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Digital technologies for sensory and physical disabilities

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Abstract:This study examines the role of Information and Communication Technologies (ICTs) in the inclusion of students with sensory disabilities. Our main goal is to present the importance of ICTs and highlight their contribution to the smooth and equal inclusion of these children in the educational system and society. Thus, the research team of this paper presents specific examples of ICTs that aid children with visual and hearing impairments and physical disabilities. ICTs provide an attractive and supportive environment for the students with special needs as well as equal opportunities regarding their inclusion. Since we live in the world of information and the digital revolution, we have to adapt to modern reality and prioritize the use of ICTs in education.

Keywords: ICTs, inclusion, sensory disabilities, physical disabilities

1 Introduction

Digital Technologies aid students with disabilities to improve their independence in the academic and work field and their participation in-class activities and discussions. I.C.Ts (Information and Communication Technologies), make learning possible anywhere and at any time by allowing the students to have access to information and knowledge wherever and whenever they want. The use of ICTs in education is inevitable. Students spend many hours of their daily life using technology, so it is reasonable not to be attracted by environments where technology is not been used.

Information and Communication Technologies (ICTs) concern the study, design, development, implementation, and support of computer information systems, especially computer software applications. ICTs use electronic devices and software for the conversation, storage, protection, processing, transmission, and secure retrieval of information [1].

The use of available technologies is considered as the main tool for the implementation of inclusion and participation. Technology can be divided into three categories: assistive technology, accessibility technology, and universal design. Assistive technology, in particular, is any device that helps a student with a disability to complete a daily task. It is more than an educational tool as it is a fundamental work tool comparable to pencil and paper for students without disabilities [2].

Digital inclusion is widely regarded as a phenomenon in which marginalized people, such as people with disabilities, have access and participate in education, social and political activities, and employment opportunities equally as others through the use of digital technologies. The focus of digital inclusion is to help people with disabilities increase their access to technology and their ability to use it [3].

ICTs promote the adaptation of the educational process to the characteristics, interests, and needs of the students by helping them participate actively to achieve their learning goals. Teachers seem to have a positive attitude towards the use of ICTs and in the last years, they have gained more knowledge in this field. However, it is necessary to adapt the curriculum and develop teaching strategies, so that ICTs can be integrated into the educational process. Besides, teachers need further training to be able to support the proper use of ICTs [4].

According to Turner-Cmuchal M. & Aitken S. [5], nowadays the contribution of ICTs has been recognized worldwide as they improve the quality of life of people with disabilities, they reduce social exclusion, and strengthen their participation in society. According to the Council of the European Union, many European countries have adopted policies that include the use of ICTs, to promote equality in education and the inclusion of people with disabilities in the information society. The UN Convention on the Rights of Persons with Disabilities ensures their access to ICTs and knowledge.

Except for the attractiveness factor, there is also the efficiency of the use of technology. For instance, digital textbooks offer a better alternative than traditional textbooks because they are interactive and they provide instant feedback [6]. ICTs support students with hearing and vision problems, as they provide access to educational material through audiovisual media [7]. Below there are presented a few examples of ICTs and their contribution to the inclusion of students with visual and hearing impairments and physical disabilities.

2 ICTs in sensory disabilities

2.1 Visual Impairment and Blindness

The educational material that is designed for not visually impaired students is often inappropriate for the visually impaired, except if it is modified to suit their needs. This requires efforts to develop content in accessible formats or to use software to convert ordinary content to accessible formats [8]. According to Kim et al. [9], the number of visually impaired people is constantly increasing worldwide so ICTs have been designed to help them in their daily lives. In particular, there are special devices that convert the optics into an audible or tactile stimulus such as screen readers, Braille keyboards, Braille printers, or special screens used in Braille. Also, mobile phones can use the camera to identify objects and via GPS the location and inform the visually impaired people with a voice message. One of the needs of man in the 21st century is to "save" the favorite moments and beautiful places in photos. For this reason, an attempt was made to design an original function of the mobile phones that used the "TalkBack" screen reading software [9].

Khetarpal [10] presented in his study some applications that can be helpful for visually impaired people. The MOCR software is a visual character recognition application that allows blind users to take a picture of a text and then the application can read the text aloud to them. BrailleLearn offers games that encourage the learning of Braille to blind children. Another application that was presented in the study was LocalEyes, which uses Google maps and GPS to help visually impaired people when they do not know what is around them. Just with the use of a phone, the blind user knows which shops are on his left or how far he is from a restaurant [10].

Assistive technologies, such as audio texts, can be used in visually impaired students to support their reading skills. Also useful are the tools to change the page, course material printed in Braille, magnifiers, and screen reader software [11]. Also, the Optical Braille Recognition (OBR) software allows visually impaired users to scan a Braille document which is then parsed, translated into text, and displayed on a computer screen [12].

Fujiyoshi et al. presented in 2010 [13] an evaluation system with a digital audio player for the recently blind users who have difficulty with Braille. Through this system, they have the opportunity to take part in the national exams for admission to University. Additionally, Choi and Walker developed the Digitizer Audory Graph, which is a software tool that allows visually impaired users to take a picture of a graph through an optical input device, such as a webcam, and then listen to an audio graph of the digitized image [13].

Learning a foreign language is an essential part of all levels of the education system in modern society. However, a common foreign language course may not be appropriate for a visually impaired person. Malinovská and Ludíková [14] researched to see if new technologies can help visually impaired people learn a foreign language. The study involved four visually impaired people aged 35 to 55 years old. For writing and reading all participants used a desktop computer with specialized software (ZoomText, Jaws, etc.), and an mp3 player or mobile phones for listening to books. According to the research results, teaching foreign languages to visually impaired adults is a very important issue that needs to be addressed. Whereas in the past blind people needed a Picht or Braille machine, today both are being replaced by computers, mobile phones, special compensating devices, and related software. On the one hand, these technological changes provide a larger and more stable platform for the integration of visually impaired people. On the other hand, language teachers often lack adequate methodology as well as knowledge of the capabilities of these individuals [14].

Visually impaired people have many limitations, including the freedom to shop independently. They find it difficult to read ingredients or nutritional information that is usually found in small print on

products. This information is considered important for the final decision to purchase the product. Shopping Assistant is a mobile application developed to make life easier for visually impaired people. This application is designed to help identify products without the need for the individual to read the information on the packaging while shopping [15]. The camera of the phone scans the barcode of the product and the product description is displayed based on the barcode ID retrieved from the database server. This application provides, also, proposals for similar products.

Blowmick and Hazarika [16] mention in their study several assistive technologies that assist the visually impaired. For example, they mention augmented reality glasses and artificial intelligence lenses. Also, they present the assistive device BrainPortV100, which aids the visually impaired to see with their tongue. Additionally, Eye Music is a device that converts visual information into audio. Another Kinect software is NAVI which helps people to move. Lastly, Blowmick and Hazarika[15] mention Braille e-book readers and a 3D smartphone that detects the barriers.

Nicolau et al. [17] developed an assistive application that helps users interact with technological environments such as cooking devices. Another similar application is called INHOME, which allows remote control of home appliances and provides messages regarding their condition. For example, when the washing machine is finished, a message appears on the screen accompanied by a sound [17]. At the same time, Sanchez and Torres developed a mobile phone-based system that uses a combination of incoming and outgoing audio and GPS technology to make it easier for visually impaired people to move around in familiar and unfamiliar environments [16].

The ABBI (Audio Bracelet for Blind Interaction) technology aims to improve spatial skills, mobility, and social interaction of visually impaired children and adults. Specifically, the ABBI bracelet provides spatial information about body movements, orientation, posture, and movement orientation mechanisms [18]. Interactive video games can be more pleasant, more interesting and, therefore, more effective than traditional interventions to enhance motor skills.

Another problem faced by visually impaired people is their mobility and autonomy in public transport. The RAMPE system is designed to assist these people when traveling by bus or tram. With this system, they can receive real-time information on public transport [19]. In addition, SmartVision is a navigation system created to enhance the mobility of the blind. SmartVision essentially complements the cane as it detects the obstacles that the cane hasn’t touched yet [20].

As mentioned above, visually impaired people need help to feel safe while walking outdoors. Nada, Fakhr & Seddik [21] report that a special stick has been made with low weight and cost, easy to use, and consumes little energy. It includes sensors that recognize obstacles within two meters and audible message alerts. The alerts vary depending on the distance of the person from the obstacle and are accompanied by different volume sounds. The advantage of this "smart" device is that it can recognize obstacles at low heights, such as stairs or objects on the floor. Thus, it is highlighted that technology helps the daily life of these people and allows them to live equally in society.

