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# Using Audio-Visual Aids and Computer-Assisted Language Instruction (CALI) to Overcome Learning Difficulties of Writing in Students of Special Needs

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**Abstract**

**Objectives:** To investigate the effects of using audio-visual aids and computer-assisted/ aided language instructions (CALI) in the performance of the students of special needs while studying writing skill, an experimental study was undertaken for this purpose.

**Methods:** Forty students of special needs (Age= 8-18) of both sexes were pre-and-post tested at al-Malādh school for students of special needs. The performance of this group of students was compared to that of another group (control group) of the same number. Both groups were taught writing course by the same speech language therapists (SLT). The only exception was that with the first group, audio-visual aids and CALI were used, while these educative aids were not used with the second group. Both qualitative and quantitative analyses were conducted.

**Results:** There were significant differences in the results of the two groups in the two tests. However, the, the rate of the performance of group 1 (experimental group) was significantly higher after the posttest conducting to test their performance in writing course (at the end of semester) (74.05%) than that of group 2 (control group) (32.5%). Males registered higher scores than females (1483 vs. 1479). These results suggest that using audio-visual aids and CALI when teaching productive skills, notably writing skill to students of special needs is very important as these educational aids improve the level of this class of students.

**Keywords:** Writing, Productive Skills, Students, Special Needs, Audio-Visual Aids, CALI, SLTs.

## 1. Introduction Chapter

### *1.1 Introduction*

Audio-visual aids and CALI are associated with the improvement of language skills be it receptive skills or productive skills or even language components (Gilakjani, 2012). These educational aids are found to be useful not only for normal students, but also for students with special needs (Iram, 2012; Kirk, et al., 2012). Explaining the reasons behind the new trend, Kirk and his colleagues have rightly observed: "Such tests, in which acoustic variability is highly constrained, may not accurately reflect spoken word recognition abilities under more natural listening situations." (Kirk, et al., 2012: p. 455)

To study how audio-visual aids and CALI affect the ability of the normal students and those of special needs, improve their productive skills, some researchers went further to investigate the process of recognizing the word in the brain before it is articulated. According to them, articulation is the ice-berg of the pronunciation process which is preceded by brain process Bradham (2012). The operation takes place, according to Bradham when "Outer hair cells provide mechanical feedback into the organ of Corti, thus enhancing the input to the inner hair cells, which predominantly send information to the central nervous system." (Bradham, 2012: Abstract)

Such findings inspired researchers to ask legitimate and reasonable questions relating to the ways information are processed in the brain and the relationship between motion representation and the visual motion system (Pavan & Baggio, 2013). More importantly, how and where does this process take place in the brains of students with special needs, especially when it comes to matters relating to deep/ surface reading for example (Wolf, et al., 2012) or those concerning Braille-reading and the way to understand issues like shape and space by blind students (Klingenberg, 2013). Onnis & Thiessen (2013)'s findings suggest that mechanisms of statistical sequential learning are implicated in language across the lifespan, and experience with language may affect cognitive processes and later learning.

Others went further by investigating not only the patients, but also the role of the parents and other people around the child which results "in greater exposure to the majority language. (MacLeod, et al., 2013: p. 132)

New trends of the research in this field started to focus on physicians and nurses and the way they read, write, etc. (Khaliq, et al., 2012; Peinhardt & Hagler, 2013). Furthermore, scientists established a new trend whereby language aspects could be linked together. The study of Diaz-Maurin & Giampietro (2013) investigated the impact of grammar for assessing the performance of power-supply systems. Having the nuclear energy and fossil energy compared to each other, the researchers concluded that when considering internal constraints, nuclear energy requires about twice as much power capacity and 5–8 times more labor. Diaz-Maurin and his colleague confirmed that things do not improve for nuclear energy when looking at external constraints which may explain the difficulties faced by nuclear energy to gain interest from investors.

Despite of the fact that audio-visual aids and CALI made better progress in the levels of

students, some researchers are still believe in the original methods as effective means through which students can acquire language skills, notably reading , listening and writing (Devimeenakshi & Maheswari, 2012). Additionally, pedagogical-based aids were present with more theoretical views but not with more practical use. Consistent with the existing literature on other audio-visual aids and CALI, at least film is common in the field of education (Swimelar, 2013)

Knowing the prevalence of boards, notably for teaching students of special needs supplements educational interpretation and can overcome the learning difficulties they suffer from? Many studies have been conducted in this field like Gessesse & Sileshi (2013)'s study whose purpose was to examine visual semiotic signs and bill-boards and their communication implications, especially if they are used for patients. It appears to in favor of this that Gessesse and her friend have forwarded the following notification: “all the visual semiotic signs on all these billboards would give a much wider picture of the types and applications of visual semiotic signs. For another, it would also provide greater opportunities to identify the genres of messages represented through these visuals semiotic signs" (Gessesse & Sileshi, 2013: p. 246)

Students of special needs frequently encounter learning difficulties related to audio, visual or audio-visual texts. Some difficulties can be subtle but can seriously influence the students' ability to learn. The article of Brown et al., (2013) proposes that differing types of annotation offer a powerful and flexible technique for transferring the benefits of graph-based diagrams, as well as for reducing disorientation while moving around the graph and for tackling some of the inherent disadvantages of using sound. According to Brown and his friends, graph annotation may be performed automatically, creating a graph that evaluation shows requires less mental effort to explore and on which tasks can be achieved more effectively and more efficiently. Such results received high support from Chen & Yen (2013) who concluded their study by providing insights on the design and instruction, not only for written text reading, but also for online reading. Writings that received great supports in their countries only were not popular worldwide. It is for this reason perhaps that we find some researchers who attempt to highlight them again like Gaski (2011) who wrote about the indignity of Johan Turi's writing and artwork.

