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(REVIEW ARTICLE)

The use of ICT in the education of students with Down syndrome

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Abstract

ICT can support the inclusion of students with down syndrome and mental retardation in mainstream school. The use of computers, tablets, internet by students with down syndrome and mild mental retardation during teaching activates learning functions in inclusion. Assistive technology serves to bridge the gap between typical students and students with down syndrome and mild mental retardation, helping them learn the material in a way they can understand, eliminating the difficulties that kept them from being on par with their peers.

Keywords: Down syndrome; ICT; Education; Inclusion

1. Introduction

In many European countries, students with mild and moderate mental retardation are increasingly integrated into mainstream inclusive school environments for part or all of their education (European Agency for Special Needs and Inclusive Education, 2018). However, depending on the country's school system and the severity or type of disability, many of these students also continue to attend special schools.

Inclusive education is the process of educating children with disabilities in regular education classrooms in their local schools (Rafferty et al., 2001). The system ensures that children with disabilities attend schools that they would normally attend if they did not have a disability. It is the process of providing support services to the child, rather than referring the child to special services. Inclusive education provides an opportunity for children with disabilities to be exposed to the richness of the regular educational environment.

Inclusive education includes three different dimensions: a physical/organizational dimension, a social dimension and an academic/cultural dimension. The physical/organizational dimension relates to location while the social dimension of inclusion is the extent of students' experience of belonging, cohesion and camaraderie at school. The academic/cultural dimension is the extent to which the school succeeds in creating camaraderie and at the same time adapting the educational content (Sigstad, 2017). The use of technology can help students with down syndrome and mild mental retardation to enhance and improve their independence in class, assignments, participation, and achieve some difficult academic tasks (Alnahdi, 2014).

2. Down syndrome and mental retardation

A quarter of people with mental retardation have a detectable chromosomal abnormality. Children with Down syndrome (trisomy 21) usually have highly recognizable physical features, while features associated with other chromosomal abnormalities, such as Klinefelter syndrome (47, XXY), may not be as obvious to family members or the doctor. Other children may have a small deletion or duplication of a particular chromosome that is rarely reported.

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Thus, the phenotype is still undefined. Some chromosomal abnormalities are inherited from one parent, but most reoccur. Many clinical syndromes have been found to have an associated chromosomal abnormality (eg, DiGeorge, Prader-Willi, Angelman and Williams syndromes) (Daily et al., 2000).

The perception and placement of mental retardation in the classification of mental disorders is controversial. Mental retardation represents a group of syndromes such as down syndrome that are recognized from childhood and are characterized by varying patterns of severe and persistent impairments in cognitive and personal functions such as intelligence, learning, adaptive behavior and skills. It is also scientifically established that these groups of syndromes that make up mental retardation have complex neurodevelopmental causes. Therefore, classification and diagnostic criteria are crucial issues and have important implications for prevalence, intervention development, service delivery and design (Bertelli et al., 2016).

People diagnosed with Down syndrome and mental retardation require various levels of support to learn how to participate in self-care activities, develop healthy, mutual and close relationships, obtain suitable employment and master other important activities of daily living. Basic skills may take longer to learn (ie, talking, walking, and taking care of personal needs such as dressing or eating). Academic, social, and self-regulatory functions may be the areas most affected.

People with mild mental retardation have problems with developmental milestones and language acquisition. With adequate training, most of these individuals will achieve complete independence in most domains of functioning but have some problems with the adaptive integrated domain. As with many young people, most problems arise when they finish the last grades of the education system, especially with reading, writing, timed tests and interpersonal skills with peers. The education system is essential to help these young people with mild mental retardation learn the basic skills for work and develop stable employment. Most people (87%) with mild mental retardation at the start of education will have little noticeable learning problems. However, as academic requirements become more complex, learning differences will become more pronounced. The more impaired the individual's functioning, the earlier these differences will become problematic for the child or adolescent (Pratt & Greydanus, 2007).

