IMPACT OF INSTRUCTIONAL MATERIALS TOWARD INTEGRATING CHILDREN WITH LEARNING DIFFICULTIES IN ISLAMIC PRIMARY SCHOOLS

أثر الوسائل التعليمية في دمج الأطفال ذوي صعوبات التعلم في المدارس الأساسية الإسلامية

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ABSTRACT

From an educational perspective, there are special differences between people, every student, whether a child or an adult, has specific educational needs that distinguish him from his peers of the same age, which necessitates designing the curriculum according to these differences, and these needs, and equipping the student with special attention, which is known as special education, through caring for those with special needs, such as health, psychological and social, rehabilitation and professional, and educational. one of the most important things that must be focused on in qualifying students with learning difficulties are skills, it could be a communication or social skills, which are the basis for obtaining other skills, as humans are social by nature. and he cannot master other skills without it, as person's interacts with his environment through good communication, he obtains many things and achievements, and other skills such as cognitive skills and self-care skills, and many skills that students with learning difficulties need. to achieve this, an integrated educational program was established, this program aims to increase the opportunities for social and educational interaction between students with special needs - learning difficulties - and regular students. This program is known as academic integration, which is a positive trend towards the participation of regular students and others in one class. This integration works to place the child with special needs in the regular class with regular students for some time and in some subjects, which makes a child benefits from, provided that the appropriate

conditions are available for the success of this trend. There is also another program, which is social integration, which is the final stage in developing special education programs for those with learning difficulties, because it helps positively to those with special needs from members of society, and this is represented in the field of work by providing suitable job opportunities for them as members of society. on this basis, this paper aims to discuss on the impact of Impact of instructional materials toward integrating children with learning difficulties in Islamic primary schools in Nigeria, a descriptive research design was used, and the results of the research indicate that instructional materials have a significant impact on enhancing educational achievements of children with learning difficulties, and also helps in integrating them academically to compete with their colleagues.

Keywords: learning, learning difficulty, special needs, skill, education.

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مستخلص البحث

في المنظوري التربوي، هناك فروق خاصة بين الناس، ولكل طالب طفلاً كان أو بالغاً، احتياجات تعليمية محددة تميزه عن أقرانه من نفس العمر، مما يستلزم تصميم المنهج وفقاً لهذه الاختلافات، وهذه الاحتياجات ومواءمة الحزب مع تجهيزاته الخاصة، وهذا ما يعرف بالتربية الخاصة. وذلك من خلال عناية بذوي الاحتياجات الخاصة، كالصحية، النفسية والاجتماعية، التأهيلية والمهنية، والتربوية، والتعليمية. ومن أهم ما يجب التركيز عليه في تأهيل الطلاب ذوي صعوبات التعلم هي المهارات سواء كانت مهارات التواصل أو المهارات الاجتماعية التي تعتبر أساس للحصول على مهارات أخرى، فالإنسان اجتماعي بطبيعته لا يستطيع إتقان المهارات الأخرى بدونها، فتفاعل الإنسان مع بيئته من خلال التواصل الجيد يحصل له على أشياء وإنجازات كثيرة، ومهارات أخرى مثل المهارات المعرفية ومهارات العناية بالذات، والعديد من المهارات التي يحتاجها طلاب ذوي صعوبات التعلم. لتحقيق ذلك أنشأت برنامج تعليمية مشتركة مع الطلاب العاديين. ويهدف هذا البرنامج إلى زيادة فرص التفاعل الاجتماعي والتربوي بين الطلاب ذوي الاحتياجات الخاصة - صعوبات التعلم - والطلاب العاديين. ويعرف ذلك البرنامج بالدمج الأكاديمي، وهو اتجاه إيجابي نحو مشاركة الطلاب العاديين وغيرهم في فصل واحد، حيث يعمل هذا الدمج

على وضع الطفل ذو الاحتياجات الخاصة في الصف العادي مع الطلبة العاديين لبعض الوقت وفي بعض المواد بشرط أن يستفيد الطفل من ذلك بشرط أن تتوفر الظروف المناسبة لنجاح هذا التوجه، كما يوجد برنامج آخر، وهو الدمج الاجتماعي وهي المرحلة النهائية في تطوير برامج التربية الخاصة لذوي صعوبات التعلم، لأنها تساعد في كل ما هو إيجابي تجاه ذوي الاحتياجات الخاصة من أفراد المجتمع ويتمثل ذلك في مجال العمل بتوفير فرص عمل مناسبة لهم كأعضاء في المجتمع. وعلى هذا الأساس تهدف هذه الورقة تسليط الضوء عن أهمية الوسائل التعليمية في دمج الأطفال ذوي صعوبات التعلم في المراحل التعليمية الأساسية الإسلامية في نيجيريا، استخدم الباحث المنهج الوصفي، وتوصلت النتيجة البحث بأن للوسائل التعليمية أثر إيجابي في تحسين تحصيلات أكاديمية لدى الأطفال ذوي صعوبات التعلم، كما تساعد في دمجهم إلى جو التعليمي لمنافسة أقرانهم من الطلبة العاديين في الفصل.
الكلمات المفتاحية: تعلم، صعوبة التعلم، احتياجات خاصة، مهارة، تربية.

INTRODUCTION:

Learning disabilities affect the way a person learns new things, how they process information, and how they communicate with others. Learning disabilities include all areas of life, not just school learning, and can affect how basic skills such as reading, writing, and mathematics are learned, as well as how higher-level skills such as organization, time planning, abstract thinking, and the development of long- or short-term memory and attention are learned. So what are learning disabilities? Their causes and methods of treatment? And therefore, Instructional materials went through stages during which it developed from one stage to another until it reached its most advanced stages that we witness today. From an educational perspective, there are unique differences between learners, and each learner, whether a child or an adult, has specific educational needs that distinguish him from his peers of the same age, which necessitates individualizing the teaching process, in line with these differences, and those needs, and equipping the learner and its special materials, and this is what is known as special education, through which the aspects of caring for people with special needs are multiple, such as health, psychological and social, rehabilitation and professional,

educational and teaching services. (Al-Quraiti, 2012: 81). Instructional materials are seen Everything used in the educational process for the purpose of achieving the goals with a high degree of mastery, and is used by the teacher inside and outside the classroom to convey the content of the lesson. (Al-Tayti, 2008: 13). The researcher sees it as: everything that helps the teacher transfer skills and experiences to students with special needs.

