The Effectiveness of an Intervention Program for the Development of Social and Emotional Capacities of Children with a Hearing Impairment

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Abstract

The study aimed to identify the extent of effectiveness of an intervention program based on the psycho-educational approach and including various activities of Arabic language and mathematics and their use to develop the social and emotional capacities of a sample of children with a hearing disability, amounting to (20) children, the sample was intentionally divided equally into two groups, one experimental and one control. The participants in the experimental group followed the activities of the intervention program for the improvement of the level of emotional sensitivity, social control, social sensitivity, over (24) sessions, for a period of eight weeks. While participants in the control group were not exposed to any activities, participants in both groups completed a social capacities test before and after the program. Statistical results indicated the effectiveness of the intervention program activities in developing the social and emotional capacities of children with hearing impairment.

Keywords

Hearing Impairment, Social Capacities, Emotional Capacities, Intervention Program

1. Introduction and Problematic

The care of people with special needs is an important task, punctuated by many difficulties, which requires first of all the recognition of the value of the human being, then the commitment and the will to change the view of its owners and the society in all its spectrums in order to integrate them as productive members

according to their capacities, Children with hearing loss are classified as having special needs, where hearing loss varies in its extent and estimates among children. It has been estimated that less than 2% of the one month to fourteen-year-old age group have a hearing impairment. In another report, it was estimated that 5% of all school children have hearing difficulties and need special educational services. The percentage of deaf people was estimated at 1% of the total population. Despite the different statistical estimates of people with hearing loss from one society to another, it is agreed that hearing is one of the most important senses possessed. This importance is particularly evident through its impact on various aspects of human development. It is directly linked to social and cultural interaction. Thus, the loss or having a defect causes serious deficiencies in many aspects, the most important of which are social and emotional capacities (ASHA, 2006). Hearing impairment also has negative effects on emotional development, leading to feelings of inferiority for the hearing impaired. Because of his inability to understand with those around him and communicate his ideas to them, this leads him to withdraw and not participate in the community of listeners (Smith, 2004). The hearing impaired is one of the specific categories that has an increased interest in our time, both in terms of research and education, because this group has many problems that need to be treated to help them continue life more easily, and this has led to the invention of many methods to deal with these problems, which can help develop their capacities and prepare them to understand the world around them, improving their abilities of social interaction, social control and emotions by employing various educational programs and intervention. Especially since the intelligence level of people with hearing loss is not different from the intelligence level of hearing people and they have the capacity to learn and think unless they suffer from disability-related brain damage (Moore's, 2001). One way to achieve the principle of equal educational opportunities among individuals is to enrich educational practices by diversifying educational situations, adapting curricula, and seeking appropriate and modified methods that meet the specific educational needs of learners (Smith, 2004). Therefore, the study was chosen as a research topic to identify the effectiveness of an intervention program for the development of social and emotional capacities of children with hearing impairment, based on the psycho-educational approach in the fields of Arabic language and mathematics. The research problem lies in the following main question:

Are there statistically significant differences between the means of the experimental group's scores on the pre- and post-tests of social and emotional capacities due to the applied intervention program? It is divided into the following sub-questions

1) Are there statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of emotional sensitivity due to the applied intervention program?

2) Are there statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of

social control due to the applied intervention program?

3) Are there statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of social sensitivity due to the applied intervention program?

2. Theoretical Framework

2.1. Hearing Impairment

The OMS (2021) definition is based on this division: Hearing impairment and deafness:

Hearing impairment is when a person is not able to hear as well as a person with normal hearing, the threshold being 20 dB or better in both ears. Hearing impairment can be mild, moderate, severe or profound. It can affect one or both ears and cause difficulty following a conversation or hearing loud sounds. People with hearing impairment have moderate to severe hearing impairment. However, they usually communicate through speech and may benefit from the use of hearing aids, cochlear implants or other assistive listening devices and captioning. Deaf people usually have profound hearing impairment, which means that they have little or no hearing. They usually communicate through sign language (OMS, 2021).

Deafness can be considered a functional disability that disrupts the individual's daily activities as well as their social roles in their surroundings. This disorder spoils one's life and happiness (Grandmont & Ndayisaba, 1999: p. 120).

2.1.1. Methods of Communication with Hearing Impaired Children

- **Oral method:** It consists in reading the movement of the lips and is based on the training of the deaf and hard of hearing child to the precise visual observation, by paying attention to the face and the gestures of the speaker. The oral method is a kind of cooperation between the sense of hearing and the sense of sight to establish the communication between the hearing and the deaf (Rochette & Tardif, 1994).
- **Auditory training:** This means training people with simple and moderate hearing impairment to listen and distinguish between sounds, words or alphabets. The need for audio training increases as the degree of hearing impairment decreases.
- **Manual Communication:** This is one of the clearest and most widely used methods of communication and includes two types of manual communication: Sign Language: This is a manual visual sensory system based on the link between sign and meaning. Signs are divided into two parts: Descriptive signs: are manual signs that have a specific meaning related to tangible and sensory things in the mind of the deaf person and express them with signs, such as raising the hand to express size and opening the arms to express abundance. And non-descriptive signs: these are signs that have their own meaning and serve as a common language for people with hearing impairment such as pointing up to express something good and pointing with a finger down to

indicate something bad (Lepot-Froment & Clearebaut, 1996).

- **Finger Spelling:** It is considered one of the most important total communication systems for people with hearing loss, because it establishes a unified composition with sign language and expresses a vocabulary that has no sign, especially in the case of not knowing a single specific sign or the names of people. Sign language expression is not limited to finger movements, but also includes facial expressions. This reflects cases of anger, sadness, joy, wonder, surprise, and others, and learning finger spelling is related to much practice. The more the deaf learner masters finger spelling, the more likely he is to improve his or her level of achievement in general and also his capacity to communicate with others (Virole, 2006).

- **Total communication method:** the total communication method means the right of every hearing impaired child to learn all possible methods of communication in order to have a greater opportunity to enrich and develop his language (Lepot-Froment & Clearebaut, 1996).

2.1.2. Hearing Impairment Classification

Hearing impairment can be classified according to three criteria:

- **Classification by age of Hearing impairment:** In this case, the hearing impairment occurs at birth or at an early age before the development of language and speech in the child, that is before the age of three. Thus, this has negative effects on the child's language development because he loses a lot of auditory stimuli, resulting in a lack of diversity and limitations of experiences, so that he is unable to learn speech and language (Hallahan & Kaufman, 2003).

- Acquired or post-language hearing impairment: The category of people with hearing loss who have lost all or part of their hearing capacity after language acquisition falls under this classification, as they are distinguished by their capacity to speak because they have heard and learned the language (Hallahan & Kaufman, 2003).

- **Classification by location of hearing impairment:**

    This definition is based on the nature of the impairment or defect of the hearing system in general. Thus, the hearing impairment is classified according to the location of damage in four categories:

- Conductive hearing impairment: it is the result of a defect affecting the outer and middle ear while the inner ear is intact. It is one of the simplest types of hearing impairment due to problems that prevent the conduction of sounds to the inner ear until they are interpreted and analyzed by the higher auditory areas (Ndayisaba & Grandmont, 1999).

- Sensorineural hearing impairment: it is the result of a defect affecting the inner ear or the area between the inner ear and the neck area of the brain, while the middle ear is healthy and the outer ear is healthy. In this case, the problem is in the process of analysis and interpretation of sounds and not in their conduction (Ndayisaba & Grandmont, 1999).

- Mixed hearing impairment: this type of disability combines conductive and sensorineural hearing impairment, so that the hearing disability is mixed if the person has both a conductive and a sensorineural disability, and therefore there is a large gap between air and bone conduction of sound waves, hearing aids can be used in this case (Ndayisaba & Grandmont, 1999).

- Central Hearing Impairment: In this case, there is a defect or disorder that prevents sound from reaching the auditory pathways in the auditory centers of the brain. People with this type of hearing impairment often have severe neurological disorders that override the hearing impairment. The usefulness of hearing aids is limited, as is medical treatment (Guidetti & Tourette, 1996).

- **Classification according to the severity of hearing Impairment:** This classification depends on the degree of hearing impairment as an indicator of the ability to hear and understand speech. In this type of classification, the concept of decibel hearing units is used (Hallahan & Kaufman, 2003). They cited the classification that has been adopted by the Specialized Committee for the Development of Services for the Hearing Impaired in the United States. This is shown in Table 1.

2.2. Social and Emotional Capacities

Riggio & Throckmorton (1990) defines social capacities as the individual's capacity to express themselves emotionally and socially verbally, in addition to

Table 1. Distribution of hearing impaired individuals by degree of loss, difficulty, and expected impact on speech hearing.