3. Academic results and inclusion

Discussions around inclusion often focus on the placement of children. In children with disabilities in particular, researchers have long asked the question “where do students learn best?” The question itself is framed in a needs-based debate, currently challenged by rights-based debates in Europe (European Agency for Special Needs and Inclusive Education, 2015). Beyond the rhetoric of placement itself, research on student outcomes in inclusive classrooms can be useful for understanding programming, curricula, and pedagogical techniques that may be more effective for particular students. Research shows that when students with disabilities are included in classrooms with higher expectations, appropriate standards, and enhanced opportunities for skill generalization, they experience improved educational experiences and outcomes (Thomas & Vaughn, 2004). In addition, various studies prove that inclusive education, compared to segregated special education, offers more opportunities for the development of social, emotional and behavioral skills of all children. Positive outcomes are usually the result of diverse children working with each other to understand differences (McCoy et al., 2014).

In their research review, Freeman & Alkin (2000) found nine empirical studies comparing the academic achievement of children with mental retardation in special schools or special classes, versus inclusion classes. These studies found no significant difference between the two groups' academic performance or children's performance in general education classes. Freeman & Alkin (2000) observed that the more time these children spend in general education, ranging between 25% and 100% of their school time, appears to be associated with more positive academic outcomes.

Some research has investigated the effects of inclusion on the academic performance of children and adolescents with mental retardation. Laws et al. (2000) found that children in general education classrooms achieved significantly higher scores on vocabulary and grammar comprehension. In the inclusive classrooms, too, most students developed better reading skills than children in special schools. Turner et al. (2008) report results from three studies conducted with the same group of individuals to investigate predictors of academic outcomes at three different ages. They found that level of cognitive ability was the single most significant predictor of participants' academic education. Attending mainstream school also had a beneficial but modest effect on individuals' academic achievement and careers.

Beyond the acquisition of academic skills, the development of adaptive skills also plays a key role in maximizing the independence of people with intellectual disabilities and their participation in the community (Kozma et al., 2009). Fischer & Meyer (2002) compared the progress of two groups of children with mental retardation. Their results showed

that children in general education classrooms made significantly greater gains in adaptive behavior than their counterparts in special education classrooms. Buckley et al. (2006) found that adolescents with mental retardation attending mainstream schools scored significantly better on communication and functional academic skills than their counterparts attending special schools. Dessemontet et al. (2012) found that children with mental retardation made significant progress in literacy skills, mathematical skills and adaptive behavior when attending a general school than their special-ed counterparts.

Szumski & Karwowski (2012) studied 605 students with mild mental retardation and found that students attending special schools had lower school performance than students attending integrated or regular schools. However, because placement alone was not a sufficient unit of analysis for the researchers, further research was conducted on student variables. The authors then found that socioeconomic status was positively associated with child placement in integrated and regular schools rather than special schools, as well as with higher parental involvement in their children's studies. Therefore, the authors concluded that the school performance of students with mild mental retardation can be much better when they attend regular schools (Szumski & Karwowski, 2012).

4. The role of technology in inclusive inclusion

The world of education is currently undergoing a massive transformation as a result of the digital revolution. Because of this digital revolution, it is important and practical to make use of technology in designing educational programs in inclusive education. Technology has the potential to contribute to a better quality of life for students with intellectual disabilities, which is more than a matter of convenience (Wehmeyer et al., 2008).

The use of technology in education is inevitable. Students spend many hours of their day outside of school using technology, they are drawn to it, so it makes sense for them to use it in education as well. In addition to the attractiveness factor, there is also the effectiveness of the use of technology, which has been proven through research. Continuing to deliver education and training in the traditional way and using the same tools that have been used for decades affects the results of these programs and makes them lag far behind modern work demands. Thus, updating school programs with modern technological tools and devices for all students with and without disabilities has become essential (Alnahdi, 2014).

It is very important to ensure that students with disabilities are prepared to meet the challenges of postsecondary education (Stodden et al., 2003). Many technological tools could increase, as much as possible, the possibilities for students with disabilities to overcome these challenges with less difficulty. In many cases, adapting appropriate assistive technology for students with disabilities could save time and effort. By ignoring the existence of devices and tools that can help students with disabilities facilitate and maximize their education and academic benefits, students are prevented from having opportunities to achieve their maximum performance, or at least become more confident (Alnahdi, 2014).

