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Welcome

Welcome to the second Newsletter of the project "Developing Virtual Reality Resources Introducing Technology Tools for Children with Autism Spectrum Disorder to SEN Teaching Undergraduates"

(ABLEWITHTECHTOOLS).

In this e-newsletter we will give information about the project activities which are managed by all partners.

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Call: 2019



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Developing Virtual Reality Resources Introducing Technology Tools for Children with Autism Spectrum Disorder to SEN Teaching Undergraduates

Intellectual Output 1 is Ready

The title of the first output is 'Higher Education Curriculum for The Use of Assistive Technologies in SEN Education'. COMU coordinated the process of curriculum development. University of Macedonia, University of Social Sciences, University of Latvia, School of Robotics and NARA Educational Technologies have provided important contributions to the IO 1. The aim of the programme:

After this training process, participants are expected to;

- Learn how the students with ASD are different in social interaction.
- Learn about the language and communication skills of the students with ASD.
- Learn about the behavioural patterns of the students with ASD.
- Learn what are the conditions for the application to be considered evidence-based practice.
- Assess the student before selecting an assistive technology tool.

- Learn how to use the assistive technology tool before teaching the students and additional team members how to use the assistive technology tool.
- Monitor the student to ensure the assistive technology tool is being used for the intended purpose.
- Learn about guides used in education of students with ASD.
- Learn the evidence-based practice on assistive technology included.

The program was designed for individuals with ASD. The program is for 14 weeks and gives an opportunity to the departments of special education and adult education centers to apply their education programs.

The program consists of evidence based practices, different strategies, methods, techniques, pedagogical approaches and didactical principals.



Project Summary

As the focus of this project, "students with autism spectrum disorder" may suffer from difficulties with social communication and interaction, repetitive behaviours, delayed speech development, problems with eye-contact, reasoning, differentiating perceptions, and orientation that prevent them from performing their academic tasks in the same manner as other students.

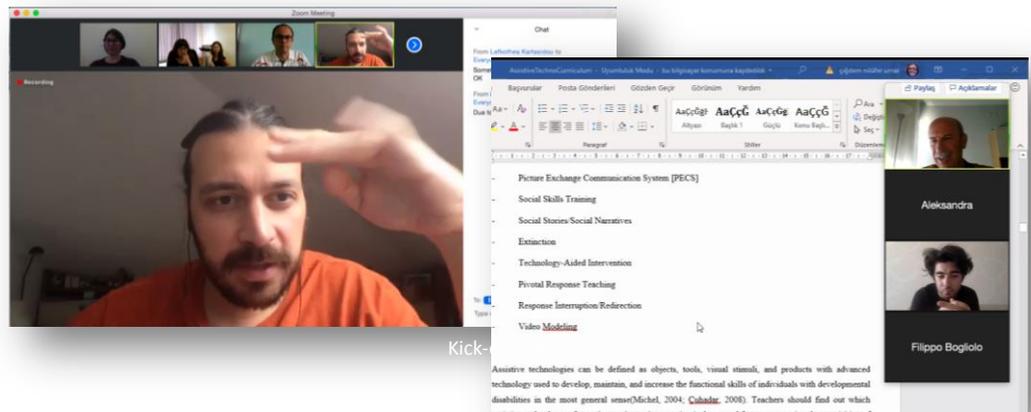
Technologies produced especially to ease social and communicative challenges of students with ASD play an important role in reducing barriers to learning.

Obtaining knowledge about how to use these assistive technologies for students with ASD will provide SEN teaching undergraduates to improve both their teaching and technology skills. It will also enable them to facilitate learning processes of these students.

In this respect, a curriculum is needed for SEN teaching undergraduates which will meet social and communicative needs of students with ASD and focus on the use and selection of the appropriate technology and when and how to utilise it and evaluate its efficiency.

Need Analysis results that we conducted to frame this proposal, revealed the necessity of training courses on this issue. Hereby teaching materials consisting curriculum as modules and VR resources will be used during the course delivery.

The Second On-Line Meeting



The meeting was supposed to be held in Riga. Due to COVID-19, the meeting was held on-line by the coordination of The Latvia University. All partners participated the meeting. The partners talked about scenarios. The storyboard will be prepared by NARA and a presentation about the VR content will be shared with the partners. Assistive technologies can be defined as objects, tools, visual stimuli, and products with advanced technology used to develop, maintain, and increase the functional skills of individuals with developmental disabilities in the most general sense (Michel, 2004; Çuhadar, 2008).