CONCEPT OF INSTRUCTIONAL MATERIALS

There are Many definitions of instructional materials, it is defined as all the tools that help the student to acquire knowledge, methods or positions. In general, it is everything that has a relationship with the intended dialectical goals, which occupy the function of activating the educational action. (Balaid, 2009: 107).

(Obaid, 2000: 43) defined it as: "It is a tool or material that the student uses in the learning process, acquiring experiences, understanding principles, and developing the knowledge he acquires successfully, and the teacher uses it to provide him with a suitable atmosphere in which he can lead his students to the facts of correct science quickly and powerfully at the lowest cost."

(Hassani, 2000: 152) also defines it as: "Every means that intervenes to help the teacher achieve educational and pedagogical goals during his direct interaction with his subject on the one hand, and with the learner on the other hand."

(Al-Hila, 2001: 25) defines it as "devices, tools, and materials that the teacher uses to improve the teaching and learning process. Shorten its duration, clarify meanings, explain ideas, train students on skills, instill good habits in their souls, develop trends, and present values without the teacher relying on words, symbols, and numbers, in order to lead his students to the correct scientific facts and sound education Quickly, powerfully and at a lower cost".

We can simply say that instructional materials are known as educational technologies, technology is "the organized,

purposeful and integrated use of scientific applications and educational innovations in their material and intellectual aspects, the material represented in all devices and machines produced, such as recordings, television, computers, and the Internet, and the intellectual represented in teaching strategies such as learning to mastery, cooperative learning and educational bags, with the aim of achieving educational goals that advance the four language skills, which are reading, writing, speaking and listening.

CHARACTERISTICS OF INSTRUCTIONAL MATERIAL

Instructional materials have a set of important characteristics that distinguish them from others and make them more clear, which are (Khalaf Allah, 2011: 78):

1. instructional materials are an inseparable part of the curriculum: instructional material are not an end or goal in themselves, but rather they are learning tools that help in obtaining diverse experiences to achieve these Goals or objectives. They are also not secondary or additional subjects, but rather, from a practical point of view, they are an integral part of the curriculum's various courses (sciences - mathematics - social subjects - languages - and other courses).
2. instructional materials are used in all educational stages: The use of instructional materials is not limited to a specific educational stage without another, as they serve the purposes of teaching and learning in different educational stages; from kindergarten to more advanced stages (primary education - preparatory education - secondary education - university education - in-service training), and they differ in terms of form and type when choosing the tool that suits the content to be explained and in terms of the sample of students and their cognitive level and age group, as each stage has the tool that suits it. The use of educational trips, samples and models is useful in teaching older and younger students, and they are also suitable for gifted students and slow learners.

3. instructional materials aim to achieve educational goals and are not an entertainment activity: Since instructional material are an integral part of the curriculum in its comprehensive sense, they are not secondary or luxury materials, and they are materials that are not intended to entertain students from the effort of studying and having fun during education. On that basis, (Obaid, 2000: 50) believes that successful instructional materials are characterized by the following characteristics:

-instructional material should be attention-grabbing and interesting, and its preparation and production should take into account learning and its foundations, and its conformity to reality as much as possible.

- instructional material should stem from the curriculum and lead to achieving its goal, such as providing information or some skills, i.e. it should be an inseparable part of the curriculum.

-It should achieve educational goals.

-It should take into account the characteristics of students and be appropriate for their chronological, mental, emotional and physical age.

-It should be characterized by simplicity, realism, clarity and lack of complexity.

-It should be proportionate to the time and effort required to use it in terms of obtaining it, preparation, and how to use it.

-To excite the learner and make him want to read, research and investigate and help him to derive new experiences.

-To be appropriate in terms of quality, space, size, sound and number of students in the class and to be presented at an appropriate time so as not to lose the element of excitement in it.

-To take into account in its design and production the scientific validity of the content and the technical quality and accuracy so that it can be circulated and preserved for a long period of time.

-To link previous experiences with new experiences.

IMPORTANCE OF INSTRUCTIONAL MATERIALS IN THE EDUCATIONAL SETTINGS:

Instructional materials play a major role in the educational process. Al-Ghamdi (2013: 90) mentioned some of them:

-Instructional material help to arouse the student's interest and satisfy his need for learning: as the student takes some experiences that arouse his interest and achieve his goals through the use of different instructional material
-It helps increase the student's experience, which makes him more prepared to learn: For example, watching a movie about some academic topics prepares the necessary experiences for the student and makes him more prepared to learn.
-It helps to increase the student's positive participation in gaining experience, and develop his ability to contemplate, observe accurately, and follow scientific thinking to reach a solution to problems. For example: involving the student in identifying the questions and problems that he seeks to solve and choosing the appropriate means, such as choosing a movie or a map, etc., to answer the questions that are on his mind.
-It helps to diversify teaching methods to address individual differences among learners.
-It strengthens the relationship between the teacher and the learner, because the teacher's use of tools makes the students love him.
-It helps to treat speech problems in some learners, such as stuttering and others, as the teacher can use a recording device to enable the student to know his problem and help him solve it.
-It motivates the learner to learn and makes him desire it, such as learning prayer through practical practice.
-It emphasizes the learner's personality and eliminates his shyness, through participation in school radio programs, acting, and impersonating characters.

