

The impact of ICTs (Robotics, VR, AI, Games) on gifted students' education

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ABSTRACT. The entry of ICT into the education of gifted students is an important step towards the rapid change of the way in which the pedagogical process is carried out. The efforts to introduce ICTs in the education of gifted students are important, but they encounter expected difficulties, without their solution the effort will never prosper. The work you will read is a literature review. More specifically, in this work there is talk about giftedness, educational methods with the use of ICT and the needs both for the training of the educational staff and the configuration of the school space.

KEYWORDS giftedness, gifted students, ICTs, talented children, education

1. INTRODUCTION

ICT is an important factor in the evolution, development and upgrading of the educational process, especially for gifted students. In order to harness the abilities, skills and innovative ideas that gifted students have, the educational process must be appropriate to their expectations, stimulate their interest and provide them with a wealth of information. The purpose of the work is to analyze giftedness, ICT and their potential and finally the need for modernization and progress of the school environment.

First, a thorough reference is made to the term "giftedness" and to the characteristics that govern gifted students from early to school age. Next, the ICTs that contribute to the educational process and what is their role in it are analyzed. In addition, examples are given of the use of ICT in teaching gifted students, the results and growth that ICT has brought about.

The next two chapters deal with the urgent need for teacher training and the modernization of the school environment, elements interrelated with each other as neither of them can work individually and bring about the desired results. There is an undeniable need for suitably qualified staff who can provide gifted children with a comprehensive experience of inquiry, reflection and knowledge. The teachers' personality also presents the different treatment of this need depending on the country. Finally, as for the school environment, the need to provide all the necessary means that will make the learning experience of gifted students attractive and unbeatable is highlighted.

2. DEFINITION AND CHARACTERISTICS OF GIFTED CHILDREN

To identify gifted children, it is necessary to define Giftedness itself. There are multiple definitions of Giftedness according to each scientist's approach (Renzulli, 2005; Gagné, 2004; Tomlinson, 1999; Gross, 1989). The definitions although diverse, they share common and substantial factors: above average intellect in comparison with other coevals with high performance in specific domains (e.g., intellectual, creative, artistic, leadership, academic) (Johnsen, 2011) and task commitment as well as the creative thinking-in (Renzulli and Callahan, 2008) and the potential of performance development (Neumeister, 2017). Renzulli who developed the "three Ring Conception Theory" (2005) later mentioned environmental and personality factors that influence the expression of giftedness.

In order to define giftedness we also, have to research models of giftedness. According to the article of Worrell et al., (2019) there are many models of giftedness. Sternberg & Davidson (2005) in their book, written in 1986, enter, firstly, into 16 different perceptions. In their second edition, added even more perceptions, including Borland's (2005), who opposes any perception of giftedness. The most used model in US education has been Renzulli's (Renzulli, 1977; Renzulli, 2016; Renzulli & Reis, 1997) enrichment triad model. On the contrary, Canada and Australia have been adopted Gagné's (2004) model of giftedness (DMGT). About the European and Asian countries, the Ziegler's (Phillipson et al., 2013) actiotope model thrives.

There are so many stereotypes about gifted students such as emotionally unavailable, intense, clumsy, poor organized and inquisitive. All of these stereotypes are debunked continuously by teachers and researchers, who found out that gifted students can also be popular and intellectual leaders (Tuttle et al. 1988). All the characteristics that they mention aren't always obvious. Charismatic children may hide them, or they probably don't have all of them during their school life. It's up to school to encourage all children to be themselves and if this happens, the characteristics of gifted children will be more obvious.

According to Tuttle and Baker (1980) and Silverman (2003), these children have some common unique characteristics visible from their early ages such as:

- Fast and effective learning abilities
- Excellent memory and wide vocabulary
- Curiosity, persistency and critic
- Leader tendencies
- Well-developed abilities of forming, using, and combining ideas
- In depth comprehension of cause-effect relationships
- Quick distinguishment between similar and different and abnormal concepts.
- Competence in thinking (analyzing possibilities, consequences etc.)
- Adaptable thinking (using alternative problem-solving pathways)
- Don't compromise with superficial statements
- Great sense of humor
- $IQ \geq 130$

That list of characteristics appears in the school environment. But, the characteristics of gifted children can make an appearance at earlier ages, as well. That's the reason why parents and teachers should be awake to identify behaviors that are different from the expected ones. (Tuttle et al. 1988) According to the article, Margot Parrot, a parent of three gifted students, showed a list of those characteristics at preschool age, based on her experience.

