
- Physical Education: to help students understand and apply physical movements and activities.
- Art: to help students develop creativity and understanding of different art forms. It can also be used in various age groups, from primary school to high school, depending on the subject and objective of the lesson.

Introduction to AI using ChatGPT

OBJECTIVES:
- To familiarize students with AI and its capabilities
- To introduce students to ChatGPT and its use as an AI language model
- To promote active learning and collaboration among students

MATERIALS NEEDED:
- Access to OpenAI's GPT-3 API
- Computers or laptops for each student
- Projector for displaying examples and instructions

PROCEDURE:
1. Introduction (10 minutes)
   o Begin the lesson by asking students if they have heard of AI and what they know about it.
   o Provide a brief overview of AI and its capabilities, highlighting its use in various industries and applications.
2. Introduction to ChatGPT (15 minutes)
   o Explain to students that they will be using ChatGPT, an AI language model developed by OpenAI, to learn more about AI.
   o Demonstrate how to access and use ChatGPT, showing examples of its capabilities and limitations.
3. Student Teaching Session (40 minutes)
   o Divide the class into small groups of 4-5 students each.
   o Provide each group with a different topic related to AI (e.g. natural language processing, machine learning, robotics, etc.).
   o Ask each group to research their topic using ChatGPT and to prepare a 5-minute presentation to teach their classmates about their topic.
   o During the student teaching session, each group will present their findings and answer any questions from their classmates.
4. Closing Discussion (15 minutes)
   o After all groups have finished their presentations, ask the class to discuss their overall impressions of AI and ChatGPT.
   o Encourage students to share what they learned and what they would like to learn more about.
   o Summarize the key points covered in the lesson and emphasize the importance of continuing to learn about AI and its potential impact on society.

ASSESSMENT:
- Student participation in group discussions and presentations will be used to assess their understanding of AI and their ability to collaborate with their peers.

- A follow-up quiz or writing assignment may also be used to assess students' retention of key concepts and information covered in the lesson.

Note: This lesson plan assumes that students have access to the OpenAI's GPT-3 API and the necessary computer equipment. If this is not the case, alternative methods for exploring AI, such as reading articles or watching videos, may be substituted.

The method of having students teach other students can be a valuable and effective way of learning and promoting active engagement in the classroom.

ADVANTAGES:
- This method can promote active learning as students are required to research, analyse and synthesize information in order to teach their peers.
- It allows students to take ownership of their learning and reinforces their understanding of the topic as they present their findings to their peers.
- This method can increase motivation and engagement as students are given the opportunity to share their knowledge and receive feedback from their classmates.
- When students are able to effectively teach others, it indicates that they have a strong understanding of the material.
- This method can also help to create a collaborative and supportive learning environment as students work together to learn and teach.

DISADVANTAGES:
- Some students may feel intimidated or uncomfortable presenting in front of their peers.
- There may be variability in the quality of presentations, as some students may struggle to effectively communicate their ideas.
- This method may not be suitable for all subjects, as some topics may be too complex for students to teach effectively to their peers.

STUDENT REACTIONS:
- Students typically enjoy this method as it provides them with a sense of ownership over their learning and the opportunity to share their knowledge.
- Many students find this method engaging and feel motivated to research and prepare their presentations.
- Student testimonials indicate that this method can foster a positive and supportive learning environment, as students are encouraged to collaborate and learn from each other.

This method can be used in a variety of subjects, such as history, science, and mathematics, where students can research and present on a particular topic or concept. It is particularly effective in subjects where students are required to understand and apply complex ideas, as it helps to reinforce their understanding and promote active engagement.

Introduction to Teachable Machine and Lego Robot Race

OBJECTIVE:
- To introduce students to the concept of teachable machine and its applications in controlling robots.
- To provide hands-on experience in creating a simple program to control a Lego robot using pictures.