Teachers should find out which assistive technology refers to instruction or intervention is the central feature supporting the acquisition of a goal for the students with ASD. So teachers focus on targeted skills and behaviours and how these skills and behaviours can be acquired through using an available assistive technologies tool or application. The project will provide assistive technologies for teachers.



Another Autism Project by COMU

The project titled "Developing New Software For Psychomotor Reeducation Of Children With Autism" and coded 2020-1-TR01-KA205-081611 was deemed worthy of support by the European Union. The project, which is worth supporting during the ERASMUS + Youth Program KA2 Strategic Partnerships 2020 / R1 application period, will be carried out under the coordination of Çanakkale Onsekiz Mart University.

With the project, which will be supported for 2 years, technological applications that are more fun and more effective ways of learning and increasing attention will be used for children with autism, by going beyond the traditional education method. In this context, Special Education University experts come from Turkey, Bulgaria

and Northern Macedonia, will share their knowledge and experience on the implementation of psychomotor reeducation exercises in the own country and this will be used as baseline data for the creation of the necessary software.

The target groups of the project are special educators and other professionals, special education and psychology students and children with autism. During the project, a total of 6 conferences and 3 international meetings will be held in three countries, 300 professionals and future experts will be informed and trained about the use of software and 75 of them will have software sets in their institutions.

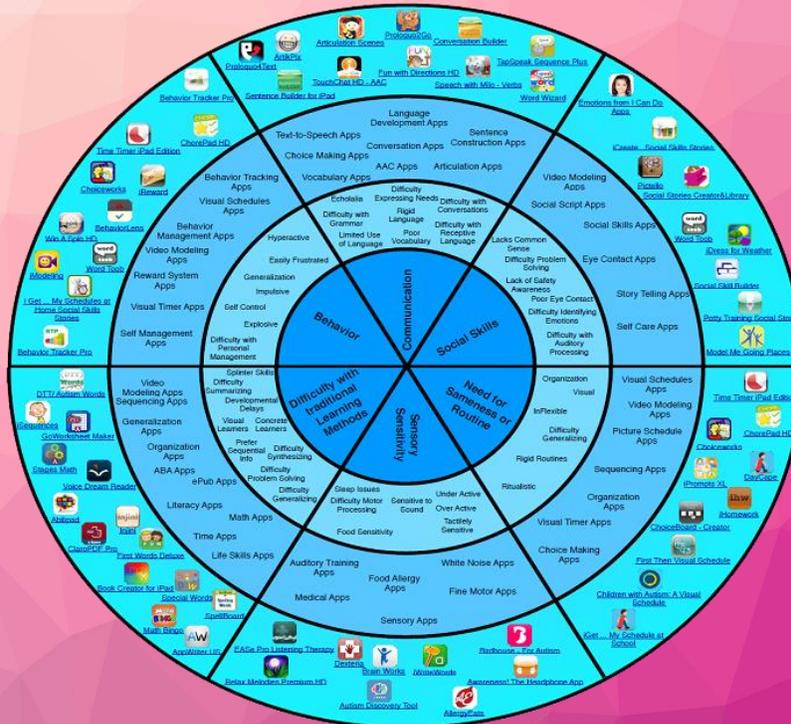
EYE ON IT

The benefits of virtual reality applied to people with autism

During the last two decades, there has been a great focus on research into the use of virtual reality (VR) technologies in the education of autistic children. The use of technology allows exposure in the “real world” to train social skills in a virtual environment (EV) controlled, repeatable and safe.

According to the study conducted by Didehbari (2016), Parsons & Cobb (2011) and Tzanavari (2015), there is evidence that suggests individualizing, rehearsing and repeating social scenarios in different contexts for the generalization of social skills learned in VE to the interactions of everyday life.

In addition, the potential of this technology to support the learning of children, youth and adults on the autism spectrum must take into account, with a variety of other approaches, that will be implemented by professionals, teachers and therapists and their use. It must be a tool that helps them make their life easier.¹



Autism Treatment Model

A comprehensive overview of the most recent autism treatment model, is outlined in the report by Odom et al (2010), Evaluation of comprehensive treatment models for individuals with ASD. Applications Students with ASD may be classified under the four dimensions which are common learning outcomes, common learning traits, application categories and applications (Coppin, 2018).