Approaches to the use of assistive technology in inclusion focus on the use of technology during instruction to enable learning. Assistive technology serves to bridge the gap between typical students and students with mild mental retardation, helping them learn the material in a way they can understand, eliminating the difficulties that prevented them from being on the same level as their peers (Smith et al., 2005).

Practical tools for applying the principles of cognitive theory to teaching, learning, and assistive technology connect a student's cognitive abilities to an educational opportunity that may not be accessible due to a disability. A student who has difficulty decoding a text can use a text-to-speech screen reader as a "bridge" between written text and the ability to process information aurally and cognitively; while a student who has difficulty sequencing thoughts in text can use outline graphics software as a bridge to visual processing skills. Therefore, by effectively integrating assistive technology into the regular classroom, students can be provided with multiple means to complete their work, with greater independence in performing tasks that they were previously unable to complete or able to achieve. with great difficulty.

The success and applicability of an assistive technology device is measured by its actual use, ease of accessibility by its users, and their satisfaction in interacting with their environment. It is necessary to ensure that assistive devices are needs-based, cheap to produce, purchase and maintain, easy to use and effective, which can be ensured by direct involvement of potential users at every stage of design and development. Technological assistive devices must have (Ahmad, 2015):

1. Suitability for users and their environment: devices should be compatible with users' aspirations, emotional needs and lifestyles, as well as their local culture, customs and traditions. They should guarantee the safety of users, be useful in various situations, and be durable and reliable especially in rural areas, remote areas, harsh conditions and other conditions of a user's environment and physical condition.

2. Cheap and easy to buy: the devices should have a low purchase price. National governments and/or NGOs can also support the provision and purchase of the devices, free of charge or at subsidized prices. The devices should be easy to assemble and maintain, so that keeping the devices in working order requires minimal resources and can be repaired using locally available materials and technical skills.

3. Ease of use: devices should be easily understood by users with limited exposure to technology, portable (easy to move from one place to another) and simple to use without prolonged training or complex skills. Depending on the different abilities of each student, the context and the appropriateness of the approach, technological aids in education can help students with learning disabilities. Collaborative effort in the use of assistive devices, assistive technology, resource support, and innovative instructional strategies to promote and maintain inclusion can support these students to learn at the same level as their nondisabled peers in educational environments without exclusions (Ahmad, 2015).

Last but not least, we emphasize the significance of digital technologies in the educational domain and students with down syndrome, which are very productive and successful, and how they facilitate and improve assessment, intervention, and educational procedures via mobile devices that bring educational activities everywhere [49-51], various ICTs applications that are the main supporters of education [52-65], and AI, Games, STEM, and ROBOTICS that raise educational procedures to new performance levers [66-71]. Additionally, ICTs are being improved and combined with theories and models for cultivating emotional intelligence, mindfulness, and metacognition [72-83], accelerates and improves more the educational practices and results, especially in students with down syndrome, treating domain and its practices like assessment and intervention.

5. Conclusion

Inclusive education is the most effective way to give all children equal opportunities to go to school, learn and develop the skills they need to thrive. Inclusive education means that all children are and learn in the same classes and in the same schools. It means real learning opportunities for traditionally excluded groups and especially children with disabilities. Inclusive systems value the unique contributions that students of all backgrounds bring to the classroom and allow diverse groups to grow in parallel, to the benefit of all.

Compliance with ethical standards

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Disclosure of conflict of interest

The Authors proclaim no conflict of interest.

References

[1] Ahmad, F. K. (2015). Use of assistive technology in inclusive education: making room for diverse learning needs. Transcience, 6(2), 62-77.

[2] Alnahdi, G. (2014). Assistive technology in special education and the universal design for learning. Turkish Online Journal of Educational Technology-TOJET, 13(2), 18-23.