The technological features of reading software that can be used for word recognition have not been explicitly investigated, but they may not be comparable because some techniques do not follow the same distinctive features and other qualities of others. The study of Damoiseaux, et al., (2012) may be a valuable source of information for refining our understanding of some of this software in general. Damoiseaux and his friends discussed the automatic reading of anti-neutrophil cytoplasmic autoantibody (ANCA-Slides). The purpose of the research team was to evaluate the AKLIDES System. The team emphasize that the results are promising in that the pattern recognition may play an important role in ANCA-associated vasculitis diagnostics.

Some researchers investigated the idea of how blogs could be used for language purposes. The article of Álvarez (2012), for example, presents a study on the best ways of using blogs

as a tool to improve students' reading and writing skills. The results showed that blogs are reliable tools for the improving students' productive skills. A total of 186 English as second language (ESL) elementary school subjects underwent the study of Ismail, et al, (2012). The aim of the study was to dis/prove whether or not using technology helps ESL learners improve their reading and writing skills. There are significant differences in the performances of the ESL students. This can be obviously seen in the outcomes of the qualitative and quantitative analyses of the scores. According to Ismail and his team, technology might play crucial role in assisting students to learn reading and writing skills. Other significant results, the researchers added, revealed that technology helped teachers in assigning extracurricular activities and communicating with students.

There has been growing interest recently in the use of multimedia as audio-visual aids to decode information and facilitate messages from high-dimensional scientific facts and present them to English as foreign language (EFL) students. The study of Fuenzalida & Sjöberg (2012) employed a support vector machine-based T.V approach to teach EFL students language skills, especially for young learners. Such results were supported by the study of Ahmed (2012). Gower & McDowall (2012) assessed the role of interactive video games on educating children during the study of language skills and/ or language components. Eleven subjects (9 children and 2 music specialists) underwent the experiment. The two researchers concluded their study by recommending the use of audio-visual aids and computer-assisted/ aided language instruction (CALI) as useful educative means when they are used for teaching EFL students.

In their study, Anson & Schwegler (2012) aimed at investigating tracking mind's eye technique. Anson and his colleague wanted to examine the usefulness of this strategy to be implemented for improving foreign language students' reading skill. Nevertheless, the study also highlighted the need for further research into how to improve such technique in composition studies, especially at the intersection of writing. The researchers justified why a receptive skill like reading is involved in such technique. According to them, “today, eye-tracking research has increasing potential for the study of writing, especially in the context of screen-based learning and digital interaction. In this contribution, we argue that a number of questions about the nature of writing and the relationship between reading (screens or texts) and writing can be profitably studied using eye-tracking methodology, which promises to reveal new insights about the psychological, visual, social, and educational dimensions of literate practice. In addition to revitalizing cognitive research, eye tracking provides ways to understand previously inaccessible dimensions of writing and reading that extend well beyond psychologically based studies of discourse processes. (Anson & Schwegler, 2012: pp. 151-152)

Although currently only a few randomized controlled studies investigated the efficacy of tracking the movement of the eye, such outcomes received a great support by many researchers in the field who conducted similar studies. (Henderson & Luke, 2012; Perea, 2012)

Audio-visual aids and CALI had a strong internal and external consistency on the

performance of the students. The test-retest and intra- and inter-rater reliabilities were shown to be adequate when it comes to talk about the effectiveness of the audio-visual aids and CALI, and the same thing applies to discriminant validity which was good in most of the conducted studies. For new techniques related to audio-visual aids and CALI, different outcomes were found: apart from one correlation, the scores on tests assessing a language skill and/ or a language component correlated significantly with outcome measures of similar methods. One of those methods is graphic organizer method designed by Manoli & Papadopoulou in 2012. According to the researchers, the study constitutes an attempt to shed light on the research evidence regarding the effectiveness of graphic organizer on text learning and the various types of graphic organizers, which use different conventions to communicate information and are classified in various ways. The researchers finished their study by recommending ways of integrating them in reading lessons, touches on the issue of strategy instruction and its effects on language learning and leaves room for further exploration.

Sigrist, et al., (2013) addressed the importance of technical display as means through which motor learning is enhanced, recommending using these audio-visual aids in addition to CALI. According to the research team, such audio-visual aids and CALI are important means that should be extensively used for teaching language skills due to their usefulness that can be clearly seen in the EFL students' multimodal feedback. To discuss audio-visual aids and CALI as important aids EFL students need to improve one or two of their language skills or language components, one need first to understand the techniques that guarantee the best results. Tang, et al., (2012) investigated the role of the software system for visualizing and analyzing eye movement data in reading. The researchers concluded that such technique can automatically and reliably find word boundaries for proportional and non-proportional fonts. Addressing one of the advantages of such new software system, the researchers have clearly stated: "….another advantage of Eye Map is that it can work on a wide range of platforms, even mobile devices." (Tang, et al., 2012: p. 421)

In an experimental study on 45 EFL students (age= 23 -38), Ghaedsharafi & Bagheri (2012) undertook their study which aimed at identifying which of aids and CALI are better for teaching productive skills, notably writing skill. The researchers divided the students into three groups, each of which contained 15 EFL students. In order to determine the effect of these audio-visual aids and CALI on the subjects in question, the researchers administered a test on the same standards of international English language testing system (IELTS) i.e., score is out of nine. According to Ghaedsharafi and her colleague, the audiovisual group performed better than the audio group and the audio group performed better than the visual group in their post-writings. To this end, Ghaedsharafi & Bagheri (2012) have clearly stated: "the difference between the post-writings of groups is significant. In other words, it was concluded that the effects of the three modes of presentation differ in writing classes, since the difference between the three groups was significant." (Ghaedsharafi & Bagheri, 2012: p. 116)