The teachers and experts may follow the below dimensions to decide the categories; however, it is important to know that all students leans differently and unique. Selecting methods, techniques and applications should be decided in terms of the learning needs of student.

Technology can curb social exclusion of children with autism

Robots may serve as a bridge into a reward and motivation system in the brains of children with autism. They may direct a child’s attention toward socially relevant features of a situation and shape social brain responses. Robots also may be useful in targeting sensory issues. Children with autism often feel overwhelmed or anxious in the presence of loud music, bright lights or strong smells. Interacting with robots that provide carefully calibrated stimuli and adapt to the child’s reactions in real time could help children with autism learn to cope with and communicate these sensory problems.

Neuroimaging technology, which allows scientists to explore the neural activity associated with behavior, may also provide insights into how to help children with autism regulate their feelings and thoughts. This technology has shown us, for example, that social exclusion hurts both typical individuals and people with autism, but for different reasons.

Too often we talk about how technology disengages us from our surroundings. But it also can help our children connect with one another be more effective self-advocates and support their own decision-making and independence. In its emergence as a vital tool for eliminating exclusion and promoting understanding, technology is, in fact, helping us all embrace our greater humanity.²

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What is Virtual Reality?

Virtual reality (VR) refers to the computer-generated simulation in which a person can interact within an artificial three-dimensional environment using special electronic devices, such as special goggles with a screen or gloves fitted with sensors. In the simulated artificial environment, the user is able to explore the various artefacts and proceedings as they might in the real world (Seth, 2018).

Unlike traditional user interfaces, VR carries the user inside an experience with a high definition. Instead of viewing a screen before them, the learners are immersed and able to interact with 3D worlds defined in virtual reality environments. By simulating as many senses as possible, such as vision, hearing, touch, even smell, the computer is transformed into a gatekeeper to this artificial world. The only limits to near-real VR experiences are the availability of content and cheap computing power (Bardi, 2019).



ABLEWITHTECHTOOLS

Here are some examples of Assistive & Adaptive Technology Tools used for the education of children with Autism Spectrum Disorder.



#01 Low-Tech

Visuals, Movement Facilitators, Timers

Visual communication tools take a variety of forms, from small single picture low-tech cards to advanced computational systems that perform text to speech functionality. The most widely used augmentative visual communication tools in the classrooms we observed are simple laminated pictures with Velcro backs depicting various objects or activities or concepts.



#02 Medium-Tech

Symbol Charts, Timers, Speaking Dictionaries, Concept Keyboards, Robots

Assistive technology devices for augmentative and alternative communication can help children with ASD build language skills over time. These tools typically include speech-generation functionality, eye tracking, and other advanced features. In other cases, these artefacts represent activities that will take place arranged in temporal order to augment understanding of time, events, and places, a tool known as a visual schedule.



#03 High-Tech

Serious Games, Advanced Robots, Tablets, Smart Phones, Virtual Reality

New technological solutions, such as educational software and serious games empower the learning process for people with ASD. Studies have given evidence that interventions with Socially Assistive Robots might help children with ASD to participate in activities that demand cooperation and communication skills. Some tools such as smartwatches, smart boards, augmented reality, digital books and some mobile applications can assist these children to speak more fluently and communicate better.

Co-funded by the Erasmus+ Programme of the European Union



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Virtual Reality: A Major Step Forward

Is there any innovation that is more exciting than virtual reality and can make the learning experience more realistic? As the people of the developed world get used to the effective use of digital technology in education, VR is one of the few innovations that will continue to be awe-inspiring.

Do you know why we highlight the use of Virtual Reality in education?



Immersive

Virtual reality is a promising step forward with its innate ability to create and maintain immersive learning environments. With VR technology, a student can be transported about almost anywhere and gain in-depth and hands-on knowledge in a virtual environment.



Risk-Free

VR is used in some industries to train workers, especially in hazardous environments. For example, firefighting students are trained in virtual reality environments in case they make a mistake, and in medical education, virtual reality is used to prevent accidents.



Today's Teleportation

Thanks to avatar-based social VR, people in different places can come together and learn in virtual settings. These settings can include product designs, architectural models or industrial systems. For example, a virtual setting can be designed for foreign language practises.