1. The children who are gifted early conquer the language; they have a wide vocabulary; they speak with long sentences, and they talk early and often. Sometimes though, gifted children don't speak early but when they acquire the language, they speak it remarkably well.
2. Gifted children at preschool age have fine and gross motor skills. They run, they climb, they walk early. They handle small objects, like pencils and more, they copy pictures and words.

3. They develop intellectual areas. They easily read signs and maybe books, they solve mathematical problems, they remember facts and they care about moral issues. They also ask “why” and seem to care and pay attention to every discussion.
4. They develop their social needs. They care about the others; they are confident and independent; they can create groups and they have the ability to lead them; they are active not only mentally but also physically.
5. In the creative areas: they have long imagination; they love participating in plays with words; they use colors, objects, toys and other things with imaginative ways.
6. There are also, specific areas, which are more expanded than the children at their age: they play musical instruments, sports, sing and they copy with them, in every specific area.

Most of the data on gifted children characteristics occurred empirically from studies involving children with high intellect. The IQ factor is the most usual assessment tool in schools because of its usability and capability to determine the mental age of the gifted children, even though it is not a direct index of charisma (Gottfredson, 2009).

Creativity, special abilities and performances, motivations, attitudes, and interests of the gifted have been studied to a lesser extent. Nowadays schools use more versatile assessments to determine the charismatic children’s potentials, as their abilities are considered multidimensional (Johnsen, 2011).

The research of giftedness identification are based on different instruments. Some of them are the IQ tests, the nonverbal ability assessments, the above-grade level achievement tests, the portfolios, the teacher referrals and recommendations, the curriculum-based performance tasks and the measures and matrices. Each of these methods are an analog of the personal opinion about giftedness definition. The reasons for this variety of instruments are the lack of a consensus definition of giftedness and that most of the models of giftedness aren’t easily translatable into criteria for identification (Worrell et al., 2019). As per Johnsen (2011) to identify gifted students we should accommodate scores, which should be psychometrically sound and technically accurate, with demonstrated construction, veracity and trustworthiness so as the population would be able to evaluate them. Furthermore, scores have to be legitimate concerning the program that is being offered without false-negative and false-positive rates. It is vital, for Johnsen, the use of more than one measures to define gifted students and these services ought to reflect the demographics, the school or district. So, all students should be included in the nomination. Worrell & Erwin’s (2011) had created a list about the best practices, which identify with Johnsen’s. Moreover, they advance assessing domain-specific skills and norms to help with the identification in schools and districts where the students’ profiles don’t reflect national norms. These advances had been given because of the great number identification practices, which are used in schools, are below the recommended practices.

3. APPROPRIATE PROVISION OF GIFTED CHILDREN

Gifted students are children who have special needs too in their education, social skills and everyday life in general. It is common to hear that gifted children are very good students, and their future academic career will be successful. Although, they are dealing with a lot of difficulties and demands (Kontostavlou & Drigas, 2019).

As aforementioned, gifted children may show giftedness in multiple areas therefore, a customized pedagogic intervention is important to nurture their specialties Silverman (1989) and alongside promote motives for these children in education (Jagust et al., 2017). According to Pangrčič et al. (2020), the Concept of discovering and working with gifted students (1999) bases its approach to working with gifted students on the following fundamental tenets: respect for individuality, encouragement of

independence and responsibility, care for a holistic, faster progress in the learning process, development of creativity, use of higher forms of learning, use of cooperative forms of learning, consideration of special abilities and strong interests.