STUDENTS WITH SPECIAL NEEDS

They are individuals who face life circumstances due to a deficiency or shortcoming in their physical, sensory or intellectual readiness or abilities, or due to social conditions and standards that describe them with a certain description based on characteristics, legislation or the like. a group of members of society who are not ordinary individuals in terms of their physical, psychological and mental characteristics, which

requires special care for them that is consistent with their abilities, capabilities and special circumstances, so that a better level of personal and social compatibility can be reached (Salama, 2003: 11).

A person with special needs means "every individual who needs, throughout his life or during a period of his life, special services in order to grow, learn, train, or comply with the requirements of his daily, family, work, or professional life, and he can thus participate in the processes of social and economic development to the extent he can and with the maximum capacity as a citizen" (Muhammad, 2009: 9)

CLASSIFICATION OF PEOPLE WITH SPECIAL NEEDS

A person with special needs belongs to one or more of the following categories: (Abu Al-Nasr. 2005: 21)

-Mental superiority and creative talent.
-Visual impairment at its various levels.
-Hearing - speech - and linguistic impairment at its various levels.
-Mental disability at its various levels.
-Physical - and special health disability.
-Academic delay - and slow learning.
-Academic and developmental learning difficulties
-Behavioral and emotional disorders
-Social disability
-Autism (rumination or Autism).

BASIC SKILLS FOR PEOPLE WITH SPECIAL NEEDS:

Skill has several related meanings, including: the characteristics of a complex activity that requires a period of deliberate training and organized practice, so that it is performed in an appropriate manner, and this activity usually has a useful function. The meanings of skill also include efficiency and quality in performance. Whether the term is used in this sense or that, skill refers to learned or acquired behavior that meets two essential conditions: first, it must be directed toward achieving a specific goal or purpose, and second, it must be organized in a way that

leads to achieving the goal in the shortest possible time" (Abdel Fattah, 2010: 46). The skills that must be established in students with special needs are varied, some of which are mentioned as follows:

1 -Technological skills: These are skills necessary for life and work in a knowledge society and are represented in: The ability to use digital technology and communication tools. Networks are its product and include: its circuitry, evaluation, and delivery of information and basic culture - scientific culture - economic culture - visual and information technology - understanding multiple cultures - universal awareness.

2 -Creative thinking skills: These include managing complexity, adaptability, self-direction, curiosity, creativity, risk-taking, higher-order thinking skills, and sound thinking.

3 -Language skills Effective communication includes: Teamwork skills, Personal skills, social and civic responsibility, Interactive communication.

4 -Emotional skills: Emotional thinking is a type of intelligence required for success in all situations and circumstances. People differ in their abilities and potential when dealing with their emotions and feelings, just as their abilities differ in language, logic, arithmetic and singing. They can be summarized in the following points:

5 -Perceptual skills are Emotional thinking and is a type of intelligence required for success in all situations and circumstances. People differ in their abilities and potential when dealing with their emotions and feelings, just as their abilities differ in language, logic, arithmetic, and singing. They can be summarized in the following points:

6 -Self-awareness skills: Emotionally intelligent people understand how they feel and feel, what drives and motivates them, what frustrates them, and how they influence others.

7 -Social skills: Emotionally intelligent people know how to communicate with others and how to build relationships and connections with them. They are good at paying attention and listening, and adapt their communications with people according to the needs of these people. Optimism Emotionally intelligent

people adopt positive attitudes in life and look to the future with optimism. Their mental attitudes charge them with the energy to work steadily to achieve their goals despite all obstacles and difficulties. To control emotions, emotionally intelligent people deal with fatigue and anxiety calmly. They consider cases of nervous stress and anxiety as change and personal differences with others.

8 -Flexibility Skills: Emotionally intelligent people adapt to change, and they use their problem-solving skills to develop and find other options.

9 -Life skills: There should be independent courses under the name of life skills within the curricula. (Birney, 2013: 67) Although the teacher's primary role in the classroom is to teach students and convey to them what he knows of academic knowledge, this does not at all prevent there being space for the daily life that students will face in their future. Therefore, there is a need to have classes to teach life skills related to the method of communication, dealing management, and self-skills, which confirms the importance of including independent courses under the name of life skills within the curricula.

Among the most important skills that the researcher may see as necessary in life are decision-making skills, self-criticism, self-enhancement, capacity development, goal setting, emotional management, psychological compatibility, self-confidence, time management, and flexibility, as well as social skills such as: dealing with difficult personalities and controlling anger.

CONCEPT OF LEARNING DISABILITIES

Learning disabilities is a general term that describes the challenges that children face in the learning process, and although some of them have a psychological or physical disability, many of them are normal, although they show difficulty in some processes related to learning: such as understanding, thinking, perception, attention, reading (dyslexia), writing, spelling, pronunciation, performing arithmetic operations, or in skills related to each of the previous processes. Learning difficulties include mentally disabled,

emotionally disturbed, hearing and visually impaired, and people with disabilities, provided that this disability is not the cause of the difficulty. It can also be seen as a continuous condition, and are assumed to be the result of neurological factors that interfere with the development of verbal and non-verbal abilities. Learning difficulties exist as a clear disability with normal to above-normal mental ability, integrated sensory-motor systems, and adequate educational opportunities. This condition varies in its degree of appearance and severity. This condition affects the individual's self-esteem, education, career, social adaptation, and daily life activities throughout his life. (Kate Adams, 2012: 123)

BRIEF HISTORY OF LEARNING DIFFICULTIES

Interest in learning difficulties began primarily in the medical field, especially by scientists interested in what is now known as speech disorders. The role of educators in developing and advancing the field of learning difficulties did not appear significantly until the beginning of the twentieth century, especially in the sixties of the last century, when the term learning difficulties appeared when Samuel A. Kirk, the American psychologist, prepared a university book on special education in 1962, in which the first definitions of learning difficulties appeared. In the same year, the scientific beginning also occurred when Kirk and Bethmann used this term to describe a group of children in classrooms who suffer from difficulties in learning to read, spell, or perform arithmetic operations.