MATERIALS:
- Lego robot kits
- Computers with a webcam and internet connection
- Teachable Machine website (https://teachablemachine.withgoogle.com/)

PROCEDURE:
1. Introduction to Teachable Machine (10 minutes):
     o Explain to the students what teachable machine is and how it can be used to create simple programs to control robots and other devices.
     o Show a demo of teachable machine and its features.
2. Creating the program (20 minutes):
     o Divide the students into pairs and provide them with computers and Lego robot kits.
     o Walk the students through the process of creating a simple program using teachable machine to control the direction of the Lego robot using pictures.
     o Guide the students as they train the model to recognize different pictures and assign actions to each picture.
3. Lego Robot Race (30 minutes):
     o Once the program is created, set up a racecourse using Legos or other obstacles.
     o Have each pair of students race their robots by holding up different pictures to control the direction of the robot.
     o Encourage the students to make modifications to their programs to improve the accuracy and speed of their robots.
4. Conclusion (10 minutes):
     o Review the main concepts learned during the lesson and discuss any challenges faced by the students.
     o Encourage the students to continue exploring teachable machine and other similar programs.

ASSESSMENT:
- Observe the students as they create their programs and race their robots to assess their understanding and application of the concept of teachable machine.
- Evaluate the final programs created by the students and provide feedback on their accuracy and efficiency.

EXTENSION:
- Encourage the students to explore other applications of teachable machine and create more complex programs.
- Have the students research other machine learning concepts and programs and present their findings to the class.

ADVANTAGES:
- If it was effective, students would have fun while learning, which can help to keep them engaged and motivated.
- If using games for learning, the proposed objectives of the lesson would be reached more easily, as students are more likely to retain information when it is presented in an entertaining and interactive way.
- The added value of this method is that it helps to make lessons more memorable, as students are more likely to associate positive emotions with the information they have learned.

DISADVANTAGES:
- It may require additional resources and preparation time for the teacher to create and implement the games.
- It may not be suitable for every subject or every student, as some may prefer traditional teaching methods.
- It may also be difficult to manage in a large class setting, as some students may become overly competitive or disruptive during the game.

STUDENT REACTIONS TO GAMES FOR LEARNING:
- If they liked it, students often find that lessons that incorporate games are more enjoyable and engaging than traditional teaching methods.
- If they enjoy the lesson, students are often more motivated to participate and learn, as they feel less pressured and more relaxed.
- If they feel more motivated, students may be more likely to seek out additional information and resources on the subject matter, even outside of class.

Games for learning can be used in a variety of subjects, including science, math, history, and language arts.

It can be particularly effective in subjects that may be perceived as dry or boring, as it can make the material more interesting and engaging for students.

Transforming music into words through drama
Project Based Learning

The method were used during the mobility in Serbia in a form of a workshop

SUBJECT :English language

OBJECTIVES/COMPETENCIES: PBL workshop explores the practice of integrating music and dance forms in foreign language teaching and learning with the aim of developing aesthetic competence, cooperation, communication and problem solving, through Drama techniques.

GRADE:14-17 years old students
Number of pupils involved – individual work / groups; 20-25

RESOURCES: time needed
  ✓ material (Tools/materials needed) laptop,internet,projector,speakers
  ✓ spatial (classroom type and design (a larger empty space with students sitting in a circle arrangement)
  ✓ human (one teacher)

SHORT DESCRIPTIVE LESSON PLAN (LESSON OUTLINE)
- The participants analysed narrative structure in music and transferred it to story through applying higher order thinking skills. In addition the mode of the workshop conforms to narrative structure making the whole experience holistic. Through using the speaking body in the empty space and verbal creative expression combined with some process drama frames, the students experimented individually, in groups and finally as a whole class with ways of using the stimulus to develop their own enacted collective, original story.
- This method was developed through my teaching experience as a response to employing the SPICE as outlined by Hillyard S. (2016) whereby all five developmental needs of learners are taken into account: Social, Physical, Intellectual, Creative and Emotional growth processes. In regard to language, it proved beneficial in that it provided a context which enabled the learners to increase their fluency by applying previously acquired structures in both spoken and written forms. Finally, the students have individually and collectively become authors of original and authentic stories that are now part of them and that will live on for years.The workshop included some theory and lots of experiential practice for group discussion and personal reflection.

ADVANTAGES:
- cares about the mission to educate all
- prepares students for the future
- all students are not assessed in a standardized manner
- lots of experiential practice for group discussion and personal reflection
- applicable in any teaching learning context regardless of the level,age,competence
- students applied higher order thinking skills,creativity,communication, collaboration and critical thinking
- all five developmental needs of learners are taken into account.