In addition to research related to exploring outdoors and avoiding obstacles for visually impaired people, technologies have been designed to help with the identification of objects. An application was designed that is supported by a portable device, is placed on the chest, and helps the visually impaired person to navigate indoors, avoid obstacles and identify objects around them using a camera and laser sensors [22].

2.2 Hearing impairment and deafness

Deaf and hard of hearing people communicate using sign language so they face many communication difficulties around the world. As the vast majority of people do not know sign language, the need for a sign language translator has increased significantly.

Drigas et al. presented in 2005 [23] a Learning System designed for the deaf and hard of hearing. This original system offers videos in Greek sign language corresponding to all texts in the learning environment. Students for the first time had the opportunity to learn in their language, the Greek sign language. Also in 2008 Drigas et al. presented the program "Daedalus" which teaches English as a second language to the deaf [23].

Also, for the deaf and hard of hearing students, accessible digital educational tools were developed in Greece that include all the books of the first two grades of Elementary School in written and oral

Greek Sign Language, as well as special educational materials for the readiness to use sign language as a first language in kindergarten and the first two grades of primary school. Specifically, the creation of electronic and printed educational materials included the basic vocabulary of Greek semantics and basic phrases for its teaching in kindergarten [24].

The platform tuniSigner offers ICT-based applications and promotes the learning of sign language [25]. ICTs, according to research, have the potential to improve phonological awareness skills in children with hearing problems. Specifically, the ARTUR program helps children with hearing problems to practice their pronunciation. Its main advantage is the provision of feedback through clear instructions to improve the articulation. Also, Nasiri et al. [26] developed a game in which children learn the words they are expected to know by the age of 7. The game includes an avatar controlled by the child's voice commands. During the game, an object appears on the screen. The avatar collides with this object, the sound of the object is heard and this sound is repeated by the child. SmartSignPlay is an interactive mobile application. The application supports the learning and practice of American Sign Language by using an animated avatar [27].

Any software tool that helps people practice reading finger gestures must be natural enough to represent the fluidity of that gesture, while at the same time being flexible enough to write any word in the target language in any order. To address these needs, a new mobile app called "Fingerspelling Tutor" was presented. Toro et al. [27] introduced the Fingerspelling Tutor application, which uses a 3D character that displays spelling. The application includes quizzes and tutorials that allow the user to type words that the 3D character can spell. At the same time, it connects to social media and creates a virtual community with people with hearing problems.

Leap Motion technology can be used to improve communication between deaf and hearing people in Saudi Arabia. Al-Nafjan et al. [28] explored the possibility of using a Leap Motion system to provide continuous recognition of ArSL (Arabic sign language) for two-way communication, to improve communication between deaf and hearing, in terms of speed and independence. The system translates ArSL into spoken words for hearing people and translates spoken Arabic into text for deaf people [28].

Nowadays, augmented reality is being expanded and used widely. It has many possibilities as an educational aid in complementing and improving communication, as deaf people do not have the physical ability to share their thoughts aloud. So there is a desperate need for cost-effective devices that could turn the languages of the hearing into gestures using 3D animated hand movements to create independent learning and communication capabilities for the deaf. The study by Suman Deb and Bhattacharya [29] aimed at creating an AR (Augmented Reality) application that will be used on mobile phones and have 3D gestures. When the camera focuses on a media card, the letter highlighted on the card will be detected by the application and a moving 3D hand will replace the letter with a gesture. The motion for the corresponding letter will be displayed in real-time. The experimental results of the study showed a significant improvement in the sign language learning of deaf students. The initial hypothesis of augmented learning is essentially achieved in this project and can be further extended to cover a wider variety of teaching-learning scenarios [29].

In 2015, Noor Tubaiz et al. [30] proposed a glove recognition system of Arabic sign language, using a technique for sequential data classification. They compiled a data set based on a 40-sentence sensor using an 80-word dictionary. Data marking is performed using a camera to synchronize hand movements with their corresponding meaning in sign language. In 2014, Tushar Chouhan, AnkitPanse, Anvesh Kumar Voona and S. M. Sameer [31] designed and implemented a low-cost wired interactive glove with a high degree of accuracy for gesture recognition. The glove maps the orientation of the hand and fingers with the help of sensors and an accelerometer. The data is then transmitted to a computer using automatic repetition as an error checking scheme. They managed to achieve a high degree of accuracy (96%) for recognizing hand gestures by using smart gloves.

N. Sriram and M. Nithiyanandham [32] designed a smart glove and a software application based on ASL (American Sign Language). The gesture recognition was done with the help of a glove consisted of 5 accelerometer sensors, a microcontroller, and a Bluetooth chip that were placed on the fingers and not all over the hand. Regarding the software, they developed an android application called Talking gestures, which was more direct and easy to use for speech synthesis. Nikhita Praveen et al. [33] proposed in their study another approach using a smart glove. The technology created detected the gesture on each finger and connected the analog voltage to the microcontroller. The microcontroller converted these analog voltages into digital samples and the information was transmitted wirelessly.

3 ICTs in physical disabilities

According to Borgestig et al. [34], gaze-based AT technology has the potential to provide children with severe mobility difficulties, with the opportunity to communicate as some of these children are deprived of speech. These children have no control over their body movements and are dependent on others for all activities, including communication, eating, and playing. Eye movements may be the only ones they can control voluntarily. For this reason, assistive technology (AT) based on a computer-controlled by the eyes may be the only option for people with severe mobility problems to use a computer. Thus, using only their eyes, children can control the computer and access various activities such as games and music [34].

Gaze-based computers can play an important role in communication and participation in everyday life and society. Introducing this technology at home and school can enable the child to communicate, express their wishes, receive school support, and participate more in social activities [35].

Writing skills require specific cognitive skills as well as certain physical skills. Various supporting technologies are: 1) portable talking dictionaries, 2) portable word processors, 3) computers with accessibility features, 4) computers with word processing software, 5) alternative keyboards, 6) word prediction computers and 7) computers with word processing voice recognition software[11]. "EyeDraw" software allows people with mobility problems to paint with their eyes [13].

Students with motor skills problems may need a larger keyboard. For users with severe motor impairment, keyboard simulation, including scanning and entering Morse code, can be used with special switches controlled by at least one muscle the person controls, such as the head, finger, knee, or mouth [12].

Chin et al. Introduced in 2008 [13], a control system through electromyography and eye monitoring for people with mobility disabilities. This system was designed for users who cannot use their hands due to spinal dysfunction or other ailments [13].

Robots can be a helpful tool for children with physical disabilities. For example, LEGO Mindstorms facilitates play and learning activities while the PlayRob system successfully helps children with physical disabilities play with LEGO. Also, the IROMEC robot had positive effects on the achievement of individual therapy but also the fulfillment of educational goals. However, all the robots mentioned above have only been used in studies and are not available for purchase [36]. In contrast, the ZORA robot is commercially available and includes many features suitable to support recovery, play, and training goals. ZORA is a humanoid robot that was originally developed as a NAO robot. His height is 58 cm and he has seven senses for physical interaction: movement, sensation, hearing, speech, sight, connection, and thought. Programmed scenarios can be used to enable the robot to dance or interact with the user [36].

The Multimodal Tongue Drive System (mTDS) is a wireless support technology in the form of a handset that uses three communication skills of people with severe mobility impairments to access computers. The first is the movement of the tongue as a switch (clicks), the second is the monitoring of the head (mouse pointer movements) and the third is the recognition of speech for typing [37]. Sahadat et al. [37] presented in their research an mTDS in the form of a headset and multiple sensors, capable of capturing the movements of the tongue, head, and speech and providing the user with multiple inputs at the same time. The main contribution of this research is to provide exclusive, simultaneous, and accessible inputs to people with severe mobility disabilities to control their daily devices such as the computer, the mobile phones, and the wheelchair.

López Sánchez et al. [38] report that there are electronic systems that help people with speech problems communicate with people around them. These are: 1) The "Verbo" software that adapts to special keyboards or screens and the user uses pictograms to visualize his message to others, 2) The "IRISBOND" system, used by people suffering from paraplegia or injury spinal cord and other similar diseases, with the help of which they can structure sentences with a virtual keyboard., 3) The "AraBoard" which offers the creation, processing and use of communication tables for different electronic devices where the user selects pictograms to write his message, 4) The "Eyescan" project which introduces a "mouse" computer that is visually controlled so that users suffering from quadriplegia can communicate [38].

4 Conclusion

Finally we underline the importance of the digital technologies in education domain and special education that is very productive and successful, facilitates and improves the assessment, the intervention and the educational procedures via Mobiles which brings educational activities everywhere [45-59], various ICTs applications which are the core supporters of education [60-115], AI, STEM & ROBOTICS which raise educational procedures into new levers of performance [116-139], and games which transforms the education in a very friendly and enjoyable interaction [140-157]. Additionally the enhancement and combination of ICTs with theories and models of metacognition, mindfulness, meditation and emotional intelligence cultivation [158-211] as well as with environmental factors and nutrition [39-44], accelerates and improves more over the educational practices and results, especially in the special education domain and its practices like assessment and intervention.

