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THE ROLE OF TOTAL COMMUNICATION IN OPTIMIZING THE TEACHING-LEARNING PROCESS FOR THE HEARING IMPAIRED STUDENTS

SUMMARY OF THE DOCTORAL THESIS

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Introduction

The present paper is going to approach a topical issue in the psychology of the hearing impaired children – total communication. This type of communication was included in the education of children in countries like France, England, Holland or United States and it proved to have a positive impact on developing language skills and on building speaking competencies for the hearing impaired children. There is a generous volume of studies and research of the scholar performances obtained by the hearing impaired children as a consequence of using total communication along the educational process.

This thesis is aiming to investigate the role of total communication in the teaching and learning process of the hearing impaired and to follow their progress from two different angles: the development of their vocabulary and the learning of some literary text concepts.

The arguments for choosing total communication as an educational approach are found on one hand in the more and more frequent use of the sign language – a phenomenon that has grown a lot in the last couple of years - , and on the other hand in the fact that there is a permanent limitation in the communication between the hearing teacher who uses primarily oral or written communication and the hearing impaired child who uses primarily sign language. The need for a link between these two different types of language becomes imperative in order to create a pleasant and accessible environment of communication for the two categories of participants involved in the educational process: the teacher and the student. Total communication brings together the two types of language mentioned above, and, in addition, it consists of a series of components meant to contribute to the clarity and the understanding of a message. For these reasons total communication could be the necessary connection between hearing persons and hearing impaired ones, and it could also provide a feeling of comfort, willingness and understanding in the process.

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CHAPTER 1

Current theories of total communication use for the hearing impaired children

1.1. Total communication – part of the hearing impaired/deaf psychology

Total communication is a term used to describe a large variety of communication methods. For the hearing people we speak of oral and written communication or of audio-visual communication techniques. Each individual chooses for himself the most efficient, pleasant or handy way of receiving and transmitting information. The fact that modern technology allows us to choose out of such a great variety of communication means, definitely represents an advantage.

The total communication term is often used in the technical field, where it consists of a series of communication means that allow the information to move around. Within psychology this term consists of one message delivered through multiple channels. Thus it means to reinforce a message through additional communication types. It becomes clear that when we talk about hearing impaired individuals, total communication has a different meaning, which is to compensate by a series of techniques the inaccessible hearing channel for these persons.

Total communication for the hearing impaired is a term created in 1967 by Roy Holcomb and it represents the title of a communication philosophy and not necessarily a method (Scouten, 1984). Total communication may involve one or more communication styles – manual, oral, auditory, written – depending on the child's particular needs. Therefore there can be certain situations where the oral language is more appropriate or other situations where the sign language is preferred, moments that demand a written communication or others where a simultaneous combination of the methods is going to work best (Solit, Taylor & Bednarczyk, 1992).

Total communication can be used by the hearing impaired children's families, teachers, educators and instructors. Many parents of the hearing impaired children consider total communication a philosophy that allows them flexibility without reducing other communication options. By using a global approach of speaking and signing all family members – both the hearing and the hearing impaired – will gain permanent access to the means of communication from their environment (Baker, 1994).

1.2. Theories and studies of the total communication method used with hearing impaired children

It is said that total communication has the ability to improve the poor educational skills noticed for the majority of hearing impaired children. The first studies made in this field searched the standardization and improvement of the sigh language on one hand, and on the other hand they concentrated on mobilizing parents and educators to use these systems.

In the following we are going to present some of the first assessments of total communication. These are heterogenic from the objectives and the methodologies points of view. They are equally heterogenic as far as the use of total communication and the description of its praxis is concerned (Lepot-Froment, Clerebaut, 1996).

As a consequence of the total communication movement expansion in the 70's we can find today a movement called "bi-bi" stating itself in the US. This movement speaks about bilingual and bicultural education. An extreme form of the "bi-bi" consists in suggesting

that all that is learnt, besides English, to be made in sign language and all that is assimilated in English to be made through reading and writing activities.

Some of the researchers criticize the non linguistic character of bimodal communication, which cannot represent the oral grammar or the signed one. Nevertheless, a bimodal message is not grammatically poor unless we consider all the elements of the speaking system to be simultaneously represented in sign language. This stipulation is rarely accomplished due to the fact that it's hardly natural when we talk about using linear procedures in sign language, the same as we use them in oral language. However some researchers consider that bilingual educational programs do not guarantee a better learning of the oral or written English language than the total communication programs do.

1.3. Advantages and disadvantages of total communication; Different approaches in developing the communication of the hearing impaired children

In educating hearing impaired children there are three great methods or techniques that can be successfully used: the bilingual-bicultural approach, the auditory-verbal approach and total communication. Each of these three has a purpose and a series of advantages and disadvantages. We are going to present in the following the features of these approaches.

1.3.1. The auditory-verbal approach

The auditory-verbal approach represents more than a compilation of techniques and strategies and certainly more than a method of communication. This kind of approach implies the teamwork of the parents and the speech therapist, together with other professionals in order to implement a dynamic interaction perspective aiming to welcome the individual needs of the child. Such a point of view embraces both the medical pattern and the behavioral one in the terms of treating the speech deficiency.

A big part of the hearing impaired individuals who have been taught in the auditory-verbal approach are now pleading for the use of sign language due to their own frustrations as long as this approach goes – especially frustrations connected to the poor level attained at the written and spoken abilities tests.

1.3.2. Bilingual – bicultural approach

The traditional bi-bi approach is based on the premise that the oral approach and total communication do not meet the hearing-impaired children's' cultural and linguistic needs; that sign language is more accessible and efficient for the hearing impaired students; that they will acquire verbal language in its written form based on sign language; that sign language is the first language taught and English is the second language.

The bi-bi approach does not allow time for exercising the residual hearing or the oral language. In fact the supporters of this method believe that it is morally wrong to compel a hearing impaired child to use a certain kind of language which he/she cannot acquire – spoken language. In addition, this perspective can seriously limit the involvement / integration of the hearing impaired into the hearing individuals' culture.

1.3.3. Total communication approach

Total communication is an educational philosophy that can be best defined by eloquence and borrowing techniques from a variety of different communication methods. Ideally, the teachers can use sign language, written language, mime, speech, images or any other communication method that brings efficiency in the given situation. The selected method should rely on the child's needs and on the given circumstances. In actual praxis, the majority of the total communication programs use a certain feature of simultaneous communication.

The research conducted in this field have frequently demonstrated the positive effects of total communication in all the development areas of the hearing impaired children, like the psychological, linguistic or academic ones (Vernon & Andrews, 1990).

If we consider the efficiency of communication above its shape (Kaplan, 1996), than total communication is truly valuable because it allows the child to use that kind of communication that is most suitable for him/her in any given situation.

D. Zibman McFadden (1999), has found the following arguments for including total communication in the classroom:

- Total communication represents a system that successfully integrates listening, speech reading, speech, body language, sign language and active reading.
- The purpose of this process called total communication is to develop for each student a comprehensive communication system that will allow him/her to get fully involved in all the academically and social areas and branches.
- Total communication represents more that the simultaneous use of sign and spoken language. It represents teaching students to use their residual hearing in order to acquire the spoken language, the information given by the teacher and those provided by the environment. Total communication translates in educating the children in such a manner that they are able to make logical connections between what they think they've heard, using the visual information by lip-reading and signs, and the existing gaps in the given requirements or tests.
- Total communication requires daily activities of auditory training and listening techniques within every academic classroom interaction.
- Total communication also means providing a consistent, functional and professional acoustical amplification. It is imperative for the audiologist to be a part of the hearing impaired classroom team.

1.4. Integrating total communication within the adapted curriculum of the hearing impaired students

It is difficult to separate the curriculum and the educational praxis from a notional point of view. In order to create a difference we can explain the curriculum term by referring to the theoretical content, to the themes and objectives, and the educational term by involving those teaching-learning praxis that engage the students into the curriculum.

Hearing impaired students are in need of the educational approaches that confer a high supporting level. They also require a curriculum that is modified to their intellectual and linguistic needs and possibilities, as well as professional assistance.

Hitchcock, Meyer, Rose and Jackson (2002) define the general curriculum as a global educational and instructional arrangement adopted by a school or a scholar system. Each school and each student benefit of this curriculum in their own style or advantage. The manner that the students with special requirements profit from this curriculum depends on the assessment and planning abilities of each special school. These schools must take into consideration the content of the teaching activities in the public schools, must identify the possibilities of attaining the objectives from the general curriculum, must create an adapted curriculum that is adequate to the type of deficiency of their students and must determine the teaching and assessment approaches inside this adapted curriculum. There are certain distinctive issues for each deficiency and it is important to consider the objectives that aim these issues, because those particular problems frequently obstruct the access to the general curriculum. A curriculum of language, reading and writing can be best described today as a balance between analytically and holistically methods.

CHAPTER 2

2. SOME ASPECTS OF LANGUAGE AND COMMUNICATION FOR THE HEARING IMPAIRED CHILDREN

2.1. Particular features of the oral communication between hearing-impaired students, their peers and classroom teachers

There are two kinds of factors that must be considered in the oral communication between the hearing impaired students and their hearing peers and teachers: the need for a better understanding of the hearing impaired students' circumstances of the oral communication and a growing tendency of integration of the hearing impaired. The question about the ideal communication style of the hearing impaired children has generated considerable debates in the literature (Gregory, Knight, Powers & Watson, 1998). It is common knowledge that 90% of the hearing impaired children are born into hearing families and despite the tendency to use sign language, a great deal of parents want their children to communicate through speech if possible (Gregory & Knight, 1998).

The natural-auditory approach intends to make the most of the residual hearing of the children with the support of the hearing aids and its purpose is to facilitate language acquisitions by copying those features in the interaction parent-child that have proven to be important in the process. The supporters of this approach claim that hearing impaired children go through the same stages of language learning as the hearing children, even though their progress could be delayed as a direct result of the hearing loss (Lewis & Richards, 1998).

A great part of the research made on the interaction between the hearing impaired students and their hearing peers have followed the general measurement of the interaction between the two groups (initiation, frequency and duration) and not the detailed studying of the communication between the two actors (Gallaway & Woll, 1994, Lederberg, 1991). A series of studies have examined the effects of the hearing state and the abilities of using the

language through the interaction between hearing impaired and hearing children. The results suggest that the both categories of children prefer to interact with peers that present the same auditory features (Antia, 1982, Minnett, Clark & Wilson, 1994, Spencer, Koester & Meadow-Orlans, 1994, Vandell & George, 1981).Both groups of children also seem to have more success in interacting with familiar children (Lederberg, Ryan & Robins, 1986, Rodriguez & Lana, 1996). On the other hand it has been underlined that the hearing impaired children that have better language abilities are more inclined to interact with their hearing peers than those with lower language abilities (Lederberg, 1991).

Communication, especially in its unstructured form, spontaneous and informal is essential for the interaction between peers and for the development of the school relationships (Stinson & Foster, 2000). The interaction of one child with his/her peers offers information on the communication features that cannot be obtained from the child-adult interaction (Ostrosky, Kaiser & Odom, 1993).

There is relatively little knowledge about the effect of different communication partners or different conversational contexts on the oral communication abilities of the hearing impaired children, especially at school age. The hearing peers' role on the learning of communication abilities of the hearing impaired needs more detailed investigations.

Lloyd, Lieven and Arnold (2001) have suggested that it might be useful if the specialists would take into consideration the part played by the hearing peers into the assessment and the development of the oral communication abilities of the hearing impaired children. What would be the role played by the hearing peers in the intervention programs? When the hearing peers are partners in the communication process there appears a different relational context than the one created with teachers or parents as communicational partners. This context could have a higher meaning for the daily interactions of the child and therefore the communication abilities gained after the interventional programs where there are interactions with hearing peers could be easier generalized to daily situations.

2.2. Language and executive function for the hearing impaired children

The executive function refers to the management and self-regulation abilities necessary to the non-mechanical purpose centered behavior. This function was diversely described as including planning, initiation, supervising, and flexible correctional actions according to feedback; as sustaining and also drifting attention; as inhibitor of potential but inadaptable responses and controller of impulses; as a selector of purposes and a performer of actions that do not necessarily lead to an immediate reward, but aim a longer term objective; as retaining the information in mind while a task is being made (work memory); as creatively responding to unusual situations with unusual answers (Hughes & Graham, 2002; Norman & Shallice, 1986; Shallice & Burgess, 1991; Welsh & Pennington, 1988).

Figueras, Edwards and Langdon (2008) consider that the development of the language and the executive function are closely related. They have discovered that hearing impaired children have difficulties in exercising the executive function (even if these difficulties are dependent on the language delay), a problem that has both clinical and educational meanings. The clinical assessment of the hearing impaired children should consider their potential problems with the executive function and the manner in which these would interfere with the children's performance in other areas, including here the social and the cognitive ones. The problems met with the executive function could appear in the

difficulties of mental management for the written assignments, in the management of the materials necessary for the activities, in time management and in employment of the longer verbal instructions. The smaller abilities of the executive function could also be behaviorally expressed by difficulties in playing or social situations such as waiting your line in a game or in conversations. Directing the behavior and teaching could be eased by using the learning strategies that underline visual conclusions and that have minimal language tasks, in order for the hearing impaired children's executive function abilities to be able to develop. Besides, intensifying some features of language development, such as learning hearing impaired children to practice and use speaking strategies with themselves in order to plan and solve problems, could be helpful for the more frequent use of the existent executive function abilities as well as for their more complex development.