[3] Bertelli, M. O., Munir, K., Harris, J., & Salvador-Carulla, L. (2016). “Intellectual developmental disorders”: reflections on the international consensus document for redefining “mental retardation-intellectual disability” in ICD-11. Advances in mental health and intellectual disabilities, 10(1), 36-58.

[4] Buckley, S., Bird, G., Sacks, B., & Archer, T. (2006). A comparison of mainstream and special education for teenagers with Down syndrome: Implications for parents and teachers. Down Syndrome Research and Practice, 9(3), 54-67.

[5] Daily, D. K., Ardinger, H. H., & Holmes, G. E. (2000). Identification and evaluation of mental retardation. American family physician, 61(4), 1059-1067.

[6] Dessemontet, R. S., Bless, G., & Morin, D. (2012). Effects of inclusion on the academic achievement and adaptive behaviour of children with intellectual disabilities. Journal of Intellectual Disability Research, 56(6), 579-587.

[7] European Agency for Special Needs and Inclusive Education. (2015). Agency position on inclusive education systems. Odense, Denmark: Author.

[8] European Agency for Special Needs and Inclusive Education (2018). European Agency Statistics on Inclusive Education: 2018 Dataset Cross-Country Report. Odense, Denmark: Author.

[9] Fisher, M., & Meyer, L. H. (2002). Development and social competence after two years for students enrolled in inclusive and self-contained educational programs. Research and Practice for Persons with Severe Disabilities, 27(3), 165-174.

[10] Freeman, S. F., & Alkin, M. C. (2000). Academic and social attainments of children with mental retardation in general education and special education settings. Remedial and special education, 21(1), 3-26.

[11] Kozma, A., Mansell, J., & Beadle-Brown, J. (2009). Outcomes in different residential settings for people with intellectual disability: A systematic review. American journal on intellectual and developmental disabilities, 114(3), 193-222.

[12] Laws, G., Byrne, A., & Buckley, S. (2000). Language and memory development in children with Down syndrome at mainstream schools and special schools: a comparison. Educational Psychology, 20(4), 447-457.

[13] Manola, M., Vouglanis, T., Maniou, F., & Driga, A. M. (2023). Children's literature as a means of disability awareness and ICT's role. Eximia, 8, 1-13.

[14] Manola, M., Vouglanis, T., Maniou, F., & Driga, A. M. (2023). The literary hero Sherlock Holmes, his relationship with Asperger syndrome and ICT's role in literacy. Eximia, 8, 67-80.

[15] Manola, M., Maniou, F., Vouglanis, T., & Soldatou, A. (2023). Literary routes in the footsteps of Sherlock Holmes. SDCT-Journal, 12(1), 79-85.

[16] Manola, M., Vouglanis, T., & Maniou, F. (2022). Contribution of the use of children's literature in special education. Open Journal for Anthropological Studies, 6(2), 21-26.

[17] McCoy, S., Banks, J., Frawley, D., Watson, D., Shevlin, M., & Smyth, F. (2014). Understanding special class provision in Ireland. Ireland: National Council for Special Education.

[18] Pratt, H. D., & Greydanus, D. E. (2007). Intellectual disability (mental retardation) in children and adolescents. Primary Care: Clinics in Office Practice, 34(2), 375-386.

[19] Rafferty, Y., Boettcher, C., & Griffin, K. W. (2001). Benefits and risks of reverse inclusion for preschoolers with and without disabilities: Parents' perspectives. Journal of Early Intervention, 24(4), 266-286.

[20] Sigstad, H. M. H. (2017). Successful Inclusion of Adolescent Students with Mild Intellectual Disabilities--Conditions and Challenges within a Mainstream School Context. International Journal of Special Education, 32(4), 767-783.

[21] Smith, R.W., Austin, D.R., Kennedy, D.W., Lee, Y., & Hutchinson, P. (2005). Inclusive and special recreation: Opportunities for persons with disabilities. Boston: McGraw Hill.