More specifically, learning technologies are transforming and modifying educational systems with impressive advances in Information and Communication Technologies. Moreover, when these technologies are available, accessible, usable, and affordable they represent real opportunities with access to inclusive education and help to overcome the barriers that exist in traditional education systems. Disability is not incapability. A disability is a real disability only when it prevents one from doing what he wants. ICTs provide a model that allows people with disabilities to be included socially and economically in their communities through access to information, knowledge, and educational processes. It is important to note that appropriate ICTs should be used according to the personal needs of each individual. It is necessary to adopt similar policies by European countries that will enhance the use of ICTs and will face the obstacles that arise. However, financial support is needed for the acquisition of appropriate knowledge and training for families and teachers and the updating of school units. Therefore, assistive technology serves to bridge the gap, helping to educate children in the same class, including children with sensory and physical disabilities, helping them to learn the material in a way that they understand, and eliminating the obstacles they had. ICTs improve the quality of life of people with disabilities, reduce social exclusion, and strengthen their participation in the social ensemble. Lastly, ICTs help to achieve the final goal which is equal access in society and higher levels of intelligence and consciousness.

5 References

[1] M. A. Shuja, “Connecting people with disabilities: ICT opportunities for all,” Munich Personal RePEc Archive, September 2009. Available: http://mpra.ub.uni-muenchen.de/17204/. [Accessed: January 28, 2020].

[2] C. Buhler and B. Pelka, “Technology for Inclusion and Participation Introduction to the Special Thematic Session. Computers Helping People with Special Needs,” ICCHP, 13th–15th July 2016, pp. 76-79. Available: https://link.springer.com/content/pdf/bfm%3A978-3-319-41264-1%2F2%2F1.pdf. [Accessed: May 13, 2020].

[3] J. Seale, E.A. Draffan and M. Wald, “Digital agility and digital decision-making: Conceptualising digital inclusion in the context of disabled learners in higher education,” Studies in Higher Education, vol. 35, no. 4, p. 445–461, June 2010. Available: https://doi.org/10.1080/03075070903131628. [Accessed: May 19, 2020].

[4] M.C. Pegalajar Palomino, “Teacher training in the use of ICT for inclusion: differences between Early Childhood and Primary Education,” Procedia - Social and Behavioral Science, no. 237, p. 144-149, February 2017. Available: https://doi.org/10.1016/j.sbspro.2017.02.055. [Accessed: June 15, 2020].

[5] M. Turner-Cmuchal and S. Aitken, “ICT as a tool for supporting inclusive learning opportunities. Implementing Inclusive Education: Issues in Bridging the Policy-Practice Gap,” International Perspectives on Inclusive Education, no 8, Emerald Group Publishing Limited, p 159-180, August 2016. Available: https://doi.org/10.1108/S1479-363620160000008010. [Accessed: May 20, 2020].

[6] G. Alnahdi, V.Dean, and S. Arabia, “Assistive Technology in Special Education and the Universal Design for Learning,” Turkish Online Journal of Educational Technology, vol. 13, no. 2, p.

18–23, April 2014. Available: https://files.eric.ed.gov/fulltext/EJ1022880.pdf. [Accessed: May 13, 2020].
[7] M. Gelastopoulou and V. Kourbetis. "The Use of Information and Communication Technologies for Inclusive Education in Greece" In: Research on e-Learning and ICT in Education, Anastasiades P., Zaranis N., Eds. Springer, Cham, September 2017.Available: http://prosvasimo.iep.edu.gr/docs/pdf/The%20use%20of%20Information%20and%20Communication%20Technologies%20for%20inclusive%20education%20in%20Greece.pdf. [Accessed: June 15, 2020].
[8] P. Ojok, "Access and Utilization of Information and Communication Technology By Students With Visual Impairment in Uganda'S Public Universities," IJDS:Indonesian Journal of Disability Studies, vol. 5, no. 1, p 65–80, May 2018. Available: https://ijds.ub.ac.id/index.php/ijds/article/view/77. [Accessed: May 18, 2020].
[9] H. Kim, S. H. Han and J. Park, "The interaction experiences of visually impaired people with assistive technology: A case study of smartphones," International Journal of Industrial Ergonomics, vol. 55, p. 22-33, September 2016. Available: https://www.sciencedirect.com/science/article/abs/pii/S0169814116300634. [Accessed: June 12, 2020].
[10] A. Khetarpal, "Information and Communication Technology (ICT) and Disability," Review of Market Integration, vol. 6, no. 1, p. 96–113, April 2015. Available: https://journals.sagepub.com/doi/abs/10.1177/0974929214560117?journalCode=rmia. [Accessed: June 3, 2020].
[11] R. Erdem, "Students with special educational needs and assistive technologies: A literature review," Turkish Online Journal of Educational Technology, vol 16, no. 1, p. 128-146, January 2017. Available: https://eric.ed.gov/?id=EJ1124910. [Accessed: June 18, 2020].
[12] F. K. Ahmad, "Use of Assistive Technology in Inclusive Education: Making Room for Diverse Learning Needs," Transcience, vol. 6, no. 2, p. 62-77, May 2015. Available: https://www2.hu-berlin.de/transcience/Vol6_No2_62_77.pdf. [Accessed: June 3, 2020].
[13] A.S. Drigas and R.E. Ioannidou, "Special education and ICTs," International Journal of Emerging Technologies in Learning, vol. 8, no. 2, p. 41–47, May 2013. Available: https://www.researchgate.net/publication/249654212_Special_education_and_ICTs. [Accessed: May 13, 2020].
[14] O. Malinovská, and L. Ludíková, "ICT in Teaching Foreign Languages to Adult People with Acquired Severe Visual Impairment," Procedia - Social and Behavioral Sciences, no. 237, p. 311-318, February 2017. Available: https://www.sciencedirect.com/science/article/pii/S1877042817300964?via%3Dihub. [Accessed : June 3, 2020].
[15] S. Ahmad, S.A. Asmai, S.Z Zaid and N. Kama, "Shopping assistant app for people with visual impairment: An acceptance evaluation," International Journal of Computing, vol. 18, no.3, p. 285–292. September 2019. Available: https://www.computingonline.net/computing/article/view/1521. [Accessed: May 15, 2020].
[16] A. Bhowmick,, & S.M. Hazarika,. "An insight into assistive technology for the visually impaired and blind people: state-of-the-art and future trends," Journal on Multimodal User Interfaces, vol. 11, no. 2, p. 149–172, January 2017. Available: https://link.springer.com/article/10.1007%2Fs12193-016-0235-6. [Accessed: June 15, 2020].
[17] L. Hakobyan,, J. Lumsden, D. O'Sullivan and H. Bartlett, "Mobile assistive technologies for the visually impaired. Survey of Ophthalmology", vol. 58, no.6, p. 513-528, September 2013. Available: https://doi.org/10.1016/j.survophthal.2012.10.004. [Accessed: June 5, 2020].
[18] G. Papanastasiou, A. Drigas, C. Skianis, M. Lytras and E. Papanastasiou, "Patient-centric ICTs based healthcare for students with learning, physical and/or sensory disabilities," Telematics and Informatics, vol. 35, no.4, p. 654–664, July 2018. Available: https://www.sciencedirect.com/science/article/abs/pii/S0736585316304919. [Accessed: June 19, 2020].
[19] O. Venard, G. Baudoin and G. Uzan, "Experiment and evaluation of the RAMPE interactive auditive information system for the mobility of blind people in public transport," in the Proceedings of the 10th international ACM SIGACCESS conference on Computers and accessibility, p. 271-272, October 2008. Accessed on June 19, 2020. [Online] Available: https://doi.org/10.1145/1414471.1414533.