In the study of White-Farnham (2012), the researcher investigated the phase of culture. According to White-Farnham, culture has demonstrated positive outcomes in some works of

writers. Whether constraint to the institutions modality or environment is responsible for such connection is still under investigation. Moreover, it remains to be seen whether this connection is effective in writings or not. The researcher emphasized the role of connecting writer to culture as "…it is yet another, distinct way to consider what "institutions" can be and how writers/rhetoricians can participate discursively in them." (White-Farnham, 2012: p.103)

A rubric is an important element of writing, which impacts significantly on writing quality. There is strong evidence in the literature to indicate that insrtuctions for guided writing, control writing or even free writing are successful for improving creative writing, including those in the examinations. However, numerous limitations exist within the methodologies of relevant studies. It remains unclear which new strategies provide optimal benefits for varying methods, techniques and methods of rubrics. This was the aim of some researchers like Schenck whose primary aim in 2012 was to build a better mousetrap by replacing subjective writing rubrics with more empirically-sound alternatives. Observational approaches to children differ in different countries based on several factors including gender, age, etc.. The aim of Chiappedi, et al., (2012)'s study was to give an alternative choice to other tests by testing a quantitative method to obtain normative data to describe arm movement of 226 children during a writing precursor gesture. The following outcomes are summarized: (1) Differences are seen in motor strategy; (2) Obtained values were not significantly correlated with variables such as gender, ethnicity or cognitive functioning; (3) Observational approach represents a valid alternative to other tests. Addressing further future steps in this regards, the research team add: "A further step in our work will be to use this assessment procedure in the evaluation of children receiving rehabilitative treatment for specific or non-specific delays in writing skills. The normative data we have defined with this study could be used as a reference for interpreting changes due to rehabilitation, using our assessment tool alone or compared to other currently used tests." (Chiappedi, et al., 2012: p. 5)

The way the children grasp the pencil makes differences in the speed and legibility of their handwriting. It may make the written work difficult to read and/ or to understand. The characters have strong effects which may give varieties of related-meanings and senses. These facts make the study of such linguistic phenomenon a real challenge both for teachers and SLTs who will benefit from the outcomes of researches in this field. A written work of 120 students has been evaluated by Schwellnus, et al., (2012) to test the correlation between grasp and handwriting. In the definition of Schwellnus and other members of his team, a grasp is "labeled according to the nature of the finger or palm contact with the pencil and the movement of the pencil." (Schwellnus, et al., 2012: p.719)

The research team documented six categories of pencil grasp: four mature grasp patterns, one immature grasp pattern, and one alternating grasp pattern. Treatment-induced changes in the subjects' various differences suggested that no effect was correlated with the way pencil is grasped. In detail, pencil grasp patterns did not influence handwriting speed or legibility in the subjects at hand. Such findings, however, support the notion that alternative grasps may be acceptable for fast and legible handwriting. Psychoneurolinguistically, such findings will allow comparison with the normal and aphasic students' studies in different countries to see to

what extent students of special needs can benefit from the results of this study. A similar aim was investigated by Howe, et al., (2012) who tested the effectiveness of two approaches used in elementary schools to improve children's handwriting. Seventy two New York City public school students from the first and second grad participated in the study. Howe and other members of the research team utilized nonequivalent pretest-posttest group design. For the treatment participants at hand engaged in handwriting activities using two approaches: intensive handwriting practice and visual-perceptual-motor activities. According to the team members, the motif behind undertaking such study was the lack of studies in this field. In this regard, the research team has clearly stated: "Although there is support for the effectiveness of both intensive practice and visual–perceptual–motor interventions, delivering these interventions in the context of a natural school setting in the form of a school club has not been studied." (Howe, et al., 2012: p.20)

Treatment continued for 12 weeks (156 hours total). Treatment involved a test on handwriting speed, legibility, and visual-motor skills at the end of week 12. Outcomes of assessments were analyzed at the end, following the post test. Participants differed in their performance levels. Compared with students in the visual-perceptual-motor activity group, students in the intensive handwriting practice group demonstrated significant improvements in handwriting legibility. Overall, generalization was not observed for any of the measures due to that no significant effects in handwriting speed and visual-motor skills were found between the students in intensive handwriting practice group and the students in visual-perceptual-motor activities group. Fiordo (2012) attempted to find a crucial answer to the question what should be taught through which: teaching writing through general semantics or vice versa. The investigation was evaluated through stylistic approach. The impact of the approach intervention was also analyzed in terms of identifying barriers and providing answers to the question posed in the aims of the Fiordo's study. The quantitative and qualitative (linguistic) findings were complementary in demonstrating the effectiveness of five practical stylistic goals: These include the relevance, accuracy, clarity, conciseness, and effectiveness. According to the researcher, these principal goals seem to gain value when writers integrate general semantics principles stylistically into verbal expression. According to Rajabi & Ketabi (2012), the cohesive devices, through power point presentations, etc., provide evidence about writing improvements, notably for advanced writing. Rajab and his work mare stated that "PowerPoint presentations should arouse the imagery system and could contribute to comprehension, and improve short and long-term memory." (Rajabi & Ketabi, 2012: 1136)

Such outcomes, the two researchers, established foundations for further work into the use of these audio-visual aid and CALI for students of learning difficulties. Additionally, the studies of Tehrani & Dastjerdi and Amador-Moreno in 2012 made significant findings in the quality of using discourse markers in writing, notably in the contemporary writing. Sixty-nine subjects with d/Deafness and hard of hearing were recruited to four writing-to-learn activities in a word processor, completing all given tasks throughout the study of Strassman & O'Dell (2012). According to the researchers, it is not possible to determine the extent to which the results could be attributed to captioned revisions. Statistical analysis of the study explored the

outcomes of the students' performance, and the barriers and facilitators affecting their levels, suggesting that the images acted as procedural facilitators, triggering recall of vocabulary and details. Zheng & Dai (2012) investigated the role of instructions in the performance improvements of students' writing. Both quantitative and qualitative methods were used in the evaluation of the subjects at hand. Zheng and his colleague concluded that "the prewriting activities generate ideas which can encourage flow of thoughts and help students discover both what they want to say and how to say it on paper." (Zheng & Dai, 2012: Abstract)