CHAPTER 3

3. CHARACTERISTICS OF THE TEACHING AND LEARNING STYLES FOR THE HEARING IMPAIRED CHILDREN

3.1. Approaches of the learning styles in hearing children

There are three kinds of approaches of the learning styles that have been frequently reported in the literature: psychological types, cognitive approaches and social-interactive approaches. About the psychological types, Guild & Garger (1985) have discovered the beginnings of the research evolution on the learning styles in Carl G. Jung's papers at the beginning of the last century. Until the 60's the majority of the trials to study student's features of the learning style were concentrated on standard personality tests. In the last decades the measurement of some personality features was continued by using the Hanson-Silver Learning Preference Inventory – LPI and the Myers Briggs Type Indicator – MBTI. The studies that have used these kinds of tests have clarified the way that people interiorize the information and the distinct ways that they make decisions.

The social-interactive approaches underline the idea that learning represents a function of the students' interaction with their teachers and peers. For instance Grasha-Riechmann Student Learning Style Scales (GRSLSS) that measure the students' learning styles, are based on a social interaction pattern associated with three dimensions of the classroom: students' attitudes towards learning, their perception on the teachers and on the peers and their reactions to the classroom rules and procedures (Grasha, 1990).

By using the patterns of the learning styles described above, the researchers have also correlated the learning styles of the students with the teaching styles of their teachers (Cooper & Miller, 1991). It has been noted that in general the teaching behaviors are less effective as school performances predictors compared to the learning abilities of the students, the time management skills and the learning habits. More recently the researchers' attention has moved towards the main teaching methods, encouraging active learning (Bonwell & Eison, 1991). Both the learning styles and the main teaching methods are part of a complicated prediction equation, so that there is the need to examine the teaching and the learning styles at the same time (Lang, 1999).

3.2. Approaches of the learning styles for the hearing impaired students

The research about the learning styles of the hearing impaired students have concentrated on the field dependent/independent and introversion /impulsivity concepts, with the majority of the studies using personality tests. There were no researches based on the social-interactive approaches. The hearing impaired students as a group seem to have a higher cognitive field dependent style compared to their hearing peers (Fiebert, 1967; Parasnis & Long, 1979). More so, Davey & LaSasso (1984) have reached the conclusion that hearing impaired students that have a cognitive field independent learning style use more efficiently the memorizing strategies in reading activities and score better at multiple choice tests than the students with a field dependent cognitive learning style.

Lang, McKee & Conner (1993) have found significant differences between the hearing impaired students and their teachers perception of some teaching-learning features and their importance while the students get the content of the taught activity. Significant differences have been noticed between the perception of the students and the teachers for 16 of the 32 teaching-learning features used by the authors in this study. Such differences could be explained by the fact that the teachers emphasize more the educational strategies that the hearing impaired students cannot integrate within their learning styles.

In order to determine the most efficient methods of working with the students, the teachers could try to find out information about each student's preferences. Nevertheless the teachers' ability to precisely identify the preferences of their students is currently limited. There is the need to create a scale for the measurement of the learning styles linked to the classroom activity, a scale with much better psychometric properties and also a better understanding of the way in which the compatibility between the learning styles of the students and the teaching strategies of the teachers influence learning.

Regardless of the type of measurement for the learning styles that has been used, it seems that the wise teacher will be the one that would offer a variety of teaching approaches during classroom activities, so that it will allow all the students to learn by their favorite style, and on the same time to capably reinforce the other learning styles as well.

3.3. Teaching reading strategies for the hearing impaired students

In the studies made so far on the development types of reading abilities for the hearing impaired students there have been included participants with divers hearing losses, from mild to severe ones. It would seem reasonable to have a difference between children with moderate hearing loss and those with severe loss, as well as between those with severe hearing loss and the ones with profound hearing loss, if we consider that the students with a smaller hearing loss will approach the reading activity differently and will comprehend reading in a different rhythm than the children with more severe hearing losses. In reality this fact hardly ever happens. One reason would be that the hearing impaired students with moderate up to profound hearing losses are usually educated together in the same institutions – schools for the deaf or hearing impaired or public schools that include special programs for the deaf/hearing impaired. Another reason would be that many children have hearing losses that vary from one frequency to another or from one ear to the other, making difficult to identify their hearing loss as the only factor to influence the reading abilities.

Wauters, Tellings, van Bon & Mak (2007) underline in their study the importance of a rich vocabulary both for the hearing and for the hearing impaired children in order to attain

the objective of reading comprehension. The authors claim that a support of perceptual words must be created in the first place for the hearing impaired students. By using these perceptual words a series of meanings for the linguistic words could be built. The process of receiving a word's meaning could be different for the hearing impaired children that come from deaf families and those that come from hearing families, and an interesting topic for future research could be the extent to which the big differences in acquiring word meaning between hearing impaired students from deaf and hearing families could be explained as a result of the acquiring technique caused by the qualitative and quantitative differences in the language offered by the two categories of parents.

3.4. Learning methods used in educating hearing impaired children. The use of total communication

Active-participative methods have been greatly promoted in the last decades due to the fact that they allow the student to satisfy his/her educational requirements by personal effort or by cooperation with other peers. Naturally this applies to the hearing impaired students as well, but when it comes to cooperation there appears a slight inconvenient: the manner that the child is taught to communicate with the teacher might not be the same way that he/she communicates with his/her peers. Thus the easiest approach for the parties involved is total communication because it integrates all communication methods satisfying both the teachers and the students.

The active-participative methods are known to stimulate the interest for knowledge and to facilitate the contact with the environment because they are a part of the children's cognitive development and social behavior. Within the education of the hearing impaired children, these methods are an important source for the classroom activities because they encourage and develop learning through cooperation making thus possible communication, social life, relationships, cooperation and group support in order for the children to solve problems or investigate knew topics. Consequently, mutual knowledge, understanding and acceptance are promoted between the hearing impaired children.

3.4.1. Active – participative methods that can be successfully applied in the hearing impaired educational context

3.4.1.1. Semantic networks

A semantic network represents a graphical notation for the representation of knowledge as a pattern of interconnected nods and arches. The computing implementation of the semantic networks was first made for the artificial intelligence and for automatic translations, but the previous versions have been used for a long time in philosophy, psychology and linguistics. All the semantic networks have in common the declarative graphical representation that can be used either for the representation of knowledge or for the automatic systems support. Some versions are strictly informal, while others are officially defined as logical systems.

A semantic network has the shape of an ensemble of oriented and labeled nods and arches. The nods represent the objects. One object can be an abstract or a particular concept, an attribute, and so on. The arches are used to represent the links between these objects.

The semantic networks represent a nonlinear brainstorming method. They can be successfully used both in the beginning of the classroom activity – as a remembering – and in the consolidation part – as a reflection. This method is used to encourage the children to think and make connections before further studying a certain subject. This method can also be used as a way to resume what has been studied so far, as a mean to build new connections or to represent new meanings. The steps of a semantic network are as follows: writing the main word in the middle of the blackboard/page, writing the words that come to mind about that, drawing lines between the words that connect in any way.

From the experience in working with primary school hearing impaired children I have noticed the difficulties they have with understanding the meaning of the words, with making sentences and developing the vocabulary in general. Hence, even though the semantic network is a tangible method and it exemplifies the words related to each other, the hearing impaired children will have to pass the test of understanding the meanings of these words. As a consequence I have considered useful to create a semantic network based on images in order to try on one hand to surpass the barrier imposed by the poor vocabulary of the hearing impaired children, and on the other hand to implement this method so that it could be easily understood and that it could contribute to the development of the vocabulary and language.

In the first step of the elaboration of this method the written words were left out and pictures were put in their place. There were only some nods left written because there was no possibility to transform them to pictures. It is the case of words like *specific activities* (in a topic like *autumn*). These words are explained to the children by using total communication.

In the second step, after the hearing impaired children have recognized all the presented pictures we have started to name them. Thus the images have been kept in the semantic network and their names have been written underneath or besides them. After the hearing impaired children were clear about all the pictures and their names we have passed on to the third step using only the words from the semantic network. One observation has to be made here: when the words are not fully comprehended the teacher can keep the pictures in hand so that the child can see them and feel more comfortable.

In the following pages there is an example of this adapted method in all its steps in figures 2, 3 and 4. For this example we have used a semantic network from the topic *Autumn.*

FIGURE 1: *Presentation of the semantic network in pictures – step 1*

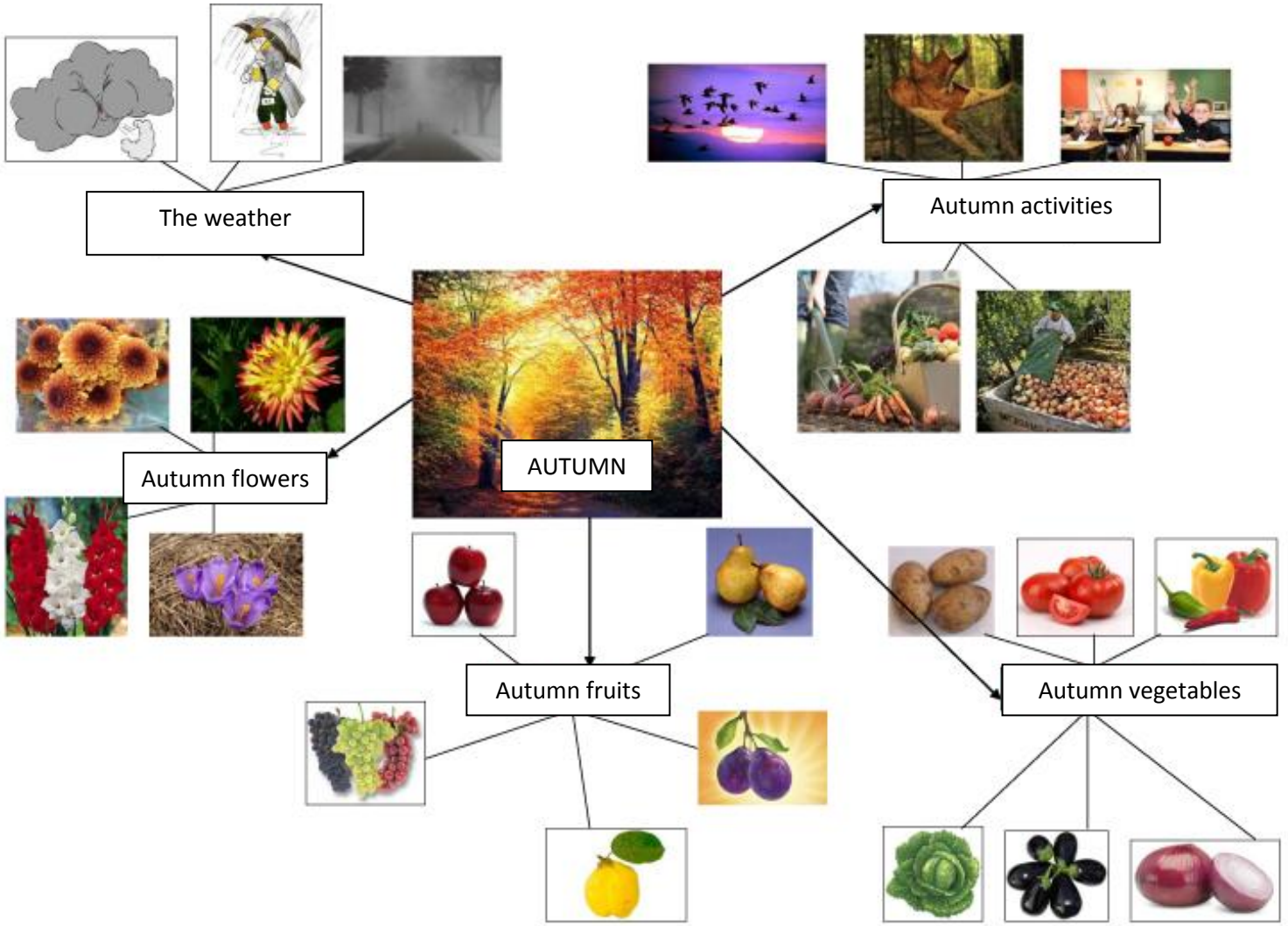


FIGURE 2: *Presentation of the semantic network in pictures with the words written below – step 2*