Degree of loss	Level of difficulty	The expected effect on hearing sounds and understanding speech
10 - 15 dB	Normal	There are no signs of disability at this level of hearing loss
16 - 25 dB	Very simple	The individual does not find it difficult to perceive speech in quiet places, but in noisy speech, it is difficult to understand
26 - 40 dB	Simple	The individual has no difficulty communicating in conversations that take place in quiet places and vocabulary is limited, and it is difficult to hear faint or distant speech even if the environment in which the individual is located is quiet
41 - 55 dB	Medium	The individual can only hear speech up close, but in group activities, such as classroom discussions, they pose a challenge to individual communication
56 - 70 dB	Medium-severe	The individual can hear the speech that is made loud and clear, and has a lot of difficulty following and understanding the speech that takes place in group situations, and it is often noticed on the speech of the individual that it is weak although it is understood
71 - 90 dB	Acute	The individual cannot hear speech if it is not loud, and even then he cannot distinguish many words because he can hear the sounds in his environment, although they are not always understood, but in terms of speech he is not understood at all.
plus de 90 dB	Very acute	The individual can hear loud sounds, but cannot hear conversation at all, and sight is the best way to communicate and speech is difficult to understand

their capacity to control and regulate their non-verbal expressions, such as their capacity to control their emotions, to receive and interpret the emotions of others, and their capacity to role play and present themselves appropriately in social situations. This definition by Riggio is considered the most accurate and comprehensive, which is why social capacity include three components:

- Transmission capacities, or what is called expressiveness, refers to the capacity with which individuals communicate with each other.
- Receiving capacities, or so-called sensitivity, express the individual's ability to interpret communication messages with others.
- Control capacities refer to the capacity that allows individuals to regulate the communication process in social situations.

These capacities can be explained as follows: emotional expression, emotional sensitivity, emotional control, social expression, social sensitivity, and social control.

From what has been presented, social capacities can be considered a multidimensional component that includes the capacity to send, receive, organize, and control personal information during verbal and non-verbal communication situations.

The acquisition and development of social-emotional capacities is the most important developmental requirement of the preschool stage. The capacity to interact with others is a prerequisite for a child's successful participation in play and learning activities (Wortham, 2005). Therefore, there is a relationship between the amount of learning that the child achieves in play and group learning activities, and their social-emotional capacities (Naceur, 2010, 2013). This relationship provides an excellent example of the principle of overlap between different areas of development, whereby the development of one area affects and is affected by the development of other areas. There is research evidence on the relationship between children's social-emotional capacities and their academic success (Blair, 2002; Denham & Weissberg, 2004; Raver, 2004; Smith, 2003; Zins, Bloodworth, Weissber, & Walberg, 2004).

For example, in reviewing previous studies on the topic of school readiness, it was found that children's social skills and abilities are an important factor in predicting their academic success.

It outweighs factors related to their mental abilities or family background. This strong research evidence supports the need to pay attention to children's social and emotional adjustment and to improve their social and adaptive capacities (Raver & Knitzer, 2002).

Goleman, the creator of the five-factor model of emotional intelligence, concluded that an individual's happiness in life depends on his emotional intelligence coefficient than on his general intelligence. Goleman believes that emotional intelligence consists of a set of social-emotional capacities. He summarizes his description of the effect of these capacities on the individual by saying that it is "*another way to show or express intelligence*". Emotional intelligence, according to him, consists of five components: Self-awareness (the individual's awareness

and understanding of his feelings), self-management (managing feelings in a way that prevents them from disrupting one's life), self-motivation (maintaining a situation in which the individual is highly productive), awareness of others (sensing and empathizing with the feelings of others), and managing relationships with others (using social skills for fluid interaction with others) (Goleman, 1995). Socio-emotional capacities are the ability of an individual to understand and manage the socio-emotional aspects of his life and to express them in a way that allows him to accomplish different tasks. They also emphasize the importance of these capacities in helping the individual to succeed academically and in the area of relationships with others, problem solving, conflict resolution and adapting to the various demands of life. They classified social-emotional capacities into three domains: self-awareness, self-control, and cooperation and concern for others (Elias, Zins, Weissberg, Frey, Greenberg, Haynes et al., 1997).

Evidence from brain research findings supports Alice and her colleagues' thesis about the relationship between social-emotional capacities and learning.

The results of this research have shown that there are no pure thought processes, but rather that thought processes are the product of the harmonious work between the mental aspects on the one hand, and the socio-emotional aspects on the other, which proves the existence of a relationship between brain activity and the level of relaxation of the student's brain, hence the efficiency of the brain decreases when it is exposed to high stress levels. In many cases, stressful situations result from conflicts or problems that the student faces due to a lack of necessary social-emotional capacities (Myrah & Erlauer, 1999; Fogarty, 1998).

In his book "*Celebrating Neurons: An Educator's Guide to the Human Brain*", Sylwester (1995) explains how social-emotional capacities enhance students' learning opportunities and academic success, highlighting the role of these capacities in influencing student motivation to learn and memory. Sylwester believes that a student's capacity to fully utilize their biological and neurological abilities is related to the extent of their dedication to learning tasks, which is achieved when they have successful relationships in the learning context. And effective capacities that allow him to solve the conflicts and personal problems he faces. In the same context, Erlauer states in his book "*The Corresponding Class with the Brain* "that the human brain is a social brain, and that academic learning takes place in a social context, and is the result of interaction either between the student and his teachers, or between the student and his peers (Erlauer, 2003).

The mechanism of how social-emotional capacities contribute to a student's readiness to learn can be explained using the famous Maslow theoretical model. As social-emotional capacities help the student to satisfy a number of basic needs, which represent prerequisites to satisfy the need for knowledge. According to Maslow's famous pyramid of needs, the satisfaction of the needs for security, love, belonging and self-esteem precedes the satisfaction of developmental needs, including knowledge (Pressley & McCorm, 1995). Therefore, the rela-

tionship between social-emotional abilities and learning appears. Thus, the student's possession of social-emotional capacities will increase the chances of satisfying his or her basic needs, which will enable him or her to move on to higher needs, the most important of which is knowledge. In other words, social-emotional capacities help students build successful relationships with their teachers and peers and reduce their problems and conflicts with them. This reduces his tension on the one hand, and strengthens his self-esteem resulting from the acceptance of others on the other. The student focuses on his basic needs, which gives him the opportunity to focus on learning and satisfy the need for knowledge (Naceur, 2010, 2013).

As for the relationship between children's social-emotional capacities and their success, it is a circular relationship. This ring relationship is evident in the fact that the development of a student's social-emotional capacities improves his relationships with those around him and reduces the chances that he will come into conflict with them; this positively affects his mood and therefore his level of concentration and attention. Improving the student's level of attention and concentration contributes to increasing the student's opportunity to learn and succeed. As well, academic success represents a positive and enriched experience for the student, which will contribute to the development of positive attitudes towards the school and its students. The student's positive attitudes toward the school and his peers and teachers will reduce the likelihood of conflict with them and develop his relationships with them, which will again have a positive effect on the student's learning and achievement, and so on (Elias, Zins, Weissberg, Frey, Greenberg, Haynes et al., 1997).

In addition, children who can manage their emotions well, can identify other people's emotions towards them and how to respond to them. They also have successful social relationships, enjoy better mental health and are more focused and accomplished in their studies and academic tasks. Children with low emotional intelligence are self-centered and cannot form successful social relationships. They are also unable to regulate their emotions and feelings. They experience feelings of anxiety and frustration due to their poor capacity to handle conflicts and problems that may arise between themselves and others. This leads to feelings of anger and aggression (Elias, 2004). In addition, the capacity to identify feelings is a necessary condition for others to share their feelings and show their emotions, which means that recognizing and maintaining the emotions of others is necessary to build strong personal relationships especially if these relationships are important to the individual, and give a sense of balance in life. As for people who suffer from an incapacity to express their feelings (who have difficulty recognizing their feelings) ,they suffer from difficulties that can affect their capacity to cope with stressful life situations and to communicate effectively; not expressing or suppressing emotions, or being in conflict about their expression, is linked to many psychological problems and has pathological effects on mental and physical health, while the individual's sense of mental and

physical health is linked to the expression of emotions (Bekker, Croon, Vermee, & Balkom, 2008).

In addition, managing feelings is the reason to achieve positive and healthy mental health, as people with intense feelings and emotions are the best at understanding and managing their emotions in stressful situations. They are also more flexible, which means that they coexist effectively in the face of loss, difficulties, adversity, and this is the reason for their skills in managing their emotions and coping mechanisms that they used and the individual's capacity to understand, manage, direct and empathically understand their feelings and emotions for others, which leads them to establish positive social relationships with them, is what is called emotional intelligence (Gawali, 2012). Emotions and feelings have a great influence on the human psyche, so that many experiences of success and failure in human life play a major role in the emotions and mastery of some people in the art of using emotions in a positive, motivating way that stimulates achievement, explodes energy and supports psychological stability, and is one of the pillars for making great souls, while the unbridled emotions that dominate the owner without being controlled by him represent a major obstacle to the owner's progress, and prevent him from achieving any accomplishment. Psychological adaptation indicates the capacity of the organism to adapt to the surrounding environmental conditions when huge and sudden changes occur in the environment, the individual must cope with them with self-change or by changes in the environment, to continue to exist.

Emotional compatibility is an important aspect and essential characteristic of mental health, as a person with mental health is characterized by several features, including:

1) Understanding oneself: through the capacity to know one's needs and goals.

2) Unity of personality: it is the complete and harmonious functioning of the personality, physically, mentally, emotionally and socially, and enjoy development and health.