When creating an individualized learning plan (ILP) for a gifted, above-average student in the classroom, some must take into consideration a variety of data that attests to the student's aptitudes (test results, grades, parental and other teachers' perspectives, accomplishments, etc.) (Pangrčič et al., 2020). The child's interests and preferences, as well as its strong and weak points, the parents' interests and ideas, the evaluation and findings, and other elements that either support or obstruct the growth of a student's high skills, should all be discussed (Pangrčič et al., 2020). Along with emphasizing the development of competences in the chosen subject, the ILP should be deeper and broader, encompassing other areas that have a big impact on how a child's talents develop. These include aesthetics, social skills, emotional intelligence, and creativity. Additionally, it is crucial to develop higher objectives and standards of knowledge, incorporate them into the core curriculum, engage in extracurricular activities, and offer teachers ongoing professional development. (Pangrčič et al., 2020).

4. ICTs WITHIN EDUCATION

Traditional teaching approaches limit the amount of information gifted children are capable of processing during lessons, resulting to a very linear educational flow (Grasha, 1996). Today's younger generations are being raised surrounded with digital technology referred as "Digital Natives" (Prensky, 2001), "n-gen" (Downes, 2005) or "Millennial Generation". Taking this into consideration some authors recommend a differentiated learning environment in association with the technological progression (e.g. multitasking, nonlinear information processing, shorter attention span, social media and text communication, etc.) (Rosen et al., 2010; Prensky, 2001). Technology is a tool which enables creative thinking, visualization of complicated abstract concepts. Thus, helping students in developing their competencies while keeping them at the highest of their own capabilities (Jagust et al., 2017). ICTs provide an opportunity for teachers to review fundamental pedagogic concerns as well as learning strategies that students need to use inside the classroom (Florian & Hegarty, 2004).

ICTs are transformative elements that, when properly applied, may encourage the transition to a learner-centered environment (Tinio, 2003). According to Tinio, some the positive effects of ICTs in education are :

1. Encouraging learning. Some ICT tools such as Network computers, can motivate learners more than any other form of ICT by combining the media diversity and interaction of other ICTs with the chance to engage with real people and take part in actual activities.
2. Development of fundamental abilities. By exercising and practicing, ICTs can aid in the transmission of the fundamental knowledge and abilities that serve as the basis for creativity and higher order thinking abilities.
3. Active and creative learning. In order to make learning more applicable to the learners' condition in reality, students learn as they go along and, where appropriate, work on real-world situations. In this approach, education with ICTs encourages higher learner involvement in contrast to learning that is dependent on memorization. The use of ICT to enhance learning also enables "just-in-time" learning, where students may decide what to study and when to learn it.

As mentioned by Abbott & Dahmus (1992), this ICT-based learning also teaches students to discover their own learning-style. Thus, self-managed learning enables students to be self-motivated and self-directed learners who will be able to adapt effortlessly, efficiently, and swiftly at any situation (Abbott & Dahmus, 1992).

Regardless of location, ICT-supported learning promotes communication and collaboration between students and instructors. In addition to simulating real-world interactions, ICT gives students the chance to connect with individuals from other cultural backgrounds, fostering the development of their interpersonal and communication skills as well as their sense of global awareness (Tinio, 2003). According to Rodrigues (2002) there will be both human-human and human-machine interaction when employing technology to enhance collaborative learning.

Students today have grown up with exposure to technology use since they were young (Wilkinson, 2006). As a result, by the time they reach puberty, they are completely adept at using technology, and their obsession with it has become commonplace (Cross, 2005). Thus, the existence of a group of pupils who may be brilliant and talented in ICT within the school population is not ruled out.

4. THE ROLE OF ICTs IN GIFTED CHILDREN EDUCATION

In the case of gifted students, effective teaching is a crucial concern. The utilization of ICT methods and tools may be one of the most efficient ways to provide gifted students the necessary education. However, each of these methods should consider the traits of gifted kids, which Kontostavlou and Drigas (2019) listed as curiosity, initiative, inventiveness, originality, creativity, devotion to what they do, and a love of learning. Online conversations, digital classrooms, mobile learning, robots, and gamification are a few of the options included in this field. Only gifted students who have a knack for using technology may use ICT, though. It's likely that among the gifted pupils, some have exceptional skills in ICT and are talented with computers. In order to maximize their potential, pupils who are gifted and skilled in ICT should be acknowledged as having special skills in this field. These students require a special way to teaching based on technologies (Kontostavlou and Drigas, 2019).