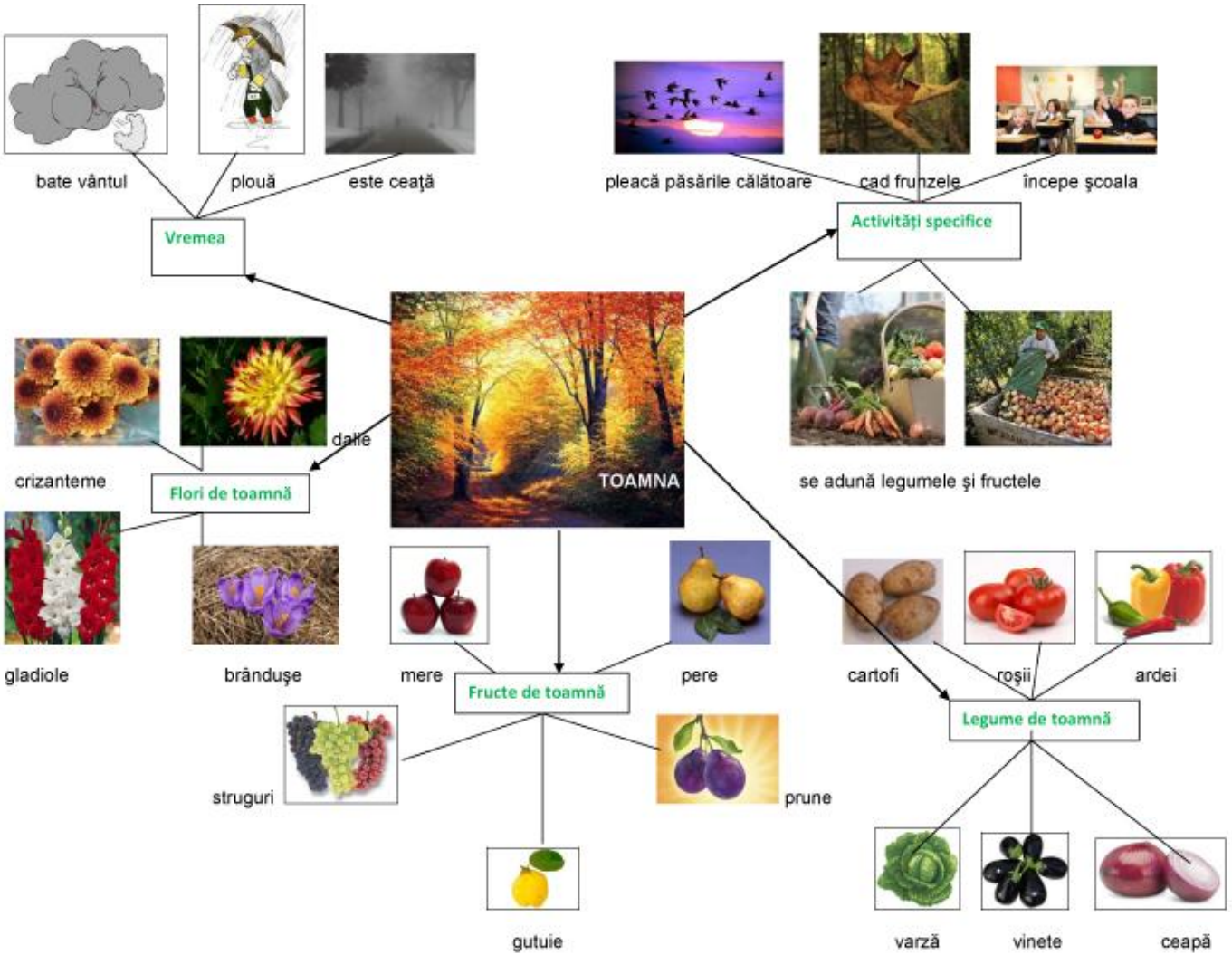
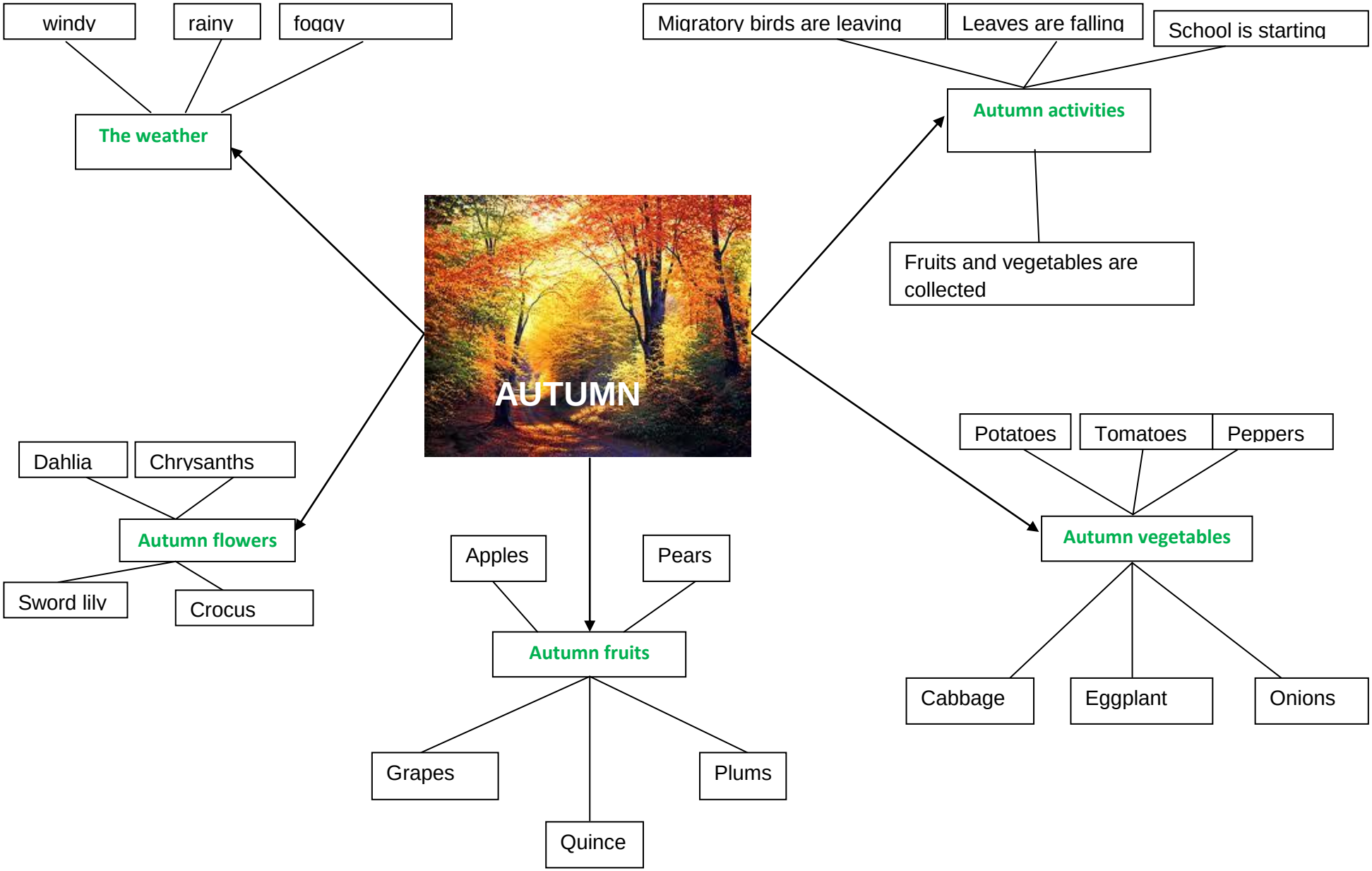


FIGURE 3: *Presentation of the semantic network in words – step 3*



3.4.1.2. „Know-Want to know-Learned”

What is special about this method it's the way it brings together the contents that are going to be studied (A. Pamfil, 2008). They are brought together to the knowledge that the student already has about the issue, to the child's expectations about the issue and then, to the new questions and expectations that arouse as an effect of the studied issue.

The model has been created by Donna Ogle and at first it was used for the expository texts lecture (D. Ogle, 1986). Known as K-W-L, initials that correspond to the questions *What do I know? What do I want to know? What have I learned?,* the pattern has been imposed as a viable solution of projecting the classroom activities for receiving some declarative knowledge (A. Pamfil, 2008).

There are five distinct steps in this method:

- What do I know about the issue?
- What would I like to know about the issue?
- Learning the new content
- What have I learned about the issue?
- What would I still like to learn about the issue?

These steps put the learning of the new content into the natural chain of interrogations, answers and new questions which the approach and the deeper learning of some issues presume.

Such a structure of the teaching approach is able to inform the configuration of all the lessons centered on assimilating a single issue.

Knowing the fact that this method assumes a series of questions and requires complex analysis and summary operations, it would be very difficult to approach it with the hearing impaired students. Thus, considering the cognitive difficulties of the hearing impaired children, we have proposed a method that is adapted from the one presented above and that we have called “Know, don't know, learned”. We have started constructing this adaptation with regard to the steps of the original method and by inserting visual elements that were going to work as meaningful anchors.

The first step of the method, “What do I know about the subject?” can be accomplished with a brainstorming exercise based on the hearing impaired children's knowledge about the text – the brainstorming is conducted by using total communication so that the children can understand and further communicate as efficiently as possible. The teacher will write down all the words that come from the children and further on he/she will move the words that are outside of the subject into the corner of the blackboard. Next the connections between words are going to be made and there will follow an exercise of synonyms, definitions, features of the words and so on.

Together with the children it will be established that all that is written on the blackboard is common knowledge, that those are the words they have identified and therefore the subject in front of them is a familiar one. Further on the teacher will present the children the text to be worked with in that class.

The hearing impaired children are asked to mark the text using two types of annotations: one for the fragments or words (if it is a vocabulary test) that they already know and one for the ones they don't know. These annotations will translate into colours. For the adaptation of this method the colours used were orange for the known elements and blue for the unknown ones.

After the hearing impaired children make the colours analysis the teacher reads and explains the text that the children have already marked. If there are any elements in the text that the children should have known but have marked them as unknown (with blue), the teacher clarifies and moves on.

In the second step of the lesson corresponding in the original method with the question "What would I like to know about the subject?" the teacher is going to mark the words that are new for the children. For these new elements the teacher will use the colour green and the hearing impaired children have now the possibility to confront these words with their own marking and to modify from blue to green the words that are new. Thus after this first analysis the hearing impaired children have a picture of the words that they know, the ones that are not very well known and the ones that they are going to learn about in that lesson.

The third step is about learning the new content and for the hearing impaired children it can take the following shape:

- Extracting the new words from the text and explaining them through total communication (signs, pictures, words)
- Making sentences with the new words
- Dividing the words into syllables
- Filling in the gaps with the new words so they can use them in various contexts.

This method is highly welcome into the hearing impaired children's classes because it insures the permanent link with the text, with the teacher and with the child's context.

The purpose of this method is to identify what the children already know, to underline what they don't know in order to help them clarify the misunderstandings and to mark what is new in order to transform it into something that the children will know. Keeping this knowledge inventory is something that the hearing impaired children like very much because it helps them in self assessment, it motivates them in the learning process and in their desire to know more or perform better.

The value of the "K-W-L" method consists mostly in the fact that it allows the learning activity to be a part of the assimilation process of a subject, process that begins long before the lesson starts and that continues after it ends. Also, because we speak about hearing impaired children and about the teaching performed by the psycho pedagogy teacher, this connection of the themes and issues can be extended to other school subjects as well. Therefore we could talk about a whole process of approaching an issue in Romanian classes, Civic education classes or extracurricular children literature classes.

What is remarkable for this active-participative method is the fact that it integrates the lesson into the children's sphere of concerns giving them the possibility to phrase their own

questions and to measure the answers, to asses themselves and to appreciate the progress from one month to another or from one semester to another.

The message given by such a process is that learning activities are not single handed, but that they are a part of a coherent process that covers domains extended beyond the limits of the lesson or of the textbook right into the life experience and into the possibilities of each individual. For a hearing impaired child such a message is very important because it offers him/her a greater self confidence, it motivates him/her and it makes him/her want more for him/her self. In other words it raises their aspirations, the will to work, to be valuable and to understand the world he/she is a part of.

For the assessment part we suggested the use of some evaluation tests that contained vocabulary requirements and text learning skills. After completing the evaluation tests the hearing impaired children received the correct answers and were asked to mark with orange the right answers and with blue the wrong ones. After this marking the hearing impaired students were required to give each other school marks taking into account the predominance of one of the two colours. With this procedure we have underlined both the role of this adapted method in the development of the hearing impaired children's vocabulary and the inter and self evaluation character of the adapted method presented above.

3.4.1.3. The method "Think, pair, share"

The method "Think, pair, share" is a strategy of conversation through cooperation that involves three steps of action where the children talk about the content and discuss ideas before sharing them with the entire group. This method introduces elements of "time of thinking" and interaction with the peers, elements which are important characteristics of learning through cooperation. The aim of "Think, pair, share" is to help the students to process information and to develop their communication skills and thinking processes.

By this strategy the teacher:

1. Addresses an open question or raises a problem;
2. Gives the students one or two minutes to think the answer through;
3. Groups the students in pairs so they can debate the answer and share their ideas;
4. Offers the students the possibility to share their answer in a larger group or with the whole class.

Because the students have the time to think the answer through and then debate it with a peer and consequently have a different perspective they are able to be more desirable and less concerned to share the answer to a larger group. This active-participative method also offers them the time to change their answer if this is necessary and diminishes the fear of giving a wrong answer.

In working with hearing impaired children the correct and easy communication represents a trustworthy and reliable factor. It is of extreme importance that they get the message that is transmitted, to use it and to discuss with other hearing impaired peers so that they can finally send a message which is properly understood. For this reason we have considered total communication useful because it allows them to use the communication forms that suit them best in their interaction with the teacher and their peers.