DISADVANTAGES:
- lack of motivation among the teachers,they are used to the traditional method of work
- lack of resources and time
- not knowing about how much self study to do and what information is relevant and useful
- not appealing to specific type of learners(shy,reserved,introvert)
- lack of concentration

  it requires of some students to come out of the comfort zone

TESTIMONIALS FROM TEACHERS AND PUPILS:

All the participating teachers answered that they liked the lesson because the students worked on a project that engaged them in solving a problem. They demonstrated their knowledge and skills by creating a public presentation for a real audience,which afterwards made them feel really proud of themselves.As a result of interaction during the project, students developed deep content knowledge as well as critical thinking, collaboration, creativity, and communication skills that are absolutely vital for their life and career success in the 21th.A variety of tasks and activities required to successfully complete the lesson objectives provided the chance for students of various learning styles and interests to contribute,it unleashed a contagious, creative energy among students and teachers.It engaged students in learning that is deep and long-lasting, and inspired for them a love of learning and personal connection to their learning experience.The SEN students were not directly involved in the lesson,but the activities can easily be adapted in the later phase so as to fit for the individual abilities and preferences of the SEN students.

Genaral conclusion is that PBL is very suitable for personalized/individualized/teaching style as it blends content mastery, meaningful work, and personal connection to create powerful learning experiences, in terms of both learning achievement and students' personal growth.

PBL as a method of teaching/learning can be transformative for students, especially those furthest from educational opportunity. Now more than ever, we need young people who are ready, willing, and able to tackle the challenges of their lives and the world they will inherit - and nothing prepares them better than Project Based Learning.
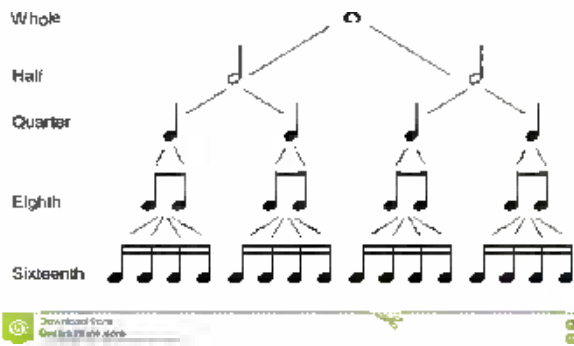
WORKSHOP OUTLINE - 90 minutes

The aim of the PBL workshop is to use music as a stimulus to create a story, similar to the way it is done in Disney cartoons where they usually use classical music. See an example.

During the workshop this 2-minute-long piece from a French film "Le fabuleux destin d'Amélie Poulain" is used because the piece has a clear narrative structure (exposition, rising action, climax, falling action, resolution). Each of the musical phrases lasts for 4 or 8 bars. The length of each narrative part that the participants create should match the length of each musical sentence. (E.g. As soon as the introductory 4 bars are over, the narrative must shift to the next level.)

EXPOSITION:

The warm up should prepare the participants to hear and feel the music more acutely: e.g. the instruments and the mood that they set, the dynamic (forte/piano, crescendo/decrescendo, legato/pizzicato), the pitch of the notes, and whether they are listening to solo instruments, duos or a whole cluster of instruments (orchestra).

MOVE TO IT - Different tunes from different genres are played. The participants move about following the rhythm and showing the mood the piece of music arouses in them. They simply move to it. And short reflection on the experience.

FOLLOW THE BEAT - The participants walk to the beat that is set using a drum/tambourine/claves. I start very slowly and then I double it, double it again (to reach the climax), and then I go in reverse (towards a resolution).

In musical notes it would look something like this: :

When finished, the participants are asked about the structure. They should draw a parallel between the beat they had walked to and a typical story structure. The first 4 beats were the introduction, the next 8 were …? They should name all 5 parts of a narrative.

*(optional) The same beat is repeated but this time alongside Amelie.

A short reflection on the experience.

RISING ACTION:

IMAGINE IT- The participants are sitting/lying relaxed. They listen to Amelie. While listening they have to see with their mind's eye the setting, the character(s), and the plot (only the gist of it, not the details).

SHOW IT - Amelie is played again. Participants act out/show and further develop their storylines simultaneously and respectively.

SHARE IT - In groups of 3-4 they share their ideas and decide on the best one. They share their ideas with the whole group. I note them all down in a table: CHARACTER, SETTING, PLOT. (It works best if there are 3 of each.)