[20] R.R.Bhambare, A. Koul, S. M. Bilal and S. Pandey, "Smart Vision system for blind," International Journal of Engineering and Computer Science, vol. 3, no. 5, p 5790-5795, May 2014. Available: http://103.53.42.157/index.php/ijecs/article/view/406. [Accessed: June 5, 2020].
[21] A.A. Nada, M.A. Fakhr and A.F. Seddik, "Assistive infrared sensor based smart stick for blind people," in Proceedings of the 2015 Science and Information Conference, SAI 2015, p. 1149-1154, London. Available: https://ieeexplore.ieee.org/document/7237289
[22] M.L. Mekhalfi, F. Melgani, A. Zeggada, F.G.B. De Natale, M.A.M. Salem, and A. Khamis, "Recovering the sight to blind people in indoor environments with smart technologies," Expert Systems with Applications, vol. 46, p. 129–138, March 2016. Available: https://www.sciencedirect.com/science/article/abs/pii/S0957417415006831. [Accessed: May 12, 2020].
[23] A.S. Drigas, and R.E Ioannidou, "ICTs in Special Education: A Review" in: Information Systems, E-learning, and Knowledge Management Research, M.D Lytras, D. Ruan, R.D. Tennyson, P. Ordonez De Pablos, F.J García Peñalvo and L. Rusu, Eds, vol. 278. Berlin: Springer, 2013. Available: https://link.springer.com/chapter/10.1007/978-3-642-35879-1_43#citeas. [Accessed: May 15, 2020].
[24] N. Zaranis and P. Anastasiades, Research on e-Learning and ICT in Education Technological, Pedagogical and Instructional Perspectives, Switzerland: Springer, 2017 [ebook]. Available: https://link.springer.com/book/10.1007%2F978-3-319-34127-9.
[25] Y. Bouzid and M. Jemni, "ICT-based applications to support the learning of written signed language" in the 6th International Conference on Information and Communication Technology and Accessbility, ICTA, December 2017, 1–5. Accessed on June 19, 2020. [Online] Available: https://ieeexplore.ieee.org/document/8336052.
[26] M. Konjevod, V. Mildner and T. Lauc, "Information and Communication Technology in the Rehabilitation of Hearing-Impaired Children," INFuture2019: Knowledge in the Digital Age, p. 175-181, May 2019. Available: https://openbooks.ffzg.unizg.hr/index.php/FFpress/catalog/view/39/51/2031-1. [Accessed: May 20, 2020].
[27] V. Constantinou, A. Ioannou, I. Klironomos, M. Antona, and C. Stephanidis, "Technology support for the inclusion of deaf students in mainstream schools: a summary of research from 2007 to 2017," Universal Access in the Information Society, vol. 19, no. 1, p. 195–200, August 2018. Available: https://link.springer.com/article/10.1007/s10209-018-0630-8. [Accessed: May 13, 2020].
[28] A. Al-Nafjan, B. Al-Arifi and A. Al-Wabil, "Design and development of an educational Arabic sign language mobile application: collective impact with Tawasol". In: Universal access in human-computer interaction, M. Antona and C. Stephanidis, Eds, vol. 9176, pp. 319–326, Cham: Springer, 2015. https://doi.org/10.1007/978-3-319-20681-3_30 [Accessed: June 3, 2020].
[29] S. Deb and P Bhattacharya, "Augmented Sign Language Modeling(ASLM) with interaction design on smartphone - An assistive learning and communication tool for inclusive classroom," Procedia Computer Science, no. 125, p. 492–500, January 2018. Available: https://doi.org/10.1016/j.procs.2017.12.064. [Accessed: May 20, 2020].
[30] N. Tubaiz; T. Shanableh and K. Assaleh, "Glove-Based Continuous Arabic Sign Language Recognition in User Dependent Mode. Human-Machine Systems," IEEE Transactions, vol. 45, no. 4, p. 526 – 533, March 2015. Available: https://ieeexplore.ieee.org/document/7061411. [Accessed: June 3, 2020].
[31] T. Chouhan; A. Panse, A.K. Voona; S.M. Sameer, "Smart glove with gesture recognition ability for the hearing and speech impaired," in Global Humanitarian Technology Conference, vol 2, no 2, p. 105 – 110, India, September 2014. Available: https://ieeexplore.ieee.org/document/6967567. [Accessed: June 13, 2020].
[32] N. Sriram and M. Nithiyanandham, "A hand gesture recognition based communication system for silent speakers" In the International Conference on Human Computer Interactions (ICHCI), Chennai, 2013. Available: https://ieeexplore.ieee.org/document/6887815.
[33] N. Praveen, N. Karanth and M.S. Megha. "Sign language interpreter using a smart glove" In the 2014 International Conference on Advances in Electronics, Computers and Communications, ICAECC 2014, India. Available: https://doi.org/10.1109/ICAECC.2014.7002401.
[34] M. Borgestig, J. Sandqvist, R. Parsons, T. Falkmer and H. Hemmingsson, "Eye gaze performance for children with severe physical impairments using gaze-based assistive technology—A longitudinal study," Assistive Technology, vol. 28, no. 2, p. 93–102, October 2015. Available:

https://www.researchgate.net/publication/283263614_Eye_Gaze_Performance_for_Children_with_Severe_Physical_Impairments_Using_Gaze-Based_Assistive_Technology-a_Longitudinal_Stud. [Accessed: June 15, 2020].
[35] P. Rytterström, M. Borgestig and H. Hemmingsson, "Hope and technology: Other-oriented hope related to eye gaze technology for children with severe disabilities," International Journal of Environmental Research and Public Health, vol. 16, no 10, May 2019. Available: https://www.mdpi.com/1660-4601/16/10/1667. [Accessed: May 20, 2020].
[36] R. J.F van den Heuvel, M. Lexis and L.P. de Witte, "Robot Zora in rehabilitation and special education for children with severe physical disabilities: a pilot study," International Journal of Rehabitational Research, vol. 40, no. 4, p 353–359, August 2017. Available: https://www.researchgate.net/publication/319267615_Robot_ZORA_in_rehabilitation_and_special_education_for_children_with_severe_physical_disabilities_A_pilot_study. [Accessed: June 15, 2020].
[37] M.N. Sahadat, A. Alreja, and M. Ghovanloo, "Simultaneous Multimodal PC Access for People with Disabilities by Integrating Head Tracking, Speech Recognition, and Tongue Motion," IEEE Transactions on Biomedical Circuits and Systems, vol. 12, no. 1, p. 192–201, December 2017. Available: https://ieeexplore.ieee.org/document/8222963. [Accessed: June 3, 2020].
[38] M. López Sánchez, J.B. González Serna, J.L. Molina Salgado and M. Hernández Salinas, "Design and Implementation of a Communication System and Device Aimed at the Inclusion of People with Oral Communication Disabilities." International Journal of Advanced Computer Science and Applications, vol. 8, no. 10, p. 254-260.
[39] Stavridou Th., Driga, A.M., Drigas, A.S., 2021. Blood Markers in Detection of Autism, International Journal of Recent Contributions from Engineering Science & IT (iJES) 9(2):79-86.
[40] Zavitsanou, A., & Drigas, A. (2021). Nutrition in mental and physical health. Technium Soc. Sci. J., 23, 67.
[41] Driga, A.M., Drigas, A.S. 2019 "Climate Change 101: How Everyday Activities Contribute to the Ever-Growing Issue", International Journal of Recent Contributions from Engineering, Science & IT, vol. 7(1), pp. 22-31. https://doi.org/10.3991/ijes.v7i1.10031
[42] Driga, A.M., and Drigas, A.S. 2019 "ADHD in the Early Years: Pre-Natal and Early Causes and Alternative Ways of Dealing." International Journal of Online and Biomedical Engineering (IJOE), vol. 15, no. 13, p. 95., doi:10.3991/ijoe.v15i13.11203
[43] A Fotoglou, I Moraiti, A Diamantis, V Stergios, Z Gavriilidou, A Drigas 2022 Nutritious Diet, Physical Activity and Mobiles. The Game Changers of ADHD BioChemMed 3 (2), 87-106
[44] V Tsopanidou, A Drigas 2022 ENVIRONMENTAL FACTORS AND THEIR EFFECT ON THE OCCURRENCE OF AUTISM BioChemMed 3 (1)
[45] Vlachou J. and Drigas, A. S., 2017 "Mobile technology for students and adults with Autistic Spectrum Disorders (ASD)," International Journal of Interactive Mobile Technologies, vol. 11(1), pp. 4-17,
[46] Papoutsi C., Drigas, A. S., and C. Skianis, 2018 "Mobile Applications to Improve Emotional Intelligence in Autism – A Review," Int. J. Interact. Mob. Technol. (iJIM); Vol 12, No 6,
[47] Karabatzaki, Z., Stathopoulou, A., Kokkalia, G., Dimitriou, E., Loukeri, P., Economou A., & Drigas, A. (2018). Mobile Application Tools for Students in Secondary Education. An Evaluation Study. International Journal of Interactive Mobile Technologies (iJIM), 12(2), 142-161
[48] Stathopoulou A., Loukeris D., Karabatzaki Z., Politi E., Salapata Y., and Drigas, A. S., 2020 "Evaluation of Mobile Apps Effectiveness in Children with Autism Social Training via Digital Social Stories," Int. J. Interact. Mob. Technol. (iJIM); Vol 14, No 03,
[49] Stathopoulou, et all 2018, Mobile assessment procedures for mental health and literacy skills in education. International Journal of Interactive Mobile Technologies, 12(3), 21-37,
[50] Drigas, A., Kokkalia, G. & Lytras, M. D. (2015). Mobile and Multimedia Learning in Preschool Education. J. Mobile Multimedia, 11(1-2), 119–133.
[51] Kokkalia G, AS Drigas, A Economou 2016 Mobile learning for preschool education. International Journal of Interactive Mobile Technologies 10 (4)
[52] Stathopoulou A, Karabatzaki Z, Tsiros D, Katsantoni S, Drigas A 2019 Mobile apps the educational solution for autistic students in secondary education International Journal of Interactive Mobile Technologies. 2019, Vol. 13 Issue 2, p89-101