Therefore we proposed the introduction of the method “Think, pair, share” by operating some adjustments in order to adapt it to the hearing impaired children’s communicational needs.

This method has been used in the consolidation step of the lesson and its objective was to solve some items in pairs, to confront these solving between two or four pairs and then with the entire classroom (a hearing impaired children classroom has about 8 to 10 students). The idea was that the students should communicate, help each other and reinforce their knowledge in order to later solve their evaluation tests alone and with self confidence.

The adaptation of this method presumed using pictures together with words. Hearing impaired students were grouped in pairs and had to solve the following issues:

1. Name a series of images from the studied subject;
2. Make sentences with the names they have found;
3. Divide into syllables some words from the studied subject (with visual support)
4. Answer three questions from a given short text.

The four tasks mentioned above were solved in four different hours (activities). The pictures used have contributed to the understanding of the words and have been a real support in the sense of positive motivation for the hearing impaired children that were confused at some point about the significance of one word.

After the tasks were solved the pairs were grouped again forming this time a four students group. At this moment each group was asked to confront the papers of the two initial groups and to bring alterations or additions wherever they think it’s necessary. Also for this step the pictures were important because they had a checking up function in the correct understanding of the word’s meaning.

After the tasks were finished the groups were enlarged once again this time having 8 to 10 members, which meant the entire class. Confrontation of the papers was required once more and there were made new annotations.

When the activity was over the hearing impaired children’s papers were exposed on a paper wall. When all the four tasks were exposed in this way the children had a big picture on their studied subject that contained: naming pictures, making sentences, syllable dividing of words shown in pictures and the answer to questions.

A working theme that is exposed on paper walls and consists in both words/sentences and pictures can offer a permanent contact to the hearing impaired children with the studied topic, with words naming and words meaning. It is considered that this visual support contributes in a great measure to understanding the content and to linking the pictures and the written words with the oral or signing explanations that are present within the total communication in an activity with the hearing impaired children.

CHAPTER 4

STUDY I: IMPACT OF ACTIVE-PARTICIPATIVE METHODS ADJUSTED TO THE REQUIREMENTS OF TOTAL COMMUNICATION ON THE DEVELOPMENT OF VOCABULARY OF HEARING-IMPAIRED CHILDREN OF YOUNG SCHOOL AGE (4th grade)

4.1. Purpose and psychological argumentation

The purpose of this study is on one hand, to introduce three of the active-participative methods to hearing-impaired children of 4th grade in a manner which meets their specific communication needs – using total communication, and on the other hand, to investigate the cognitive profit obtained by the participants following the implementation of these three methods. In this study cognitive profit represents the development of the vocabulary of hearing-impaired children from its initial testing (at the beginning of research) to final evaluation (at the conclusion of research). The method by which these three active-participative methods were presented to hearing-impaired children represented the most difficult and thorough part of this study, being at the same time the element of novelty as teaching and learning technique in hearing-impaired children. The methods which were selected for this study were: semantic networks, "I know, I want to know, I learned" method and "Think, work in pairs, communicate" method.

4.2. Objectives and hypotheses

4.2.1. General objective

Highlighting the formative role of active-participative methods adjusted to the development of communication competences of hearing-impaired children.

4.2.2. Specific objectives

a. Presentation of active-participative methods in a particularized form, with insertions of images or colours, as applicable, in order to obtain a better understanding of their functioning and role by the hearing-impaired participants;

b. Presentation of linguistic material under the angle of total communication;

c. Reporting the vocabulary notions assimilated by hearing-impaired students to the three active-participative methods used;

d. Comparison of initial and final results of hearing-impaired participants from the perspective of linguistic acquisitions and the cognitive profit recorded.

4.2.3. General hypothesis

The presentation of Romanian language contents through the active-participative methods adjusted to the needs of hearing-impaired students will contribute to the development of their vocabulary and to a better comprehension of the read text, which will be reflected in the analysis of initial and final results to vocabulary tests.

4.2.4. Specific hypotheses

a. The use of the semantic networks method, under its adjusted form (with images) will contribute to the logical organization of the lexical field of the studied subject, which will materialize in the identification of a significant larger number of words from the first to the last subject evaluated by this method.

b. The use of *I know, I want to know, I learned* method under its adjusted form (with colours) will contribute to the self-evaluation process of skills and notions assimilated by hearing-impaired students and to the highlighting and reorganization of the linguistic material which remained unprocessed or unknown. These aspects will be reflected in the identification of a significant larger number of words from the first to the last subject evaluated by this method.

c. The use of *Think, work in pairs, communicate* method will contribute to the verbal stimulation of hearing-impaired students through the operations of comparison, checking and resolution of problems together with the members of the group to which they belong. The linguistic material will be processed both individually and in groups of 2 to 8 members, the students having the opportunity to check the assimilated vocabulary. These aspects will be reflected in the identification of a significant larger number of words from the first to the last subject evaluated by this method.

d. The use of the three active-participative methods will contribute to the development of vocabulary of hearing-impaired students, which materialized in the recording of a significant higher score at the final vocabulary test (after the implementation of the three methods) compared to the initial one (before the implementation of the three methods).

e. The implementation of the three active-participative methods will lead to obtaining a cognitive profit by the hearing-impaired participants, regardless of the category of intellectual level to which they belong.

4.3. Participants – concise description under audiological aspect, under the angle of intellectual level and the start linguistic acquisitions

The study was conducted on a lot of 37 hearing-impaired participants with ages between 10 and 11 years old, for a period of one school year.

Out of the 37 participants, 30 have hearing deficiency of perception, profound, bilateral and 7 participants have hearing deficiency of perception, medium, bilateral.

Out of the 37 participants in the study 28 come from hearing families, and 9 come from hearing-impaired families.

The distribution of participants by categories depending on the intellectual level is as follows:

(1) good and above medium level intelligence (IQ≥100) –10 participants

(2) poor medium level intelligence (IQ= 90-99) - 8 participants

(3) intelligence below medium level (IQ=80-89) – 15 participants
(4) limit intelligence/light mental deficiency (IQ=72-46) – 4 participants

4.4. Instruments and materials used in research

In the elaboration of this research we used a series of instruments and materials which we will enumerate below.

- For the measurement of the vocabulary of hearing-impaired children we elaborated an evaluation test which was applied at the beginning of research to evaluate the initial level of vocabulary of students, respectively at the end of research to measure the progress recorded by them following the implementation of active-participative methods adapted.
- For highlighting and measuring the vocabulary knowledge acquired by hearing-impaired children following the implementation of each of the three active-participative methods adapted, we elaborated a formative evaluation test following each subject taught by the respective method. For all the subjects presented with the same method the structure of the formative evaluation test was identical.
- For measuring the intellectual level of hearing-impaired participants we used the Progressive Matrices Raven Color.

4.5. Work procedure

In the teaching of contents of Romanian language and literature at 4^{th} grade for hearing-impaired children we used three active-participative adapted methods (*semantic networks method*, *I know, I want to know, I learned method, and Think, work in pairs, communicate method)* which were introduced to the participants in the study and which were used exclusively until the end of the school year.

The order in which these methods were presented was random and does not work like a confounded variable in the interpretation of results of participants. For each studied subject we chose the most suitable method from the point of view of understanding the words, their usage with meaning and the construction as easy as possible of enunciations.

The period of work for a subject was one, maximum two weeks, respectively between six and twelve hours of Romanian language. The subjects studied in the school year were as follows (in the order of their studying in class): *Family, School, Autumn, Vegetables, Fruits, House, Winter, Christmas Holiday, Domestic Animals, Wild Animals, Human Body, Cook, Teacher, Tailor, Postman, Doctor, Carpenter, Barber, Policeman, Spring, 1^{st} and 8^{th} March, Easter, Flowers, Clothing items, Means of transport, Child's Day, Summer.*

For these 27 subjects we present below the distribution of the three methods from the study. The subjects are graded from 1 to 27 and keep the order presented above. The active-participative methods are graded with a, b and c as follows: *semantic networks*

method - a; *I know, I do not know, I learned method* – b; *Think, work in pairs, communicate method* – c.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
c	b	a	c	b	c	c	b	a	b	c	a	c	b	c	a	c	a	c	a	c	b	c	a	b	c	c

4.6. Experimental Design

A. For checking the first research hypothesis we will use a simple experimental design:

- Independent variable: presentation of Romanian language contents by using the "*semantic networks*" method under its adapted form – variable intrasubjects
- Dependent variable: the number of words correctly identified at the evaluation test specific to this method

B. For checking the second research hypothesis we will use a simple experimental design:

- Independent variable: presentation of Romanian language contents by using the method "*I know, I want to know, I learned*" under its adapted form – variable intrasubjects
- Dependent variable: the number of words correctly identified at the evaluation test specific to this method

C. for checking the third research hypothesis we will use a simple experimental design:

- Independent variable: presentation of Romanian language contents by using the method "*Think, work in pairs, communicate*" under its adapted form – variable intrasubjects
- Dependent variable: the number of words correctly identified at the evaluation test specific to this method

D. for checking the fourth research hypothesis we will use a simple experimental design:

- Independent variable: presentation of Romanian language contents by using the three adapted active-participative methods – variable intrasubjects
- Dependent variable: number of correct answers at the vocabulary evaluation test

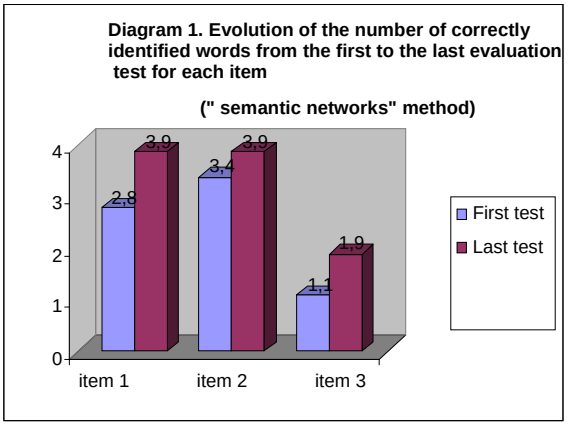
E. For checking the fifth research hypothesis we will use an experimental design 2x4:

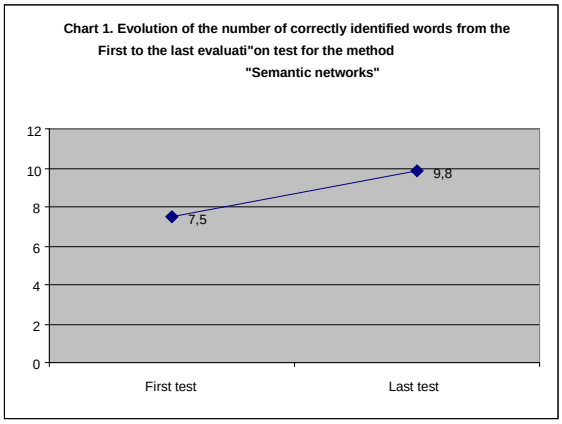
- Independent variable 1: presentation of Romanian language contents by using the three adapted active-participative methods – variable intrasubjects
- Independent variable 2: <u>intellectual level of participants</u> – with four methods:
  (1) good medium level and above medium level intelligence, IQ≥100,
  (2) poor medium level intelligence, IQ= 90-99,
  (3) intelligence below average, IQ=80-89,
  (4) limit intelligence/light mental deficiency, IQ=72-46
  – variable intersubjects
- Dependent variable: number of correct answers to the evaluation test specific to methods/vocabulary evaluation test.

4.7. Presentation and interpretation of results of the study

A. *Checking of the first specific hypothesis regarding the effectiveness of the active-participative method "Semantic networks"*

For checking the hypothesis of vocabulary development by using the "Semantic networks" method we will make comparisons between the number of correctly identified words at the first evaluation test and the number of correctly identified words at the last evaluation test for each item and globally for all items. The experimental hypothesis will be confirmed if the participants correctly identify significantly more words at the last evaluation test than at the first evaluation test.





You can see in diagram 1 and chart 1 that there is a positive evolution in the development of vocabulary from the first test to the last test by using the active-participative method "semantic networks", the participants identified correctly more words at the last test compared to the first evaluation test. In order to see if these differences are statistically significant we tested first the normality of distribution by using the Kolmogorov-Smirnov test. The results obtained at this test show us that only the global scores resulted by summing up the partial scores obtained at each item are normally distributed (Z_{KS}=.842, p= .478 for the first evaluation test and Z_{KS}=1,169, p=.130 for the last evaluation test), while the scores recorded by the participants at each item are not normally distributed (Z_{KS}=1,602, p=.012 for the first evaluation test item 1, Z_{KS}=1,761, p=.004 for the last evaluation test item 1; Z_{KS}=2,689, p=.000 for the first evaluation test item 2, Z_{KS}=3,274, p= .000 for the last

evaluation test item 2 and Z_{KS}=1,370, p= .047 for the last evaluation test item 3). Therefore, in order to test this specific hypothesis we will apply test t for pair samples for the global score (table 1) and Wilcoxon test for pair samples for the scores recorded at each item (table 2).