Gifted children may have high abilities and creativity in specific areas, but as aforementioned, they still need the right mentoring aiming to make creativity and giftedness productive. The mentoring involves among others, expertise, instruction, knowledge, or skill-mastering by using ICTs (Jagust et al., 2017).

According to Drigas et al. (2022) the important and effective role that digital technologies play in the education sector must be emphasized. These technologies, such as mobile devices, a variety of ICT applications, AI & STEM, and games, facilitate and enhance educational procedures such as assessment, intervention, and instruction. Furthermore, the use of ICTs in conjunction with theories and models of metacognition, mindfulness, meditation, and emotional intelligence cultivation as well as with environmental factors and nutrition accelerates and enhances educational practices and outcomes, particularly for gifted students (Drigas et al., 2022). This includes online discussions, digital classrooms and mobile learning (Kontostavlou & Drigas, 2019; Alqahtani et al., 2021).

According to Fung et al., (2021) gifted students' self-efficiency and ability to self-regulate online learning, was influenced by lesson planning, teacher's support, parents, and peers. During the current Covid-19 pandemic even more technological possibilities for assisting gifted children education were developed (Erdem, 2021). The pandemic has seriously affected the identification and education of gifted students. These students although, had the ability to try a new teaching and learning process through ICT-facilitated distance education (Erdem, 2021).

Using ICT in the classroom for talented students has the benefit of giving them the chance to practice and improve higher-order thinking abilities. Students are motivated to appreciate studying when given challenging, engaging information (Burney, 2008). On the contrary, some studies involving gifted children who do not participate in challenging educational experiences show a decline in their capacity for critical and analytical thought (Renzulli, 2005).

5. THE DIFFERENT ICT MODELS USED IN GIFTED CHILDREN EDUCATION

The 21st century's needs have reshaped the learning process by progressively transitioning from traditional teaching approaches (e.g., "chalk and talk") to non-physical classroom environment approaches such as the "digital" classroom (Bakar, 2016). With the integration of ICTs into the classroom environment, education gets an "everywhere and anytime" character (Kontostavlou et al. 2019). Specifically gifted children, being able to absorb much more curriculum because of their quicker information processing skills, can benefit tremendously from the use of ICTs as a compulsory element of their education (Bakar, 2016). Moreover, a "digital classroom" enables gifted students to communicate with others outside of the classroom using chat rooms, email, online conferences or webinars, video conferencing, and other computer-mediated communication techniques. But the most beneficial factor of ICTs for these children is the free access in online learning platforms (MOOC, Khan Academy etc.) allowing both children and teachers to upgrade the educating experience overall. This encourages information acquisition from a variety of sources, which obviously helps students understand the material better. Additionally, it aids pupils in better information management, enhancing the effectiveness of 21st century learning (Bakar, 2016).

There are two ways to share the digital classroom. First, a synchronous digital classroom with a computer for each student, online students who can join the class through the internet and a teacher utilizing a computer to facilitate learning with cutting-edge technology. The second is an online, asynchronous classroom where each student can join at any time and from any location. This type of learning is a student-centered teaching approach that makes use of online learning tools to enable information sharing across a network of people outside the boundaries of time and location. It can be used to support learning in traditional on-campus education as well as online learning. This learning is a blend of self-study and asynchronous interactions to encourage learning. Email, electronic mailing lists, threaded conferencing systems, online discussion forums, and blogs are some of the online learning tools used to enable asynchronous learning (Zolfaghari & Kargozari, 2011).

Each student in the virtual classroom is given an avatar that he controls entirely on his own. In this classroom, the role of the teacher is evolving. There is a shift from the role of the teacher as the expert to one where they support the students in discovering new worlds and developing ideas. His goal is to maximize the potential of the digital classrooms technical features by creating learning experiences that satisfy each students pedagogical demands (Galitskaya, et al., 2022).