In 1963 a conference was held attended by educators, psychologists, and those interested in the subject of learning difficulties to discuss and discover the problems of cognitively disabled children. In 1975 the term “learning disability” was accepted in the federal law (Education for All Handicapped Children), and this was the final step in stabilizing the term at the national level after great efforts to develop a more specific definition of it and the standards related to it in the Federal Register in 1977.

The seventies were also marked by the emergence of Public Law 94/142, which educators consider one of the most important laws that guaranteed people with special needs in general their rights to education and other support services, and defined the roles of specialists and the rights of their families. The field of learning disabilities had a large share, like other fields of disability, in what this law stipulated. The name of this law has changed and is now known as the Educational Law for Individuals with Disabilities. Since its emergence in 1975, this law has given associations and groups supporting the field of learning disabilities a legal basis from which they can benefit in their calls and demands to provide free appropriate education for students with learning disabilities. Learning disabilities were officially recognized under US Public Law 91/230 of 1969 regarding children with learning disabilities. (Al-Zahir, 2008:89 & Mohammed, 2009: 56)

CLASSIFICATION AND TYPES OF LEARNING DIFFICULTIES

Specialists in the field of learning difficulties classify the latter into two main groups:

1- Developmental Learning Disabilities.

These difficulties are related to brain functions, and to the mental and cognitive processes that the child needs in his academic achievement, and the reason for their occurrence may be functional disorders related to the central nervous system, and these difficulties affect pre-academic processes, such as attention, perception, memory, thinking and language, on which academic achievement depends, and constitute the most important foundations on which the individual's cognitive mental activity is based.

2- Academic Learning Disabilities.

This refers to difficulties in academic cognitive school performance, which are represented in reading, writing, spelling, written expression and arithmetic, and these difficulties are largely related to developmental learning difficulties. Below is a list of the most important academic learning difficulties, and an

overview of each one, with separate articles devoted to each difficulty:

A- Dyslexia (reading difficulties).

This is a term known as “dyslexia”, which means the student’s inability to read, and it is divided into two types:

- Reading difficulties: Students who suffer from this difficulty show a low ability to acquire reading and writing skills, and these difficulties often cause them to avoid reading and writing and try to learn the material by heart, in order to hide their reading difficulties. Some of the manifestations of reading difficulties include: lack of accuracy in reading, slow reading, difficulties in understanding what is read, difficulty in spelling, reverse writing of words and letters, and sometimes even linguistic difficulties in organizing sentences and distinguishing between sounds.
- Comprehension difficulties: We talk about this concept when the student cannot understand the meanings of words, phrases and sentences.

B- Writing difficulty (dysgraphia). This term refers to the student’s inability to write, or that he cannot think while writing.

C- Attention and concentration disorders. Attention and concentration disorders (ADD) appear in difficulty maintaining continuous attention, distraction and high sensitivity to external stimuli. When attention and concentration disorders are accompanied by hyperactivity (ADHD), these symptoms are accompanied by hyperactivity, impulsivity (impulsivity), emotional volatility and difficulty in postponing satisfaction (gratification of desires).

D- Difficulty in calculation (Dyscalculia). It affects the ability to acquire arithmetic skills, and students who suffer from this difficulty are characterized by a deficiency in understanding the relationship between numbers, difficulties in visual or auditory perception of numbers, and they also suffer from difficulty in performing arithmetic operations and others.

E- Difficulty in movement (Dyspraxia). This term expresses a sensory integration disorder and includes problems with

"balance - coordination between hand and eye performance", i.e. the student's inability to coordinate and control simple movements such as writing and cutting, or more complex movements such as running and jumping. (Sandra H, et al 2011: 32).

SIGNS OF LEARNING DIFFICULTIES

Youssef, (2012: 79) stated that learning difficulties are difficult to detect due to their complexity and overlap with other symptoms, but experts usually discover them by measuring what the child achieves compared to what is expected of him according to his level of intelligence and age. In general, there are some indicators that indicate the presence of a learning difficulty, which we summarize as follows:

1- Before four years:

- Difficulty pronouncing words.
- Difficulty sticking to the tune while singing or chanting.
- Problems learning letters, numbers, colors, shapes, and days of the week.
- Difficulty understanding and following directions, and in following routines as well.
- Difficulty holding a pen, chalk, or scissors.
- Difficulty dealing with buttons and tying shoes…

2- From the age of four to nine:

- Difficulty linking letters and how to pronounce them.
- Difficulty linking the sounds of letters together to pronounce a word.
- Confuses words when reading them.
- Constantly makes spelling mistakes, and always makes mistakes in reading.
- Difficulty learning basic concepts of arithmetic such as addition and subtraction.
- Difficulty telling time and remembering the order of the parts of the day and hour.
- Slow to learn new skills.

3- From nine to fifteen years old:

- Difficulty reading texts and doing arithmetic.

- Difficulty answering questions that require writing.
- Avoids reading and writing.
- Writing one word in more than one way on one topic.
- Poor organization and organization.
- Unable to integrate into class discussions and express his ideas.

CAUSES OF LEARNING DIFFICULTIES

Recent studies have shown the existence of multiple and overlapping causes of learning difficulties, which we summarize as follows, (Rosan, Farouk 2005: 101):

- Defects in brain development: During the stages of fetal development, some defects and errors may occur that may affect the formation and connection of nerve cells with each other, and scientists believe that these errors or defects in nerve cell development are what lead to the emergence of learning difficulties in children.
- Genetic defects: It is often noted that learning difficulties are prevalent in certain families, and it is believed that this matter is due to a genetic basis. For example, children who lack some of the skills required for reading, such as hearing the distinctive and detailed sounds of words, it is likely that one of the parents suffers from a similar problem.
- Problems during pregnancy and childbirth: The emergence of learning difficulties in a child can be linked to the stages preceding his birth. In some cases, the mother's immune system reacts to the fetus as if it were a foreign body attacking it, and this reaction leads to a disruption in the development of the latter's nervous system. In other cases, the umbilical cord may twist around itself during birth, leading to a sudden lack of oxygen reaching the fetus, which leads to impairment in brain function and difficulty learning in adulthood. Smoking, drinking alcohol, or some dangerous medications during pregnancy can also cause the child to suffer from learning difficulties.
- Pollution and environmental problems: Research has shown that environmental pollution can lead to learning difficulties due to its harmful effect on the growth of nerve cells. Studies have shown that lead, which is an environmental pollutant resulting

from the combustion of gasoline and is also found in drinking water pipes, can lead to many learning difficulties.