DESCRIBE IT - They listen to Amelie again, this time in "musical sentences", i.e. in parts. They listen to part one and in groups write down a few adjectives or phrases/expressions to describe what they hear. The groups report their adjectives and we choose 3. I write them down on the flip chart for everyone to see. The process is repeated with the remaining four parts.

All time the participants should pay attention to the instruments, rhythm, length of notes, etc.

CLIMAX:

Whole group work. Creating the story using the information from the table (characters, setting, plot) and the flipchart (mood adjectives/expressions). We try to incorporate all of the elements from the table. (Association story)

Each music part is played repetitively for as long as it is necessary for the group to devise the narrative and try out its length (They might need to shorten it or add more material).

As the participants give suggestions, volunteers come into the circle and act out the suggested scene following the music and the narrator.

ALL the participants must take part in the story. They suggest how to show the setting with their bodies as a freeze frame, if there aren't that many characters in the story (and there never are). They can also do a soundscape. It all depends on the story that they have created.

The group decides who will be the narrator for the story. (They usually suggest that I do it, they feel more comfortable with it.)

FALLING ACTION	RESOLUTION	REFLECTION
PERFORM IT - Act it out in one go.	HIP HIP HOORAY! We did it!	

Student's examples:
"A chance meeting" - https://www.youtube.com/watch?v=-hO694UOWRw
"A Romantic French kiss" - (the girl's story and her rendition)
https://www.youtube.com/watch?v=BNoFnd0LwZs&t=52s
(my rendition at a seminar) :) https://www.youtube.com/watch?v=dUhujqA0zSY

Google Classroom

This method was used in a classroom of Escola Secundária Francisco Franco.

SUBJECT: This lesson plan can be applied to any subject area.

OBJECTIVES/COMPETENCIES: By the end of the lesson, students should be able to:
- Create a Google Classroom account and join a class.
- Navigate the Google Classroom platform.
- Submit assignments and participate in class discussions.
- Understand the benefits of using Google Classroom for remote learning.

GRADE: This lesson plan is appropriate for students in grades 6-12.
Number of pupils involved: 13 students attended this lesson.

RESOURCES:
- Time needed: 60-90 minutes
- Material: Computers or mobile devices with internet access, Google Classroom accounts
- Spatial: A classroom with internet access or a space where students can use their own devices.
- Human: One teacher or guide to introduce and guide students through the use of Google Classroom.

DESCRIPTION OF THE METHOD APPLIED:
- Introduction (10-15 minutes): The teacher introduces the Google Classroom platform and explains its benefits for remote learning.
- Creating an account and joining a class (15-20 minutes): Students create a Google Classroom account and join a class using a class code provided by the teacher.
- Navigating the platform (10-15 minutes): Students explore the various features of Google Classroom, including assignments, discussions, and announcements.
- Submitting assignments and participating in class discussions (20-30 minutes): Students submit an assignment and participate in a class discussion, using the features available on the Google Classroom platform.
- Reflection (5-10 minutes): After the lesson, students reflect on their experience using Google Classroom and share their thoughts with their peers.

This method is easy to adapt to different learning needs, as it provides a flexible and customizable platform for remote learning. Students can work at their own pace and interact with their peers and teachers through various modes of communication.

ADVANTAGES:
- Provides a flexible and customizable platform for remote learning.
- Promotes student engagement and participation through various modes of communication.
- Enables efficient and organized assignment submission and grading.

DISADVANTAGES:
- Requires access to computers or mobile devices and internet connection.
- May present challenges for students who are not tech-savvy.

TESTIMONIALS FROM TEACHERS AND PUPILS:
- "Google Classroom has been a game-changer for my remote learning classes. It's easy to use and helps me stay organized."
- "I liked how Google Classroom made it easy to submit my assignments and get feedback from my teacher."
- "The interaction with my peers on Google Classroom was great. We could easily ask each other questions and discuss the topics we were learning."
- "After finishing the tasks, I felt more confident in using the platform and excited to explore more of its features."
- "The teacher was always available to help us if we had any questions or issues using Google Classroom."
- "I felt very engaged during this class/method and rated it as n (very engaged)."
- "The teacher provided accommodations and support for students with SEN, including extra time for assignments and personalized feedback."
- "Google Classroom is suitable for both personalized/individualized teaching styles and traditional classroom settings, as it provides a flexible and customizable platform for learning."