3) Psychological adaptation: this means the satisfaction of the child with himself and the capacity to socialize.

4) Feeling happy with oneself: which is represented in the feeling of aspects of comfort, tranquility and confidence, and the growth of a positive conception of emotions and their appreciation.

5) Feeling happy with others: which includes the love for others and the propagation of trust between them, and the capacity to establish good social relationships.

6) The capacity to face life: which is represented by a healthy and objective view of life and its daily demands and problems, living in the present and reality, and controlling environmental conditions whenever possible (Yetman, 2000).

Social and Emotional Characteristics of People with Hearing Impairment

One of the most important vestiges of hearing impairment on the personality of the child is the incapacity to establish effective natural social relationships with

others, due to his incapacity to communicate in spoken language, which leads to the emergence of social and emotional adjustment difficulties, as the emotional life of people with hearing impairment is strongly affected by the impairment of the capacity to hear, and studies of all kinds have proven that the life of people with hearing impairment is less mature socially and emotionally, and less adaptive, which leads them to psychological drifts. The results showed that 17.38% of hearing impaired children face various socio-emotional disorders, and these disorders are represented by anxiety 13%, shyness 17%, fear 11%, aggression 6%, lying 3%, stealing 11%, and 41% of hearing impaired children have emotional and behavioral problems, and the results also showed that hearing impaired children aged 12 - 18 years had more anxiety, depression and social problems than children aged 4 and 11 years (Eldik, Treffers, Veerman, & Verhulst, 2004). Some deaf or hard-of-hearing students exhibit verbal or physical aggression, some getting frustrated easily, while others are characterized by their incapacity to cope with the conditions of school life. In addition, they suffer from a weakness in self-expression and a clear delay in awareness and awareness of their emotions and the emotions of others, as their understanding of emotional vocabulary is linked to personal adjustment, which in turn helps to reinforce the importance of communication in self-understanding (Perot, 2015).

2.3. The Intervention Program

2.3.1. Theoretical Foundations of the Content of the Intervention Program

- **Psychological intervention:** it is a process that helps the guide, so that he can achieve adaptation with his environment through the development of his personality and self-acceptance, and exploit his potential and capacities to be more mature and more capable of achieving psychological adaptation in the future, relying on psychological methods to solve his problems and treat his behavioral disorders (Gilles & Lhuilier, 2012).

- **The intervention through games:** it is used in the field of child support and has many advantages in teaching, diagnosing and treating the child of his behavioral disorders. It is based on many theories of play, considering that play is a child's job, it is also a psychological and social need that must be satisfied. Thus, play is used to guide, correct and control the child's behavior, to support his growth, to satisfy his needs and to provide him with an opportunity to let off steam and express his emotions (Lenoir, 2009).

- **Educational intervention:** it is represented in the intervention services provided throughout the educational process within a specific educational program. Within the framework of compatibility between the objectives of the intervention approach and the objectives of the educational approach on the basis that education is a life process in which the individual learns about life through various activities and with the guidance and direction of the educator. Furthermore, education is a process oriented towards the preparation of a good person who is psychologically compatible for life. Here, the educa-

tional process and the guiding process are similar in their purpose, function, strategy and approach (Lenoir, Alaoui, & Pelletier, 2018).

- **Psycho-educational intervention for children through play:** the psycho-educational intervention program used in this research is a behavioral psychotherapy model for children through play. The psycho-educational intervention program designed a behavioral therapeutic support model using play represented by art, drama (action) and other educational play methods. This can be explained as follows:

- **Psycho-educational accompaniment through drawing:** the child's desire to practice the various arts is not superficial so that its essence is approximation and simulation, but rather it is a desire that stems from his insistence on asserting himself in the form of various projections through the emotional relief that he exercises to get rid of his fears and repressed emotions. It is very important to discuss the paintings produced by the child to help him reveal the symbolic meanings they contain in order to take advantage of them in the diagnosis and treatment processes in a way that reflects the combination of consciousness and unconsciousness, and between thinking and feeling, as this helps the development of the child's personality by raising the level of sensory perceptual development (Labrèche & Poirier-Magassouba, 2003).

- **Psycho-educational support through theater:** educational theater is a method used, includes a set of activities that students perform under the direction of the teacher or educator to achieve specific educational goals, its purpose is theatrical activity in which the learner assumes a certain role in a specific situation, and based on his personal experience and capacity in order to achieve a specific educational goal. Drama is a motor activity that children do to play, so it can be used in behavioral therapy for children, where the essence of behavioral therapy (psycho-educational intervention) lies. Thus, children who suffer from behavioral and psychological problems, which gives them the opportunity to escape emotionally, and thus restore their emotional balance (Lenoir, 2014).

- **Role of theater in the process of psycho-educational intervention:** theater can be used in the intervention process as a method of psychological support used in the treatment of many problems and theater can be used in the educational process as a method of teaching and learning. It is therefore a psychological and educational process.

- **Children and art education:** art and aesthetic education in its entirety aims to form the personality of the integrated child freed from his sometimes stifled emotional energies, as art therapy tends to affirm and accept him or herself and to give him or her the capacity to communicate with others with a kind of stability (Labrèche & Poirier-Magassouba, 2003). For the child generally tends to realize himself through various artistic activities, which are presented in the form of a sensory-kinetic synergy that translates into various artistic images such as music, song, dance, kinetic rhythm, drawing in its various forms, and literature in its various forms such as poetry, storytelling,

and songs (Labrèche & Poirier-Magassouba, 2003). As such, the arts are believed to reflect their role in the life and personality formation of the child in the form of various developmental aspects that can be specified as follows: Development of mental capacities, development of communication capacity, sensory development, emotional relief, development of innovative behaviors, development of cultural criticism (Labrèche, 2001).

2.3.2. Theoretical Bases for Designing and Implementing the Intervention Program

The psycho-educational intervention is part of a systematic and adapted vision of the student that takes into account his personal abilities, the environment in which he grew up and the student's capacity to act in daily life events. The teacher orients his psycho-educational intervention taking into account the child's environment (the classroom, the school and the family). Renou (2005) has shown that the psycho-educational intervention is characterized by:

- Treating the individual as a whole by taking into consideration all biological, cognitive, emotional, and social components.
- Considering that the intervention is an interaction between three poles: the pole of the individual, the pole of the environment in which he/she is situated, and the pole of the interaction between the individual and his environment.
- Establish an educational relationship based on a positive vision, respect, safety, trust in approved methods, professionalism and self-confidence, consistency in attitudes, empathy and altruism.
- Considering all the situations that make up the life of an individual as infinite capacities to accept to learn with new behaviors and develop new capacities.
- Evaluation and support of the individual and his environment in a progressive way in which the poles undertake a more adaptive path.
- Systematically intervene in order to organize the individual's environment so that it meets his needs and develops his capacities to the maximum.

Gendreau is considered the founding father of the psycho-educational model of activity-based intervention for people with disabilities and special needs.

The educational activity aims to train and develop individuals, and it differs from the use of time for the simple feeling of pleasure. As for technique, Gendreau & Le Blanc (2002) define it as a period of life or a learning situation that includes a set of exercises aimed at meeting human needs within a specific temporal and spatial framework. The educational activity also responds to the necessities imposed by nature, social life and rehabilitation.

According to Renou (2005), these activities go through three stages carried out by the psycho-educational counselor which are the preparation stage, the application stage and the evaluation stage. And that the interaction between the components of the general structure of the educational activity has increased from ten components with (Gendreau, 1978) to fourteen with (Gendreau, 2001; Gendreau, Prince, & Lévesque, 2006; Gendreau & Prince, 2006; Gendreau, Prince,

& Bernier, 2006).

The actors in the educational activity were presented as follows, and as shown in Figure 1:

- **The participant:** is the focus of educational intervention, who complain of serious difficulties or joint or private adjustment difficulties at the behavioral, psychological or social level.
- **The psycho-educator:** who possesses the necessary know-how, knowledge and sufficiency related to his specialty, profession and mission.
- **The team:** it is characterized by belonging to a formal or informal system and a certain psychosocial function.
- **The peer group:** they may belong to the same institution or to other institutions and may have different psychosocial characteristics.
- **Parents:** they help children communicate with them when they return home.
- **Other professionals:** collaborators of different specialties provide assistance in case of need for advice.
- **The objective of an educational activity:** represents the strategic basis that brings together the actors of the educational activity and takes into account the characteristics of the counselors and the possibilities offered by the environment. Its criteria are determined by the psycho-educator, who has identified the means to achieve it, and it is valuable and meaningful for the educators and parents.