Despite recognition of the need for increased long-term support for old people to make use of their sensory-processing abilities in their handwriting, there remains limited evidence for effective age interventions. To evaluate the handwriting of old people who uses their sensory-processing abilities, 118 healthy, independently functioning adults we used as subjects in the study of Engel-Yeger, et al., (2012). The researchers divided the subjects into four groups (based on age): 31-45, 46-60, 61-75 and 76+ years. Again, the aim of the study was to investigate the effects of age on sensory-processing abilities and their impact on handwriting. Results showed that age significantly affected sensory processing and handwriting pressure as well as temporal and spatial measures. Addressing this particular point, the research team has clearly clarified: “Based on the literature, which highlights the negative impact of reduced activity level on health and well-being, it is most important to refer to activity level in the aged population. Regarding the specific modalities, it is known that aging is related to lower motor-activity level.” (Engel-Yeger, et al., 2012: p.270)

Given the sensory seeking prediction, both handwriting time and spatial organization of the written product were predicted by sensory seeking which may be a more productive scale than other means of measurements(although not all) in testing old individuals' handwriting. Printing materials were improved significantly following the global cultural movement. Across the world, improvements in publications were greater than improvements in other field of life sectors. This trend was evident in most research works like the study of Yee & Kirk (2012) who investigated the role of printed materials in improving the written work. These include: Books and other publications, and an increased flow of news, information, and knowledge. Summarizing the effects of this major trend on life’s aspects, Yee and his friend have rightly observed: “The ability to read and write afforded opportunity for economic and social advancement. But the valuation placed on handwriting went well beyond its social and economic benefits. In the modern West, literacy often affords similar benefits, but calligraphy is considered a minor art at best, and handwriting seems to be losing its place in elementary education.” (Yee & Kirk, 2012: p.128)

In order to assess the level of reflection on the essays, Roux et al., (2012) conducted an experimental study on a number of Mexican students (n = 165) who were recruited through writing course. Results show that students are largely influenced by the categorization scheme which seems to be applicable to reflective writing; however, not all individuals under investigation appear to exhibit benefits. Reminding teachers of the significance of writing, Roux and his research team have evidently noticed: “Writing is thought to play an important role in reflecting on and understanding experiences in teaching.” (Roux et al., 2012, p.1)

The outcomes of Roux and her colleagues' study indicated that half of the subjects continued to write in a non-reflective mode throughout the course, but this does not minimize the usefulness of the reflective writing mode. Newcomb (2012) also examined whether sustainable design could cued written word production and whether such approach alters ways of thinking about writing situations, keeping ethical and contextual factors in focus, and encouraging students to develop habits of situational creativity. To this end, Newcomb has clearly notified: "….design helps set up the future world, so issues of sustainability are already part of it." (Newcomb, 2012: p. 594)

According to the researcher, the practical benefits of such approach should be addressed in follow-up researches by different experts in the field. Strictly, writing evaluations comprised repeated measures of word recognition and word representation. Such outcomes inspired Tan, et al., (2012) to conduct a study on measuring the ability of robots to learn the semantic representations of numbers and the movements of writing numbers through imitation and to verify the effectiveness of this framework. Some researchers believe that benefiting from robots in some educational issues, notably those related to children's handwriting is more important than investigating the robots' abilities themselves (Popular science & technology writing) (Palsbo & Hood- Szivek, 2012; Perrault, 2012 ). Inspired by such modern views, some psychoneurolinguists suggested more implementation of these audio-visual aids and CALI in serious tasks like writing performances, practices, blogs, web-based essay critiquing system feedback and teacher follow-up feedback, and other online resources (Bouchamma, et al., 2012; Vurdien, 2013; Lee, et al., 2013; Grohe, et al., 2013). A number of variables are likely to have contributed to differences in the method of recording audio responses to students' writing. Replication with Everett M. Rogers' diffusion of innovations model, the analysis of Killoran's study in 2013 focused on five attributes of recorded-audio response—its observability, compatibility, complexity, trialability, and relative advantage- to better ascertain the effects of the model on students' writing performance.

The standard relationship between self-regulated strategy development as a Tier 2 writing intervention and struggling writers can be reversed if schools implement writing intervention. Under such conditions, the study of Johnson et al., (2013) documented one school's journey through the process of identifying, implementing, and evaluating outcomes of a Tier 2 writing intervention using self-regulated strategy development. A hybrid model for grammar checking is suggested by combining a language-independent approach based on a statistical machine translation framework with an existing rule-based grammar checker. According to the designers of this approach (Ehsan & Faili, 2013); the aim of using such approach is to detect grammatical errors as well as context-sensitive spelling mistakes (real-word errors). The parameters of the quality of the above mentioned approach and, especially, the hybrid model for grammar checking registered higher than the normative values in all other available approaches. Results revealed that the proposed statistical method and the rule-based grammar checker are complementary in detecting and correcting syntactic errors. Moreover, the outcomes of the hybrid grammar checker, applied to some English texts, showed, according to Ehsan and his friend, an improvement of about 24% with respect to the recall metric with almost similar value for precision. Experiments on real-world data set show that

state-of-the-art results are achieved for grammar checking and context-sensitive spell checking for Persian language. The new model could be used for evaluative purposes such as an additional method for assessing the electronic writings, and certain types of dual these checkers could become promising tools for the improvement of the writings in general and correct writings in particular.

