

# AbleWithTechTools

THE FIRST E-NEWSLETTER

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## Welcome

Welcome to the first  
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  
introduce the project and give  
some information about the  
scope of the project, the  
specific project activities, and  
the partner institutions.

The Project  
ABLEWITHTECHTOOLS is  
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## This Issue

About The Project **P.1**

Scope & Objectives **P.2**

Partnership **P.3-4**

Completed and Upcoming Activities **P.5**

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

### About The Project

Technology tools for disabled refer to devices or systems that support people with special needs to maintain or improve their autonomy, self-reliance and wellbeing. These tools address a wide range of special needs related to social, behavioural, cognitive, perceptive or physical conditions.

As the focus of this project, "students with autism spectrum disorder" generally 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.

### Meeting the Needs

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 project, 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.

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Erasmus+



## Objectives

The project carried out for the improvement of the teaching skills of Special Education Teaching Undergraduates has the following objectives.

1- Capacity building of SEN teaching undergraduates and enabling them to excel in teaching

2- Promoting assistive technologies for better social and communication skills of students with ASD

3- Investing in innovative technologies as teaching materials (VR content) and contributing to the development of education technologies

## Intellectual Outputs

We plan to develop;

a- A Curriculum "Introduction to Technology Tools to Improve Social and Communication Skills of Students with ASD"

b- Teaching materials VR Resources



## Which Assistive Technologies?

There are three types of assistive technologies used in the education of children with ASD.

High-tech

Medium-tech

Low-tech

## Methodology & Activities

Methodology consisted of three cycles on the course of the project is as follows.

Cycle 1 - Literature Reviews & Curriculum Development (Individual & Team Works)

Cycle 2 - Content & Software Development (Workshops & Technological Support)

Cycle 3 - Piloting (Training courses & Evaluations)

Activities to be implemented are as follows.

### Cycle 1

1- Partnership will review literature to prepare two reports named "Autism Spectrum Disorder & Social and Communicative Challenges" and "Assistive Technology Tools for Accelerating Learning Processes of Children with ASD". These reports will form the basis of the proposed curriculum.

2- Curriculum will be developed as modules and necessary arrangements will be made on the curriculum in order to adapt it to national contexts.

### Cycle 2

1- Workshops will be organised for the content development. Subject matter experts, lecturers and other stakeholders will participate in the workshops. The focus will be on the most effective assistive technology tools for ASD.

2- After the workshops, team works will take place and scenarios will be written necessary for VR resources. Then the software will be developed.

## VR Technology

Virtual Reality is one of the most prominent digital tools which is used for various purposes in different study areas. As for education, benefiting from newly emerged innovations always happens lately compared to different sectors. Yet, priority must be given to educational practices first and foremost, because piloting the effectiveness of innovations and benefiting from strong motivating and engaging factors of these tools will facilitate the learning processes.

Virtual Reality resources should be used in order to strengthen the experiential learning of students. In virtual reality applications, visual objects are used in 3 dimensions. The studies shows us that; virtual reality-based educational practices, which help embody the abstract concepts, increased attention span during the training of the students. In this context, it is also clear that your virtual reality will contribute to the development of students' imagination and creativity.

## Results & Impact

SEN teaching undergraduates will directly participate in the project practice and be equipped with necessary pedagogic and technology skills about these assistive tools. Interested lecturers from all over the world will be able to use the developed curriculum and VR content in their classes. Partner organisations will be able to use developed curriculum and VR resources during their course delivery. Through panel discussions and a valorisation conference project results will be disseminated to a wide range of stakeholders.

# PROJECT CONSORTIUM



## Düzce University

Düzce University is one of the pioneers of the newly founded state universities after 2006 in Turkey. DU acts as a family with nearly 32.000 students and 2.500 academic and administration staffs in-holding 14 faculties, 4 institutions, 13 research centers, one professionally equipped Hospital, one technology transfer center and a techno-park itself. DU fulfils the research and academic needs of Düzce and the region. Academic researches and projects are sponsored and supported by the Top Administration Office of the University.



## Çanakkale Onsekiz Mart University

Çanakkale Onsekiz Mart University (ÇOMU) was founded in 1992, with its new status and intake from Turkey's large youth population, the university developed quickly in terms of the number of students, staff and facilities, spurring the opening of new faculties and colleges. The university has over 45,000 students participating in a wide variety of programs taught by 1600 academic staff in 10 faculties, 2 polytechnic colleges and 11 vocational colleges.

## EYE ON IT What is Autism Spectrum Disorder?

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder with central symptoms of reduced social interaction and communication, the presence of limited interests and repetitive behaviors<sup>1</sup>.

Lorna Wing (psychiatrist, author, and mother of an autistic child) introduces the term "spectrum of autism"<sup>2</sup> for the first time to more accurately attribute the fluctuation of manifestations of the same symptom to the individual and to the people with ASD.

The diversity of definitions cannot cover the diversity of people with ASD, as although there are common difficulties and common symptoms this is a highly variable<sup>3</sup>.

The most important difficulties for people with ASD that also occur in the school environment are as follows:

- Communication Difficulties
- Academic Difficulties
- Delicate Mobility Difficulties
- Behavioral Problems
- Organization Difficulties
- Social Difficulties
- Transition from one activity to another
- Resistance to Change, persistence in uniformity
- Other Difficulties

## Good Practices for Intervention

### How about Robotics?

Studies have given evidence that interventions with Socially Assistive Robots might help children with Autism Spectrum Disorder (ASD) to participate in activities that demand cooperation and communication skills. ASD is a neurodevelopmental condition characterized by stereotyped repetitive activities and interests, and significant impairment in communication skills, which affect the socialization of children and their interaction with others.