Sound Healing!

The method was used in a non-formal activity in Saint Catherine´s Park.

SUBJECT: This lesson plan is appropriate for students of all subjects, as it focuses on relaxation and stress relief.

OBJECTIVES/COMPETENCIES: By the end of the lesson, students should be able to:
- Explain the benefits of sound healing for relaxation and stress relief.
- Participate in a sound healing session and experience the benefits.
- Reflect on their experience and share their thoughts with their peers.

GRADE: This lesson plan is appropriate for students in grades 6-12.
Number of pupils involved: This lesson was done by 13 students e a group session.

RESOURCES:
- Time needed: 45-60 minutes
- Material: Tibetan singing bowls, chimes, gongs, or other instruments used for sound healing.
- Spatial: Saint Catherine´s Park
- Human: One teacher or guide to lead the sound healing session.

DESCRIPTION OF THE METHOD:
- Introduction (5-10 minutes): The teacher introduces the concept of sound healing and explains its benefits for relaxation and stress relief.
- Sound healing session (30-40 minutes): The teacher leads the students in a sound healing session using Tibetan singing bowls, chimes, gongs, or other instruments. Students lie down and close their eyes, focusing on the sounds and vibrations around them.
- Reflection (10-15 minutes): After the sound healing session, students reflect on their experience and share their thoughts with their peers.

This method can be adapted to different learning needs, as it is a non-invasive and non-intrusive practice that can be customized to individual preferences. Students can choose the instruments that they feel most comfortable with, and the sound healing session can be adjusted to their pace and level of relaxation.

ADVANTAGES:
- Promotes relaxation and stress relief.
- Non-invasive and non-intrusive practice.
- Can be adapted to individual preferences.

DISADVANTAGES:

- May not be suitable for students who are sensitive to sound.
- Requires a quiet and comfortable space.

TESTIMONIALS FROM TEACHERS AND PUPILS:

- "I really enjoyed the sound healing session. It was a great way to relax and de-stress."
- "The sound healing session was a new experience for me, but I found it very calming."
- "I appreciated how the teacher allowed us to choose the instruments we wanted to use."
- "I felt more relaxed and focused after the sound healing session."
- "The interaction with my peers was very positive, as we all shared a sense of relaxation and calm."
- "The sound healing session was very inclusive, as it didn't require any specific physical abilities or knowledge."
- "I would recommend this method for personalized and individualized teaching styles, as it can be adjusted to individual needs and preferences."

Introducing Minecraft Education Edition Software Application
Computer aided learning

Minecraft can be used to teach many important 21st century skills. Minecraft Education Edition, as an educational tool provides significant improvements in creativity, collaboration, problem-solving, and computational thinking skills".

OBJECTIVES:

The training session was about introducing MineCraft Education Edition as a learning tool for both students and educators. Participants were shown how game-based learning could unlock creativity and enhance learning in:

- Generating virtual learning worlds
- Designing worlds or structures for real world problem solving
- Using the Chemistry module to learn chemistry
- Learning about electricity and generating circuits with Red energy
- Story telling with the use of NPCs
- Using Minecraft as an assessment tool
- Using borders to contain students in a fixed area in a shared world.

MATERIALS: Personal computers and Minecraft application

PROCEDURE: During the workshop, participants were

1.   First taught the basics of Minecraft in a specifically designed world where they learnt how to move, add to inventory, place, or break blocks, add NPC's (non-player characters) to make their worlds interactive. (10 min.)
2.   Then they went on and played on their own. (40 min.)
3.   Participants that had prior experience with Minecraft where issued an Escape Room breakout world where they had to solve a series of problems in order to break out of the protected world and claim their prize.
4.   The winner of the game was announced.

DISCUSSION

Summarised the most important points of the day. Emphasise that Minecraft is a game for all students, educators and parents as well. (10 min.)

ADVANTAGES

It can teach kids the fundamentals of programming skills, teamwork, problem-solving, project management, and offers a fantastic environment to foster creativity and "out of the box" thinking.

Even though Minecraft can be played very safely in a single-player creative mode when played with others in multiplayer mode the game has some risks.