[22] Stodden, R. A., Conway, M. A., & Chang, K. B. (2003). Findings from the study of transition, technology and postsecondary supports for youth with disabilities: Implications for secondary school educators. Journal of Special Education Technology, 18(4), 29-44.

[23] Szumski, G., & Karwowski, M. (2012). School achievement of children with intellectual disability: The role of socioeconomic status, placement, and parents' engagement. Research in developmental disabilities, 33(5), 1615-1625.

[24] Thomas, G., & Vaughn, M. (2004). Inclusive education: Reflections and readings. Maidenhead: Open University Press.

[25] Turner, S., Alborz, A., & Gayle, V. (2008). Predictors of academic attainments of young people with Down's syndrome. Journal of intellectual disability research, 52(5), 380-392.

[26] Vouglanis, T., & Driga, A. M. (2024). The use of ICT in the education of students with alexia/acquired dyslexia. International Journal of Science and Research Archive, 11(01), 116–123.

[27] Vouglanis, T., & Raftopoulos, D. (2023). The use of ICT in the education of students with dyscalculia. GSC Advanced Research and Reviews, 17(01), 038–046.

[28] Vouglanis, T., & Driga, A. M. (2023). The use of ICT in the education of students with dysgraphia. World Journal of Advanced Engineering Technology and Sciences, 10(01), 021–029.

[29] Vouglanis, T. (2023). The use of ICT in the education of students with Dysorthographia. World Journal of Advanced Research and Reviews, 19(02), 1363–1371.

[30] Vouglanis, T. (2023). The use of ICT in the education of students with dyslexia. Magna Scientia Advanced Research and Reviews, 08(02), 141–149.

[31] Vouglanis, T. (2023). The use of ICT in the education of students with dyslexia. Global Journal of Engineering and Technology Advances, 16(02), 38–46.

[32] Vouglanis, T. (2023). The use of robotics in the education of students with special educational needs. World Journal of Advanced Research and Reviews, 19(01), 464–471.

[33] Vouglanis, T., & Driga, A. M. (2023). Educating students with autism through ICT during the COVID-19 pandemic. World Journal of Biology Pharmacy and Health Sciences, 14(03), 264–274.

[34] Vouglanis, T., & Driga, A. M. (2023). Educating students with Attention Deficit Hyperactivity Disorder (ADHD) through ICT during the COVID-19 pandemic. TechHub Journal, 6, 40–51.

[35] Vouglanis, T., & Driga, A. M. (2023). Factors affecting the education of gifted children and the role of digital technologies. TechHub Journal, 6, 28–39.

[36] Vouglanis, T., & Driga, A. M. (2023). Educating students with dyslexia through ICT during the COVID-19 pandemic. TechHub Journal, 5, 20–33.

[37] Vouglanis, T., & Driga, A. M. (2023). The use of ICT for the early detection of dyslexia in education. TechHub Journal, 5, 54–67.

[38] Vouglanis, T., Driga, A. M., & Drigas, A. (2022). Charismatic Children: Heredity, Environment and ICTs. Technium Sustainability, 2(5), 1–15.

[39] Vouglanis, T., Driga, A. M., & Drigas, A. (2022). Physical and mental exercise to create new congenial neurons, to increase intelligence and the role of ICTs. Technium BioChemMed, 3(3), 21–36.

[40] Vouglanis T. (2020). Charismatic children and heredity. London: LAP LAMBERT Academic Publishing, 72 p., ISBN: 978-620-2-52043-0

[41] Vouglanis T. (2020). The effect of exercise on the development of new neurons in the brain resulting in increased intelligence, London: LAP LAMBERT Academic Publishing. 72 p., ISBN: 978-620-0-56531-0

[42] Vouglanis T. (2020). The positive and negative effects of the internet on the cognitive, mental and social aspects of the personality of the person with a disability. London: LAP LAMBERT Academic Publishing, 76 p., ISBN: 978-620-0-47936-5

[43] Vouglanis T. (2020), "Teachers' attitudes towards the use of ICT in the educational process of people with special educational needs", International Journal of Educational Innovation, Vol. 2, Issue 1, ISSN 2654-0002.