TREATMENT OF LEARNING DIFFICULTIES

We have seen in the previous article that learning difficulties have multiple causes, and it is natural that the treatment be proportionate to the nature of the difficulty that the child suffers from and the degree of its severity, and it is also natural for the efforts of the various stakeholders in raising the child from parents, teachers and psychologists to be combined. In general, the potential effects of learning difficulties can be mitigated by activating the following guidelines:

A- Parents' understanding of the problem: Parents must understand the nature of their children's problems and help the school in building a treatment program for these children away from psychological tensions.

B- Special educational program: A special educational program should be planned appropriate for each child according to the type of learning difficulty he suffers from, and this is done in cooperation between the psychologist, the teacher and the family.

C- Early diagnosis and intervention: The diagnosis of the affected child's condition should be done under the supervision of psychologists, and the earlier the diagnosis is made, the better we can deal with the child and avoid a lot of misunderstandings.

D- Cooperation between school and family: Learning difficulties affect life as a whole, so the treatment program must be comprehensive for all aspects of learning, and in full coordination between the family and the school.

CONCLUSSION

The study showed that the instructional materials has a positive impact in integrating and developing the skills of students with learning difficulty, and also help them with variety of skills such as self-care skills, social skills, communication skills, cognitive skills, which give them ability to be part of the normal

educational settings, as well as becoming active members of their community. One of the most important things that must be focused on in qualifying students with special needs are skills, whether they are communication or social skills, which are the basic pillar of the rest of the skills, since humans are social by nature, and cannot master the rest of the skills without them, so the interaction of humans with their social environment through good communication achieves many things and successes for them, as well as other skills such as cognitive skills and self-care skills, and many skills that students with special needs need. From the above, we find that instructional materials are of great importance in achieving educational goals. because people with special needs are the individuals who deviate from the normal or average level in a characteristic, or in one or more aspects of their personality, from the average performance of their normal peers, to the extent that it becomes necessary to provide services or the presence of special care such as educational, medical, rehabilitation, social or psychological services.

RECOMMENDATIONS:

- The need to focus on activating the role of instructional materials in developing cognitive and social skills among students with learning difficulty.
- Training students with special needs to defend their rights, through educational means.
-Developing instructional materials for students with learning difficulty according to the skills that are desired to be developed in them.
- Conducting studies and research on the impact of instructional materials on integrating students with learning difficulty with appropriate skills they need.

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Utilizing Artificial Neural Networks (ANN) to forecast Autism Spectrum Disorders (ASD)

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Abstract Autism Spectrum Disorders (ASD) are a type of neurodevelopmental disorder that often manifests in the early years of a child's life. These symptoms are defined as a deficiency in both verbal and nonverbal communication abilities utilized in soci .This research will primarily focus on detecting the condition using a battery of tests that involve training and instructing a foreground-backward neural network. Based on the obtained results, the condition is diagnosed in the affected individual. The tests rely on diagnostic data regarding the parents, as well as information pertaining to the child. Based on the acquired results, it was determined that the diagnostic success rate is as high as ٧0%.

Keywords Autism Spectrum Disorders, Artificial neural networks, Prediction.

1- INTRODUCTION

is one of the important neurodevelopmental disorders that have many burdens for both the individual and society and manifest itself with deficits in social communication-interaction and limited-repetitive behavioral patterns, whose symptoms start in the early developmental period and cause clinically significant impairment in social or other important areas of functioning [1]. Although symptoms can be seen even in the 6–12-month period, the diagnosis age is usually around 24 months [2]. Studies on the prevalence of ASD have indicated that its prevalence varies according to the countries and the diagnostic methods used; however, the main emphasis is that the incidence is gradually increasing [3]. In general, the prevalence in developed countries is reported to be 1-5% [4]. A study comparing the prevalence of ASD in China and western countries found a 1% prevalence rate [5].

Given that the dramatic increase in its prevalence rates, it is important to know the situations that pose a risk for ASD. Several factors have been suggested in the etiology. In the meta-analysis study conducted by Tick et al.[6], it was emphasized that ASD is hereditary at a rate of 64-91%, and environmental factors, as well as genetic features, have an important effect on the increase in ASD prevalence [7]. Among environmental factors, prenatal characteristics are shown as one of the most important factors emphasized in ASD etiology. A meta-analysis study by Gardener et al. [8] has determined that advanced parental age at pregnancy, mother's use of medication in the prenatal period, presence of gestational diabetes, history of bleeding in pregnancy, being the first-child are the risk factors associated with ASD [9].

The importance of early detection of people with (ASD) and early intervention greatly contributes to setting the appropriate treatment mechanism for the affected individuals, treating them, improving their condition, and leading their lives normally [10].

There are many criteria that can be used in diagnosing a disorder of Autism, starting with the standards that were set by the scientist “Leo- Kanner” in 1943 and passing through many standards that were set from Before scientists, specialists, international centers, and organizations, end to standards Diagnostics contained in the fifth statistical and diagnostic manual, (V5-DSM) issued by the American Psychiatric Association in 2013, which can be referred to below because it is characterized by being the most accurate, most widely used and accepted in clinical and educational circles, Figure 1 shows the traditional approach (outlined above) [11], [12].