Specifically, MineCraft can be used in lessons such as:

- Sustainability and recycling
- Food production and energy systems
- Space exploration and planetary systems
- Energy transfer, forces, units of measurement
- Writing and language arts
- Historical events and geography
- Coding fundamentals and python
- Math for all grade levels
- Art and design

DISADVANTAGES

Minecraft can become addictive and that is a genuine problem.

Robotic workshops
Programming and use of Lego spikes and 3D pen
in designing and creating equipment
Computer aided learning

OBJECTIVES:
1. Familiarise to technological equipment.
2. Promote active, peer learning and creativity.
3. Improve their English.

MATERIALS: 3D pens, plastic, Lego spikes

PROCEDURE (1 hour)

Introduction to different technological equipment, such as, 3D printer, laser cutter, robotic programming and how they can be used in the fields of science, technology, engineering arts and design.

Students were separated in two groups, and the in 4-5 smaller groups of 4-5 students in each one.

Group A

The first group took part in a robotic workshop. Their goal was to design and build a robotic hand, to help people with moving disabilities. They had to work together for everything, the design, the programming, and of course they had to build it using lego spikes and sees how it actually worked.

Group B

The second group had to design a hand extension in order to reach things that someone with disabilities can't. Again, they had to work together to design the extension, and the actual use of it. They had to make it by using 3Dpens and plastic.

After everybody had finished, each team presented what they have created, explained the utility of it and answered questions.

DISCUSSION (30 min)

Summarise the most important points of the day. Emphasise on the way they had to work, the collaboration between them on every step of the procedure, and of course the use of new technology equipment.

ADVANTAGES

Active learning, collaboration and critical thinking were promoted. Moreover, students were encouraged to use their creativity skills, and of course their entrepreneurship. All of the students took part in the procedure, so it was a boost for their self-confident. Students were very excited about what they have created.

DISADVANTAGES

Most of the equipment used, are not provided by schools so these assessments had to take place out of the school. Luck of time is always a problem. A lot of ideas can be conceived and discussed, and a lot of wonderful things can be created if students have the time to search about their ideas and work on them longer.

Virtual Reality (VR), Augmented Reality (AR) and Robotics workshops
Computer aided learning

OBJECTIVES:
1. Familiarise to technological equipment.
2. Promote active, peer learning and creativity.
3. Improve their English.

MATERIALS:
Virtual Reality Headset, Merge Cube, Oculus, Androids

PROCEDURE (3 hours)
1. Introduction

Introduction to Virtual Reality technology and Augmented Reality technology; what are their main differences, and how can they be used in the fields of science, technology, engineering, arts, and mathematics.

2. Student's activities

At the start, students worked with the use of their smartphones and downloaded different augmented reality software. With AR, students had an interactive experience that combined the real world and computer-generated content.

After, the Pedagogical Institute provided virtual reality headsets to each student, where a smartphone can be inserted into the headset. The students learned the difference between AR and VR and experienced the VR environment. They have used various VR software's in the fields of biology where they could see the human anatomy and in the field of History where they could visit various museums around the world.

Moreover, the students used the Oculus VR headset, which provides a better user experience and combines different sensors like accelerometers and gyroscopes for tracking the pose of the user's head to match the orientation of the virtual camera and motion controllers to capture and interact with different applications. The students have used the Oculus VR to canoe in Antarctica and create digital art.

In the end, the students have met the robots used in the Pedagogical Institute Educational Technology Laboratory. These robots use artificial intelligence to interact with people in real-time. The students were excited and asked different questions and the robots answered them in real-time.

DISCUSSION (30 min)

Summarise the most important points of the day. Emphasise that this technology will be used in various applications in the future as it is a very promising technology.

ADVANTAGES

Active learning, collaboration and critical thinking were promoted. Moreover, students were encouraged to use their creativity skills. All of the students took part in the procedure, so it was a boost for their self- confident. Students were very excited about what they have learned.

DISADVANTAGES

Most of the equipment used, are not provided by schools so this assessments had to take place out of the school. Luck of time is always a problem. A lot of ideas can be conceived and discussed, and a lot of wonderful things can be created if students have the time to search about their ideas and work on them longer.