[44] Vouglanis, T., & Driga, A. M. (2023). Effects of COVID-19 on people with intellectual disabilities and the ICT's role. TechHub Journal, 4, 29-44.

[45] Vouglanis, T., & Driga, A. M. (2023). Risks, inequalities, and problems of people with Disabilities in the COVID-19 pandemic and the role of ICTs. TechHub Journal, 4, 45-58.

[46] Vouglanis, T. & Drigas, A. (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.

[47] Vouglanis, T. & Drigas, A. (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.

[48] Wehmeyer, M. L., Palmer, S. B., Smith, S. J., Davies, D. K., & Stock, S. (2008). The efficacy of technology use by people with intellectual disability: A single-subject design meta-analysis. Journal of Special Education Technology, 23(3), 21-30.

[49] Stathopoulou A, Karabatzaki Z, Tsiros D, Katsantoni S, Drigas A, 2019 Mobile apps the educational solution for autistic students in secondary education , Journal of Interactive Mobile Technologies (IJIM) 13 (2), 89-101https://doi.org/10.3991/ijim.v13i02.9896

[50] 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 DOI:10.5281/zenodo.3987533

[51] Politi-Georgousi S, Drigas A 2020 Mobile Applications, an Emerging Powerful Tool for Dyslexia Screening and Intervention: A Systematic Literature Review , International Association of Online Engineering

[52] Drigas A, Petrova A 2014 ICTs in speech and language therapy , International Journal of Engineering Pedagogy (iJEP) 4 (1), 49-54 https://doi.org/10.3991/ijep.v4i1.3280

[53] Bravou V, Drigas A, 2019 A contemporary view on online and web tools for students with sensory & learning disabilities , iJOE 15(12) 97 https://doi.org/10.3991/ijoe.v15i12.10833

[54] Drigas A, Theodorou P, 2016 ICTs and music in special learning disabilities , International Journal of Recent Contributions from Engineering, Science & IT …

[55] Chaidi I, Drigas A, C Karagiannidis 2021 ICT in special education , Technium Soc. Sci. J. 23, 187, https://doi.org/10.47577/tssj.v23i1.4277

[56] Galitskaya, V., & Drigas, A. (2020). Special Education: Teaching Geometry with ICTs. International Journal of Emerging Technologies in Learning (iJET), 15(06), pp. 173–182. https://doi.org/10.3991/ijet.v15i06.11242

[57] Alexopoulou, A., Batsou, A., & Drigas, A. S. (2019). Effectiveness of Assessment, Diagnostic and Intervention ICT Tools for Children and Adolescents with ADHD. International Journal of Recent Contributions from Engineering, Science & IT (iJES), 7(3), pp. 51–63. https://doi.org/10.3991/ijes.v7i3.11178

[58] Stathopoulou A, Spinou D, Driga AM, 2023, Burnout Prevalence in Special Education Teachers, and the Positive Role of ICTs, iJOE 19 (08), 19-37

[59] Stathopoulou A, Spinou D, Driga AM, 2023, Working with Students with Special Educational Needs and Predictors of Burnout. The Role of ICTs. iJOE 19 (7), 39-51

[60] Loukeri PI, Stathopoulou A, Driga AM, 2023 Special Education Teachers' Gifted Guidance and the role of Digital Technologies, TECH HUB 6 (1), 16-27

[61] Stathopoulou A, Temekinidou M, Driga AM, Dimitriou 2022 Linguistic performance of Students with Autism Spectrum Disorders, and the role of Digital Technologies , Eximia 5 (1), 688-701

[62] Vouglanis T, Driga AM 2023 Factors affecting the education of gifted children and the role of digital technologies. TechHub Journal 6, 28-39

[63] Vouglanis T, Driga AM 2023 The use of ICT for the early detection of dyslexia in education, TechHub Journal 5, 54-67

[64] Drakatos N, Tsompou E, Karabatzaki Z, Driga AM 2023 Virtual reality environments as a tool for teaching Engineering. Educational and Psychological issues, TechHub Journal 4, 59-76