The **structural components of the educational activity** are:

- **Time:** especially the objective time that counts for the coexistence, which is translated into daily, weekly, monthly, quarterly or annual timings.
- **Space:** a designated and thoughtfully prepared place. The space also has its own character related to the perceptions of the psycho-educator and the participants or stakeholders.
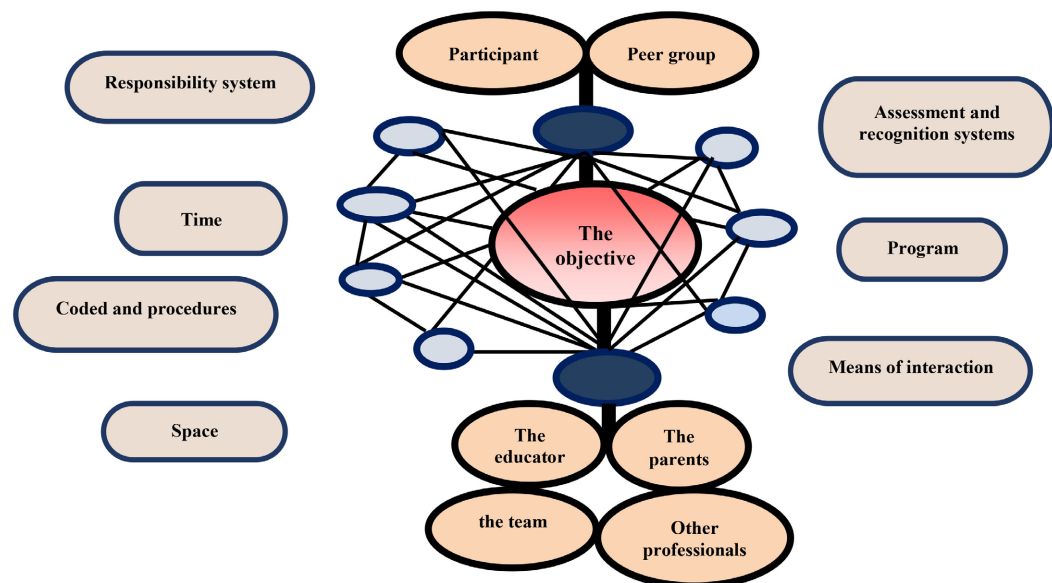

Figure 1. Interactive components to structure educational activity (Le Blanc, 2014).

- **Programming of the educational activity:** this component includes a series of processes that repeat or change over a period of time and whose task is to coach, support, educate and motivate participants to continue to achieve the objectives of the activity.

- **The means of interaction of an educational activity:** the psycho-educator plans to have the participants or companions interact with the content of the activity, and the interaction is achieved through these means, which in turn represent techniques for managing and directing thoughts, emotions, and behaviors to achieve the goals of the activity.

- **The system of responsibilities of an educational activity:** it is represented in the tasks, roles or functions assigned to the participants in the activity according to their level of autonomy and the organizational logic of the activity. It supports the activity in order to achieve the objectives.

- **The code and the procedures of an educational activity:** the code consists of the set of rules adopted to update the norms of behavior that concern the relationships between individuals and with tools and means to carry out the interaction of the activity program. As for the procedures, they are the methods of realization, and the methods to be followed in the activity, and they change according to the context and the characteristics of the individuals.

- **The evaluation system of the educational activity:** the evaluation of the participation in the activity is manifested through criteria established as benchmarks to assess the activity and the progress made by the participants (Le Blanc, 2014: pp. 126-129).

Through the definition presented by Gendreau (2001) of the psycho-educational model, they also identified a concept of intervention that is articulated around eight professional processes, which provides support and backing for the development of a psycho-educational practice methodology (Renou, 2005). To emphasize its effectiveness and efficiency, Gendreau (2001) presented the professional processes in a form bearing the infinity symbol (∞). This presentation illustrates the interconnected and continuous approach of these processes and the internal links that unite them. Where observation represents the first operation in this series of operations, which allows us to obtain the necessary data to prepare an accurate assessment of the person in difficulty and knowing his or her situation, and this assessment, which precedes the intervention, is immediately followed by the planning of the intervention, which in turn determines the organization of the various components of the intervention situation. The animation of the intervention situation generates structural and relational interactions that make the psycho-educational intervention useful and meaningful. The post-intervention evaluation allows for an analysis of the status of the intervention. This evaluation demonstrates the effectiveness of the intervention and sheds light on some of the elements that could be the object of a new intervention. In parallel to these different processes, there are constant communicative steps between the different actors involved in this intervention (Caouette & Pronovost, 2013: p. 282). This is illustrated in **Figure 2**.
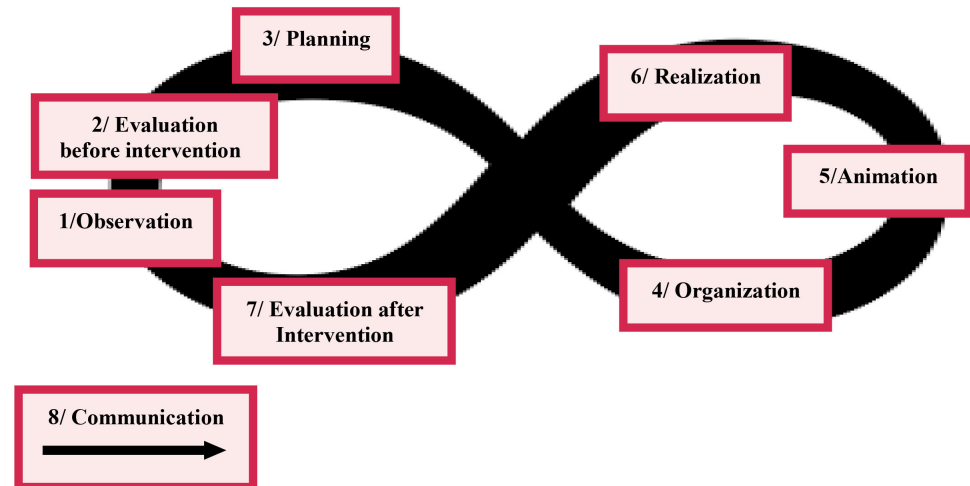
Figure 2. Psycho-educational intervention operations.

These professional processes were initially designed according to (Gendreau, 1995; Dionne, 1996) to frame and support requests for intervention with socially and emotionally incompatible delinquent children and adolescents, but it is now being used in favor of interventions for many different special needs and problems. This psycho-educational intervention model remains an essential reference for specialists in the field of educational psychology (Gendreau, 2001; Renou 2005). For mentioned "*During facilitation, the educator may observe interactions and outcomes that highlight particular strengths, abilities, weaknesses or difficulties encountered by the individual as well as the richness of the context and content. Returning to these shared experiences can support the generalization of all the positive and rich learning they contain.*" (Gendreau, 2001: p. 148).

The coach who adopts the psycho-educational approach will be concerned with the quality of the practices he/she uses, their foundations and usefulness. Grégoire (2004) explains the different conditions that characterize an effective practice in the psycho-educational fields:

- These applications are based on a thorough knowledge of the problem experienced by the person, who will be the object of the intervention.
- It involves a comprehensive assessment of the strengths, protective factors, needs, deficits and abilities of the person receiving help.
- This assessment should lead to the formulation of specific and realistic goals and their monitoring.
- Provide the means to achieve the goals in the most effective manner possible.
- Use means to monitor, verify, and evaluate the procedures that have been approved.
- Evaluate the degree to which desired goals are achieved (Potvin, 2017: p. 5).

According to Deleu & Chambon (1999), the psycho-educational approach covers three important and fundamental dimensions: the pedagogical dimension, which allows for the exchange of information and knowledge about the disease, its symptoms and treatment methods; the psycho-emotional dimension, which

aims to reduce the emotional burden felt by the individual and his entourage; and the behavioral dimension, which targets learning and invests in behavior modification strategies such as problem-solving and social capacities training... with the aim of reducing the internal tensions resulting from the symptoms and making adjustments to various contexts of the patient's life (such as family, social and school) to better adapt to his or her needs and habits during any activity he or she performs (Duhamel, 2014).

2.4. Previous Studies

Weisel & Bar-Ley's (1993) study: The use of computers to train hearing impaired children to improve their social capacities and enhance their integration using symbolic reinforcement, where he trained hearing impaired children in social capacities through a computerized program that presented three social cases; The first focuses on social capacities in the school environment, the second on social capacities in the family environment, and the third on social capacities in the workplace, such as problems with disruptive peers, problems with teachers, problems with administrators. The study tool consisted of a test on the Margaret Aggressive Behavior Scale and the Teacher Appraisal Questionnaire to observe changes in the social level of the study sample. Results showed a change in students' social behavior, development of their social capacities, and a decrease in the rate of their aggressive behavior after the intervention, as well as a willingness to discuss their social problems with the teacher. They showed positive responses on the social interaction problem solving scale, improved responses with those around them, lack of negative interaction, development of communication strategy, decision making, and finding solutions to social problems.

Ducharme & Holborn (1997) study: The study aimed to develop the social skills of 5 children with hearing impairment at the preschool stage where these children were paired with 5 other children with the same degree of disability and the observers were asked to identify problems that occur in the natural environment and record its recurrence. After that, the children were invited to play and exchange different games with each other, and the child was reinforced when they practiced the required social skill by giving them a card for each skill they performed in the required manner. The results showed that the children had acquired these skills and the rate of social interaction with them increased from 40% at the initial stage to 80% at the intervention stage and 75% at the follow-up stage.

Suarez (2000) Study: The purpose of the study was to evaluate the effect of a training program on the social capacities of students with hearing loss at the elementary level in regular schools. The sample consisted of 18 hearing impaired children aged 9 to 13 years. The study concluded that the intervention was designed to improve social problem-solving capacities and self-esteem capacities. Differences were not significant in the complementarity between academic and

social capacities as estimated by peers in the social relations questionnaire.