[53] Drigas A, DE Dede, S Dedes 2020 Mobile and other applications for mental imagery to improve learning disabilities and mental health International Journal of Computer Science Issues (IJCSI) 17 (4), 18-23
[54] Alexopoulou A, Batsou A, Drigas A, 2020 Mobiles and cognition: The associations between mobile technology and cognitive flexibility iJIM 14(3) 146-156
[55] M Anagnostou, A Drigas 2022 Mobile Applications for stress management Scientific Electronic Archives 15 (2)
[56] P Leliopoulos, A Drigas 2022 The evolution of wireless mobile networks and the future 5G mobile technology for sustainability. Technium Sustainability, 2(4), 28–43. 2 (4), 28-43
[57] A Doulou, A Drigas, C Skianis 2022 Mobile applications as intervention tools for children with ADHD for a sustainable education. Technium Sustainability, 2(4), 44–62. 2 (4), 44-62
[58] V Tsakou, A Drigas 2022 Early Detection of Preschool Children with ADHD and the role of mobile Apps and AI Technium Social Sciences Journal 30, 127-137
[59] E Karagianni, A Drigas 2022 Language Development and Mobile Apps for Down Syndrome Children Technium Social Sciences Journal 34, 193-213
[60] Drigas, A. S., & Ioannidou, R. E. (2011, September). ICTs in special education: A review. In World Summit on Knowledge Society (pp. 357-364). Springer, Berlin, Heidelberg.
[61] Drigas, A. S., J.Vrettaros, L.Stavrou, D.Kouremenos, 2004. E-learning Environment for Deaf people in the E-Commerce and New Technologies Sector, WSEAS Transactions on Information Science and Applications, Issue 5, Volume 1, November
[62] Drigas, A.S., Vrettaros, J. and Kouremenos, D. (2004) 'Teleeducation and e-learning services for teaching English as a second language to deaf people, whose first language is the sign language', WSEAS Transactions on Information Science and Applications, Vol. 1, No. 3, pp.834–842.
[63] Drigas, A., Koukianakis, L., Papagerasimou, Y., 2011, Towards an ICT-based psychology: Epsychology, Computers in Human Behavior, 27:1416–1423. https://doi.org/10.1016/j.chb.2010.07.045
[64] Charami, F., & Drigas, A. (2014). ICTs in English Learning and Teaching. International Journal of Engineering and Science. Vol. 2(4):4-10. DOI: 10.3991/ijes.v2i4.4016
[65] Drigas A.S., Kouremenos D (2005) An e-learning system for the deaf people. In: WSEAS transaction on advances in engineering education, vol 2, issue 1, pp 20–24
[66] Drigas A., Pappas M, and Lytras M., 2016. "Emerging technologies for ict based education for dyscalculia: Implications for computer engineering education," International Journal of Engineering Education, vol. 32, no. 4, pp. 1604–1610,
[67] Drigas, A. & Kokkalia, G. 2017. ICTs and Special Education in Kindergarten. International Journal of Emerging Technologies in Learning 9 (4), 35–42.
[68] Drigas, A. S., Stavridis, G., & Koukianakis, L. (2004). A Modular Environment for E-learning and E-psychology Applications. WSEAS Transactions on Computers, 3(6), 2062-2067..
[69] Drigas, A., Leliopoulos, P.: Business to consumer (B2C) e-commerce decade evolution. Int. J. Knowl. Soc. Res. (IJKSR) 4(4), 1–10 (2013)
[70] Pappas M, Drigas A, Papagerasimou Y, Dimitriou H, Katsanou N, Papakonstantinou S, et al. 2018; Female Entrepreneurship and Employability in the Digital Era: The Case of Greece. Journal of Open Innovation: Technology, Market, and Complexity. 4(2): 15.
[71] Papanastasiou G., Drigas, A. S., Skianis Ch., M. Lytras & E. Papanastasiou, 2018. "Patient-Centric ICTs based Healthcare for students with learning, physical and/or sensory disabilities," Telemat Inform, vol. 35, no. 4, pp. 654–664, 2018. https://doi. org/10.1016/j.tele.2017.09.002
[72] Drigas, A., & Kontopoulou, M. T. L. (2016). ICTs based Physics Learning. International Journal of Engineering Pedagogy (iJEP), 6(3), 53-59. https://doi.org/10.3991/ijep.v6i3. 53-59
[73] Papanastasiou, G., Drigas, A., Skianis, C., and Lytras, M. (2020). Brain computer interface based applications for training and rehabilitation of students with neurodevelopmental disorders. A literature review. Heliyon 6:e04250. doi: 10.1016/j.heliyon.2020.e04250
[74] Drigas, A. S., John Vrettaros, and Dimitris Kouremenos, 2005. "An e-learning management system for the deaf people," AIKED '05: Proceedings of the Fourth WSEAS International Conference on Artificial Intelligence, Knowledge Engineering Data Bases, article number 28.

[75] Pappas, M., Demertzi, E., Papagerasimou, Y., Koukianakis, L., Kouremenos, D., Loukidis, I. and Drigas, A. 2018. E-Learning for deaf adults from a user-centered perspective. Education Sciences 8(4)206:
[76] Pappas, M., Eleftheria Demertzi, Yannis Papagerasimou, Lefteris Koukianakis, Nikitas Voukelatos, and Drigas, A. S., 2019. Cognitive Based E-Learning Design for Older Adults. Social Sciences 8, 1 (Jan. 2019), 6. https://doi.org/10.3390/socsci801000
[77] Drigas, A. S., Lefteris Koukianakis 2009: Government online: An e-government platform to improve public administration operations and services delivery to the citizen. WSKS (1), volume 5736 de Lecture Notes in Computer Science, 523–532. Springer,
[78] Theodorou, P.; Drigas, A. 2017, ICTs and Music in Generic Learning Disabilities. Int. J. Emerg. Technol. Learn. 12(4), 101–110
[79] Pappas, M.A., & Drigas, A.S. (2015). ICT based screening tools and etiology of dyscalculia. International Journal of Engineering Pedagogy, (5)3, 61-66.
[80] Drigas, A., & Kostas, I. (2014). On Line and other ICTs Applications for teaching math in Special Education. International Journal of Recent Contributions from Engineering, Science & IT (iJES), 2(4), pp-46. http://dx.doi.org/10.3991/ijes.v2i4.4204
[81] Alexopoulou, A, Batsou, A, Drigas, A. (2019). Resilience and academic underachievement in gifted students: causes, consequences and strategic methods of prevention and intervention. International Journal of Online and Biomedical Engineering (iJOE), vol. 15, no. 14, pp. 78.
[82] Drigas, A. & Ioannidou, R. E. (2013). Special education and ICT's. International Journal of Emerging Technologies in Learning 8(2), 41– 47.
[83] Drigas, A., & Papanastasiou, G. (2014). Interactive White Boards in Preschool and Primary Education. International Journal of Online and Biomedical Engineering (iJOE), 10(4), 46–51. https://doi.org/10.3991/ijoe.v10i4.3754
[84] Drigas, A. S. and Politi-Georgousi, S. (2019). Icts as a distinct detection approach for dyslexia screening: A contemporary view. International Journal of Online and Biomedical Engineering (iJOE), 15(13):46–60.
[85] Lizeta N. Bakola, Nikolaos D. Rizos, Drigas, A. S., 2019 “ICTs for Emotional and Social Skills Development for Children with ADHD and ASD Co-existence” International Int. J. Emerg. Technol. Learn., 14(5), 122-131.
[86] Kontostavlou, E.Z., & Drigas, A.S. (2019). The Use of Information and Communications Technology (ICT) in Gifted Students. International Journal of Recent Contributions from Engineering, Science and IT, 7(2), 60-67. doi:10.3991/ijes.v7i2.10815
[87] Drigas, A. S., and Vlachou J. A., 2016. “Information and communication technologies (ICTs) and autistic spectrum disorders (ASD),” Int. J. Recent Contrib. Eng. Sci. IT (iJES), vol. 4, no. 1, p. 4, https://doi.org/10.3991/ijes.v4i1.5352
[88] Drigas, A. S., Koukianakis, L, Papagerasimou, Y. (2006) “An elearning environment for nontraditional students with sight disabilities.”, Frontiers in Education Conference, 36th Annual. IEEE, p. 23-27.
[89] Drigas A., and Koukianakis L. 2006 An open distance learning e-system to support SMEs e-enterprising. In proceeding of 5th WSEAS Internationalconference on Artificial intelligence, knowledge engineering, data bases (AIKED 2006). Spain
[90] Drigas A, Petrova A 2014 ICTs in speech and language therapy International Journal of Engineering Pedagogy (iJEP) 4 (1), 49-54
[91] Bravou V, Oikonomidou D, Drigas A, 2022 Applications of Virtual Reality for Autism Inclusion. A review Retos 45, 779-785
[92] Chaidi I, Drigas A, 2022 "Parents' views Questionnaire for the education of emotions in Autism Spectrum Disorder" in a Greek context and the role of ICTs Technium Social Sciences Journal 33, 73-91
[93] Chaidi I, Drigas A,2020 Parents' Involvement in the Education of their Children with Autism: Related Research and its Results International Journal Of Emerging Technologies In Learning (Ijet) 15 (14)
[94] M Karyotaki, L Bakola, A Drigas, C Skianis 2022 Women’s Leadership via Digital Technology and Entrepreneurship in business and society Technium Social Sciences Journal28(1), 246–252.