TABLE 1. *Results of comparison between the averages obtained at the first evaluation test and at the last evaluation test for the method "semantic networks" (test t for pair samples).*

	Difference between pairs					t	df	p
	Average	Standard deviation	Average standard error	Trust interval 95%				
				Minimum	Maximum			
The first evaluation test vs. The last evaluation test	-2,35135	1,00599	,16538	-2,6867	-2,0159	-14,218	36	**.000**

TABLE 2. *Results of comparisons of the number of correctly identified words for each item - "semantic networks" method (Wilcoxon test).*

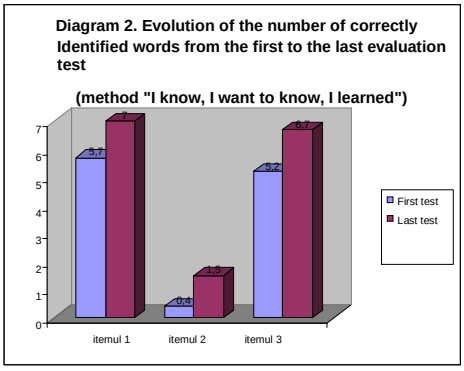
The first evaluation test vs. the last evaluation test	Average of ranks		
Item 1. (identification of words species For a word genus given)	negative ranks 8,50 positive ranks 14,72	4,564	**000**
Item 2. (name of images given)	negative ranks 1,00 positive ranks 7,00	3,271	**001**
Item 3. (identification of works in lacunose sentences)	negative ranks 13,50 positive ranks 15,11	4,524	**000**

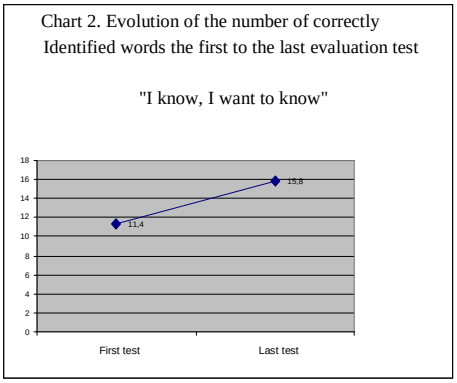
As you can see from tables 1 and 2 there is a significant difference of the number of correctly identified words both for the global score obtained for the "semantic networks method" [t(36)]= -14,218, p=.000, d=2,36] and for each item (Z= -4,564, p=.000, r=0,75 for item 1; Z= -3,271, p=.001, r=0,53 for item 2; Z= -4,524, p=.000, r=0,74 for item 3).

Therefore, the first experimental hypothesis is confirmed and we can say that the use of the active-participative method "semantic networks" in its adapted form for hearing-impaired children has the effect of vocabulary development. Moreover, because the indicator d of Cohen has a value >1,00 we can say that the active-participative method "semantic networks" in its adapted form has a very strong effect on the development of vocabulary.

B. Checking the second specific hypothesis regarding the effectiveness of the active-participative method "I know, I want to know, I learned"

In order to check the hypothesis of vocabulary development by using the method "I know, I want to know, I learned" we will make comparisons between the number of correctly identified words at the first evaluation test and the number of correctly identified words at the last evaluation test for each item and globally for all the items. The experimental hypothesis will be confirmed if the participants identify correctly significantly more words at the last evaluation test than at the first evaluation test.





You can see in diagram 2 and chart 2 that following the use of the active-participative method "I know, I want to know, I learned" the evolution of vocabulary is in the expected direction, the participants correctly identified more words at the last evaluation test compared to the first evaluation test. In order to see if these differences are also statistically significant we tested first the normality of distribution by using the Kolmogorov-Smirnov test. Similarly to the first specific hypothesis, the results obtained at this test show us that only the global scores resulted by the addition of partial scores obtained at each item are normally distributed (Z_{KS}=.785, p= .569 for the first evaluation test and Z_{KS}=.986, p=.986 for the last evaluation test), while the scores recorded by participants at each item are not normally distributed (Z_{KS}=2,059, p=.000 for the last evaluation test item 1; Z_{KS}=2,315, p=.000 for the first evaluation test item 2, Z_{KS}=1,341, p= .055 for the last evaluation test item 2 and Z_{KS}=1,706, p= .006 for the last evaluation test item 3). Therefore, in order to test this specific hypothesis we will apply the test t for pair samples for the global score (table 3) and Wilcoxon test for pair samples for the scores recorded at each item (table 4).

TABLE 3. *Results of comparison between the averages obtained at the first evaluation test and at the last evaluation test for the method "I know, I want to know, I learned" (test t for pair samples)*

	Differences between pairs					t	df	p
	Average	Standard deviation	Average standard error	Trust interval 95%				
				Minimum	Maximum			
The first evaluation test vs. The last evaluation test	-3,64865	1,68682	,27731	-4,21106	-3,08624	-13,157	36	**.000**

TABLE 4. *Results of comparisons of the number of correctly identified words for each item – "I know, I want to know, I learned" method (Wilcoxon test).*

The first evaluation test vs. the last evaluation test	Average of ranks	Z	p
Item 1. (name of images given)	negative ranks 5,00 positive ranks 13,33	-4,285	**.000**
Item 2. (answer to questions)	negative ranks 6,50 positive ranks 13,27	-4,279	**.000**
Item 3. (identification of words in lacunose sentences)	Negative ranks ,00 Positive ranks 13,00	-4,425	**.000**

As you can see from tables 3 and 4 there is a significant difference of the number of correctly identified words both for the global score obtained for the method "I know, I want to know, I learned" [t(36)]= -13,157, p=.000, d=2,19] and for each item (Z= -4,285, p=.000, r=0,70 for item 1; Z= -4,279, p=.000, r=0,7 for item 2; Z= -4,425, p=.000, r=072 for item 3).

Therefore, the second experimental hypothesis is also confirmed and we can say that the use of the active-participative method "I know, I want to know, I learned" in its adapted form for hearing-impaired children has the effect of vocabulary development. Moreover, because the indicator d of Cohen has a value >1,00 we can say that the active-participative

method “I know, I want to know, I learned” in its adapted form has a very strong effect on the development of vocabulary.

C. *Checking the third specific hypothesis regarding the effectiveness of the adapted active-participative method "Think, work in pairs, communicate”*

In order to check the hypothesis of vocabulary development by using the method "*Think, work in pairs, communicate”* we will make comparisons between the number of correctly identified words at the first evaluation test and the number of correctly identified words at the last evaluation test for each item and globally for all the items. The experimental hypothesis will be confirmed if the participants correctly identify significantly more words at the last evaluation test than at the first evaluation test.

Diagram 3. Evolution of the number of correctly Identified words from the first to the last evaluation Test for each item ("Think, work in pairs, communicate" method)

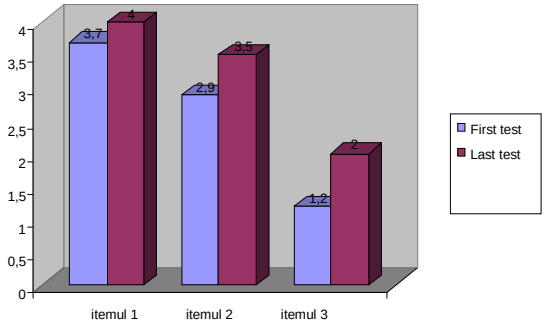
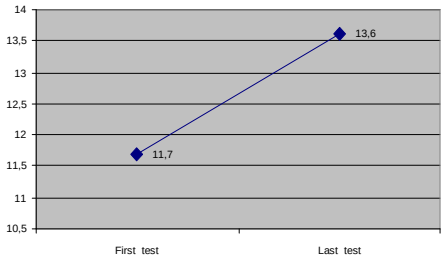


Chart 3. Evolution of the number of correctly Identified words from the first to the last Evaluation test for the method "Think, Work in pairs, communicate"



Similarly to the results obtained in the case of the other two active-participative methods, we can see in diagram 3 and chart 3 that following the use of the active-participative method "Think, work in pairs, communicate” the evolution of vocabulary is in the expected direction, the participants correctly identified more words at the last evaluation test compared to the first evaluation test.

In order to see if these differences are also statistically significant we tested first the normality of distribution by using the Kolmogorov-Smirnov test. The results obtained at this test show us that only the global scores resulted from the addition of partial scores obtained

at each item are normally distributed for both experimental conditions – the first evaluation test and the last evaluation test - (Z_{KS}=.721, p= . 676 for the first evaluation test and Z_{KS}=.1,100, p=.177 for the last evaluation test), while the scores recorded by participants at each item are asymmetric for at least one experimental condition (Z_{KS}=2,929, p=.000 for the first evaluation test item 1; Z_{KS}=2,929, p= .000 for the last evaluation test item 2 and Z_{KS}=1,574, p= .014 for the first evaluation test item 3). Therefore, in order to test this specific hypothesis we will apply the test t for pair samples for the global score (table 5) and Wilcoxon test for pair samples for the scores recorded at each item (table 6).

TABLE 5. *Results of comparison between the averages obtained at the first evaluation test and at the last evaluation test for the method "Think, work in pairs, communicate" (test t for pair samples).*

	Differences between pairs					t	df	p
	Average	Standard deviation	Average standard error	Trust interval 95%				
				Minimum	Maximum			
First evaluation test vs. Last evaluation test	-1,86486	,85512	,14058	-2,14998	-1,57975	-13,265	36	.000

TABLE 6. *Results of comparisons of the number of correctly identified words for each item – "Think, work in pairs, communicate" method (Wilcoxon test)*.

First evaluation test vs. last evaluation test	Average of ranks	Z	p
Item 1. (name of images given)	Negative ranks ,00 Positive ranks 4,50	-2,828	.005
Item 2. (formation of sentences)	negative ranks ,00 positive ranks 10,00	-4,062	.000
Item 3. (questions from a short text)	negative ranks 24,50 positive ranks 13,60	-4,198	.000

As you can see from tables 5 and 6 there is a significant difference of the number of correctly identified words both for the global score obtained for the method "Think, work in pairs, communicate" [t(36)= -13,265, p=.000, d=2,21] and for each item separately (Z= -2,828, p=.005, r=0.46 for item 1; Z= -4,062, p=.000 for item 2, r=0,66; Z= -4,198, p=.000, r=0,69 for item 3).

Therefore, the third experimental hypothesis is confirmed and we can say that the use of the active-participative method "Think, work in pairs, communicate" in its adapted form

for hearing-impaired children has the effect of vocabulary development. Moreover, because the indicator d of Cohen has a value >1,00 we can say that the active-participative method "Think, work in pairs, communicate" in its adapted form has a very strong effect on the development of vocabulary.

D. *Checking the fourth specific hypothesis regarding the cumulative effect of the three adapted active-participative methods in the development of language of hearing-impaired children*

In order to check the hypothesis of the cumulative effect on the development of language of the three adapted active-participative methods we will compare the score obtained at the vocabulary test done before the implementation of the active-participative methods to the score obtained at the same vocabulary test done at the end of implementation of active-participative methods. The experimental hypothesis will be confirmed if the score obtained at the final vocabulary test is significantly higher than the score obtained at the initial vocabulary test. The statistic indices related to this hypothesis are presented in table 7.

TABLE 7. *Statistic indices regarding the scores obtained at the vocabulary test before and after the implementation of active-participative methods.*

	Average and Standard deviation	**Kolmogorv-Smirnov test**
Initial vocabulary test	m=78,6486 σ=26,47034	Z_{KS}=674 (p= ,754 **NS**)
Final vocabulary test	m=107,0270 σ=24,24469	Z_{KS}=749 (p= ,628 **NS**)

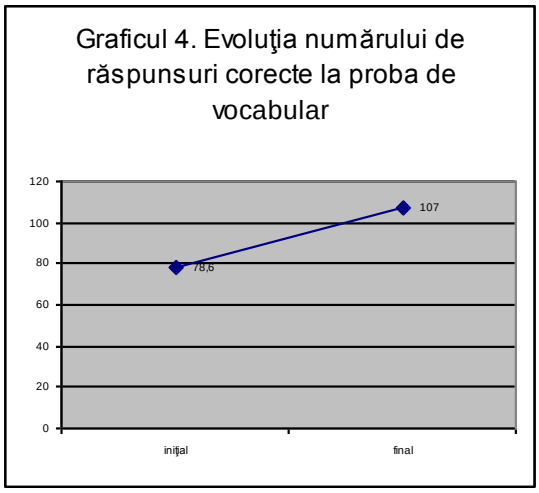


Chart 4. Evolution of the number of correct answers at vocabulary test

According to table 7 and chart 4, the score obtained by the participants in the final vocabulary test is higher than the score obtained at the initial vocabulary test. In order to check if this difference is also statistically significant and because Kolmogorv-Smirnov test indicates a normal distribution of the scores of participants in case of both vocabulary tests (Z_{KS}=.655, p= .784 for initial test, Z_{KS}=.733, p= .656 for final test) we will resort to test t for pair samples (table 8).