Study by Eldik et al. (2004): The purpose of the study was to test the extent to which behavioral problems are present in children with hearing loss. The sample consisted of parents of 238 children with hearing loss, aged 4 to 18 years. The results showed that 41% of these children suffer from emotional and behavioral problems, with a percentage of 6.2 compared to normal children, which exceeds 16%, where it was found that anxiety, depression, withdrawal and many social problems abound in the 12 to 18 age group. For the age group between 4 and 11 years, it was found that these problems are relatively low, but they suffer in the aspects of perception, thinking and attention.

Huve (2012) Study: The purpose of the study was to understand the emotions of children with hearing loss and compare them to a group of normal children. The study sample consisted of 8 children with hearing loss at age 5 and 16 normal children ranging in age from 4 to 6. The study tools were the ELO oral language test (Komsi, 2001) and an emotion assessment test. The results showed statistically significant differences in favor of the ordinary ones, who were more effective in expressing their emotions and their appearance in facial expressions such as sadness, joy and anger, while the hearing impaired children encountered many difficulties in this.

Zeidan (2017) Study: The purpose of the study was to test the effectiveness of mini-games in developing certain social skills for deaf elementary students. The sample consisted of 16 deaf male students at the primary level, they were divided into 8 students in an experimental group and 8 students in a control group, which are all students of Al-Amal school for the deaf in Mansoura, Dakahlia governorate. And those who scored low on the observation list to estimate the social abilities of deaf children prepared by the researcher, and their ages ranged from 9 to 12 years and they have severe hearing loss (more than 90 decibels). The study tools were the family economic and social level scale and a list of scores to assess deaf children's social skills prepared by the researcher, the small games program to develop deaf children's social skills prepared by the researcher. The results showed the effectiveness of the small game program in developing certain social skills in deaf elementary students.

Bouaziz et al. (2018) study: The study aimed to find out the role of adapted sports physical activity in the development of certain social capacities in children with hearing impairment. The sample consisted of 30 children from the school for the deaf in Relizane, and the study tool was the social capacities questionnaire. The descriptive approach was chosen for its suitability to the nature of the subject of study. The results showed that adapted sports physical activity has a role in developing communication, problem-solving, participation, and empathy capacities for people with hearing impairment.

Mohammed's (2015) study: The study aimed to determine the effectiveness of a proposed program in developing social interaction and communication skills among hearing impaired students and their normal peers in inte-

gration schools in Jeddah city. The study sample consisted of two groups, an experimental group and a control group of students with hearing loss. The study tool was the Social Interaction Scale for Children with Hearing Loss. The results showed that there were statistically significant differences in social interaction between the means of the scores of the experimental group before and after the application of the intervention program to the hearing impaired students, in favor of the post-test. Although there were no differences in the control group.

Relationship of the current study to previous studies

- The present study is consistent with previous studies in addressing an intervention program and the topic of the hearing impaired category and the social and emotional capacities variable.
- But no clear study was found in which all of the variables in the current study met, including emotional sensitivity, social control, and social sensitivity grouped together in the same study and involving children in the primary stage of the study sample age group. And that the follower of local psychological studies notes a glaring lack of study of the variables of the current research, this is due to the scarcity and absence of such a study in Tunisia. This study came to fill this gap in order to identify the effectiveness of an intervention program to develop these capacities in people with a hearing impairment.

The most important feature of the current study compared to previous studies

The current study focused on the category of children with hearing impairment and investigated their social and emotional capacities, and the interaction relationship between these two capacities, although there are very few studies looking at this group independently.

This study is distinguished by the fact that it adopted the quasi-experimental approach, since it seeks to identify the effectiveness of an intervention program based on the psycho-educational approach in the development of social and emotional capacities of children with hearing impairment, and to reveal the relationship between the development of these capacities of the aforementioned sample and the extent to which they are affected by the proposed program.

Previous studies did not address the variables of the current study combined within the researcher's knowledge, which confirms that the current study is one of the new studies in this field in Tunisia and aims to help researchers conduct further studies in the field of specialization that address the variables of this study among other categories of the Tunisian society.

Benefits of previous studies

The benefits of these studies were on many levels, including the following:

- Preparation of the introduction.
- Enrichment of the theoretical framework of the study.
- With previous comments on the studies, this helped in selecting and defining

the program and sample.

- Benefit from these studies to set objectives, define study hypotheses, approach methodology and determine the most important dimensions and indicators of the study tools.
- Determine certain variables by looking at the recommendations mentioned by previous studies.
- Compare the results of the current study with the results of previous studies and understand the relationship that combines certain concepts.
- Interpret and discuss the results and suggested recommendations.
- Use some of the references listed.

3. Methodological Approach

3.1. Hypotheses

- **General hypothesis:** There are statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests of social and emotional capacities due to the applied intervention program.
- **First sub-hypothesis:** There are statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of emotional sensitivity due to the applied intervention program.
- **Second sub-hypothesis:** There are statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of social control due to the applied intervention program.
- **Third sub-hypothesis:** There are statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of social sensitivity due to the applied intervention program.

3.2. Research Approach

The approach followed in this research is the quasi-experimental approach, in which the members of the experimental and control groups were not randomly selected, by subjecting two equal experimental and control groups to a number of pre-tests, then the experimental group is subjected to activities and experiments (the independent variable), while the control group is excluded from activities and experiments, then a certain number of tests were presented to both groups with the aim of identifying the effectiveness of the intervention program (independent variable) for the development of social and emotional capacities (emotional sensitivity, social control and social sensitivity) (dependent variable). After the end of the program, post-tests were applied to find out the effect of the independent variable (the intervention program).

3.3. Research Procedures

- Obtaining the agreement of the Tunisian Association of Aid to the Deaf, Nabeul section, to allow the practice of the activities of the intervention pro-

gram for children with a hearing impairment.

- Selection of the research sample of 20 children with hearing loss aged 10 to 12 years.
- Organize a meeting with the different specialists present in the association in order to present the intervention program, its objectives, the duration and the time allocated to the sessions.
- Prepare the educational environment before beginning program implementation and provide the necessary tools and resources.
- Pre-testing the children: social capacities test.
- Implementation of the intervention program that was designed.
- Post-testing the children: social capacities test.
- Conduct the data collection process and analyze it statistically to answer the research questions.
- Analyze and discuss the results.

3.4. Research Sample

For comparative purposes between the effect of the two methods (the intervention program according to the psycho-educational approach and the traditional pedagogical approach) on the social and emotional capacities of students with a hearing impairment, we selected two samples with the same characteristics (hearing impairment and biological age between 10 and 12 years old, with a cochlear implant or hearing aid). These two samples are selected from the Tunisian association of aid to the deaf "ATAS" of Nabeul. It should be noted that the students are diagnosed by the ENT doctor (ear, nose and throat specialist) as having a hearing impairment and this is noted in their psycho-educational records. The first sample is experimental and is composed of 10 students with a hearing impairment. They followed the activities of the intervention program according to the psycho-educational approach (mathematics, Arabic language). The second sample is control and composed of 10 students who also have a hearing impairment and were taught mathematics and Arabic language through a traditional pedagogical approach.

Homogeneity between the study sample

Homogeneity between experimental and control group members in the following variables: chronological average age, intelligence level, family cultural level.

To test the homogeneity between the experimental and control groups, the Mann-Whitney test and the Wilcoxon test were used, and the following is an explanation of this:

In terms of chronological age:

To ensure homogeneity of sample members (experimental and control groups) in chronological age, children with a chronological age between 10 and 12 years were selected, and chronological age was calculated in months. This is shown in **Table 2**.

Table 2. Values (U, W, Z) and their significance for the differences between the average of the scores of the two experimental and control groups in chronological age in months.

Group	N	mean	mean scores	Scores totals	U	W	Z	Level of significance
Experimental	10	50.90	9.57	191.5	86.5	191.5	0.367	Not significant
Control	10	51.57	10.92	218.50				

Table 2 shows that there is no difference between the mean scores of the two experimental and control groups in chronological age, because the calculated Z value was (0.367) which is not statistically significant at the 0.05 level of significance, which confirms the equivalence of the experimental and control groups.

In terms of intelligence level:

In order to homogenize the level of intelligence, the mental ability test for 10 - 12-year-old children prepared by Musa (2003) was applied to the students of the experimental and control sample. This is shown in **Table 3**.

Table 3 shows that there is no differences between the mean scores of the two experimental and control groups with regard to the level of intelligence, because the calculated Z value was (0.206), which is not statistically significant at the 0.05 level of significance, confirming the equivalence of the experimental and control groups.

In terms of the family's cultural level:

The homogeneity of the members of the experimental group and the control group at the cultural level was confirmed, thanks to the application of the family cultural level scale, prepared by Khader (2004). The data were taken from the children's cards. This is shown in **Table 4**.

Table 4 shows that there is no difference between the mean scores of the two experimental and control groups in the cultural level of the family, because the calculated Z value was (0.325) which is not statistically significant at the 0.05 level of significance, confirming the equivalence of the experimental and control groups.