Machine learning is a subfield of artificial intelligence, and machine learning (ML) has spread into many different fields and disciplines, which has the potential to greatly enhance the role of computational methods in neuroscience. This is evidenced by the substantial work that has been done in the field of development, and here I will use machine learning to diagnose

and detect those with and without autism spectrum disorder through the use of ANN, therefore allowing machine learning models to predict the likelihood of having (ASD).

2- RELATED WORK

• Ucuz, A. Uzun Cicek, 2020 [13] the purpose of this study is to establish that Autism Spectrum Disorders "ASD" are among the most significant neurodevelopmental diseases. Using prenatal-perinatal variables, family history, and developmental traits that are highlighted in the literature as risk factors for "ASD", this study sought to do artificial intelligence-based modeling. Materials and Methods: The research was designed utilizing retrospective management, and data from 136 children with "ASD" and 143 healthy children were included. Results: According to the A multilayer perceptron(MLP) model's findings, the average age of the first words (months), average age of head control (months), average age of unassisted sitting (months), average age of autism in the family history (years), and average paternal age at conception were the five variables that were most important (months). The overall percentages for the testing and training samples were 88.0% and 91.4%, respectively. The model's Area Under The Curve (AUC) for separating the autism and control groups was 0.922. In conclusion, the proposed model can distinguish autistic spectrum disorder patients from healthy people and pinpoint the risk factors for the condition.

• Ganesan, Srividhya, and J. Senthi, 2021[14], the aim of this research: Autism is often described as a pervading disorder. The word "pervasive" suggests an acute condition. People with autism spectrum disorders ("ASD") have trouble engaging with others. They also struggle with hyperactivity and behavioral problems while reacting to activities. Numerous technical developments have improved the ability to anticipate the characteristics of autism. The emphasis of this study is on several machine learning techniques for categorizing an autistic youngster. It primarily focuses on classification models utilizing

Convolution Neural Network (CNN), and Haar Cascade with the Visual Geometry Group16(VGG16) algorithm of the Support Vector Machine (SVM) classifier. Using these models, more accuracy was obtained in comparison to other categorization methods.

• Lakhwinder K., Vikas K., 2017 [15], In this study, we covered the definition of autism, its symptoms and indicators, diagnosis, and the many technologies used in the evaluation and treatment of autistic children. Many artificial neural networks (ANNs) and fuzzy-based systems have been applied to the task of diagnosing autism's severity. Diagnosing whether or not a kid has autism using ANNs and a fuzzy system is feasible.

• Avishek C., Christopher M., 2018 [16], in this study, a data set that is used for autism screening was used. It consists of 10 personal characteristics and 10 behavioral traits that may be used to distinguish cases of "ASD" from controls in behavioral science. The procedure of diagnosing" ASD" is costly and time-consuming. Rapid and low-cost screening tools are needed since the number of people diagnosed with "ASD" is rising rapidly across the globe. An artificial neural network (ANN) using the Levenberg–Marquardt algorithm for autism spectrum disorder “ASD” identification and evaluation of prediction accuracy. Next, we must create a clinical decision-making support system for early autism spectrum disorder characterization.

• Nguyen V., Ngo L., 2018 [17], this paper details the systematic exploration of using this combination to facilitate early "ASD" diagnosis. The presented data suggests that this approach may form the basis of the decision-support system employed in "ASD" research and diagnosis.

2- MATERIAL AND METHODS

2.1. Study Procedure

This study was designed retrospectively and conducted on the data of 292 patients diagnosed with ASD (case group) .ASD

was diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) criteria [10]. Children with known chronic medical illness(es) and non-psychiatric drug use were excluded from the study. We will take a dataset based on age, gender, and behavioral traits and characteristics that are effective in detecting ASD cases from controls in behavioral science. We create a questionnaire consisting of 10 questions for the children. Once the answers are identified, they are fed into an artificial neural network to determine whether the child has ASD. The ASD analysis around the trait/characteristics datasets is shown in Table 1

Table 1. Analysis of autism spectrum disorder the attributes and descriptions

Attribute	**Type**	**Description**
Age	Number	Years
Gender	String	Male or Female
Ethnicity	String	List of common ethnicities in text format
Born with jaundice	Boolean (yes or no)	Whether the case was born with jaundice
Family member with PDD	Boolean (yes or no)	Whether any immediate family member has a PDD
Who is completing the test	String	Parent, self, caregiver, medical staff, clinician ,etc.
Country of residence	String	List of countries in text format
Used the screening app before	Boolean (yes or no)	Whether the user has used a screening app
Screening Method Type	Integer (0,1,2,3)	The type of screening methods chosen based on age category (0=toddler, 1=child, 2= adolescent, 3= adult)
Question 1 Answer	Binary (0, 1)	The answer code of the question based on the screening method used

Question 2 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Question 3 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Question 4 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Question 5 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Question 6 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Question 7 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Question 8 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Question 9 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Question 10 Answer	Binary (0, 1)	The answer code of the question based on the screening method used
Screening Score	Integer	The final score obtained based on the scoring algorithm of the screening method used. This was computed in an automated manner

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2.2 - ARTIFICIAL NEURAL NETWORKS (ANNS):