In order to improve learning in the classroom, Chickering and Gamson (2006) defined seven criteria of effective practice in education. These included:

1. iPads, which were used for note-taking, communication, and as a second screen
2. Voice readers, which let students hear passages from a textbook and/or have their papers checked for grammar
3. Videoconferencing, which improved teamwork among teams working on a particular project

4. Screen sharing, which allowed students to share and collaborate on computer screens
5. Multiple screens: In this scenario, students utilized an iPad in addition to a PC to study various papers, assist with presentations, and multitask in general

Wikis, a potent tool for the digital classroom, were first developed by Chao & Parker (2007). They are only one of the numerous elements of Web 2.0 that may be utilized to improve learning. A wiki is a web-based platform for communication and teamwork that may be used to get students interested in studying alongside others in a collaborative setting.

Digital storytelling has developed into an important educational tool for both teachers and students. Although there are many distinct definitions of “Digital Storytelling” they all generally center on the notion of fusing the craft of storytelling with various digital multimedia, such as photos, audio, and video. To provide information about a particular topic, almost all digital tales include digital graphics, text, recorded voice narration, video, and music. Digital stories often have a particular point of view and center around a selected topic, much like traditional stories do. The tales, which are normally only a few minutes long, can be used to provide information or instruction on a particular subject or to share personal stories or recall historical events (Robin, 2011).

According to Xenos (2018) twenty years of experience with digital classrooms, the characteristics included in the majority of digital environments may be divided into two categories. Characteristics that are exclusive to simulating a regular classroom are included in the first section (common features), such as video and sound, chat, students’ feedback, whiteboard, slide presentations, discussion administration. The second category (advanced features) includes features and methods that go beyond the conventional classroom, like retrospective assignments, breakout rooms, anonymous polling, shared whiteboard, shared documents and annotating, application sharing.

Another approach which combines Online Education as learning tool, allows gifted children to receive the appropriate instruction in the traditional learning environment. “Mobile Learning” is a promising model which represents the next-stage for e-learning (Kontostavlou & Drigas, 2019). The use of e-learning and m-learning was found to be particularly suitable for gifted children who are at home or who live in remote, difficult-to-reach areas or whose schools do not have enough advanced programs (Olszewski-Kubilius & Corwith, 2011). M-learning, also, promotes personalized learning, which can benefit particularly gifted students. Mobile technologies, according to Cobcroft (2006) can foster students’ creativity, teamwork, critical thinking skills and interpersonal relationships.

Sometimes online learning is more convenient, compared with m-learning (Alqahtani et al., 2021). Del Carmen et al., (2020) provided a good illustration of how to combine mobile learning with gamification and lesson plan. They used Lesson Plan by Symbaloo EDU, gamification and m-learning with escape room as an alternative strategy to teach English as a second language to gifted children to cover their faster learning skills.

Additionally, the Smartphone use gives access to educational resources everywhere and at any time. As a result, education will transcend boundaries of time, space, and subject matters (Kontostavlou & Drigas, 2019).

The International Communication Technology (ICT) and Educational Robotics are closely related. However, these methods are not often used in students with special education needs, especially gifted children. Nevertheless, the limited use of Educational Robotics in special education doesn’t indicate its efficiency in special education. Educational Robotics, and programs like LEGO2 or ELEKIT3 include specific tools that can be used to deepen and conceptualize students learning. These created new

possibilities for gifted children to develop self-expression and create technological constructions to expand their skills. Programming increased students' enthusiasm and the playful and inspiring technology environment encouraged them to be more creative (Resnick, 2006). Working with Educational Robotics provides a natural environment to learn and practice problem-solving skills, logical thinking, concentration and frustration tolerance (Resnick, 2006). In conclusion, Educational Robotics provide a differentiated learning style and multiple skill development.

In an experimental study, Önal & Önal (2021) found that Augmented Reality (AR) supporting Astronomy teaching activities had a positive impact on gifted students' interests in Astronomy. So, Augmented Reality (AR) and at the same time Virtual Reality (VR) appear to be promising in ICT techniques (Alqahtani et al., 2021).