3.5. Research Tools

3.5.1. Social Capacities Scale

Riggio's (1986) Social capacity scale consists of five points ranging from (1) not applicable to (5) fully applicable, and thus the answer is easy for the candidate with measurement accuracy.

This scale is designed to measure social and emotional capacities and consists of (90) statements divided into six sub-dimensions of (15) items for each scale or dimension, as follows:

- **The first dimension:** emotional expression; it measures the capacity of individuals to communicate non-verbally and their ability to express their feelings and emotional state.
- **The second dimension:** emotional sensitivity; it reveals the individual's capacity to receive the interpretation of non-verbal communication forms from others.

Table 3. Values (U, W, Z) and their significance for the differences between the average of the intelligence scores of the two experimental and control groups.

Group	N	mean	mean scores	Scores totals	U	W	Z	Level of significance
Experimental	10	41.97	9.87	197.50	92.5	197.5	0.206	Not significant
Control	10	42.15	10.62	212.50				

Table 4. Values (U, W, Z) and their significance for the differences between the average of the scores of the two experimental and control groups at the family cultural level.

Groupe	N	mean	mean scores	Scores totals	U	W	Z	Level of significance
Expérimental	10	56.45	9.65	193.00	92.5	197.5	0.325	Not significant
Control	10	57.5	10.90	217.00				

- **The third dimension:** emotional control; it deals with the individual's capacity to control his or her emotional and non-verbal expressions according to the social situation in which he or she finds himself or herself.
- **The fourth dimension:** social expression; refers to the individual's capacity to express him/herself verbally and to participate with others in social situations.
- **The fifth dimension:** social sensitivity; it measures the individual's capacity to verbally receive and understand the norms and rules of appropriate social behavior.
- **The sixth dimension:** social control; it refers to the capacity to play a role and adapt to social situations and to the ability to determine the content and direction of communication during social interaction.
- **The method of correcting the social capacities scale:** it is represented by evaluating each of the statements in the light of five points starting from (1) where the statement does not apply at all to (5) where the statement applies completely, the candidate gets a score for each of the six subscales between (15 and 75), as well as a total score between (90 and 450), which is the sum of his scores on the subscales. The number of negative items, which are in the opposite direction of ability, was (31) out of the total number of statements (90) sentence.
- **Psychometric properties of the social capacities scale**

  Reliability of the scale; this is shown in Table 5.

  It emerges from the table that the degree of reliability of the scale of social capacities and all its dimensions exceeds 0.50 either using the Alpha Cronbach method or the split-half method, which means that the scale is characterized by an acceptable degree of reliability and usable on a sample in the Tunisian environment.

  Validity of the scale. This is shown in Table 6.

  The correlation coefficient of each dimension was calculated with the total score of the scale. The values of the correlation coefficient varied between 0.49 and 0.87 and they were all indicative at the level of 0.01 and 0.05 which means

Table 5. Reliability of the scale by split-half and Alpha Cronbach.

The dimensions	Calculation by split-half reliability coefficient		Calculation by Alpha Cronbach reliability coefficient	
Emotional expression	0.69		0.69	
Emotional sensitivity	0.59		0.57	
Emotional control	0.71	0.68	0.70	0.66
Social Expression	0.63		0.61	
Social sensitivity	0.51		0.52	
Social control	0.63		0.63	

Table 6. Validity of the scale by internal consistency.

The dimensions	Correlation coefficient	signification
Emotional expression	0.59	0.01
Emotional sensitivity	0.87	0.01
Emotional control	0.49	0.05
Social Expression	0.64	0.01
Social sensitivity	0.50	0.05
Social control	0.63	0.01

that the scale is characterized by a high degree of validity after its application to a Tunisian sample.

In this study and its objectives, we will rely only on three dimensions of this scale, which are:

Emotional sensitivity: reveals the individual's capacity to receive interpretation of non-verbal forms of communication from others.

Social control: refers to the capacity as to role-play and adapt to social situations and the ability to determine the content and direction of communication in a social interaction.

Social sensitivity: measures an individual's capacity to verbally receive and understand norms and rules for appropriate social behavior.

3.5.2. Psycho-Educational Intervention Program

The design, preparation and implementation of the psycho-educational intervention program was carried out as follows.

Idea of the program: the idea of the educational psychological intervention program is based on the development of social and emotional capacities by using play and art methods in learning situations. It is by presenting activities in the school curriculum and according to the official curricula in Arabic language and mathematics for a sample of hearing impaired children aged 10 to 12 years old, using artistic intervention techniques such as drama (play) and art (drawing), games (different educational games according to the objective of the session).

Planning and preparation phase: the intervention program was planned based on the idea of helping children with hearing impairment to develop their social and emotional capacities, since this category of children has been proved by many studies, as we mentioned in the theoretical part, (these children suffer from many difficulties at the social and emotional level) through the use of play techniques and arts in the learning process, providing the appropriate conditions and creating a suitable educational environment for children to learn by providing them with means and tools for motivation and psychological comfort.

Implementation phase: the implementation of the intervention program began practically in the second half of September 2021, where the appropriate activities in Arabic language and mathematics for the fourth grade were applied and adapted with the aim of providing intervention services, entertaining, artistic and theatrical activities (games, drawing, dialogue, hymn, acting, storytelling...). The program lasts until mid-November 2021, for two months, which have been divided into 24 sessions of support at a rate of 3 sessions per week, the duration of the session is 45 minutes.

The general objective of the program: the program aims to identify the effectiveness of intervention according to the psycho-educational approach to develop the social and emotional capacities of children with a hearing impairment. (emotional sensitivity, social control and social sensitivity).

Location of the program: the program was implemented by the Tunisian Association for the Deaf ATAS Nabeul.

Means used in the program: arange of means and tools were used, including: computer, stories, different pens, colors, glues, pencils, papers of different types and sizes, texts, numbers and cardboard letters, illustrated scenes, songs, theater room, multi-colored lamps and videos.

Program Validity: The intervention program was presented in its first form to a group of professors specializing in the field of curriculum and teaching methods, the field of psychology and the field of special education in order to control and correct certain errors. After some modifications and improvements, the opinions of the program's jury members are 98% in agreement on the validity of the program's content, its appropriateness to the objective and its appropriateness to the implementation.

Program Evaluation: post-evaluation; the effectiveness of the training program was evaluated after its application, which lasted two months, using the scale and tests mentioned, to identify the extent of its impact on the members of the experimental group.

3.5.3. Sample Selection Tools

Test of mental abilities (10 - 12 years old), prepared by Musa (2003).
Family cultural level scale, prepared by Khader (2004).

3.6. Statistical Analysis

All values are expressed as mean ± standard deviation. Before using parametric

tests, acceptance of normality was checked by the Shapiro-Wilk W-test. To determine the effects of the psycho-educational intervention program, a 2-factor analysis of variance (2 × 2) was used. The factors were: group (Experimental and Control) and time (Pre- and Post). When the group × time interactions reached significance, a post-hoc Bonferroni test was performed to identify significant pairwise differences. Effect sizes were also calculated for all ANOVAs using partial eta-squared. Therefore, an effect size of 0.01 indicated a small effect, a value of 0.06 indicated a medium effect, and a value of 0.15 showed a large effect (Cohen, 1988). Intra-group comparison was performed using a paired-sample t-test. All statistical analyses were performed using SPSS software (SPSS Inc., Chicago, IL, version. 18.0) and where the significance level was set at $P < 0.05$.

Test de Wilcoxon.

Test de Mann-Whitney.

Test z.

4. Results and Analysis

4.1. Analysis of Hypothesis Results

To test the validity of the hypotheses, a 2-factor (2 × 2) analysis of variance was used, the factors were: group (experimental and control) and time (pre- and post) to determine the effect of the intervention program on the social and emotional capacities (emotional sensitivity, social control and social sensitivity) of the children with hearing impairment. When the group × time interactions reached significance, a post-hoc Bonferroni test was performed to determine significant pairwise differences. In addition, effect sizes were calculated for all ANOVAs using partial eta-squared, and within-group comparisons are made using a paired sample t-test.

4.1.1. Results of the First Sub-Hypothesis

The first sub-hypothesis states that; There are statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of emotional sensitivity due to the applied intervention program. This is shown in Table 7.

With regard to emotional sensitivity, the analysis of variance indicated that there was a statistically significant effect of the time factor (F = 7.93; $P = 0.001$;

Table 7. The effect of the intervention program on emotional sensitivity.

The test	The group	Pre-test	Post-test	Change %	Analysis of variance test		
					Interaction time × group	Group effect	Effect of time
Emotional sensitivity	Experimental	43.50 ± 1.96	46.20 ± 1.40**	6.2	F = 6.84 $P = 0.02$ $\eta^2 = 0.28$	F = 8.66 $P = 0.01$ $\eta^2 = 0.32$	F = 7.93 $P = 0.001$ $\eta^2 = 0.31$
	Control	43.10 ± 1.60	43.20 ± 1.81	0.2			

Note. *$P < 0.05$, **$P < 0.01$.