TABLE 8. *Results of comparison between the scores obtained at the initial vocabulary test and the final vocabulary test (test t for pair samples).*

	Differences between pairs					t	df	p
	Average	Standard deviation	Average standard error	Trust interval 95%				
				Minimum	Maximum			
Initial vocabulary test vs. final test	-28,37838	7,55848	1,24261	-30,89850	-25,85826	-22,838	36	**.000**

The data presented in table 8 indicates a significant difference between the scores obtained by the participants at the final vocabulary test and the scores from the initial vocabulary test [t(36)]= -28,37838, p=.000, d=4,6]. In other words, the fourth specific hypothesis is confirmed, the scores obtained by the participants at the final vocabulary test are significantly higher than the scores from the initial vocabulary test, which indicates that the implementation of the three adapted active-participative methods leads to a substantial development of vocabulary. Moreover, we notice that the value of indicator d of Cohen (d=4,6) in case of comparison between the scores obtained at the initial vocabulary test (before the implementation of the three active-participative methods) and the scores obtained at the final vocabulary test (after the implementation of the three active-participative methods) is a lot higher than any of the values of indicators d of Cohen calculated to measure the size of the effect of each active-participative method (d=2,36 for the method “semantic networks”, d=2,19 for the method “I know, I want to know, I learned”, d=2,21 for the method “Think, work in pairs, communicate”). It can indicate that the cumulative effect of the three active-participative methods in their adapted form is even stronger than the separate effect of each method. Although this conclusion is very likely we have to keep into account that the initial and final vocabulary tests are different from the tests used for the evaluation of the efficiency of each method.

E. *Checking the fifth specific hypothesis regarding the efficiency of active-participative methods in their adapted form regardless of the intellectual level of participants.*

In order to check this hypothesis, we divided the participants into four categories of intellectual level:

(1) good medium level and above medium level intelligence (IQ≥100) –10 participants

(2) poor medium level intelligence (IQ= 90-99) - 8 participants

(3) intelligence below average (IQ=80-89) – 15 participants

(4) limit intelligence/light mental deficiency (IQ=72-46) – 4 participants

In order to see if the use of adapted active-participative methods leads to the development of vocabulary regardless of the intellectual level of participants we will make two types of statistic comparisons.

First of all, we will compare the averages obtained by the participants at the first evaluation test and the last evaluation test for each adapted active-participative method ("semantic networks" method, "I know, I want to know, I learned" method and "Think, work in pairs, communicate" method) and for each category of intellectual level, respectively between the initial vocabulary test and the final vocabulary test for each category of intellectual level. Secondly, we will make comparisons between the cognitive profit obtained by each category of intellectual level and separately for each active-participative method in its adapted form, and cumulatively for all three adapted active-participative methods. The cognitive profit index is calculated by the difference between the score at the last evaluation test and the score at the first evaluation test for each active-participative method (formula 1.1.), respectively by the difference between the score obtained at the final vocabulary test and the score obtained at the initial vocabulary test (formula 1.2.).

PC_{method} = score at the last evaluation test – score at the first evaluation test (1.1.)

$PC_{general}$=score at the final vocabulary test – score at the initial vocabulary test (1.2.)

This experimental hypothesis will be confirmed if in each category of intellectual level, the scores obtained at the last evaluation test for each method/ final vocabulary test are significantly higher than the scores obtained at the first evaluation test for each method / initial vocabulary test, and if there is no significant difference between the groups of intellectual level of the cognitive profit recorded as a consequence of implementation of each active-participative method, respectively the implementation of all three adapted active-participative methods (cumulative effect).

Since all the experimental lotes have a low number of participants and the numbers are profoundly unequal, we will report ourselves to medians and we will use non-parametrical methods of statistic comparisons. As expected, in each experimental lot (intellectual level 1, intellectual level 2, intellectual level 3 and intellectual level 4) the medians corresponding to the results for the last evaluation test for each method/final vocabulary test are higher than the medians corresponding to the results for the first evaluation test for each method/initial vocabulary test.

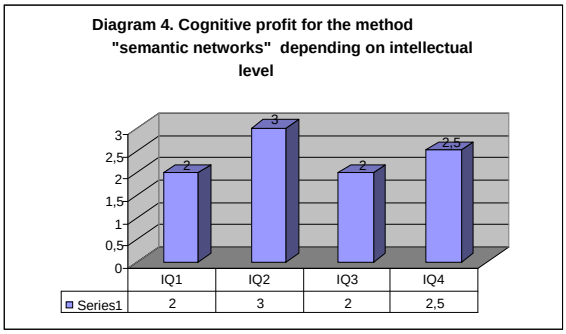
In order to see if these differences are also statistically significant we resorted to Wilcoxon test for pair samples. The results obtained at this test indicate that we obtained a significantly higher score for each method/global vocabulary test at the last evaluation test /final vocabulary test compared to the first evaluation test /initial vocabulary test in participants with a good medium intellectual level (Z= -2,598, p=.009, r=0,82 for the method "semantic networks", Z= -2,825, p=.005, r=0,89 for the method "I know, I want to know, I learned", Z= -2,877, p=.004, r=0,9 for the method "Think, work in pairs, communicate", Z= -

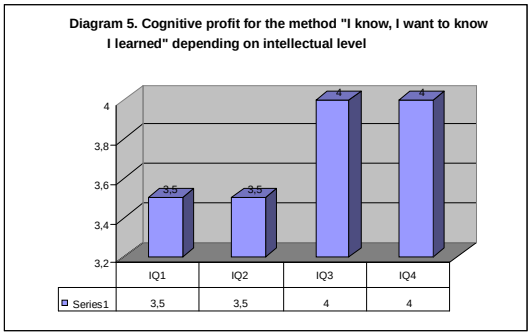
2,805, p=.005, r=0,88 for the vocabulary test), poor medium (Z= -2,565, p=.010, r=0,9 for the method “semantic networks”,Z= -2,546, p=.011, r=0,9 for the method “I know, I want to know, I learned”,Z= -2,598, p=.009, r=0,91 for the method “Think, work in pairs, communicate”,Z= -2,521, p=.012, r=0,89 for vocabulary test) and below average (Z= -3,455, p=.001, r=0,89 for the method “semantic networks”,Z= -3,426, p=.001, r=0,88 for the method “I know, I want to know, I learned”,Z= -3,449, p=.001, r=0,89 for the method “Think, work in pairs, communicate”,Z= -3,416, p=.001, r=0,88 for vocabulary test). But for the category of participants with limit intellectual level/light mental deficiency we did not obtain significant differences for any of the experimental conditions (Z= -1,841, p=.066, for the method “semantic networks”,Z= -1,841, p=.066, for the method “I know, I want to know, I learned”,Z= -1,841, p=.066, for the method “Think, work in pairs, communicate”,Z= -1,826, p=.068, for vocabulary test). It is noteworthy that this lot is very reduced from the point of view of the number of participants (4), so we cannot draw any firm conclusion, so much so as the threshold obtained (p=0,066) is very close to the necessary one for the statistical significance (p=0,05), being very likely that this threshold changes in any direction with the increase of the lot of subjects. Yet, it is noteworthy that it is being kept the tendency that the number of correct answers is higher after the implementation of the active-participative methods in their adapted form.

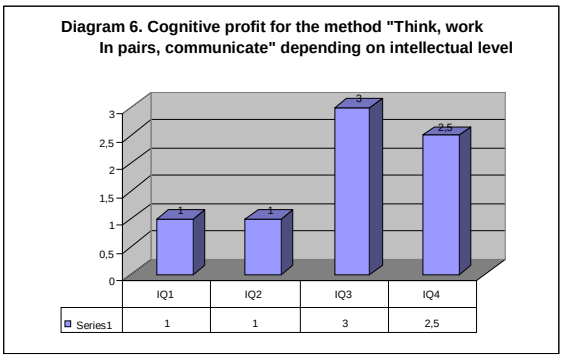
As for the differences between the groups of intellectual level, we present in table 9 statistical indices for the cognitive profit related to each method depending on the intellectual level.

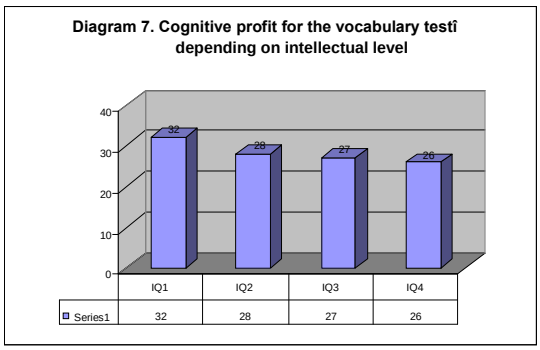
TABLE9. *Statistical indices for the cognitive profit related to each method/vocabulary test depending on the intellectual level*

	“*Semantic networks*” method	**“*I know, I want to know, I learned*” method**	**“*Think, work in pairs, communicate*” method**	**Vocabulary test**
Intellectual level 1	m=1,9 Mdn=2,0 σ=1,1005	m=3,6 Mdn=3,5 σ=,9660	m=1,5 Mdn=1,0 σ=,7071	m=27,9 Mdn=32,0 σ=11,3768
Intellectual level 2	m=2,5 Mdn=3,0 σ=,75593	m=3,3 Mdn=3,5 σ=,744	m=1,3 Mdn=1,0 σ=,5175	m=27,6 Mdn=28,0 σ=5,80486
Intellectual level 3	m=2,6 Mdn=2,0 σ=1,0465	m=3,6 Mdn=4,0 σ=1,2421	m=2,5 Mdn=3,0 σ=,9154	m=29,2 Mdn=27,0 σ=6,4416
Intellectual level 4	m=2,2 Mdn=2,5 σ=,9574	m=4,0 Mdn=4,0 σ=,81650	m=2,2 Mdn=2,5 σ=,9574	m=27,7 Mdn=26,0 σ=4,27200









In order to see if there are statistical differences between the cognitive profit depending on the intellectual level for each method, we will apply the Kruskal-Wallis test, the non-parametrical equivalent of ANOVA method (table 10).

TABLE 10. *Kruskal Wallis test for cognitive profit depending on intellectual level*

	Global cognitive profit	**Cognitive profit for the method "semantic networks"**	**Cognitive profit for the method "I know, I want to know, I learned"**	**Cognitive profit for the method "Think, work in pairs, communicate"**
Chi-Square	,169	2,353	1,102	8,485
df	3	3	3	3
p	,982	,502	,777	,037

As you can see from table 10, there is no significant difference of the cognitive profit resulted from the implementation of the adapted active-participative methods “semantic networks” [H(3)=2,353, p=.502] and “I know, I want to know, I learned” [H(3)=1,102, p=.777] depending on the intellectual level, respectively the vocabulary test [H(3)=.169, p=.982] applied at the end of the programme of presentation of Romanian language contents through the three adapted active-participative methods. However, it seems that there are some significant differences between the cognitive profit achieved by the participants who have different intellectual levels when it is used the method “Think, work in pairs, communicate” [H(3)=8,485, p=.037]. In order to see between which experimental lotes there are significant differences of cognitive profit, we will compare the experimental lotes two by two with the Mann-Whitney U test (table11). Because of several comparisons made, the significance

threshold was corrected by Bonferroni method so that all the results will be reported to the adjusted significance threshold α=0,008.

TABLE 11. *Results of comparisons between the four lotes of subjects of cognitive profit obtained by using the method "Think, work in pairs, communicate".*

	Intellectual level 1 vs. 2	Intellectual level 1 vs. 3	Intellectual level 1 vs. 4	Intellectual level 2 vs.3	Intellectual level 2 vs. 4	Intellectual level 3 vs.4
Mann-Whitney U	37,500	38,500	10,500	25,500	7,000	29,500
Z	-,259	-2,141	-1,461	-2,361	-1,669	-,053
P	,796	,032	,144	,018	,095	,958

Considering that in case of multiple comparisons, the statistical norms recommend reporting to a threshold adjusted by Bonferroni method, and in this case this corrected threshold is .008, we can conclude that when using the method "Think, work in pairs, communicate" there is no statistically significant difference between the cognitive profit obtained by participants with different intellectual levels. This conclusion is confirmed by the fact that following the application of Kruskal-Wallis test for the vocabulary test applied at the end of the whole programme of presentation of Romanian language contents through the three adapted active-participative methods, it was not highlighted any significant difference of cognitive profit depending on the intellectual level.

In conclusion, the fifth specific hypothesis is confirmed, which is, there is no significant difference of the effects of adapted active-participative methods on the development of vocabulary in hearing-impaired children depending on intellectual level. In other words, the adapted active-participative methods turned out to be very effective in the development of vocabulary at all levels of intellectual development, from the intellectual level above average to the liminary intellectual levels or even below liminary threshold.

CHAPTER 5

5. STUDY II: ROLE OF VISUAL TEACHING AIDS IN THE INTRODUCTION OF LITERARY TEXT TO HEARING-IMPAIRED CHILDREN OF YOUNG SCHOOL AGE, IN THE CONTEXT OF TOTAL COMMUNICATION

5.1. Purpose and psychological argumentation

The purpose of this study is to illustrate the means by which hearing-impaired children of 4th grade, respectively 5th grade can have access to literary text, can understand it, tell it and interpret it.

The written word represents a symbol for hearing-impaired children, symbol which if it is not decodified in image or in a gestural sign remains an unknown factor. This word will be read by virtue that it is composed of a series of letters which the hearing-impaired child

learned to name. therefore, he will name the letters and will read the word. But if he does not recognize the significance of the word and cannot translate it into a mental image or into a gestural sign, for him that word will not convery any message.