In an attempt to motivate children with ASD to participate in game activities, and help them obtain the social skills needed to fulfill them, Daisy Robot a flower robotic partner, and a newly Method for the implementation of robot assisted interventions were utilized, to mediate interactions among children with ASD and typical development children. In those interventions were incorporated board and digital games<sup>4</sup>.



## EYE ON IT

### Current Assistive Technologies

Assistive Technologies help perform tasks and activities such as

- moving independently and safely (wheelchairs, prostheses, seat cushions, sensory devices),
  - hearing (voice amplifiers, alerting devices such as vibration, flashing lights, FM listening systems or captioning,)
  - vision (eye gaze systems, talking or vibrating devices, Braille, audio books)
  - augmentative/alternative communication (phonetic spelling, basic, picture, multiple, progressive and wearable communicators)
  - cognition (Audio players, recorders, timers, reading guides, reading pens, personal data assistants, pagers, calculators, writing support, graphic organisers, electronic worksheets, word prediction programmes, screen magnifiers, speech synthesis softwares, note-taking devices)
- Children with ASD mainly needs assistive technologies developed to ease communication skills.



### University of Macedonia

The University of Macedonia (UOM) is a modern university with extended research activities and participation in many national and international research programs. UOM is also a member of many international organisations concerning higher education e.g. the European University Association (EUA), the Jean Monnet European Center of Excellence is based, at the branch of UOM etc. UOM was at first formed under the name of "The Graduate School of Industrial Studies of Thessaloniki" in 1948, but it first functioned during the academic year 1957-58. In 1958 it was renamed "Graduate Industrial School of Thessaloniki" and from 1971/72 it was divided into two Departments: Department of Economics and Department of Business Administration.



### University of Latvia

University of Latvia (UL) with 13,000 students, 13 faculties and more than 20 research institutes is one of the largest comprehensive research universities in the Baltic States with educational and research potential in humanities, social and natural sciences. The only higher education institution from Latvia ranked in the QS Top Universities ranking. UL is especially proud that its degree of internationalization has been recognized as high in several rankings, such as QS Top Universities, Multirank, Interfax ranking. UL pays great attention to the development of international collaboration, and supports different schemes of mobility. At present, the UL has signed 148 bilateral agreements with universities around the world, more than 800 Erasmus+ agreements with universities in program countries and 29 agreements with universities in partner countries.



### University of Social Sciences

Spoleczna Akademia Nauk (University of Social Sciences) is one of the leading private universities in Poland having 15.000 students and over 1000 academic staff. In the educational rankings, published by the influential national magazines our Academy is placed very high. There are 20 departments, including Culture Studies, Educational Science, Psychology and Sociology that will contribute their experience to this project. Within the Educational Science department student teachers are trained with a special focus on preschool and early school level of education. As an educational organization University of Social Sciences promotes a multidisciplinary approach, bringing together researchers from a diversity of backgrounds



### School of Robotics

The School of Robotics (Scuola di Robotica) is an Educational and Training Center Certified by the Italian Ministry of Education and member of the European Robotics Platform. It has extensive experience in employing robotics to support educational needs. A Committee consisting of robotics scientists and of scholars in Humanities has instituted School of Robotics (2000), and it serves as Scientific Committee. The aim of the "Scuola di Robotica" is to promote the knowledge of the science of Robotics among students and young people, from early childhood to high school education. It provides also for the widest practicable and appropriate dissemination of information concerning the results of the R&D in the field of Robotics, ICT and of about complementary developments of other disciplines.

## Nara Educational Technologies

Nara Educational Technologies was founded in 2014 and it's guiding the development of Augmented Reality and Virtual Reality technology in Turkey. Nara is mainly a R&D and edtech startup. It offers innovative, creative and original content in the field of education by using AR / VR technologies. Nara's most important mission is to make education more fun, more successful and more democratic.



## What has been done so far?

- **Kick-off Meeting**

The kick-off meeting was held in Düzce University Premises. All partners except University of Latvia (because of busy schedules) participated in the meeting. The project practice was handled in the meeting in detail. The first report was also brought up for discussion. The template of the second report was decided and the work breakdown took place. The consortium members also visited Abant Lake and get to know each other more during the social dinners.

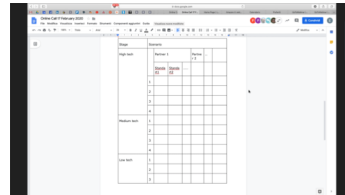


- **The First Report “Autism Spectrum Disorder Social & Communication Challenges”**

The first report has been prepared by the participation of all the partners. The report includes information about ASD, its characteristics, definition, types, identification and assessment, ASD skills and challenges, education and treatment, evidence based practices.

- **Skype Meeting 1**

A Skype Meeting was held among the partners before the Kick-off Meeting. The template of the first project report was discussed and the titles were decided. Responsibilities before the kick-off meeting will be handled.



- **The Second Report “ Use of Assistive and Adaptive Technologies in the Learning Settings”**

The report includes information about three types (high-tech, medium-tech, low-tech) of assistive and adaptive technologies developed for the education of children with ASD.

## Upcoming Events

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

## References

- <sup>1</sup> Diagnostic and Statistical Manual of Mental Disorders V(2013). 5 th Edition. American Psychiatric Association
- <sup>2</sup> Wing, L. (1996) The Autistic Spectrum. A guide for parents and professionals. Constable, London
- <sup>3</sup> Geschwind, D. H. (2008). Autism: many genes, common pathways?. Cell, 135(3), 391-395.
- <sup>4</sup> <http://earthlab.uoi.gr/tel/index.php/themes/learn/article/view/13/6>