Gifted children are a part of the community. Their education does not have to include only extremely technical math, science or computer engineering (Alqahtani et al., 2021). On the contrary, they require also social interaction skills as part of a community. Based on the functions of the most well-liked gaming websites, Blachnitzky (2009) created and evaluated the online game Typozilla. Tested on gifted children showed that they were ecstatic about seeing other players' avatars in multiplayer spaces and engage in competition. As a result, they enjoyed learning this new game and taking part in creative activities as also the new skill of touch typing (Blachnitzky, 2009).

In addition, Avcu and Er (2020) elaborate an instructional design. This design was based on the model of Morrison et al., (2010). They notice that the program was efficacious in calculative thinking and expanded the creative thinking skills of gifted students but in the field of programming using their own capabilities and believing in them, the program misses the mark. Moreover, this design helps gifted students to get acquainted with the computational concepts and with the applications. It also helps them improve their perspectives about calculative practices and elevate their design skills. Gifted children take delight in design thinking method, that has been followed and they get familiar with the content of the course although they encounter some difficulties.

To conclude, Technology Strategies used in Gifted Education aim to create a variable, enriched, personalized educational environment that promotes the development of independence a self – learning ability (Rudenko et al., 2021).

6. TEACHER'S REQUIREMENTS IN ICT ORIENTED EDUCATION

ICT and Special Education needs focus on the knowledge and skills that teachers, classroom assistants and provision managers need to have in order to fully utilize technology as a vital part of effective inclusive education (Florian & Hegarty, 2004).

Turalbayeva et al. (2017) highlighted the importance of teachers' ICTs knowledge. The necessity of training teachers to create scientific projects for gifted students was emphasized by Trnova & Skrabankova (2013). Some researchers based on curriculum analyses and professional development programs for teachers, developed and tested an educational model for teaching gifted children in mathematics and science using computers (Bochareva et al., 2018). Another method was suggested to increase teachers' in-service training through efficient use of videoconferencing technology (Kobayashi, Nagai & Higuchi, 2020).

Children who have been labeled as gifted frequently describe feeling alienated, different, alone, teased and rejected at an early age (Clark, 2002; Davis & Rimm, 2004). ICT, according to Mooij (2013), enables teachers to create individualized lessons plans for each student to get above gifted childrens'

requirements for an enriched curriculum and motives. Even though gifted students and special education are related, often giftedness results to being ignored, as for their educational needs (VanTassel-Baska, 1997; Gallagher, 2003).

Therefore, an effective teaching is influenced by the teachers' knowledge of the nature of creativity and their attitudes toward creative children (Chan & Yuen, 2013). Teachers play a crucial role as role models and mentors in fostering student creativity in classroom (Cropley, 1997; Bramwell et al, 2011). So, they must know the tools to identify students who are potentially highly creative, to meet their specific needs (Runco et al., 1993).

Teachers have the most significant role to affect gifted children's development (Bohner & Wanke, 2002). Teachers' attitudes toward gifted students are an important factor in developing gifted education programs (Davis & Rimm, 2004). Work experience, in-service and postgraduate gifted education lead to greater understandings of giftedness, helping teachers to assess their own attitudes and dispel myths (Hansen & Feldhusen, 1994; Cashion & Sullenger, 2000; Goodnough, 2001; Meyland, 2001). It's known that a lack of knowledge about giftedness is suggested to be responsible for the mistaken teachers beliefs (Clark, 2002). There are teachers who have negative attitude about gifted children and their educational program might be less cooperative and more unaware and prejudiced (Meyland, 2001).

It is confirmed that further teacher training and whole-school involvement in gifted education may improve gifted children education (Lassig, 2009). Teachers who had received a basic training in gifted education were more likely to have better attitudes towards gifted education, than teachers who had no training. This indicates that a lack of teachers' awareness on gifted children may result to isolation and rejection of them (Meyland, 2001).