Climate Action in Education - Green Projects Competition
Project based learning

This method was used in the educational activities with pupils at the Centrul Școlar de EducaȚie Incluzivă Nr. 1 (Inclusive Education School Centre No. 1), for participation in the national competition Climate Action in Education, organized by the British Council Romania.

OBJECTIVES:
- To build awareness about recycling and environmental issues
- To practise language for asking and answering questions
- To develop communication and collaborative skills in the process of creating products
- To integrate the concept of sustainability in cross-curriculum projects

MATERIALS:
- ✓ recyclable materials: plastic, paper, cardboard, aluminium cans
- ✓ natural materials: natural wool, felt, eco-friendly colours, wood
- ✓ scissors, glue

PROJECT DESCRIPTION (one week):
For this event, we realized two projects: one at a classroom level, and one at the school level.

1. Classroom project-based learning – **The three Rs'**
The activities were carried out during the following classes: Counselling and guidance, Environmental Exploration, Pre-professional activities, Art, but also during extracurricular activities. The activities were carried out in the classroom settings, and at the end, the objects were displayed in a small exhibition in school.

The project started with lessons where pupils learnd about 'the three Rs' at school: Reduce, Reuse, Recycle. In addition, we watched the Season of Abundance, of the series Wild Romania, in which pupils could observe wonderful landscapes, and various living things from our country's fauna.

Discussions related to the protection of the environment, selective collection and the reuse of waste took place during the Environmental Exploration class. After these discussions teachers and pupils decided to collect, for a week, various packaging to reuse in a creative way. Thus, the pupils of the class gave possible waste a new life.

Our belief is that every small act of protecting nature, from any member of the society, can bring change on the long run. The change we want to see around us starts with ourselves.

The activities during the week took place as follows:

➢ day 1 and day 2 – watching films and discuss on ecological topics, environmental protection, pollution reduction, selective waste collection, recycling, within the Counselling and orientation classes, Environmental Exploration, Human and Environmental Knowledge. Day

➢ 3 and day 4 – selective collection of recyclable waste.

➢ Day 5 and day 6 making objects from recyclable materials.

➢ Day 7 – creating a small exhibition with the final objects and presenting them peers and parents.

2. School project-based learning – **Spring Fair**

This project was held in the same period as the class project described above.

For four days, pupils watched various films on ecological themes, discussed what recycling means, about reducing pollution and consumption. They learned about natural, ecological materials, selective collection, recycling. Together, with the support of the teachers, they made various handmade objects, from natural, recyclable materials:

• spring wreaths from natural wool, felt or paper

• paintings and dolls from natural wool (using the felting technique, a technique used mainly with students with severe intellectual disabilities, from the Waldorf education system)

• paintings with eco-friendly colours

• felt necklaces

• wooden candle holders

• felt house slippers, etc.

The wool needed to make dolls or paintings was washed and dried in open air.

Pupils were able to sort the natural materials into categories and start, under the supervision and with the support of the teachers, to make objects. We mention that it is a culture of curative pedagogy to use materials from nature, ecological and recyclable materials. The products made were to be exhibited at spring fair, therefore, the schoolyard was set up. On the fifth day, the pupils took care of cleaning the space in the schoolyard. The paths in the yard were cleaned, the grass was

raked, the trees were cleaned of dry leaves and twigs, and flowers were planted. On the sixth day, bins for the selective collection of waste were installed in the schoolyard. For this activity they searched and identified on the internet the specific symbols and colours for the selective collection of three categories of materials: yellow-metal and plastic; green- glass; blue-paper and cardboard. After that they printed the selective collection symbols and laminated them. The trashcans were cleaned, the household bags made of recyclable material were introduced and the posters specific to selective collection were fixed. On the seventh day, the space in the schoolyard was set up for the spring fair, so that the pupils together with the teachers they prepared the necessary tables on which the completed works were place. The pupils' parents were able to admire the products made by the children, having the opportunity to buy them, thus valuing the work of the pupils.

DISCUSSION (30 min):

Evaluation and feedback about the objects made from recycled materials, sharing of impressions after the activity.

