Indicator 4 – Report on the most appropriate technologies

		Formal Education		Non-Formal Education		Special Education	
Technologies	**Age**	**Proper**	**Reasons**	**Proper**	**Reasons**	**Proper**	**Reasons**
Humanoid Robot NAO	Above the age of 4	Yes	Using learning applications to make complex lessons simple. First steps in controlling robot's sensors, motors and audio/visual modules. Create simple animations and behaviors in Choregraphe – first steps in programming with test codes/scripts on a simulated robot or directly on a real one.	Yes	Learning by exploration. Programing NAO in Choregraphe- written in its specific graphical language, C++ or Python. Allows to create very complex behaviors, e.g. interaction with people, dance, send e-mails, vision recognition, etc.	Yes	Serious games. Programing robot behaviors for imitation by children with SEN in two directions: for learning cognitive and motion skills. The motion activity programs include physical exercises and song training programs. To improve the social skills, concentration and cognitive skills of children, game scenarios with the NAO robot could be created, such as: basketball for socialization and fine motor skills; interactive learning the geometric shapes; cubes and boxes buildings for learning by imitation.
Artificial anthropomorphic robotic hand	Above the age of 3	Yes	First steps in mechanical and control system of a human hand. Explore controlling of fingers and palm joints by controllers like Raspberry Pi, iOS or Android. Easy lessons for understanding teleoperation and wireless robot control. Using of a wireless glove.	Yes	Appropriate for training, innovative research and scientific achievements in the field of robotics, communications, control and sensors. Programing in Raspberry Pi, Arduino and iOS or Android. Learning by exploration, however pupils need to be	Yes	Teaching simple hand gestures and counting from 1 to 10 for children with SEN. Low cost and high reliability.

					supervised by scientific consultants (mentors).		
Non-humanoid Walking Robot	Above the age of 5	Yes	Explorea non-humanoid robot overcoming either maximum steep slopes or high steps. Explore ideas by adding new 3D printed actuators or parts, sensors, motors or communication modules.	Yes	Appropriate for training, innovative research and scientific achievements in the field of robotics, communications, control and sensors. Programing in Raspberry Pi, Arduino and iOS or Android. Learning by exploration, however pupils need to be supervised by scientific consultants (mentors).	Yes	Structured games for social therapy of children with SEN. Small walking robot in a module for orientation in colors, shapes, forms and directions. Low cost and high reliability.
Cubelets	Above the age of 4	Yes	Cubelets are engaging and intuitive and an ideal start into computational thinking in Robotics. Promote creativity and learning by exploration. Make complex lessons simple.	Yes	Explore ideas in Robotics. Programing Cubelets by Google's visual programming language for CubeletsBlockly and Cubelets Flash to program Cubelets using the C language.	Yes	Playfulness in the play for the sake of the play. Children with Cerebral Palsy canplay with mainstream robotic toys (one of which is Cubelets).
MS Kinect Sensor	Above the age of 5	Yes	Developing sensorimotor skills by real physical movements. Support Embodied Learning. Trainers and monitoring tools to practice skills in art, sport, science.	Yes	Learning by exploration. Developing applications by MS Kinect SDK, such as: Control screen objects or robots by body movement; Produce high-quality 3D scans; Retrieve data via gestures; Virtual reality interactions; Virtual clothes-fitting, etc.	Yes	Serious games. For developing sensorimotor skills.For joyfulness in the play for the sake of the play. Monitoring tools.
LEAP motion device	Above the age of 13	Yes	Leap motion supports Embodied Learning. Best application in medical education.Developing sensorimotor skills - fine and gross. Controlling robots and digital objects on screens.	Yes	Learning by exploration. Developing applications by LeapC (a C-style APIs), for bringing gesture controls to everyday computing or games.	Yes	Leap Motion serious games for exploring nature, objects, daily routines, emotions and social skills or for developing fine sensorimotor skills. Monitoring tools.

			Promoting more movements in children resulting in exponential neuronal growth in the brain.				
VR Oculus Rift glasses	Above the age of 13	Yes	Visualization of the lessons by learning in virtual reality. For trainers and simulators, such as VR sports training to take athletes to the next level. Supports Embodied Learning, such as discovering the secrets of the Universe with VR and Embodied Learning.	Yes	Explore ideas by programing in Oculus SDK. A new technology forexploring by hands the merging of physical and digital reality.	Yes	Oculus Rift used in Serious games. Virtual reality rehabilitation for children with special needs
Insight/EPOC of EMOTIV EEG based brainwave device	Above the age of 15	No	EMOTIV devices are not meaningful to use in formal education. It has wet electrodes and complex software. It requires an informed consent from parents. A portable devices with dry electrodes and easy calibration such as *MindWave Mobile 2*of NeuroSky could be used for demonstrations in learning biosensors and biometrics.	Yes	Learning by exploration. Programing in Python, C# or C++ for gaming applications, training or mental, cognitive and emotionally self-assessing.	Yes	For learning by self-regulatory training above the age of 5. For monitoring of speech skills of children - allowed even after birth. In general, using an EEG portable brainwave devices require a very complex ethical procedures.
Mixed Reality/ Augmented Reality Microsoft HoloLens	Above the age of 13	Yes	To make complex lessons simple by immersing in the world of holograms and with new way of Interactionsand teamwork. Explore places and science. 3D Geometry in the Classroom. Medical Science Training areas relating to anatomy and physiology. Transform the ways to communicate, create, collaborate, and explore. Bringing a view of the earth and space, etc.	Yes	Explore ideas. A new dimension of creativity and teamwork. To create and work with holograms in relation to the world around pupils. By HoloLens SDK applications are built for mixed reality. SDK uses Visual Studio with the Windows 10 SDK. If case of don't having a mixed reality device - HoloLens emulator	Yes	HoloLens MR new gaming development could have wide-ranging applications in healthcare particularly in the treatment of those suffering from autism or disability AR Treatment for children with ASD - develop an AR environment where children engage in activities to develop behavioral skills at different levels and instances to show altruistic behavior. At the end of the interaction an empathy score can be obtained.

			New way for Interactions: pupils are completely cut off from their local environment visually and they are able to see an instructor, each other and also to interact. They will be seeing the same model but from different viewpoints.		can be installed in order to build and test mixed reality apps without a HoloLens headset.		