A comprehensive study of gifted education in 21 European Nations was carried out in 2005 (Monks & Pfluger, 2005). Only 9 of the 21 nations (Austria, Germany, Spain, Hungary, Luxembourg, The Netherlands, Romania, Slovenia and United Kingdom) according to the conducted research, offered teachers preparation programs for those working with gifted students. A national program for gifted education has been developed in Austria and includes training for teachers who work with gifted students. Teachers and psychologists use standardized tests to identify giftedness. The emphasis of gifted students' teacher training is important as it prepares future educators to work with gifted students enrolled in regular classrooms. The OEZBF (Austrian Education and Research Center for Gifted Students) collaborates with schools and universities to design teacher training methods for gifted students (Monks & Pfluger, 2005).

On another perspective, Belgium a country that offers a completely opposite approach to gifted education. According to Kumps (2008) the idea that being gifted is a problem of luxury in Belgium. As a result, neither giftedness nor gifted education is defined in Belgian law. The sustainability of gifted education isn't being discussed because there is little support for gifted children and inadequate teacher training.

In conclusion, it is necessary to increase the flexibility of schools, diversify teaching methods and techniques, enrich the curriculum, and raise the qualifications of teachers who work with gifted students in order to maximize the potential of gifted students and make gifted education sustainable (Reid & Horvathova, 2016). Teachers' training is an underutilized subject, although unawareness is the most significant cause of wrong judgments and negative attitudes (Clark, 2002) which affect school standards and classrooms efficiency for gifted students (Hoy & Woolfolk, 1993).

7. THE NECESSITY OF FACILITY MODERNISATION

Technology can only be helpful and significant in the growth of one institution and its outputs through acceptance and utilization. As a result, new technology-based approaches to teaching and learning must be embraced and included into the learning curricula for teachers and school systems to pursue technology integration at the highest degree possible (Limon, 2015).

When using learning media in the classroom, not only teachers should have strong academic skills to master the use of ICT for learning, but also the manager of the school or establishment has also committed to supporting the ICT infrastructure. If instructional media are used properly in teaching and learning activities, it will result in high-quality learning outcomes and make learning more enjoyable and efficient (Miftah et al., 2020)

Using tablets, computers and smart boards in classrooms, Turkey is trying to keep up with this modern development (Hoag et al, 2017). The FATİH-MIOİT is one of these studies (Movement to Increase Opportunities and Improve Technology) The FATİH Project, which started in 2010, aims to the alternation of the educational landscape (Ekici & Yilmaz, 2013). It combines information and communication technologies with special education in order to reform the educational system (Orhan et al., 2017).

By fusing theory and practice, the use of projects and ICT tools enables the growth of students' potential, experience and creative activity as well as the activation of cognitive interest. The expansion of opportunities for fostering and developing creativity as well as the simple identification of children's giftedness is made possible by the modernization of the educational and technological resources offered in schools. Thus, the availability of ICT facilities is necessary for the effective use of ICT to educate gifted students in schools, as demonstrated by Ahmed and Bakhiet (2021), who found a correlation between the use of ICTs and their benefits when teaching gifted students. Therefore, provision of all the required ICT facilities in school is of utmost importance (Chan & Yuen, 2013). The main goals of ICT integration into the educational process are broad intersubjective integration, a decisive step toward individualizing the instruction and a shift from the use of individual electronic teaching materials to the development of electronic textbooks and libraries in all academic disciplines.

5. CONCLUSIONS

Taking the present literature review into consideration, we gained a more comprehensive and thorough view of the needs of gifted students in education and came to the conclusion that in order to make the educational process interesting and exhilarating through ICTs, the education, the teachers training and the school space as well, are very important, factors that currently lag significantly behind.

Finally we underline the importance of all the digital technologies in education domain and gifted students 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 [86-94], various ICTs applications which are the core supporters of education [95-129], AI, STEM & ROBOTICS which raise educational procedures into new levers of performance [130-148], and games which transforms the education in a very friendly and enjoyable interaction [149-154]. Additionally, the enhancement and combination of ICTs with theories and models of metacognition, mindfulness, meditation and emotional intelligence cultivation [155-199] as well as with environmental factors and nutrition [82-85], accelerates and improves more over the educational practices and results, especially in the gifted education domain.

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