[65] Drakatos N, Tsompou E, Karabatzaki Z, Driga AM 2023 The contribution of online gaming in Engineering education, Eximia 8, 14-30

[66] Chaidi E, Kefalis C, Papagerasimou Y, Drigas, 2021, Educational robotics in Primary Education. A case in Greece, Research, Society and Development journal 10 (9), e17110916371-e17110916371 https://doi.org/10.33448/rsd-v10i9.16371

[67] Lytra N, Drigas A 2021 STEAM education-metacognition–Specific Learning Disabilities , Scientific Electronic Archives journal 14 (10) https://doi.org/10.36560/141020211442

[68] 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, https://doi.org/10.3991/ijep.v8i3.8044

[69] Pergantis, P., & Drigas, A. (2024). The effect of drones in the educational Process: A systematic review. Education Sciences, 14(6), 665. https://doi.org/10.3390/educsci14060665

[70] Chaidi I, Drigas A 2022 Digital games & special education , Technium Social Sciences Journal 34, 214-236 https://doi.org/10.47577/tssj.v34i1.7054

[71] Bravou V, Oikonomidou D, Drigas A, 2022 Applications of Virtual Reality for Autism Inclusion. A review , revista Retos 45, 779-785 https://doi.org/10.47197/retos.v45i0.92078

[72] Drigas A, Mitsea E, Skianis C 2021 The Role of Clinical Hypnosis & VR in Special Education , International Journal of Recent Contributions from Engineering Science & IT (IJES) 9(4), 4-18. https://doi.org/10.3991/ijes.v9i4.26147

[73] V Galitskaya, A Drigas 2021 The importance of working memory in children with Dyscalculia and Ageometria , Scientific Electronic Archives journal 14 (10) https://doi. org/10.36560/141020211449

[74] Drigas A, Mitsea E, Skianis C. 2022 Virtual Reality and Metacognition Training Techniques for Learning Disabilities , SUSTAINABILITY 14(16), 10170, https://doi.org/10.3390/su141610170

[75] Drigas A,. Sideraki A. 2021 Emotional Intelligence in Autism , Technium Social Sciences Journal 26, 80, https://doi.org/10.47577/tssj.v26i1.5178

[76] 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, DOI:10.47577/tssj.v30i1.6220

[77] Karyotaki M, Bakola L, Drigas A, Skianis C, 2022 Women's Leadership via Digital Technology and Entrepreneurship in business and society , Technium Social Sciences Journal. 28(1), 246–252. https://doi.org/10.47577/tssj.v28i1.5907

[78] Mitsea E, Drigas A,, Skianis C, 2022 Breathing, Attention & Consciousness in Sync: The role of Breathing Training, Metacognition & Virtual Reality , Technium Social Sciences Journal 29, 79-97 https://doi.org/10.47577/tssj.v29i1.6145

[79] 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 (IJES) 9(4), 4-17.

[80] E Mitsea, A Drigas, C Skianis 2022 Metacognition in Autism Spectrum Disorder: Digital Technologies in Metacognitive Skills Training , Technium Social Sciences Journal, 153-173

[81] Chaidi, I. ., & Drigas, A. (2022). Social and Emotional Skills of children with ASD: Assessment with Emotional Comprehension Test (TEC) in a Greek context and the role of ICTs. , Technium Social Sciences Journal, 33(1), 146–163. https://doi.org/10.47577/tssj.v33i1.6857

[82] Kontostavlou, E. Z., & Drigas, A. (2021). How Metacognition Supports Giftedness in Leadership: A Review of Contemporary Literature. , International Journal of Advanced Corporate Learning (iJAC), 14(2), pp. 4–16. https://doi.org/10.3991/ijac.v14i2.23237

[83] Drigas A, Mitsea E, Skianis C, 2022 Intermittent Oxygen Fasting and Digital Technologies: from Antistress and Hormones Regulation to Wellbeing, Bliss and Higher Mental States , Technium BioChemMed journal 3 (2), 55-73