Children books, notably those designed for students of special needs and those who suffer from learning difficulties and language disorders are more likely to be classified as new on the relevant schools. Using such audio-visual aids for teaching this class of students suggest that the content should be malleable and context dependent. Having many of these books being investigated, Jeewek (2013) recommended some of them. These recommended books include: "One Wolf Howls," by Scotti Cohn, "Our Walk in the Woods," by Charity Nebbe, and "Elton the Elf," by Lisa Mallen. (Jeewek, 2013: pp. 13-20)

*1.2 Aims of the Study*

This study attempted to test the main and interaction effects of using audio-visual aids and CALI in the performance of students of special needs in writing skill. To this end, the researcher aims to find answers for the following questions:

1. What are the audio-visual aids and CALI that can be used for teaching students of special needs language in general and writing in particular? To what extent can SLTs benefit from them when teaching this class of students? What are the best methods that can be effectively used for implementing these educative aids in a way that guarantee improving students of special needs' performances.

2. Compared with those who do not use them, do audio-visual aids and CALI make any difference when they are used for teaching writing skill to students of special needs? Are there any results of other studies that agree or contradict the findings of the present study?

*1.3 Methodology*

Eighty students of special needs (age ranges between 8-18 years old) of both sexes were enrolled in this experimental study. The subjects were randomly divided into two groups; each group consists of 40 students. Nearly all students suffer different types of aphasias. They underwent a course on writing skill, for a semester (4 months) at al-Malādh school for teaching students of special needs in Dhamar city, republic of Yemen. The purpose of the study was to examine the effectiveness of audio-visual aids and CALI when they are used for teaching productive skills in general and writing skill in particular. Before and immediately after the first writing lesson, the subjects under investigation performed a pre-test and at the end of the semester, another post-test was administered to them by their SLT who was teaching the two groups at the same school. In between the treatment, the first group studied using audio-visual aids, while the second group studied using ordinary methods (chalk and black boards). Outcomes of the two tests were linguistically and statistically assessed. In this regard, social program for social sciences (SPSS) was implemented to describe the frequencies.

## 2. Analysis

### *2.1 Using audio-visual aids and CALI to teach students of special needs language skills in general and writing skill in particular*

Educative aids are frequently used in language practice to help students learn very well. Recently, psychoneurolinguists and speech language therapists (SLTs) have realized that using these aids is of special importance to students of speech needs. Audio-visual aids and CALI can be used to, psychoneurolinguistically, help students of special needs overcome some language impairment notably those who are suffering from tetranopsia, paragraphia, logaphasia, macromelia (macromelus/ megalomelia), agnosia, motor and optic agraphia, dysorthography, etc. These divided the practical part of these educational aids into two broad categories:

- Conventional aids.
- Computer learning in language teaching.

A very legitimate question that poses itself in this regard is the following:

Why do we use aids in language teaching in general and what are the benefits of using them for students of special needs? To answer such reasonable questions, one needs to understand that aids can be used for many language purposes. Some of these purposes can be listed as follows:

- Attracting attention.
- Maintaining attention.
- Clarifying concepts and meanings of words and utterances.
- Increasing chances of remembrance.
- Time saving (1 picture is worth 1000 words).
- Adding varieties to class activities.
- Compensation for the lack of experience in teachers (e.g., bringing pictures for throat to compensate for his inability to draw).
- Individualizing learning and teaching (e.g., giving students cassettes to be listened to at home or program instruction which takes forms like the book, for example, which is the simplest form and which contains some forms that have some bits of information and each bit of information has its feedback in the margins, etc.
- Involving learners: Either by asking them to participate in class activities or by using pattern practice which can be done by computer recording. Consider:

- John is reading a book.
- Mary……

(Instant feedback varies according to the situation e.g., I'm sorry, good answer, well done, excellent, try again, etc.).

- Presenting authentic language e.g., listening to a native speaker, giving menus to the students, recordings of airport's announcements, news, etc.
- Simulation of language use (e.g., acting, dramatization, etc.).

Clearly, educational aids can be used for different purposes. We can use them for teaching language skills and language components. In detail, educational aids can be used for teaching oral skills (listening and speaking) and written skills (reading and writing) and components of language (sound system, grammatical structures and vocabulary building). These aids van be effectively implemented to teach students of special needs, especially those who are suffering from verbal agraphia, or those who are suffering from problems related to allochromasia. Educational aids for teaching language skills and language components fall into five major types: Visual aids, audio aids, audio-visual aids, action (e.g., dramatization, field trips, debating, etc.), and multi-media (Computer-assisted language learning/ instruction/ teaching (CALL/I/T)).

A: Visual aids: This type takes different forms and shapes:

- Realia (Real things). This includes chalk, board, chair, etc.
- Three dimensions models (e.g., trains).
- Pictures or drawings: These can be photographic or hand drawn. There are different types of pictures:
- Simple pictures: Pictures of cars, pens, books, etc.
- Composite pictures: Pictures of scenes in classes, movies, etc.
- Series or sets: For example, telling stories, process of doing something (cooking, manufacturing, experiment, etc.), pictures of transportation means, etc.
- Posters: Usually consists of picture and text (e.g., posters of "No Smoking").
- Maps: These include geographical maps (used for topographical purposes), political maps, city plans, floor plans, etc. SLT can use city plan for example and ask the student who suffers from dyslexia to follow his instructions by drawing lines on the places he/ she is talking about.
- Boards: There are many of them like smart boards, white boards, black boards, etc.
- Cards: These include flash cards (where the picture is in one side and the word is in the other side), reading cards, and question & answer cards, etc.
- Graphs: One of the most famous graphs is the pie graphs. Pie graphs are normally used for statistical purposes.
- Forms: To be used by students who are suffering from dysgraphia for example. Examples of forms: Immigration forms, customs forms, hotel forms, etc.

- Menus: Restaurant menus that can be used to teach mentally handicapped students something about cultures, traditions, folklores, etc.

- Slides: Overhead projectors (OHP) slides and 35 mm slides are some of the example for this type of visual aids. Many of the above mentioned visual aids can be converted into slide forms and then presented to the students of special needs to achieve some class activities.