Easy Access

Some students face restrictions in access to education for various reasons ranging from disability to distance. VR provides excellent ways to solve these problems. For example, some teachers use VR to teach children with ASD to cross the street and better prepare for the world outside of the classroom.



Offering Gamification

VR offers the ability to explore some regions and places that are physically hard to explore. Adding game-based elements to these learning environments, such as scoring, timed events, and rewards, can help improve motivation and learning, and learners will be more engaged.



Distraction Repellent

Immediate engagement with VR repels the distraction and detaches learners from their real physical environment. The sceneries in the virtual settings are so vivid, realistically defined with the 3D and encourages participation so that each student becomes involved in the activities

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The Benefits of The Use of Virtual Reality in Education

1. Easy Access

2. Breaking The Laws of Physics

3. Gamification

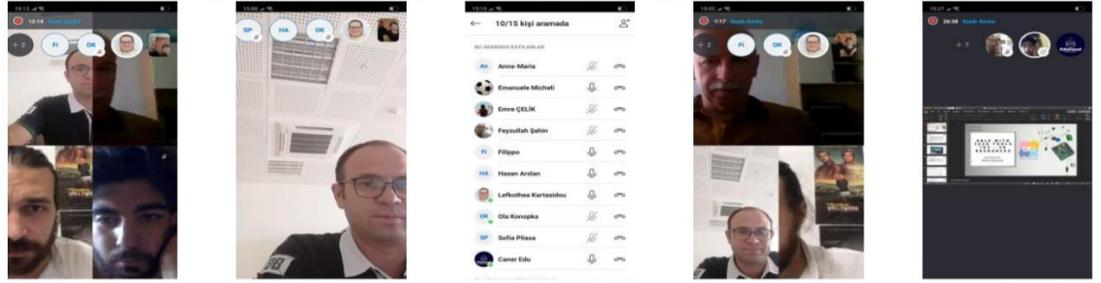
4. Immediate Engagement

5. Language Options

7. Remote Presence

9. VR Content Creation

The Third On-Line Meeting



The meeting was held on-line by the coordination of Düzce University. Associate Prof. Dr. Feyzullah Şahin chaired the on-line meeting. All partners participated the meeting which was held July 20, 2020.

At the meeting, partners revised the finished parts of curriculum. The partners then, shared the lessons plans (modules) of the curriculum among each other. All partners decided to work on and finish the lesson plans in September. Emre Çelik (Nara EdTech) made a presentation about the Virtual Reality environment. Assoc.Prof.Dr. Feyzullah Şahin suggested to finish the curriculum until the middle of the September to keep up with the timetable. Emanuele Micheli (SdR) gave information about the quality checks of the project activities. Aleksandra Konopka (SAN) asked partners to support the social media pages of the project.

COMU gave information about IO 1 and asked lesson plans for each partner. The partners accepted to prepare the lesson plans. The project web-page and e-news letter 1 were translated to different languages. This process will give an opportunity to disseminate project activities.

Quality management and quality evaluation were discussed among the partners. There have been seen that the project has continued successfully.

The partners discussed the latest regulations of the Turkish National Agency as well. Partners decided to continue online meetings and organise the multiplier events in accordance with the situation of the Covid 19 Pandemic.

3rd IITEE 2020 3rd International Instructional Technologies in Engineering Education Symposium 17-18 SEPTEMBER 2020

At the 3rd International Instructional Technologies in Engineering Education Symposium held online on 17-18 September, the presentation of the paper called “High Technology Applications Effective in the Education of Children With Autism Spectrum Disorders: Virtual Reality” and “Developing Virtual Reality Resources Introducing Technology Tools for Children With Autism Spectrum Disorders to SEN Teaching Undergraduate” prepared by the project team was made.

In addition, 53 teachers working in Düzce Provincial Directorate of National Education were informed about the project.



Announcement on facebook sites related to Autism, Higher education



facebook.com/ablewithtechtools

Upcoming Events

- Preparation of the Higher Education Curriculum “Assistive Technologies for the Education of Children with ASD”
- The Fourth Transnational Project Meeting

References

¹ <https://psiious.com/the-benefits-of-virtual-reality-applied-to-people-with-autism/>

² <https://www.spectrumnews.org/opinion/viewpoint/technology-can-curb-social-exclusion-children-autism/>