[95] Bravou V, Drigas A, 2019 A contemporary view on online and web tools for students with sensory & learning disabilities iJOE 15(12) 97
[96] Drigas A, Vrettaros J, Tagoulis A, Kouremenos D, 2010 Teaching a foreign language to deaf people via vodcasting & web 2.0 tools World Summit on Knowledge Society, 514-521
[97] Chaidi I, Drigas A, C Karagiannidis 2021 ICT in special education Technium Soc. Sci. J. 23, 187
[98] L Bakola, I Chaidi, A Drigas, C Skianis, C Karagiannidis 2022 Women with Special Educational Needs. Policies & ICT for Integration &EqualityTechnium Social Sciences Journal
[99] M Tsakiridou, A Drigas 2022 A REVIEW OF STRESS ON STUDENTS WITH ADHD. THE ROLE OF ICTS & MENDAL INTERVENTIONS TO IMPROVE PRODUCTIVITY Technium Sustainability 2 (5), 39-57
[100] H Koutsonika, A Drigas 2022 High functioning ASD profile adult employees in global labour markets. ICT supported employment Technium Sustainability 2 (4), 17-27
[101] I Chaidi, A Drigas 2022 Key to Behavioral Observation of Developmental Disorders by teachers in Greek School and the role of ICTs. Technium Social Sciences Journal 34, 110-125
[102] T Vouglanis, AM Driga, A Drigas 2022 Physical and mental exercise to create new congenial neurons, to increase intelligence and the role of ICTs. Technium BioChemMed 3 (3), 21-36
[103] I Chaidi, A Drigas 2022 "Digital Learning: Differentiated Teaching Models using e-Twinning I COMMUNICATE WITH MY NEIGHBOR THROUGH CULTURE AND TRADITION: e - Twinning Project" Technium Education and Humanities 2 (3), 59-77
[104] I Moraiti, A Fotoglou, K Dona, A Katsimperi, K Tsionakas, Z Karampatzaki, ... 2022 Assistive Technology and Internet of Things for people with ADHD Technium Social Sciences Journal 32, 204-222
[105] A Fotoglou, I Moraiti, K Dona, A Katsimperi, K Tsionakas, Z Karabatzaki, ... 2022 IoT Applications help people with Autism Technium Social Sciences Journal, 115-130
[106] E Karagianni, A Drigas 2022 The contribution of ICTs to the Down Syndrome Children's Language and Cognitive Development Technium Education and Humanities 2 (3), 19-40
[107] M Karyotaki, A Drigas 2022 The impact of digital technologies and social networks in young women and young mother's entrepreneurship and employability Technium Sustainability 2 (5), 79-91
[108] C Dimitropoulos, C Katsigera-Svoronou, A Rizou, SM Hantziara, A Hasioti, ... 2022 The Use of ICTs by Children and Young People with Mental Retardation and Syndrome Down in Domains of their Daily Life Sustainability 2 (5), 16-38
[109] M Tsakiridou, A Drigas 2022 CAUSES OF STRESS ON CHILDREN WITH ADHD AND THE ROLE OF ICTS Technium BioChemMed 3 (3), 12-20
[110] T Vouglanis, A Drigas 2022 The internet addiction and the impact on the cognitive, psychological and social side of people's personality with disabilities Technium Social Sciences Journal 35 (1), 93–110
[111] TM Hasioti, A Drigas, D Loukeris, Z Gavriilidou 2022 Asperger Syndrome and Assistive Technologies Technium Social Sciences Journal 35 (1), 285–295
[112] P Vasilakou, S Mineiko, TM Hasioti, Z Gavriilidou, A Drigas 2022 The accessibility of visually impaired people to museums and art through ICTs Technium Social Sciences Journal 35 (1), 263–284
[113] T Vouglanis, A Drigas 2022 The positive impact of Internet on the cognitive, psychological and social side of people's personality with disabilities Technium Social Sciences Journal 35 (1), 29–42.
[114] E Gkeka, A Drigas 2022 Ict's and Dysgraphia Technium Social Sciences Journal 31, 228-240
[115] A Doulou, A Drigas 2022 Behavioral Problems and ICTs: Research and analysis in schools in Athens Technium Social Sciences Journal 29, 181-197
[116] Drigas, A. S., Rodi-Eleni Ioannidou, 2013 A Review on Artificial Intelligence in Special Education, Information Systems, Elearning, and Knowledge Management Research Communications in Computer and Information Science Volume 278, pp 385-391, http://dx.doi.org/10.1007/978-3-642-35879-1_46
[117] Drigas, A., Vrettaros, J. (2004): An Intelligent Tool for Building e-Learning Contend-Material Using Natural Language in Digital Libraries. WSEAS Transactions on Information Science and Applications 5(1) 1197–1205
[118] Drigas, A.S., Vrettaros, J., Koukianakis, L.G. and Glentzes, J.G. (2005). A Virtual Lab and e-learning system for renewable energy sources. Int. Conf. on Educational Tech.