- Film strips: It is a set of slides like picture series. SLTs can also make use of silent films.

- Comic books: Examples of this type are children books, stories, etc. that can be used to entertain children, notably those who have problems relating to dyscalculia. Such type also attracts the attention of students suffering from dysarthria and prompts them to speak.

- Facial diagrams: Diagrams to be taken from books like phonological books or even by drawing them on the boards for teaching purposes like teaching articulation for those who are suffering from pronunciation problems.

- Clock, face, and hands: By asking the students to assign the time according to the question or vice versa. Such types of activities help dyscalculic students learn better.

- Calendars: For counting days of the week, months of the year, numbers, etc. Again, such drill gelps those who suffer from dyscalculia.

- Letters of the alphabet and numbers: For teaching spelling, recognition of the letter, etc.

- Cross-word puzzle: For teaching vocabularies. We also have scrabbles. Learning vocabulary items is very helpful for those who have developmental aphasia.

- Tables & schedules: These include time table, flight schedules, tec. Linking information to each other helps those who have global aphasia as it strengthens their abilities to speak and comprehend.

Visual aids in general are effective means; that is why, they are recommended for students who are ambidexter, or those who are suffering from deaf-mutism.

B: Audio-aids: Some audio aids that can be used for students who have language difficulties are:

❖ Cassette recorder or radio: Such audio aid is typical, notably for those who have problems related to Wernicke's aphasia as it helps them comprehend what they are listening to. Those who suffer from conduction aphasia may benefit from these cassettes also as they have to repeat the words and / or phrases they are listening to. In others, they do not have to listen to themselves and repeat their own sentences more than one time.

❖ Phonograph records: It is an old version of compact discs (CDs).

❖ CDs.

❖ Conversional language labs: In this kind of labs, one can have all the above mentioned audio aids.

C: Audio-visual aids: The most obvious types are T.V, videos, and also digital versatile disc (DVD) which has almost the same function as the video tape. Sophisticated language lab is another audio-visual aid. In this kind of labs, students of special needs can have both recording and playing. They can also have the facility to speak and listen at the same time and then compare that. Another characteristic of these labs is the facility of instant repetition. Sound movies are also some other types of audio-visual aids. These movies are now replaced by video tapes. Sound movies are the opposite of silent movies. SLTs can mute the sounds so that movies can be functioned for speaking or with the sound for listening. Slide/ sound synchronization is another type of audio-visual aids. In this type, students of special needs can have both sound and picture and this is used to be one of the methods used in the past and is called in French "La method audio-visuelle". As is seen, these aids can be exploited to teach those students who are suffering from word deafness, bradylexia, caligo/ caligation. They can even be used to teach those who are suffering from mos (crypophthalmus).

D: Action: This takes different shapes and forms:

- Dramatization (physical action) like walking, standing up, etc. Such exercises are helpful for students suffering from Alalia. However, if the SLTs notices that his/ her student cannot act the action, then they can ask them (using sign language when necessary) to pantomime or imitate.

- Charade: Charade is a good exercise due to those students of special needs enjoy it so much. In this type of exercises, SLTs are supposed to play a role of something and their students predict what it is.

- Party games: Many of them can be used be used as means for teaching language skills in general.

- Language teaching games: They can be found in magazines, etc.

- Field trips: They teach students of special needs some vocabularies. Students of special needs can also get practical experiences with them.

- Role playing: It is a good example of actions.

- Physical response: It is considered one of the ways of performing actions.

Action as is clearly seen above can be used to teach students of special needs, namely those who are suffering from dysmetria, achromata and/ or echolalia.

E: Multi-media aids (CALL/ CALT): They are combination of all the above mentioned aids including the use of internet, etc. Nor must we forget some general programs like T.V, radio, etc. SLTs should also pay attention to the use of computer as only one aspect of aids in language learning.

It is important, however, that SLTs know the best ways to use the above mentioned educative aids in teaching language to their students of special needs. Some requirements for proper use of these educational aids (selection & use) are as follows:

- Aim (objective): In this regard, SLT should ask himself/ herself "Why am I using this aid in particular (a picture for instance)? Why not another/ other aid(s)?"

- Effectiveness: Again, SLTs should ask themselves questions regarding to the effects (positive, negative, or side effects). Examples of these questions are: How effective is the use of this educative aid? What shall I do to make that educational aid more effective bearing in mind time, environment, students' levels, individual differences, types of language disorders, etc. For example, a documentary art subject will help students with dysmnesia remember things: Should I use it as a whole or just segment it in sections? When shall I use it? Shall I use it at the beginning, in the middle or at the end of the class?

- Resources: Questions relating to the availability of the educational aids. These include: Where can I get the educative aid (s)? Are they available in toys' stores, bookstores, or internet?

- Preparation: Making sure whether this educational aid is useable or not (usability of the educative aids and the best way (s) to use it.

Let's take an example of using these educational aids for teaching writing to students of special needs. Strictly, before understanding the audio-visual aids and CALI that can be used for teaching writing skill to students of special needs, SLTs should know that writing has two aspects: Mechanical writing and composition.

☒ Mechanical writing: It refers to handwriting (calligraphy), converting sound into graphic letters or graphics, dictation, punctuation marks, etc. Consider:

☒ Right, write, wright, rite, etc.

☒ Meet meat, mete, etc.

☒ Composition (Meaningful exercises): This aspect has three strategies:

1. Controlled composition: In this aspect, the SLTs can make use of scrambled paragraphs and sentences in spite of the fact that reading comprehension is also involved. SLTs can also use unscrambled words for simple and complex sentences or unscrambled sentences for paragraphs. SLTs can also make use of combination tables, matching, etc. Students of special needs, especially those who are suffering from dysgraphia or agraphia can also be asked to join sentences, expand phrases (paraphrase ), summarize, comment, report, etc., on tape-recordings, tables, graphs, charts, etc. Boards (smart, white, black, green, etc.), OHP, cards, and computers (cut or copy and paste) are also found to be useful for teaching writing skill to students of special needs in general and those who are suffering from dysorthography, and dyspraxia in particular.