η^2 = 0.31) and time × group interaction (F = 6.84; P = 0.02; η^2 = 0.28), in addition to the existence of statistically significant differences between the experimental and control groups, where the effect of the group was also statistically significant (F = 8.66; P = 0.01; η^2 = 0.32). This was manifested by the notable improvement of the experimental group whose performance developed (t = 4.15; P = 0.02) with a percentage of 6.2% change between pre and post tests compared to the control group which obtained only 0.2% where there were no statistically significant differences observed between pre and post tests at the level of the different items tested, which confirms the first sub-hypothesis.

4.1.2. Results of the Second Sub-Hypothesis

The second sub-hypothesis states that; There are statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of social control due to the applied intervention program. This is shown in Table 8.

With regard to social control, the analysis of variance indicated that there was a statistically significant effect of the time factor (F = 1955.16; P < 0.001; η^2 = 0.99) and time × group interaction (F = 2004.24; P < 0.001; η^2 = 0.99) in addition to the existence of statistically significant differences between the experimental and control groups, where the effect of group was also statistically significant (F = 1245.93; P < 0.001; η^2 = 0.99). This was manifested by the significant improvement of the experimental group whose performance developed (t = 46.29; P = 0.001) and with 250.8% change between pre and post tests compared to the control group which reached −1.7% where there were no statistically significant differences observed between pre and post tests at the level of the different items tested, which confirms the second sub-hypothesis.

4.1.3. Results of the Third Sub-Hypothesis

The third sub-hypothesis states that; There are statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests, in the dimension of social sensitivity due to the applied intervention program. This is shown in Table 9.

With regard to social sensitivity, the analysis of variance indicated that there was a statistically significant effect of the time factor (F = 2951.27; P = 0.001; η^2 = 0.99) and time × group interaction (F = 503.27; P = 0.001; η^2 = 0.96) in addition

Table 8. The effect of the intervention program on social control.

The test	The group	Pre-test	Post-test	Change %	Analysis of variance test		
					Interaction time × group	Group effect	Effect of time
Social control	Experimental	19.30 ± 2.36	67.70 ± 2.26**	250.8	F = 2004.24 P < 0.001 η^2 = 0.99	F = 1245.93 P < 0.001 η^2 = 0.99	F = 1955.16 P < 0.001 η^2 = 0.99
	Control	18.00 ± 1.63	17.70 ± 1.77	−1.7			

Note. *P < 0.05, **P < 0.01.

Table 9. The effect of the intervention program on social sensivity.

The test	The group	Pre-test	Post-test	Change %	Analysis of variance test		
					Interaction time × group	group effect	effect of time
Social sensitivity	Experimental	10.70 ± 2,06	59.80 ± 2.25**	458.9	F = 503.27 P = 0.001 η^2 = 0.96	F = 313.76 P = 0.001 η^2 = 0.95	F = 2951.27 P = 0.001 η^2 = 0.99
	Control	10.50 ± 2,80	30.90 ± 2.13	194.3			

Note. *P < 0.05, **P < 0.01.

to the existence of statistically significant differences between the experimental group and the control group, where the effect of the group was also statistically significant (F = 313.76; P = 0.001; η^2 = 0.95) This was manifested by the significant improvement of the experimental group whose performance developed (t = 78.85; P < 0.001) and by 458.9% change between pre and post tests compared to the control group which obtained only194.3% where there were no statistically significant differences observed between pre and post tests at the level of the different tested items, which confirms the third sub-hypothesis

4.1.4. Results of the General Hypothesis

The general hypothesis states that; There are statistically significant differences between the means of the scores of the experimental group in the pre- and post-tests of social and emotional capacities due to the applied intervention program which is shown in Table 10.

Regarding the total score of social and emotional capacities, the analysis of variance indicates that there is a statistically significant effect of the time factor (F = 3268.17; P = 0.001; η^2 = 0.99) and time × group interaction (F = 1442.88; P = 0.001; η^2 = 0.99) in addition to the existence of statistically significant differences between the experimental and control groups, where the group effect was also statistically significant (F = 1157.54; P < 0.001; η^2 = 0.98). This was manifested by the significant improvement of the experimental group whose performance developed (t = 63.29; P = 0.001) and by 136.3% change between pre and post tests compared to the control group which obtained only 28.2% where there were no statistically significant differences that were observed between pre and post tests at the level of the different items tested.

- This confirms the overall hypothesis of the study that the intervention program contributed to the development of social and emotional capacities of children with hearing impairment.

5. Discussion of the Results

The results indicate the feasibility and effectiveness of the program in the development of social and emotional capacities of the members of the experimental group, due to the regularity of the members of the experimental group in the sessions of the intervention program, where the methods and means used were significant in their lives, which made them more flexible, understanding and

Table 10. The effect of the intervention program on social and emotional capacities sensivity.

The test	The group	Pre-test	Post-test	Change %	Analysis of variance test		
					Interaction time × group	group effect	effect of time
Social and emotional capacities							
Emotional sensitivity	Experimental	73.5 ± 03.87	173.70 ± 4.78**	136.3	F = 1442.88	F = 1157.54	F = 3268.17
Social control					$P = 0.001$	$P < 0.001$	$P = 0.001$
Social sensitivity	Control	71.60 ± 3.17	91.80 ± 2.15	28.2	$\eta^2 = 0.98$	$\eta^2 = 0.98$	$\eta^2 = 0.99$

Note. $^*P < 0.05$, $^{**}P < 0.01$.

willing to fully enjoy activities within realistic situations and life models, which contributed to increasing their social and personal balance and their capacity to openly express their feelings in a spontaneous way, especially in terms of human feelings and situations in life areas, as a result, they become less tense and anxious by expressing their problems more freely and increase their capacity to coexist with themselves and those around them in order to take advantage of what they have in terms of capacities, preparations, characteristics, personal traits, motives and emotional aspects. And it can be used to build relationships and interactions in an appropriate climate inside and outside the educational institution. As a result, the level of social capacities of the experimental group members improved in the post-test. This result is in agreement with the study of Piché & Hubert (2007), who showed that insufficient social capacities lead to the emergence of many behavioral problems and psychological and emotional disorders, and indicated that training in these capacities is an important factor in achieving social harmony. Therefore, care was taken to diversify the activities between fiction, scientific, cinematic, theatrical, artistic and musical and to use them smoothly in the daily learning of Arabic language and mathematics, and taking into account the association of each activity with one or more specific capacities (emotional sensitivity, social control and social sensitivity). This was indicated by Hallié (2010) in the improvement of the level of emotional sensitivity in people with hearing impairment, the researcher explains that despite their attempt to integrate into society, this integration and interaction is tainted with a bit of caution, as the deaf may fear criticism or any source of concern from others. Some studies have established a link between the exposure to stress and the corresponding emotional sensitivity, and there is a strong relationship between the negative emotional sensitivity and the dimensions of psychological stress, as confirmed by the study of Brun (2001) that individuals who have the characteristic of a negative emotional sensitivity are more exposed to psychological pressure and more strongly and intensely for it.

This is consistent with what has been shown by Peterson (2004) that participation of people with hearing impairment in various activities helps them understand the environment around them and the development of their social be-

havior, and they can control their emotions and express them appropriately, which clearly affects their personality.

Also was confirmed by Perot (2015) by designing and proposing tools to develop the expression and understanding of 6 emotions according to Ekman (1992) (joy, anger, sadness, surprise, anxiety and fear) in children with hearing impairment and the results showed that there are several difficulties in the level of emotions in children with hearing impairment, which requires training and therapeutic intervention by specialists.

The improvement of the sample members in the post-test is due to the content of the program whose systems are designed according to their capacities and inclinations, as well as diversifying the activities and avoiding routine, in addition to the sequence and integration of activities, which were appropriate to the capacities of students and their mental, psychological and cognitive characteristics, This made it possible to enjoy the activities and create an atmosphere of understanding and harmony between them and the teacher, in addition to encouraging and motivating them to attend the rest of the sessions and to move from one activity to another only after making sure that the students have understood the previous activity in an atmosphere where satisfaction and happiness prevail by receiving thanks and encouragement, even if the effort made by the students was simple.

The tools that were used in the program also had a great impact on enriching and increasing its effectiveness by providing motivational videos and others on how to get rid of stress and tension, in addition to providing moral support through continuous encouragement, as well as material support by offering candy and stories that were presented at the end of each session, also gifts and certificates that were given at the end of the intervention program.

The improvement in social capacities can be attributed to the techniques included in the intervention program and the skills the children acquired as a result of them, as these capacities are likely to meet the children's daily needs and are necessary for successful interaction with others. It is also possible that the overall atmosphere of the program sessions played a role in providing a safe environment that helped them express themselves freely without fear of making mistakes, or worrying about sanctions or judgments about their behavior.

The adoption of the playful method in the information and realization of activities developed the motivation of the members of the experimental group and their interaction with the teacher, and this type of animation constituted a new experience for these children, since they were not subjected to the school programs in a normal and traditional way, hence the program brought a renewal in the subjects and the method of presentation.