. An artificial neural network (ANN) is a mathematical model based roughly on the human brain in that it consists of a connected network of simple processing units (artificial neurons) that learn from practice by adjusting their connections (weights). The ability of brains to behave adaptively depends on their ability to adjust their behavior based on changing situations. Neural networks efficiently mimic human brains and this learning behavior by updating the network parameters Θ based on available data $D = \{z(1) \ldots z(N)\}$, allowing the construction of large talented models to solve complex cognitive tasks. Learning continues by making adjustments to the network parameters Θ so that its output increasingly matches the agent's goals at hand. This is formalized by a cost function $J(\Theta)$ that measures the degree to which the agent is moving away from its

goals. J is calculated by running a neural network in a forward mode (from input to output) and comparing the expected output to the desired output. During its lifetime, the client obtains data from its environment by aggregating from the pdata data generation distribution [18].In training, connections (weights) are assigned. Most training algorithms start by assigning random numbers to the weight matrix. The neural network is then checked for correctness. After that, the weights are adjusted based on how well the neural network performs. This process is repeated until the validation error is within an acceptable limit [`19]. Artificial neurons are grouped into layers as shown in Figure(1). Each layer contains a set of neurons that perform similar functions. There are three types of layers. The input layer, which is responsible for receiving input from the user program, the output layer, which sends data to the user program, and the hidden layer(s) between the input layer and the output layer. The neurons in the hidden layer do not interact directly with the user program. Not every neural network has this number of layers. The hidden layer is optional. The input and output layers are mandatory, but it is possible to have a layer that acts as both the input and output layer [20].The model is validated after the neural network is trained to evaluate the model to see if it is ready for real use. To properly validate a neural network, the validation data must be different from the training data [21]. In this paper, This many layers aren't found in every neural network. It's up to you whether or not to use the concealed layer. Although both the input and output layers are required, it is conceivable to have a single layer that serves as both an input and an output layer. [22]. After a neural network has been trained, model validation is performed to see if the model is suitable for usage. Validation data must differ from training data in order to appropriately validate a neural network [23]. We used around 80% of the entire sample data for network training and 20% for network validation in this article. The major goal of our research is to create a neural network that can be used to predict whether or not someone has autism. For this, a dataset from the "ASD Tests" application for autism screening

was utilized. The aim of the paper is to detect UTISM using ANN.

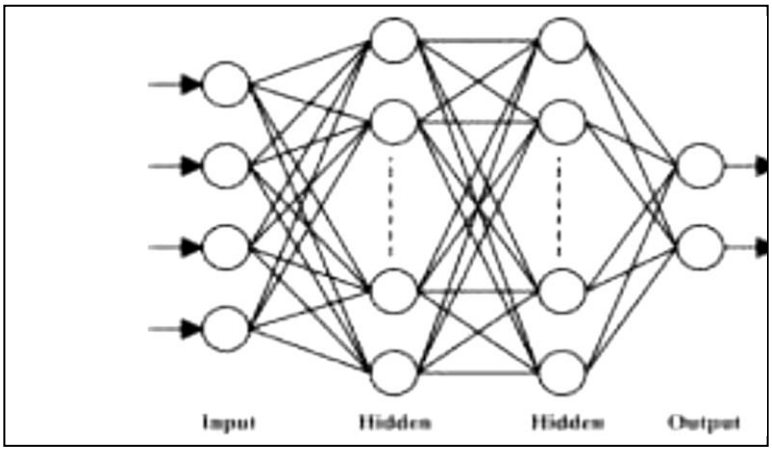

Figure 1: ANN Architecture

3-THE PROPOSED WORK AND RUESELT

In this case will using adaptive neural network depend on the number of testing that put it as input layer and the testing of parents and put it as hidden network. In this research it takes 292 were selected between an autistic child and a normal child. So, our ANN contain 4 layers (input layer, 2 hidden layer, output layer), this design need 2 hidden layer because one layer for the taste of parents and the second layer for random weights. The numbers of nodes are also different between input layer and first hidden layer. In this search takes many cases:

1) The first case:

In this were taken 3 symptoms of the disease that the child suffers from. Along with three of the characteristics of the test for the parents, so the network parameters are shown in table 2 below and the result applying ANN to the first case shown in the table 3. Figure 2 shows the Graphics success Rate-Generation first case :

Table 2. The parameters of ANN for first case.

The Parameters	Values
The node of input layer	2
The node of hidden1 layer	3
The node of hidden2 layer	3
The node of output layer	1
The connection between input and hidden layers	6
The connection between hidden1 and hidden2 layers	9
The max-generation (max-iteration)	125
"The range of initial weights (wg)."	[0,1]
The error factor (alfa)	0.1

Figure 2. Graphics success Rate-Generation first case .

2) The second case:

In this were taken 4 symptoms of the disease that the child suffers from. Along with four of the characteristics of the test for the parents, so the network parameters are as the following table 4 shows and the next table 5 we will see the result applying ANN to the second case. The Graphics success Rate-Generation second case after applying ANN in the figure 3.

Table 4. The parameters of ANN for second case.

The parameters	Values
The node of input layer	4
The node of hidden1 layer	4
The node of hidden2 layer	4
The node of output layer	1
The connection between input and hidden layers	16
The connection between hidden1 and hidden2 layers	16
"The max generation (max iteration)"	154
"The range of initial weights (wg)"	[0,1]
The error factor (alfa)	0.1

Table 5. The result applying ANN to the second case.

Generation	Error	Time	Effort	Success Rate
36	0.0539	0.9 sec	1100	43%
47	0.0183	1 sec	1400	45%
59	0.00962	1.066 sec	1600	52%
63	0.00857	1.543 sec	1640	54%
76	0.00717	1.895 sec	1743	57%
85	0.00656	2.764 sec	1762	62%
110	0.00649	2.877 sec	1784	68%

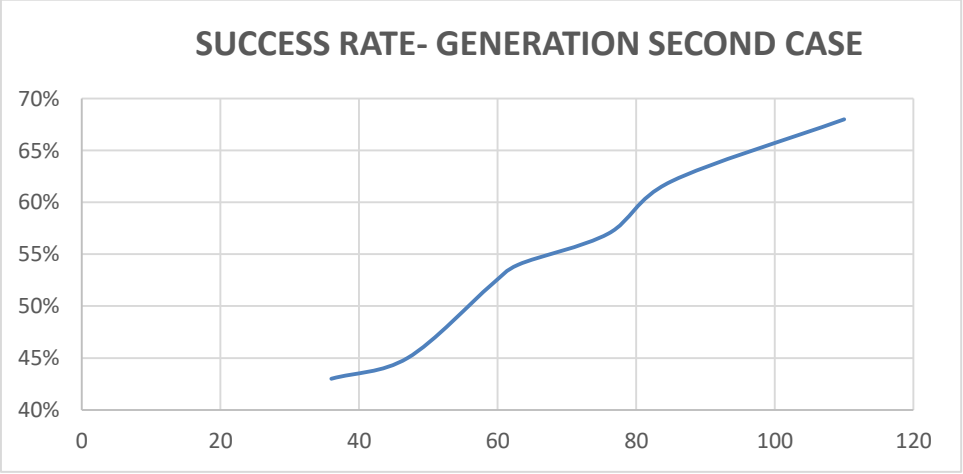

Figure 3. Graphics success Rate-Generation second case.