Or when we work with literary text, where beyond the presence of phenomena, objects, happenings or characters, descriptions appear, symbolic or figurative meanings appear, it needs a better comprehension of the written word.

Considering the limited vocabulary of hearing-impaired children compared to the hearing students and the slower pace of processing the information and of comprehension, we considered important that apart from the written presentation of the literary text – introduced for the first time to hearing-impaired students – there is a visual presentation of the most important information from the text.

5.2. Description of psychopedagogic experiment

5.2.1. Selection of literary texts. Criteria

For this study were selected a number of 11 fragments of literary texts. In some of them we made changes to the less usual words, for the purpose of making the text easier to read and understand for hearing-impaired children. We used with the written text a series of visual teaching aids which support or facilitate the comprehension of the written words. Apart from these aids we chose to present the text in oral language/labial reading, to use to dactyl system and the gestural language. Thus, the fragment of literary text was presented under the angle of total communication, and the hearing-impaired children could select the optimal way of receiving the information depending on the particularities of communication of each of them.

5.2.2. Visual teaching aids

a). Plastic illustration of the text – artistic drawing

b). watching the artistic film or the theatre play corresponding to the literary text studied

c). Dramatization of literary text studied

d). Illustration of text by fragments

5.2.3. Participants – concise description under the angle of start linguistic acquisitions and psycho-linguistic needs

The study of literary texts was introduced to a lot of ten hearing-impaired children for a period of two school years. The ages of the children were between 10 and 12.

Eight of the ten participants have bilateral profound hearing deficiency of perception, and two of them average bilateral hearing deficiency of perception. Two of ten participants come from hearing-impaired families, and the remaining eight from good hearing families.

From the point of view of linguistic acquisitions, the students were tested at the beginning of the psychopedagogic experiment by a vocabulary test and a test of work with the text.

Following the results obtained by the students at the initial test, corroborated with their intellectual level, we could outline three distinctive level groups in the lot of participants. A first group is made of four students; the second group is made of three students and the third group is made of three students.

5.2.4. Objectives and hypotheses

5.2.4.1. General objective

Valuing total communication features in the field of academic performances for the hearing-impaired children.

5.2.4.2. Specific objectives

a. Presentation of fragments of literary texts under the angle of total communication;
b. Use of visual teaching aids for the facilitation of perception and understanding of the structure of literary text;
c. Reporting the notions and literary concepts presented to the visual teaching material used;
d. Comparison of the three types of visual teaching aids used, from the perspective of their influence on the assimilation of literary notions.

5.2.4.3. General hypothesis

The hypotheses from where we start is that each hearing-impaired child can assimilate minimum information from a literary text, but the competences of oral and written expression depend on the volume of vocabulary, the easiness of communication with meaning in gestural language and the type of teaching aids used in the teaching of the literary text.

5.2.4.4. Specific hypotheses

a. The use of visual teaching aid *illustration by fragments* will contribute to the logical and temporal organization of happenings from literary text, which will materialize in the task of arrangement of five sentences in the order presented in the text.
b. The use of the visual teaching aid *illustration by fragments* will influence the perception and understanding of the linguistic structure of the literary text and will reflect in the task of using new words in the answers formulated by the participants.
c. The use of the visual teaching aid *dramatization* will contribute to the organization of mental representations regarding the characters from the literary text and will materialize in the task of identification in writing of characters from the fragment of text studies and in the characterization of character.

d. The use of the visual teaching aid *film* will influence the perception and understanding of the events presented in the literary text and will reflect in the task of answer in writing to five questions from the studied fragment, in the realization of the plan of ideas and in the oral telling of the fragment.

5.2.5. Work procedure

The fragments of literary texts were eleven and they were: "Memories of Childhood" by Ion Creangă, „Pinocchio" by Carlo Collodi, "Snow Queen" by Hans Christian Andersen, "Titmouse Stone" by Tudor Arghezi, "Ballad of a small cricket" by George Topârceanu, "Winter Lane" by George Coşbuc, "Visit" by Ion Luca Caragiale, "Spring" by Vasile Alecsandri, "Autumn" by Octavian Goga, "Sleepy Birds" by Mihai Eminescu and "When the Master is not Home" by Emil Gârleanu.

The period of work for a literary text was two weeks, respectively twelve classes of Romanian language and included the following stages:

(a). presentation and storytelling of the plot of the fragment of literary text:

(b). presentation of visual teaching aids and their use for the purpose of consolidating the comprehension of the subject of the text;

(c). work with written text (answers to questions, realization of the plan of ideas, characterization of character, storytelling);

(d). evaluation of participants at the end of the period of work with the text.

5.2.6. Presentation and interpretation of results

I. Identification in writing of the characters of studied literary texts

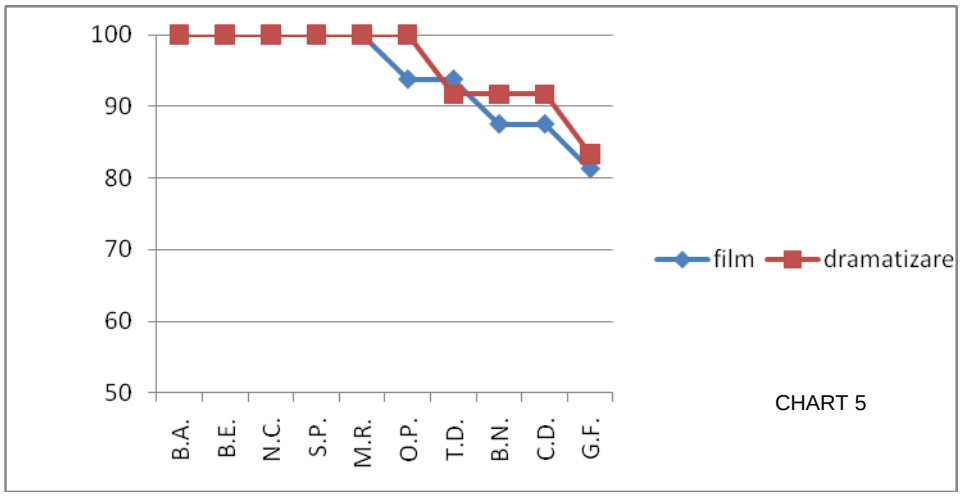


CHART 5

This test was evaluated only for the texts studied through the artistic film, respectively dramatization (seven of eleven texts), because only they represented epic texts. The other four texts studied with the aid of illustration by fragments were lyrical texts, where no characters are present. Considering the results above 80% obtained by all the participants from the research lot, we can conclude that the objective of this test was achieved. The

differences which appear depending on the teaching aids used in the support of comprehension of the written text indicate the preferential way of reporting to the imagery support depending on the intellectual capacities of each student.

One of the specific hypotheses from where we started supported the obtaining of better performances in the identification of literary characters for the texts where we used dramatization as visual teaching aid. The hypothesis is confirmed by the analysis above, six out of 10 participants obtained the maximum score at the test corresponding to the texts for which we used dramatization, and three out of four remaining participants obtained better scores at the same test compared to the test corresponding to the texts where we used artistic film as visual teaching aid.

II. **Answer in writing to five questions from the literary text studied**

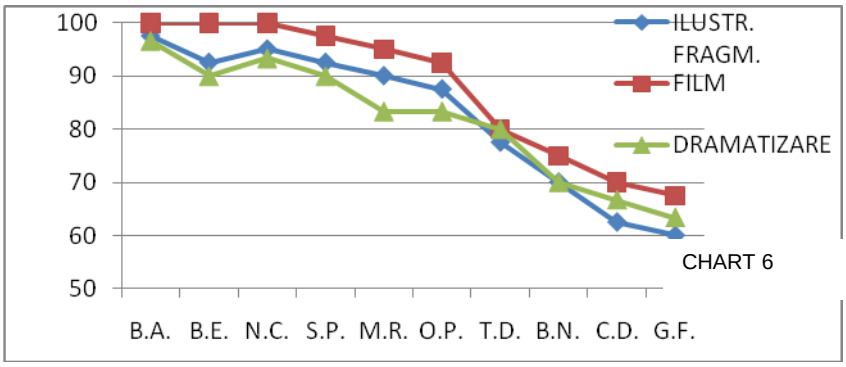


CHART 6

The results obtained by the hearing-impaired participants at this test indicate that regarding the comprehension of happenings presented in the written text, the artistic film represented the most effective visual teaching aid. All the participants recorded much better performances when they benefited from the watching of the artistic film compared to the use of the other two teaching aids. The objective set for this test, of the answer to questions based on studied texts, is achieved by all the hearing-impaired participants, their results ranging between 60% and 100%.

The specific hypothesis from the beginning of the study, by which it is stated that the artistic film contributes to the perception and understanding of carrying out the action from the presented literary text, which will materialize in obtaining a higher score at the test of answering five questions is confirmed by the analysis above. Nine of ten participants from the lot obtained net superior results at this test in case of using the artistic film as visual teaching aid, and a participant obtained an equal score for using artistic film and dramatization, but better than the score obtained when the visual teaching aid was illustration by fragments.

III. Use of new words in the answers formulated by participants

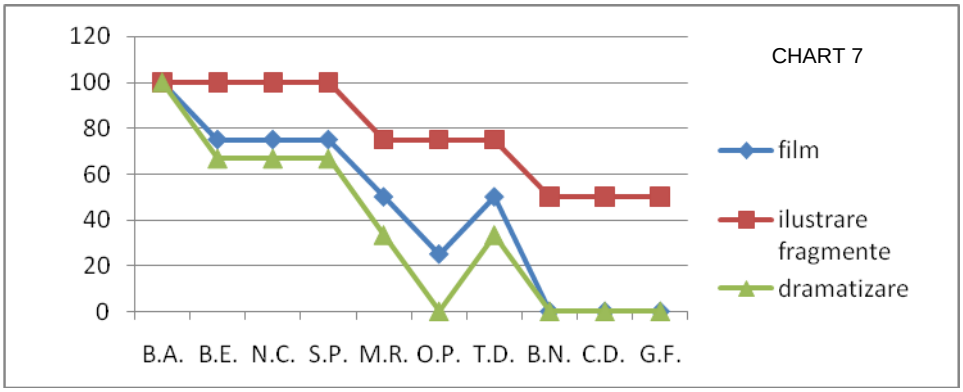


CHART 7

In this test we can already see a much higher difference between the teaching aids used. Illustration by fragments represents the visual teaching aid by which the participants fulfilled the task of this test in proportion of at least 50%. By illustration by fragments, the participants can memorize the word easier by reporting it to the image and later they can use it in the right context. This is also indicated by chart 7 above, where we can see an improvement of the performances of hearing-impaired participants when they worked with illustration by fragments.

The specific hypothesis from the beginning of the study by which it is assumed that illustration by fragments contributes to the perception and understanding of the linguistic structure of the literary text, which materializes in higher scores at this test compared to the use of artistic film and dramatization is confirmed in the analysis above.

The fact that illustration by fragments allows hearing-impaired children to better understand the significance of some words, to use those words with confidence in the formulation of sentences and in different verbal contexts leads us to the conclusion that this teaching aid should be used more often at classes of hearing-impaired students, at least for this purpose of illustration of newly taught words.

IV. Arrangement of sentences/verses in the order of happening/presentation

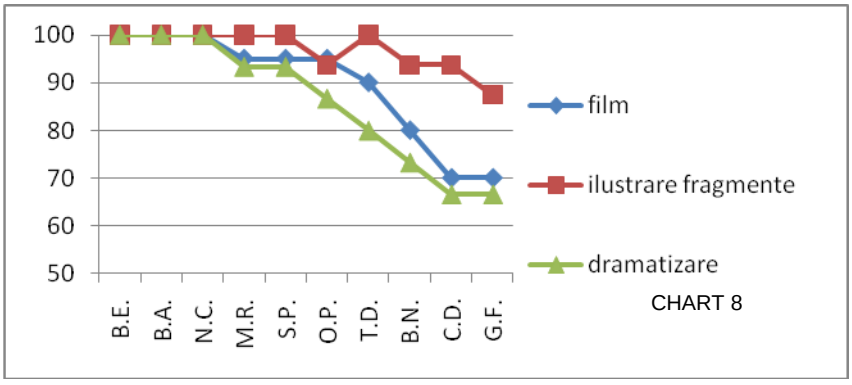
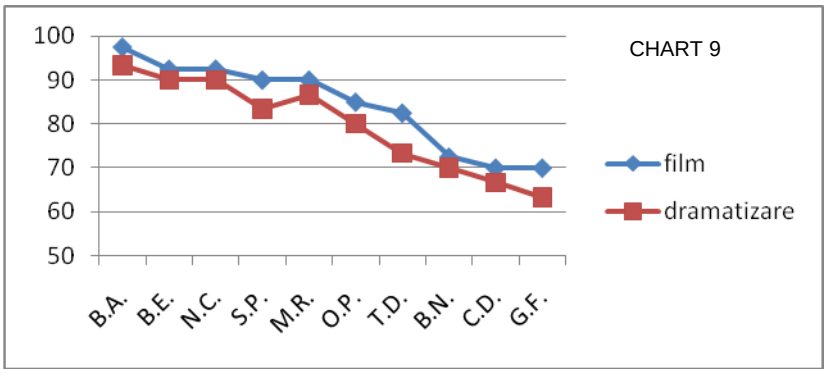


CHART 8

The arrangement of sentences or stanzas in the order of happenings represented a test which aimed at the way in which were received and understood the happenings from the studied texts, their place and order. We can see from chart 8 above that in case of illustration by fragments, the percentage of success of participants is very high. The objective sought by this test was achieved, considering that the lowest percentage recorded by one of the participants was 66 %.