The improvement in social control can also be justified by the nature of the program and its varied and enjoyable training activities, as the environment has been provided with the necessary tools for orientation activities and the variety of fun activities during each week. In addition to the variety of tools used in each activity served as motivation for children to discover the environment around

them through the tools that are used (scissors, glues, colors, papers, cubes, balls, drawing paper and computers.), so that the child has freedom of use, and all these tools serve as compensation for the lack of auditory capacity among the members of the sample through visual stimuli that the child processes himself. Graduation of children's familiarity with the stimuli helped them accept it, where familiar stimuli are presented first, then gradation to another stimulus to help bring the experience closer to the child. Atkins reported that 8.4% to 9.6% of people with hearing loss have emotional and behavioral problems and disorders, and Vernon reported that 20.7% to 22.5% have poor adjustment or psychological disorders, with many reports indicating that severe emotional and behavioral disorders outweigh their prevalence in children with hearing impairment 2 to 3 times higher than in hearing children.

In addition to the lack of social communication methods, and this behavior ranges from not establishing social relationships, or making friends with peers, refusal to communicate with others, isolation from people and the environment, indifference to what is going on, and this can begin in the preschool years, and last for many years or perhaps throughout life (Siegal, Pascalis, & Want, 2003: p. 83). This is reflected in their level of social control, which showed a remarkable improvement after the intervention program was implemented. The activities were based on the use of senses, tangible materials and practices so that the children could be exposed to learning experiences through discovery, practice and participation, and be active in their productions by expressing their opinions on the positions of characters in stories or role plays or correcting a friend's mistakes in a math problem with justification and others. The improvement in these two dimensions was also reflected in the children's level of social sensitivity, and this was due to the children's acquisition of the capacities of co-operation, participation, tolerance, forgiveness, apology and recognition of error, which was the meaning of all the contents of the reading texts, stories, songs and videos to which they were exposed and discussed in group. This reduced the children's feelings of shame or anger, violent reactions and fear of confrontation.

And encouraged them to step out of the circle of conflict and anxiety to integrate with others and release emotional burdens and feel their importance and value in the team and their openness to it, which led to an improvement in their emotional state and thus better social interaction. The sessions allowed the children to express themselves freely, which reduces stress and develops their ideas and self-confidence, showing that the lack of social interaction capacities leads to a decrease in the acceptance of friends and leads to abnormal social behaviors (Ducharme & Holben, 1997).

Hage, Charlier, & Leybaert (2006) also pointed out that children with hearing impairment need adaptive social capacities to help them integrate into society. As stated Sara & Hadyn (2000) that the social and psychological incompatibility in children with hearing impairment is due to the lack of social skills. Where researchers have linked this impairment in social capacities and certain behavioral and emotional disorders, and it has been confirmed that there is a relationship

between impairments in social capacities and psychological loneliness (Huve, 2012).

It should be noted that the members of the experimental group showed great interest and cooperation during the intervention sessions, they have become more capable and effective in controlling situations characterized by anger and emotion, by privileging the language of dialogue and discussion, and good listening rather than violence, aggression, hasty decision making and doubt. In addition to self-control, deliberation in judgment, evaluation of the consequences of things and the capacity to assume responsibility.

All these factors contributed in some way to the development of social capacities (emotional sensitivity, social control and social sensitivity) in the experimental group members who were subjected to the intervention program based on the use of games and arts in daily learning of mathematics and Arabic language, especially since it was inspired by the children's cultural environment and adapted in a manner consistent with their age and developmental level, this further strengthens their relationship with the teacher and their desire to attend each session daily and longer, unlike the control group whose members did not follow the intervention program and its stimuli and activities, and they remained in the traditional environment which lacked the stimuli and activities that would develop the social capacities of children with hearing impairment. This result is consistent with the study by Weisel & Bar-Lev (1993), the study by Ducharme & Holborn (1997), the study by Suarez (2000), the study by Eldik et al. (2004) and the study by Huve (2012).

These studies have proven their effectiveness and feasibility in improving the various and multiple dimensions of the social capacities of people with hearing impairment by interfering with counseling programs through experiences, activities, techniques, training, dialogue and discussions available.

All of them emphasize the importance of different intervention programs in order to help this group to have a balanced coexistence, a positive interaction and a targeted constructive communication in order to obtain the best results, whether academic or relational and social, which paves the way for a greater societal consensus at all levels.

From the previous presentation of the results, it is apparent that there are statistically significant differences between the means of the pretest scores and the means of the posttest scores for the experimental group at all capacity levels, as well as for the total score. The differences were in favor of the posttest, indicating an improvement in all capacities covered by the intervention program activities, showing that the improvement in the level of emotional sensitivity reflects positively on the level of social sensitivity and social control. When children with hearing impairment become more able to control their emotions, their social relationships improve when interacting and communicating in many life situations (Naceur, 2010, 2013). Whether it is by interacting with each other or with other friends, or by expressing their emotions in different life situations, it builds their confidence in themselves and in each other and makes them love to learn,

so they participate and succeed so that their feeling of being effective and always able to do better grows with each session and activity in which they realize that they were able to find solutions or accomplish a task to the maximum. They appreciate each other's work, cooperate with each other and seek help without hesitation, in light of a prepared environment in which the emphasis is on visual and other clear sensory stimuli that stimulate achievement and engagement. They appreciate each other's work, cooperate with each other, and seek help without hesitation in light of a prepared environment in which the emphasis is on visual and other clear sensory stimuli that stimulate success and engagement. And in clear and focused strategies at all stages of learning that exploit the error and turn it into a source of step-by-step information and take into account the particularities of people with hearing impairment, investing their strengths and eliminating anything that would be a barrier to them, attracting their attention more and understanding it better. Thus, it is retained in the memory and is easy to retrieve when needed. In conclusion there is a strong interactive relationship between emotional sensitivity, social sensitivity and social control for people with hearing impairment. It is a relationship of influence harmonizes with each other to generate a development in their lives that allows them to integrate with life in all its dimensions.

6. Conclusion

Although there are many and varied intervention programs in the field of support for children with hearing impairment, the need for learning through play and the use of the arts remains urgent and essential, due to the effective role of these means in the development of psychological, emotional, social and communicative capacities. In this research, we attempted to study the effectiveness of an intervention program for the development of social and emotional capacities in children with hearing impairment, and sought to prove this among the research sample (the experimental group).

We therefore decided to use the psycho-educational approach to help develop social capacities such as emotional sensitivity, social control and social awareness in order to encourage them to engage in learning with as much energy as possible in which the child uses all of his or her healthy senses and invests all of the available resources. This approach was proven to be effective in developing these capacities and overcoming many of the difficulties they face in this area, and this was not limited to the area of social capacities alone, but also went beyond them, as it allowed the sample members to develop the rest of their different senses and perceptions through drama, role-playing, kinetic and educational games, and assembly games, using illustrated stories, dialogues, discussions, brainstorming, displaying pictures and graphics, imaginative play, developing their innovative behavior and cultural critical orientation. "*Teaching aids are technical materials and tools adapted to different educational situations that the teacher and learner expertly use to enhance the teaching-learning process. They help to convey meanings, clarify ideas and motivate learners to participate*

more in educational situations. This enhances learning, which creates motivation to acquire new learning." (Kahn, 2011). This confirms that it is the individual's internal motivations that drive their motivation to learn (Bolus & Shavelson, 1982).

And if the research sample is made up of people with hearing impairment, then they lack verbal communication, so the teaching aids provide a material basis for sensory perception and reduce the verbal aspects, this is because they address the human senses and perceptions, emphasizing the emotional and social aspect between him and the students and between the students themselves (Fuster & Jeanne, 1996). Therefore, it is necessary to emphasize the effectiveness of using play and various arts activities in educational programs for people with special needs in general and people with hearing impairment in particular. Stressing that these tools are a basic educational means in the construction of an integrated human personality and a method of communication, expression, understanding and change of behavior to achieve balance and harmony between individuals and their environment. It is also necessary to diversify the pedagogical means in order to liberate the learner from his experiences and in order to overcome the difficulties he encounters, to develop his self-confidence and to reach an appropriate level of psychological, emotional and social adaptation.

7. Suggestions

- Despite our results, we recommend building other intervention programs to develop social and emotional capacities by adopting other techniques that we did not use in this research.
- Prepare orientation programs for teachers of the hearing impaired to guide them on how to develop their self-management skills.
- -Addressing the Department of Education to link programs with educational lessons that help students with hearing loss develop their abilities, particularly their communication skills, such as life skills lessons, and the development of textbooks that use visual stimuli adapted for the hearing impaired.
- The effectiveness of an intervention program to educate mothers of the hearing impaired on methods of developing personal skills and social communication, and its impact on their adaptation in society.
- Reflection on the quality of the family environment and its impact on the social interactions of children with hearing impaired.
- To increase the number of institutions concerned with the affairs of the hearing impaired and to enrich them with intervention programs (psychological support programs, awareness meetings, workshops, events) in order to contribute to raising the level of social and emotional skills and to offer cultural programs to increase their awareness and knowledge; This is based on the results of the study, which showed an increase in the level of social and emotional skills among the hearing impaired.
- Conduct empirical studies on the development of social and emotional skills

of people with hearing loss using different approaches, and then compare the results of each approach to determine which is most effective in developing these capacities.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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