[119] Drigas AS, Argyri K, Vrettaros J (2009) Decade review (1999-2009): artificial intelligence techniques in student modeling. In: World Summit on Knowledge Society. Springer, pp 552–564
[120] Vrettaros, J., Tagoulis, A., Giannopoulou, N., & Drigas, A. (2009). An empirical study on the use of Web 2.0 by Greek adult instructors in educational procedures. World Summit on Knowledge System (WSKS), 49, 164-170. http://dx.doi.org/10.1007/978-3-642-04757-2_18
[121] Drigas, A., Dourou, A. (2013). A Review on ICTs, E-Learning and Artificial Intelligence for Dyslexic's Assistance. iJet, 8(4), 63-67.
[122] Anagnostopoulou, P., Alexandropoulou, V., Lorentzou, G., Lykothanasi, A., Ntaountaki, P., & Drigas, A. (2020). Artificial intelligence in autism assessment. International Journal of Emerging Technologies in Learning, 15(6), 95-107. https://doi.org/10.3991/ijet.v15i06.11231
[123] Pappas, M., & Drigas, A. (2016). Incorporation of artificial intelligence tutoring techniques in mathematics. International Journal of Engineering Pedagogy, 6(4), 12–16. https://doi.org/10.3991/ijep.v6i4.6063
[124] Lytra N, Drigas A 2021 STEAM education-metacognition–Specific Learning Disabilities Scientific Electronic Archives 14 (10)
[125] Mitsea E, Lytra N, A Akrivopoulou, A Drigas 2020 Metacognition, Mindfulness and Robots for Autism Inclusion. Int. J. Recent Contributions Eng. Sci. IT 8 (2), 4-20
[126] Chaidi E, Kefalis C, Y Papagerasimou, A Drigas 2021 Educational robotics in Primary Education. A case in Greece. Research, Society and Development 10 (9), e17110916371-e17110916371
[127] S Stavridis, D Papageorgiou, Z Doulgeri 2017 Dynamical system based robotic motion generation with obstacle avoidance, IEEE Robotics and Automation Letters 2 (2), 712-718
[128] T Kastritsi, D Papageorgiou, I Sarantopoulos, S Stavridis, Z Doulgeri, 2019 Guaranteed active constraints enforcement on point cloud-approximated regions for surgical applications 2019 International Conference on Robotics and Automation (ICRA), 8346-8352
[129] S Stavridis, Z Doulgeri 2018 Bimanual assembly of two parts with relative motion generation and task related optimization 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems …
[130] S Stavridis, P Falco, Z Doulgeri2020Pick-and-place in dynamic environments with a mobile dual-arm robot equipped with distributed distance sensors IEEE-RAS 20th International Conference on Humanoid Robots (Humanoids)
[131] D Papageorgiou, S Stavridis, C Papakonstantinou, Z Doulgeri 2021Task geometry aware assistance for kinesthetic teaching of redundant robots IEEE/RSJ International Conference on Intelligent Robots and Systems …
[132] T Kastritsi, I Sarantopoulos, S Stavridis, D Papageorgiou, Z Doulgeri Manipulation of a Whole Surgical Tool Within Safe Regions Utilizing Barrier Artificial Potentials Mediterranean Conference on Medical and Biological Engineering and Computing …
[133] S Stavridis, D Papageorgiou, L Droukas, Z Doulgeri 2022 Bimanual crop manipulation for human-inspired robotic harvesting arXiv preprint arXiv:2209.06074
[134] Ntaountaki P, et all 2019 Robotics in Autism Intervention. Int. J. Recent Contributions Eng. Sci. IT 7 (4), 4-17
[135] Demertzi E, Voukelatos N, Papagerasimou Y, Drigas A, 2018 Online learning facilities to support coding and robotics courses for youth International Journal of Engineering Pedagogy (iJEP) 8 (3), 69-80
[136] A Sideraki, A Drigas Artificial Intelligence (AI) in Autism Technium Social Sciences Journal 26, 262-277
[137] M Karyotaki, A Drigas, C Skianis 2022 Chatbots as Cognitive, Educational, Advisory & Coaching Systems Technium Social Sciences Journal 30, 109-126
[138] E Karagianni, A Drigas 2022 The STEM Education of Down Syndrome Children in Algorithmic and Computation Thinking for a sustainable life Technium Sustainability 2 (5), 58-78
[139] S Kouloumenta, A Drigas 2022 The use of Robotics for the Development of Social Skills for Children with ASD Technium Education and Humanities 2 (4), 51-62
[140] Chaidi I, Drigas A 2022 Digital games & special education Technium Social Sciences Journal 34, 214-236

[141] Papanastasiou, G. P., Drigas, A. S., & Skianis, C. (2017). Serious games in preschool and primary education: Benefits and impacts on curriculum course syllabus. International Journal of Emerging Technologies in Learning, 12(1), 44–56. https://doi.org/10.3991/ijet.v12i01.6065
[142] Kokkalia, G., Drigas, A., Economou, A., Roussos, P., & Choli, S. (2017). The use of serious games in preschool education. International Journal of Emerging Technologies in Learning, 12(11), 15-27. https://doi.org/10.3991/ijet.v12i11.6991
[143] Drigas, A. S., and Pappas M.A. 2015 "On line and other Game-Based Learning for Mathematics." International Journal of Online Engineering (iJOE) (11)4, 62-67, https://doi.org/10.3991/ijoe.v11i4.4742
[144] Papanastasiou, G., Drigas, A., Skianis, C., & Lytras, M. D. (2017). Serious games in K-12 education: Benefits and impacts on students with attention, memory and developmental disabilities. Program, 51(4), 424-440. https://doi.org/10.1108/prog-02-2016-0020
[145] Drigas, A. S., & Kokkalia, G. K. (2014). ICTs in Kindergarten. International Journal of Emerging Technologies in Learning, 9(2). https://doi.org/10.3991/ijet.v9i2.3278
[146] Doulou A, Drigas A 2022 Electronic, VR & Augmented Reality Games for Intervention in ADHD Technium Social Sciences Journal, 28, 159.
[147] Kokkalia, G., Drigas, A., & Economou, A. (2016). The role of games in special preschool education. International Journal of Emerging Technologies in Learning (iJET), 11(12), 30-35.
[148] Kefalis C, Kontostavlou EZ, Drigas A, 2020 The Effects of Video Games in Memory and Attention. Int. J. Eng. Pedagog. 10 (1), 51-61
[149] I Chaidi, A Drigas 2022 Digital games & special education Technium Social Sciences Journal 34, 214-236
[150] G Papanastasiou, A Drigas, C Skianis 2022 Serious Games in pre-K and K-6 education. Technium Education and Humanities 2 (3), 1-18
[151] V Bravou, A Drigas 2021 BCI-based games and ADHD Research, Society and Development 10 (4), e52410413942-e52410413942
[152] I Chaidi, A Drigas 2022 Questionnaire of parents' opinions on digital games in the education of children with autism spectrum disorder in a Greek context Technium Social Sciences Journal 34, 248-270
[153] E Karagianni, A Drigas 2022 Digital Games for Down Syndrome Children's Language and Cognitive Development Technium Social Sciences Journal 35 (1), 162–185
[154] C Gatsakou, N Bardis, A Drigas 2022 The usage of RPGS as an interdisciplinary method of teaching dyslexic students Technium Social Sciences Journal 27, 207-216
[155] C Gatsakou, N Bardis, A Drigas 2021 Role playing vs RPGs as teaching strategies in educational procedure Technium Social Sciences Journal 26, 186-193
[156] N Doukas, N Bardis, A Drigas 2022 A Strategy Game Using Adaptive Agents and Reinforcement Learning Technium Education and Humanities 2 (2), 33-46
[157] G Papanastasiou, A Drigas, C Skianis 2022 Serious Games: How do they impact special education needs children Technium Education and Humanities 2 (3), 41-58
[158] Drigas, A., & Mitsea, E. (2020). The 8 Pillars of Metacognition. International Journal of Emerging Technologies in Learning (iJET), 15(21), 162-178. https://doi.org/10.3991/ijet. v15i21.14907
[159] Drigas, A., & Papoutsi, C. (2019). Emotional intelligence as an important asset for HR in organizations: Leaders and employees. International Journal of Advanced Corporate Learning, 12(1). https://doi.org/10.3991/ijac.v12i1.9637
[160] Drigas, A. S., and M. Pappas, 2017. "The Consciousness-Intelligence-Knowledge Pyramid: An 8x8 Layer Model," International Journal of Recent Contributions from Engineering, Science & IT (iJES), vol. 5, no.3, pp 14-25, https://doi.org/10.3991/ijes.v5i3.7680
[161] Drigas A, Karyotaki M (2017) Attentional control and other executive functions. Int J Emerg Technol Learn iJET 12(03):219–233
[162] Drigas A, Karyotaki M 2014. Learning Tools and Application for Cognitive Improvement. International Journal of Engineering Pedagogy, 4(3): 71-77. From (Retrieved on 13 May 2016)
[163] Drigas, A., & Mitsea, E. (2021). 8 Pillars X 8 Layers Model of Metacognition: Educational Strategies, Exercises &Trainings. International Journal of Online & Biomedical Engineering, 17(8). https://doi.org/10.3991/ijoe.v17i08.23563