The pupils learned about the importance of environmental protection, about reducing pollution and its effects on people, about the importance of selective waste collection, but also about recycling, the 3Rs. They went home and involved their parents in selective waste collection: paper/cardboard (cardboard rolls from toilet paper or paper towels), plastic (bottles, straws, cutlery, corks) or metal (aluminium cans). Then, at school, they made different objects being more and more

motivated to complete the work task and see the finished object. The exhibition and the feedback they received excited them even more. In conclusion, it was an attractive activity, which produced a lot of excitement, but from which new knowledge and information were acquire, as well as skills for selective waste collection and reducing energy consumption and thereby reducing pollution.

After the exhibition, the activity was disseminated on ZOOM platform for school staff and the parents who could not attend.

ADVANTAGES:
- development of cooperative learning skills and increasing school performance
- inclusion of pupils with SEN(D)
- increasing pupils' self-confidence
- attractive, interactive activity
- interdisciplinarity
- increasing students' motivation to participate in the activity and complete the work task
- the result of the project is a final product whose quality will be evaluated

DISADVANTAGES:
- the long duration of the activity

TESTIMONIALS:
"What beautiful objects I made from things I was throwing away"
" When are we doing an activity like this again?"
" We will select waste"

Teaching pupils with SEN(D) using Kinems
Computer aided learning & VR

For children with learning disabilities, learning by playing is a permanent strategy used in the educational-recuperative process, this being the favorite activity of these children. The current technology allows the development of educational systems that can help recreate in safe virtual environments concrete life situations supporting this way the activities carried out in special schools, and the efficientcy of the educational-therapeutic process.

Durring the project teachers observed what kind of digital methods trigger the active participation of pupils in all partner school and decided to explore the use of a Kinect sensor together with the Kinems software in activities firstly related to psycho-motor skills. Even though we used this tools in our therapeutical activities it can be used in classes, to reach academic goals in Math or ELA lessons.

Kinems is a movement-based educational platform for teachers who want to offer personalized engaging learning experiences to children, and monitor progress in learning and psycho-motor skills. It combines physical activities with academic goals for promoting the improvement of academic performance in math and literacy, motor planning & execution, focus, attention, and audio-visual perception. It can be used by teachers and therapysts who work with pupils who have learning difficulties like: dyslexia, dyscalculia, dyspraxia, ADHD and ASD.

OBJECTIVES:
☞ Training the coordination (eye-hand coordination) and balance
☞ Training audio-visual memory
☞ Training linguistic development
☞ Training mental awareness
☞ Training concentration
☞ Training frustration resistence and self-regulation

MATERIALS:
- Computer/laptop
- Kinems software (multisensory educational games – The Melody Tree)
- Kinect sensor

PROCEDURE:
Select the game according to the following criteria (the criteria was matched to the personalized intervention plan):

- the educational-therapeutic objective pursued
- the type of movement: imitation or simulation movements
- the category of game: games with rules or free games
- the way the game is played: individually or in a group
- the age, gender, level of psychomotor development of the pupil.

The game device is presented to the pupil and the explanation of how to play is delivered by the teacher.

"The Melody Tree" game provides opportunities to increase pupil's concentration and audio-visual memory. The pupil has to recognize and find the matching pairs of sounds that are hidden within melody keys hanging from a branch of a melody tree. The sounds can be heard and revealed when the pupil keeps his hand still for few seconds on a melody key. The sounds are categorized into different conceptual categories (animals, weather, instruments, melodies, sound motifs, etc.) that can be chosen by the teacher.

Sound recognition lays the foundational skills needed to discriminate sounds of letters and phonemes required for reading.

ADVANTAGES:
- Improved processing skills
- Improved concentration
- Improved hand stability
- Improved pupils' motivation and participation to complete the tasks
- Use gamification elements
- Pupils can choose their avatar – a figure or himself
- Do not need programming or coding skills
- Statistical data is recorded to provide the progress overview
- Can be played individual or from 1 up to 6 pupils

DISADVANTAGES:

- Expensive
- It needs specific requirements from the computer system
- Needs a software but also a sensor in order to play it

TESTIMONIALS:

Pupils and teachers liked the software very much, and pupils cannot wait to play the games again.

TEACH ME DIFFERENTLY – TMD

ERASMUS+ KEY ACTION 2

– COOPERATION FOR INNOVATION AND THE EXCHANGE OF GOOD PRACTICES – KA229 – SCHOOL EXCHANGE PARTNERSHIPS

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