3) The third case:

In this were taken 6 symptoms of the disease that the child suffers from. Along with five of the characteristics of the test for the parents, so the network parameters are as illustrated in the table 6 below and will see in the table 7 the result applying ANN to the third case and the Graphics success Rate-Generation third case after applying ANN in the figure 4.

Table 6. The parameters of ANN for third case.

The parameters	**Values**
The node of input layer	6
The node of hidden1 layer	5
The node of hidden2 layer	5
The node of output layer	1
The connection between input and hidden layers	30
The connection between hidden1 and hidden2 layers	90
“The max generation (max iteration)”	200
“The range of initial weights (wg)”	[0,1]
The error factor (alfa)	0.1

Table 7. The result applying ANN to the third case.

Generation	**Error**	**Time**	**Effort**	**Success Rate**
69	0.00657	2.567 sec	1640	60%
80	0.00517	2.764 sec	1876	69%
90	0.00356	3.087 sec	1987	76%
105	0.00249	3.165 sec	2076	82%
126	0.00085	3.398 sec	2156	88%
132	0.00062	4.005 sec	2854	91%
149	0.00038	5.876 sec	3176	97%

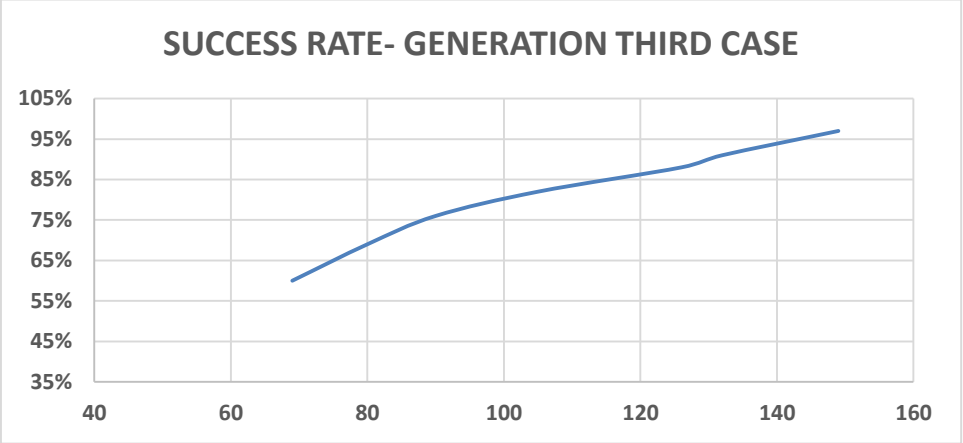

Figure 4. Graphics success Rate-Generation third case .

After that, will see the final result applies ANN to all cases in table 8 below, and the final Graphics success Rate-Generation for all cases in the figure 5. Through the above tables and graphics, it is clear that the best results for diagnosing cases of autism are by entering several symptoms and a number of parental tests into the neural network, and after the training and learning process, the success rate were high, reaching 97 percent. This network can be applied to various other tests and to other people with other symptoms.

Table 8. The final result applying ANN to the all cases.

	Generation	Error	Time	Effort	Success Rate
Case 1	96	0.00492	2.895 sec	1784	60%
Case 2	110	0.00649	2.877 sec	1784	68%
Case 3	149	0.00038	5.876 sec	3176	97%

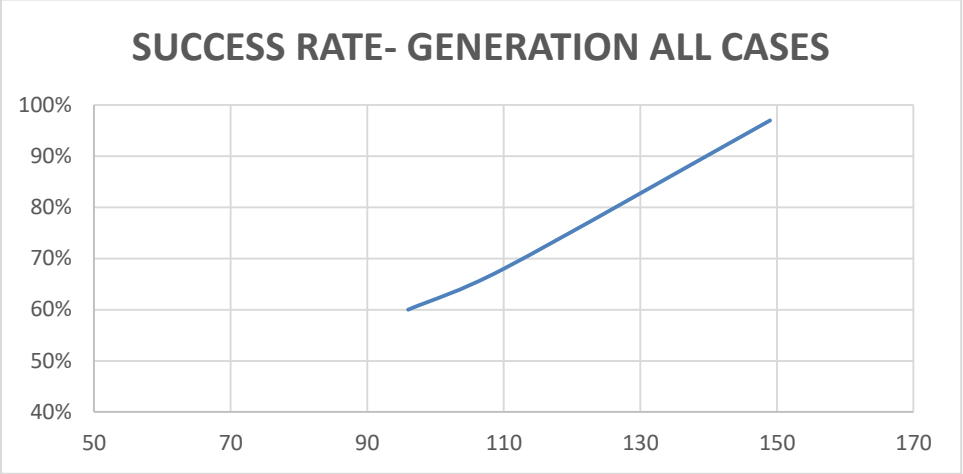

Figure 5. Graphics success Rate-Generation all cases.

4. CONCLUSIONS

The study presents an approach for diagnosing autism using an adaptive neural network that takes into consideration both the symptoms of the disease and the characteristics of the parents. The approach was tested on 292 cases and the results show that the best performance was achieved by using several symptoms and parental characteristics as inputs to the Artificial neural network. The study found that the approach can achieve a high success rate of 90% in diagnosing autism. This approach can be applied to other tests and individuals with different symptoms, making it a promising tool for autism diagnosis.

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