It is confirmed following this analysis the specific hypothesis by which it is assumed that the illustration by fragments contributes to the logical and temporal organization of happenings from the text, aspect materialized in the resolution of the task described above. However, it requires a very important observation in the analysis of this test, which is that for the participants with a high I.Q. the visual teaching aids used did not have a differentiated impact in the resolution of the task, but for those from the following value groups, with a lower I.Q., the illustration by fragments contributed to a visibly larger extent to the logical and temporal organization of happenings from the studied texts and they recorded much better scores when this visual aid was used. Therefore, hearing-impaired children who present a more reduced intellectual development will take advantage of this visual teaching aid to better organize and structure the text read.

V. Plan of ideas of the studied text



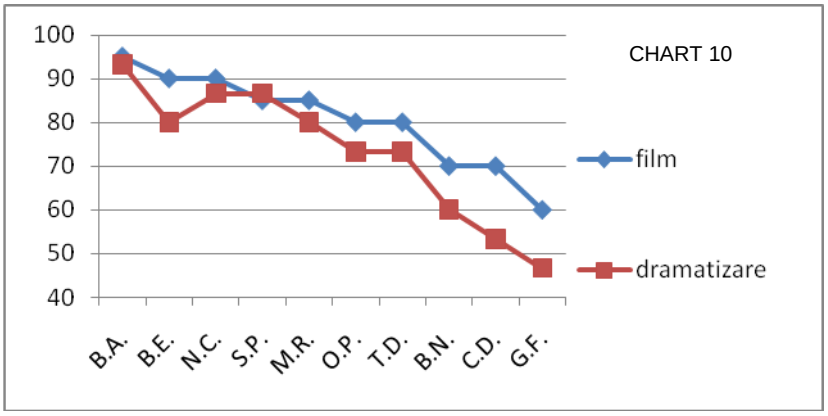
As for the extraction of the main ideas and realization of the plan of ideas, we have again only two teaching aids on which we conducted the analysis, because in case of illustration by fragments we dealt with lyrical texts – where we did not speak of plan of ideas.

The artistic film is the teaching aid preferred by the hearing-impaired children and by which they understand and process correctly the information offered and the happenings told. One can notice that the results expressed in percentage are very good at this test, for all the participants enrolled in analysis and therefore, the objective of making the plan of ideas was successfully achieved.

The specific hypothesis by which it was assumed a better understanding of the action in case of using the artistic film and the recording of higher scores at this test, is confirmed in the analysis and the chart above. The hearing-impaired children keep easily in mind the

images presented by this visual aid and later construct points of reference in the text read. Therefore, as one can see from the previous analysis, they will succeed in illustrating more easily the plan of ideas of the studied text with the aid of this visual aid, compared to the texts where dramatization was used.

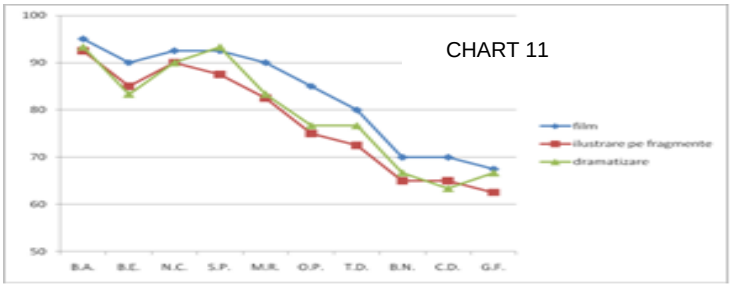
VI. Characterization of a character from the studied literary text



Characterization of character indicates once again the preference of hearing-impaired students for artistic film. However, there is in this analysis a participant who makes exception from the statement above, he obtains a slightly higher score at the characterization of characters from the texts presented by dramatization. The difference between the performance obtained at the texts presented with the aid of film and the performance obtained at the texts presented by dramatization is 1% for this participant (S.P.).

The specific hypothesis by which we assumed that the dramatization of the studied text would facilitate the characterization of character, by direct reporting to stage interpretation is not confirmed by the results analyzed above. The students obtained much better results at this test when the artistic film was used as means of support of the studied text. Even if the hearing-impaired child used his own feelings and experience in the deployment of action from the text and this helped him to identify the characters (with much better results than in case of using other visual aids), the watching of the artistic film and the understanding of deployment of action by this aid had a higher impact and was more relevant than dramatization when it was about characterization of character.

VII. Oral storytelling of studied literary text



The oral storytelling of the studied text depending on the teaching aids used in the support of the written text offers us one of the best visions on the preferences of hearing-impaired participants regarding the understanding of the text by reporting it to a concrete teaching aid.

The artistic film is this time again the best support for hearing-impaired children in the understanding and illustration of happenings of the text. With a single exception, all the results from the texts presented with the aid of the film are better and higher than the results of oral storytelling of the other texts.

The specific hypothesis by which we assumed at the beginning of the study that the use of artistic film as visual teaching aid in the presentation of fragments of literary texts would facilitate the perception and understanding of events from these texts and would lead to higher results for the oral storytelling test, compared to the results at the same test in case of texts presented with the other two visual aids, is confirmed by the analysis above. The artistic film as visual teaching aid has a special influence on memory and thinking processes of hearing-impaired participants. Following the use of this teaching aid they had very good results concerning the understanding of the text, the deployment of events and the action of characters.

CHAPTER 6
GENERAL CONCLUSIONS

This thesis was elaborated starting from a major subject of interest in the education of hearing-impaired children, which is total communication. The directions of investigation of the subject proposed had the objective of proving the efficiency of this way of communication. The first observation which requires is the difficulty of investigation under all aspects of a way of communication which is vast taken as a whole. Therefore, we structured this research in several components to be able to pursue a few clear angles of applicability of the total communication method in the sphere of school acquisitions in hearing-impaired children.

First of all the work briefly presented similar research conducted in other countries, with lots of hearing-impaired children and outlined the impact recorded following the use of this way of communication on the verbal performances of participants.

Secondly we established the directions of influence of total communication on the school results of hearing-impaired children and therefore, the aspects which the investigations from this research targeted. These aspects materialized in two large categories: development of vocabulary of participants in the context of using total communication and their access to literary notions and concepts presented under the angle of the same way of communication.

Each of these two objectives targeted involved the elaboration of a strategy of approaching total communication. For the first of them – development of vocabulary – three active-participative methods of teaching and learning were selected. Taking into account the linguistic acquisitions of children, the requirement of using total communication and the learning styles of participants, we proposed a series of changes in the structure of these three methods. The theoretical description of the methods, with argumentation of the changes brought to them to satisfy the needs of hearing-impaired children and to integrate them in the scope of total communication, represents the first element of novelty which this thesis brings in the theoretical models of interaction with this category of participants. Considering that the three active-participative methods are substantiated in their classical form on the written word, we considered necessary and useful that they should be based in their adapted form on image or colour. This option is owing to the fact that hearing-impaired persons use the visual analyzer as the main compensation for hearing loss and secondly, for hearing-impaired children the image is much more eloquent and faster to perceive than the written word. Of course this observation comes from the experience in communication and interaction with hearing-impaired children and emphasizes their poor acquisitions from the point of view of vocabulary and written words.

In the research part of this work we aimed in the first study at the checking of the efficiency of adapted active-participative methods which were theoretically described and proposed as method of presentation of contents in the subject of Romanian language for a school year. The efficiency of these three methods was statistically demonstrated in chapter 4 under the following aspects:

- Checking of each method from the point of view of the influence it exerts on the development of vocabulary – which is measured in a significantly higher number of correctly identified words at the final evaluation tests than at the initial evaluation tests (tests elaborated for each method);
- Checking of the cumulative effect of the three methods on the development of vocabulary – which is measured in a significantly higher number of correctly identified words at the final evaluation test than at the initial evaluation test (at the end, respectively at the beginning of research);
- Checking of the efficiency of the three methods on the development of vocabulary regardless of the intellectual level of participants – which is measured by the recording of a cognitive profit, following the implementation of methods, by all the hearing-impaired participants regardless of the category of intellectual level to which they belong.

Checking the specific hypotheses from the study summarized above proves the efficiency of the three adapted methods, elaborated in this thesis and allows their

introduction in the educational approach of hearing-impaired children. The value of these methods in the school acquisitions of participants is high, first of all because of their effect on the development of vocabulary – objective observed in hearing-impaired children during the whole schooling, and secondly because of the original character of the method of presentation of the material or subject of discussion. These methods fit the moulds of total communication and support by various techniques the active involvement of children in the learning activity. Thus, the hearing-impaired child is not only recipient of information so that he can reproduce it more or less faithfully – exactly as it was presented – but becomes part of the communication process, having the opportunity to express his opinion, to ask questions, to make comments – all this through a method of communication suitable to his particularity. We notice here that the communication and inter-relation process visibly improves because by total communication the child has access to the understanding of messages and to the possibility of choosing a method of communication which he can easily and happily use to make himself understood. It is noteworthy here that a large number of hearing-impaired children refuse to interact with hearing persons when they do not understand what they are saying and when they realize that these persons do not understand them either. They will try several times to make themselves understood, but will abandon this process after a series of failures in communication. These barriers could be easily removed by using total communication and active-participative methods which give confidence and motivation to hearing-impaired children.

In the second part of research of this thesis we pursued the influence of visual teaching aids on the assimilation of literary notions by hearing-impaired children, in the context of total communication. The specific hypotheses of this study investigated the reception of literary texts, the formation and development of competences of work with the text and the preference of participants for one or several visual teaching aids. Following the interpretation of results we could observe the following aspects:

- Each visual teaching aid used in the study proved to be efficient on a certain side of work with the text: illustration by fragments contributed to a logical and temporal organization of events to a much larger extent than the other visual aids and proved to be beneficial in the recording of new words in the vocabulary of children; dramatization contributed to the formation of clear representations on characters facilitating their identification; the artistic film contributed to the understanding of carrying out of events from the text, to the perception and rendering of actions of characters and to the oral storytelling of the text.
- Among the specific hypotheses formulated all of them were checked, with one exception: the artistic film had a higher impact on the recording of the characteristics of the character than dramatization. The discussions referring to the preference of the film to dramatization are found in the conclusions of study II, in subchapter 5.2.7.

- Out of the three visual teaching aids proposed to hearing-impaired children for the study of literary texts, the artistic film had the most powerful effect on the participants. All their results at the evaluation tests were increased when this visual teaching aid was used. However, it must be mentioned that at a given moment there occurs a differentiation of the recorded results, meaning that the participants have different preferences for visual aids depending on the category of intellectual level to which they belong. More specifically, the participants with a lower intellectual level clearly choose one of the aids, while those with a higher intellectual level obtain good and very good performances regardless of the visual aid used. Here it is about the test of arrangement of five sentences in the order of happening. The two value groups with a lower intellectual level recorded different scores depending on the visual material used. A subsequent investigation could determine how significant these differences are between the scores obtained by this category of participants.

Following this study and the impact which the artistic film, as visual teaching aid, had on the performances of hearing-impaired children, a few observations are required and will be presented below.

The use of information technology with the aid of instruments such as: computer, laptop, interactive blackboard or video-projector for watching films, documentary films or images facilitates the teaching-learning process and supports hearing-impaired children in the understanding of carrying out of certain events, in the explanation of phenomena and in the logical and space-time organization of happenings and actions. Information technology used for this purpose supports the passage from theoretical presentation of notions and concepts to their practical applicability. Therefore, it has an important role in total communication used in hearing-impaired children. This technical variant of presentation of the teaching content represents an extremely beneficial acquisition because it allows the hearing-impaired child access to understanding the significance of phenomena.

This thesis pursued the role of total communication in the optimization of teaching and learning in hearing-impaired children and investigated the influences of this type of communication on the development of vocabulary and the assimilation of literary notions. These last two aspects are found in the competences of oral and written expression which are formed and develop during the instructive-educational process of hearing-impaired children.

Following the research conducted we can conclude that the use of total communication offers access to the significance of words, statements, texts and conversations. Through it the hearing-impaired child truly understands the message conveyed and does not answer mechanically but in full knowledge of it.

Another conclusion derived from the studies conducted in this work refers to the very important role played by images in the context of total communication. Images offer the connection between the word and its significance and facilitate the formation of mental representations of concepts. By images the hearing-impaired child has access to the concrete perception of objects or phenomena they speak of.

The images must be a part of total communication because they contribute to the assurance of educational contexts which tightly connect the instructive-educational activity to day-to-day life. Or beyond the educational competences we pursue in the schooling of hearing-impaired children, a major objective targeted along the educational route is the use of these competences in the day-to-day life of children and in the end their integration in society.

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