[164] Drigas A., Papoutsi C. (2020). The Need for Emotional Intelligence Training Education in Critical and Stressful Situations: The Case of COVID-19. Int. J. Recent Contrib. Eng. Sci. IT 8(3), 20–35. 10.3991/ijes.v8i3.17235
[165] Drigas, A., & Mitsea, E. (2020). The Triangle of Spiritual Intelligence, Metacognition and Consciousness. International Journal of Recent Contributions from Engineering, Science & IT (iJES), 8(1), 4-23. https://doi.org/10.3991/ijes.v8i1.12503
[166] Kokkalia, G., Drigas, A. Economou, A., & Roussos, P. (2019). School readiness from kindergarten to primary school. International Journal of Emerging Technologies in Learning, 14(11), 4-18.
[167] Drigas, A., & Mitsea, E. (2021). Metacognition, stress-relaxation balance & related hormones. International Journal of Recent Contributions from Engineering, Science & IT (iJES), 9(1), 4–16. https://doi.org/10.3991/ijes.v9i1.19623
[168] Pappas M, Drigas A. 2019; Computerized Training for Neuroplasticity and Cognitive Improvement. International Journal of Engineering Pedagogy.9(4):50-62
[169] Papoutsi, C. and Drigas, A. (2017) Empathy and Mobile Applications. International Journal of Interactive Mobile Technologies 11(3). 57. https://doi.org/10.3991/ijim.v11i3.6385
[170] Papoutsi, C. & Drigas, A. (2016). Games for Empathy for Social Impact. International Journal of Engineering Pedagogy 6(4), 36-40.
[171] Karyotaki, M., & Drigas, A. (2015). Online and other ICT Applications for Cognitive Training and Assessment. International Journal of Online and Biomedical Engineering. 11(2), 36-42.
[172] Papoutsi, C., Drigas, A., & Skianis, C. (2019). Emotional intelligence as an important asset for HR in organizations: Attitudes and working variables. International Journal of Advanced Corporate Learning, 12(2), 21–35. https://doi.org/10.3991/ijac.v12i2.9620
[173] Chaidi I. Drigas, A. S., 2020. "Autism, Expression, and Understanding of Emotions: Literature Review," Int. J. Online Biomed. Eng., vol. 16, no. 02, pp. 94–111, https://doi.org/10.3991/ijoe.v16i02.11991
[174] Drigas, A. S., & Karyotaki, M. (2019). A Layered Model of Human Consciousness. International Journal of Recent Contributions from Engineering, Science & IT (iJES), 7(3), 41- 50. https://doi.org/10.3991/ijes.v7i3.11117
[175] Drigas, A. S., Karyotaki, M., & Skianis, C. (2018). An Integrated Approach to Neuro-development, Neuroplasticity and Cognitive Improvement. International Journal of Recent Contributions from Engineering, Science & IT (iJES), 6(3), 4-18.
[176] Karyotaki M. and Drigas, A. S., 2016. "Latest trends in problem solving assessment," International Journal of Recent contributions from Engineering, Science & IT (iJES), vol. 4, no. 2, 4-10.
[177] Mitsea E., Drigas, A. S., and Mantas P., 2021. Soft Skills & Metacognition as Inclusion Amplifiers in the 21st Century," Int. J. Online Biomed. Eng. IJOE, vol. 17, no. 04, Art. no. 04, https://doi.org/10.3991/ijoe.v17i04.20567
[178] Angelopoulou, E. Drigas, A. (2021). Working Memory, Attention and their Relationship: A theoretical Overview. Research. Society and Development, 10(5), 1-8. https://doi.org/10.33448/rsd-v10i5.15288
[179] Tourimpampa, A., Drigas, A., Economou, A., & Roussos, P. (2018). Perception and text comprehension. It'sa matter of perception! International Journal of Emerging Technologies in Learning (iJET). 13(7)
[180] Drigas A, Mitsea E 2020 A metacognition based 8 pillars mindfulness model and training strategies. International Journal of Recent Contributions from Engineering, Science & IT 8(4), 4-17.
[181] Papoutsi C, Drigas A, C Skianis 2021 Virtual and augmented reality for developing emotional intelligence skills Int. J. Recent Contrib. Eng. Sci. IT (IJES) 9 (3), 35-53
[182] Kapsi S, Katsantoni S, Drigas A 2020 The Role of Sleep and Impact on Brain and Learning. Int. J. Recent Contributions Eng. Sci. IT 8 (3), 59-68
[183] Drigas A, Mitsea E, Skianis C 2021 The Role of Clinical Hypnosis and VR in Special Education International Journal of Recent Contributions from Engineering Science & IT 9(4), 4-17.
[184] V Galitskaya, A Drigas 2021 The importance of working memory in children with Dyscalculia and Ageometria Scientific Electronic Archives 14 (10)

[185] Chaidi I, Drigas A 2020 Parents' Involvement in the Education of their Children with Autism: Related Research and its Results International Journal Of Emerging Technologies In Learning (Ijet) 15 (14), 194-203.
[186] Drigas A, Mitsea E 2021 Neuro-Linguistic Programming & VR via the 8 Pillars of Metacognition X 8 Layers of Consciousness X 8 Intelligences Technium Soc. Sci. J. 26, 159
[187] Drigas A, Mitsea E 2022 Conscious Breathing: a Powerful Tool for Physical & Neuropsychological Regulation. The role of Mobile Apps Technium Social Sciences Journal 28, 135-158
[188] Drigas A, Mitsea E, C Skianis 2022 Clinical Hypnosis & VR, Subconscious Restructuring-Brain Rewiring & the Entanglement with the 8 Pillars of Metacognition X 8 Layers of Consciousness X 8 Intelligences. International Journal of Online & Biomedical Engineering 18 (1)
[189] Drigas A, Karyotaki M 2019 Attention and its Role: Theories and Models. International Journal of Emerging Technologies in Learning 14 (12), 169-182
[190] Drigas A, Karyotaki M 2019 Executive Functioning and Problem Solving: A Bidirectional Relation. International Journal of Engineering Pedagogy (iJEP) 9 (3)
[191] Bamicha V, Drigas A 2022 ToM & ASD: The interconnection of Theory of Mind with the social-emotional, cognitive development of children with Autism Spectrum Disorder. The use of ICTs as an alternative … Technium Social Sciences Journal 33, 42-72
[192] Drigas A, Mitsea E, C Skianis 2022 Neuro-Linguistic Programming, Positive Psychology & VR in Special Education. Scientific Electronic Archives 15 (1)
[193] Drigas A, Mitsea E, Skianis C. 2022 Virtual Reality and Metacognition Training Techniques for Learning Disabilities SUSTAINABILITY 14(16), 10170
[194] Drigas A,. Sideraki A. 2021 Emotional Intelligence in Autism Technium Soc. Sci. J. 26, 80
[195] Drigas A, Mitsea E, Skianis C.. 2022 Subliminal Training Techniques for Cognitive, Emotional and Behavioural Balance. The role of Emerging Technologies Technium Social Sciences Journal 33, 164-186
[196] Bakola L, Drigas A, 2020 Technological development process of emotional Intelligence as a therapeutic recovery implement in children with ADHD and ASD comorbidity. . International Journal of Online & Biomedical Engineering, 16(3), 75-85
[197] Bamicha V, Drigas A, 2022 The Evolutionary Course of Theory of Mind - Factors that facilitate or inhibit its operation & the role of ICTs Technium Social Sciences Journal 30, 138-158
[198] Mitsea E, Drigas A,, C Skianis 2022 Breathing, Attention & Consciousness in Sync: The role of Breathing Training, Metacognition & Virtual Reality Technium Social Sciences Journal 29, 79-97
[199] Drigas A, Bakola L, 2021The 8x8 Layer Model Consciousness-Intelligence-Knowledge Pyramid, and the Platonic Perspectives International Journal of Recent Contributions from Engineering, Science & IT (iJES) 9(2) 57-72
[200] Karyotaki M, Drigas A, 2016 Online and Other ICT-based Training Tools for Problem-solving Skills. International Journal of Emerging Technologies in Learning 11 (6)
[201] Mitsea, E., & Drigas, A. (2019). A journey into the metacognitive learning strategies. International Journal of Online & Biomedical Engineering, 15(14). https://doi.org/10.3991/ijoe.v15i14.11379
[202] Mitsea E, Drigas A, Skianis C, 2022 ICTs and Speed Learning in Special Education: High-Consciousness Training Strategies for High-Capacity Learners through Metacognition Lens Technium Soc. Sci. J. 27, 230
[203] Drigas A, Karyotaki M, Skianis C, 2017 Success: A 9 layered-based model of giftedness International Journal of Recent Contributions from Engineering, Science & IT 5(4) 4-18
[204] A Drigas, E Mitsea, C Skianis Intermittent Oxygen Fasting and Digital Technologies: from Antistress and Hormones Regulation to Wellbeing, Bliss and Higher Mental States BioChemMed 3 (2), 55-73
[205] A Sideraki, A Drigas Artificial Intelligence (AI) in Autism Technium Social Sciences Journal 26, 262-277
[206] E Mitsea, A Drigas, C Skianis Cutting-Edge Technologies in Breathwork for Learning Disabilities in Special Education Technium Social Sciences Journal 34, 136-157

[207] A Stathopoulou, M Liouni, Y Salapata, A Drigas 2022 Emotional difficulties and post-traumatic stress disorder symptoms in children refugees & the role of ICTs: A case study in northern Greece borders Technium Social Sciences Journal 31, 213-227
[208] V Bravou, AM Driga, A Drigas 2022 Emotion Regulation, the Function of Stress Hormones & Digital Technologies BioChemMed 3 (2), 27-34
[209] A Drigas, E Mitsea, C Skianis Subliminal Training Techniques for Cognitive, Emotional and Behavioural Balance. The role of Emerging Technologies Technium Social Sciences Journal 33, 164-186
[210] T Vouglanis, AM Driga, A Drigas 2022 Charismatic Children: Heredity, Environment and ICTs Technium Sustainability 2 (5), 1-15
[211] E Mitsea, A Drigas, C Skianis 2022 Mindfulness for Anxiety Management and Happiness: The Role of VR, Metacognition, and Hormones Technium BioChemMed 3 (3), 37-52