Concerning the activities that can be used in teaching controlled compositions, SLTs can use unscrambling sentences (putting words in order with/ without modification unlike in reading where sentences are put in order), matching parts of split sentences using compositions/ combination tables. Consider:

| | | | |
|---|---|---|---|
| A | B | C | D……. |
| Boy | play | ball | in……. |
| Class | read | book | of……. |
| …. | ….. | ……. | …….. |

SLTs can also make use of writing mechanics where texts are formatted (Broken into paragraphs), and students of special needs are asked to provide punctuation or add diacritics.

2. Guided composition: This aspect involves providing ideas and prompting words. Note here that all audio-visual aids that are recommended for speaking skill can also be used here in guided compositions because they provide language production (Productive skills). SLTs can also give students of special needs a model (Letters, application forms, license form, etc.) and ask them to produce something similar. Alternatively, SLTs can also ask students of special needs to convert (transcord) charts and graphs into written language. Moreover, he/ she can ask his students to watch or listen to a program, lecture, debate, summit, etc., and then ask them to report on what they have already listened to or watched. Dictionaries (especially those which provide different uses of lexical items called lexical aids for writing) are also very valuable for teaching writing skill to students of special needs. SLTs should not ignore here thesaurus (dictionaries of meanings) or what has been known nowadays "dictionaries of synonyms".

In guided compositions, the following activities and drills can be used for better understanding:

- SLTs can use detailed questions: Where is Riyadh? How big is ut? How many population are there in Riyadh?, etc.
- Detailed outlines are also recommended (Population, size, location, etc.).
- SLTs can also provide their students of special needs with prompt words e.g., interaction, detour, etc., and these words help those suffering from dysmimia and agnosia.
- SLTs are also recommended to use pictures, sets and other graphics aids when teaching their students of special needs guided compositions.
- SLTs can also provide model texts (Letter, and application forms) by converting words from application forms into sentences to form a story, etc. Consider:

Table 1. An example of application form

| *Application form* | |
|---|---|
| Name | Sadeq |
| Age | 34 |
| Sex | M |
| Occupation | Lecturer at the university |
| Nationality | Yemeni |
| Marital Status | Married |
| Date of Birth | September 10. 1980 |
| Place of Birth | Dhamar, Yemen. |

| | |
|---|---|
| Permanent Address | Western Ring Road, Medical Complex Zone. |

The information in the above mentioned table can be converted into the following text:

Hello everyone. Let me introduce myself to you. My name is Sadeq. I am 34 years old. I am male of course. I work as a lecturer at prince Salman University. Originally, I am from Yemen.I live in Dhamar city (I was born there). You can visit me on the western ring road at the medical complex zone. This is the neighborhood where my family and I live. You are most welcome any time. Bye for now.

- Combine listening with writing like taking a message, summarize it or comment on oral written text.

- Converting a dialogue, a conversation, etc. into running text (e.g., a story) or vice versa.

- Computer can also provide help (Lexical, structural and information). SLTs can also make use of dictionaries (S-T or T-S dictionaries), thesauri, etc.

- SLTs can make use of journal dialogue where SLT does not correct students' mistakes, but paraphrase their work which would encourage a sort of fluency among them, notably those suffering from dysthymia.

- SLTs can make use of pen pal system which usually happens in the country of target language.

Collaborative writing can also be used where a text is written with the help of a group. However, for automatic evaluation, SLTs can use e-raters.

3. Free composition: All what have been said about the aspect of guided composition can also be said here and all the audio-visual aids that have been used there can also be used here in this type of compositions. However, what distinguishes free composition from controlled or guided composition is that it can be either factual or creative. The former includes reports, descriptions, etc., while the latter includes literature genres (novels, poetry, stories, drama, etc.) that are the highest level of writing in general. Again, all audio-visual aids that have been implemented in guided compositions van also be used here in free compositions due to that they all require students to make more sophisticated use of them.

For the activities, exercises and/ or drills, SLTs can make use of different audio-visual aids and CALI to assess their students of special needs,. For example, they can provide outlines, use chatting (on the net) with students who suffer from learning difficulties preferably. SLTs can write a test and ask his/ her colleague to revise it for him/ her. SLTs can also make use of collaborative writing through e-mail or they can make use of communication among the students of special needs (for teaching and/ or evaluation and feedback) and between the students and their SLT (for both evaluation and instructions). Nor must one forget the role of dictionaries. Authentic evaluation can be done through special software for the purpose like e-raters Pearson.

*2.2 Audio-visual aids and CALI: Effects in the performance of students of special needs*

Pre-test is the first test designed to examine the effects of using audio-visual aids and CALI on teaching writing skill for students of special needs. Table 2 summarizes the performance of the two groups (experimental and control groups). Consider:

Table 2. Performance of the subjects in the pre-test: Comparison between the treatment and control groups

| *No* | *Treatment/ Experimental group* | | | | *Control group* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Subject Name* | *Subject Sex* | *Subject Age* | *Subject Score* | *Subject Name* | *Subject Sex* | *Subject Age* | *Subject Score* |
| 1 | Saleh | M | 18 | 13 | Nada | F | 15 | 18 |
| 2 | Majed | M | 12 | 25 | Hajar | F | 14 | 23 |
| 3 | Saqr | M | 14 | 26 | Hamas | F | 8 | 45 |
| 4 | Ali | M | 8 | 38 | Rashad | M | 12 | 23 |
| 5 | Amatallateef | F | 12 | 23 | Omar | M | 9 | 57 |
| 6 | Amatala'leem | F | 9 | 28 | Ashraf | M | 16 | 35 |
| 7 | Badr | M | 13 | 45 | Mohammad | M | 11 | 13 |
| 8 | Tareq | M | 14 | 17 | Montaha | F | 14 | 49 |
| 9 | Parees | F | 15 | 48 | Ayman | M | 13 | 46 |
| 10 | Bayrout | F | 9 | 56 | Aayah | F | 10 | 47 |
| 11 | Tammaah | M | 9 | 37 | Adham | M | 10 | 39 |
| 12 | Taher | M | 17 | 49 | Nasser | M | 11 | 38 |
| 13 | Baraah | F | 16 | 24 | Haylah | F | 17 | 27 |
| 14 | Abrar | F | 11 | 54 | Tawfeeq | M | 13 | 25 |
| 15 | Ahmad | M | 13 | 27 | Nour | F | 12 | 23 |
| 16 | Fatimah | F | 16 | 45 | Najeebah | F | 18 | 39 |
| 17 | Amatillah | F | 18 | 57 | Radha'a | F | 16 | 29 |
| 18 | Abdullateef | M | 8 | 12 | Wafa'a | F | 15 | 18 |
| 19 | Amriyah | F | 12 | 6 | Wajedah | F | 15 | 13 |
| 20 | Abduljaleel | M | 12 | 27 | Sultan | M | 9 | 45 |
| 21 | Kareemah | F | 11 | 38 | A'simah | F | 12 | 23 |
| 22 | Nadiyah | F | 11 | 39 | Adalah | F | 11 | 67 |
| 23 | Sariyah | F | 13 | 47 | Abulwali | M | 8 | 54 |
| 24 | Sarah | F | 13 | 56 | A'amal | F | 8 | 47 |
| 25 | Huda | F | 18 | 23 | Salah | M | 12 | 36 |
| 26 | Sulayman | M | 15 | 35 | Ammar | M | 13 | 28 |
| 27 | Amjad | M | 14 | 37 | Luluah | F | 18 | 27 |
| 28 | Abdullah | M | 11 | 36 | Bilal | M | 14 | 27 |
| 29 | Abdulmajeed | M | 16 | 76 | Ziad | M | 12 | 36 |
| 30 | Raghad | F | 15 | 12 | Ruqayah | F | 18 | 16 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 31 | Hafsah | F | 14 | 15 | Asma'a | F | 15 | 15 |
| 32 | Abdurrahman | M | 14 | 27 | Sumayah | F | 17 | 23 |
| 33 | Akram | M | 14 | 37 | Kawthar | F | 13 | 74 |
| 34 | Taqwa | F | 13 | 38 | Khawlah | F | 14 | 54 |
| 35 | Salma | F | 12 | 49 | Tasneem | F | 18 | 34 |
| 36 | Hadiyah | F | 18 | 39 | Amal | F | 10 | 36 |
| 37 | Sayda | F | 18 | 48 | Sami | M | 10 | 26 |
| 38 | Abdulkareem | M | 16 | 46 | Haneen | F | 10 | 46 |
| 39 | Sadeq | M | 8 | 26 | Ayham | M | 16 | 36 |
| 40 | Motaz | M | 10 | 38 | Sajidah | F | 18 | 34 |
| Total | 40 (20 M+20 F) | | 530 | 1419 | 40 (20 M +20 F) | | 525 | 1391 |
| Mean | | - - | 13.25 | 35.47% | | - - | 13.12 | 34.77% |

As is mentioned in the research methodology, a total of 80 subjects of students of special needs (age=8-18 years old) were tested in the beginning of the term (before writing course starts). The aim of this test is to compare its outcomes with the posttests' to ensure the validity and reliability of the study from one side and also to fully understand the changes audio-visual aids and CALI make. With reference to the data described in the above mentioned table, the control group, compared to the treatment group, performed significantly more poorly on the pre-test (1391 scores vs. 1419 scores). Compared with males' scores, the females' scores are higher (674 vs. 745). Control group of females overpassed that of the males also (927 vs. 464). These scores remain, statistically, normal since the treatment has not yet started. Again, such scores will not be useful unless we compare them to those of the posttests'. Compare:

Table 3. Performance of the subjects in the post-test: Comparison between the treatment and control groups

| *No* | *Treatment/ Experimental group* | | | | *Control group* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Subject Name* | *Subject Sex* | *Subject Age* | *Subject Score* | *Subject Name* | *Subject Sex* | *Subject Age* | *Subject Score* |
| 1 | Saleh | M | 18 | 87 | Nada | F | 15 | 35 |
| 2 | Majed | M | 12 | 98 | Hajar | F | 14 | 23 |
| 3 | Saqr | M | 14 | 67 | Hamas | F | 8 | 27 |
| 4 | Ali | M | 8 | 56 | Rashad | M | 12 | 36 |
| 5 | Amatallateef | F | 12 | 48 | Omar | M | 9 | 38 |
| 6 | Amatala'leem | F | 9 | 97 | Ashraf | M | 16 | 48 |
| 7 | Badr | M | 13 | 80 | Mohammad | M | 11 | 49 |
| 8 | Tareq | M | 14 | 98 | Montaha | F | 14 | 46 |
| 9 | Parees | F | 15 | 97 | Ayman | M | 13 | 59 |
| 10 | Bayrout | F | 9 | 67 | Aayah | F | 10 | 12 |
| 11 | Tammaah | M | 9 | 58 | Adham | M | 10 | 17 |
| 12 | Taher | M | 17 | 94 | Nasser | M | 11 | 28 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 13 | Baraah | F | 16 | 56 | Haylah | F | 17 | 35 |
| 14 | Abrar | F | 11 | 67 | Tawfeeq | M | 13 | 38 |
| 15 | Ahmad | M | 13 | 85 | Nour | F | 12 | 28 |
| 16 | Fatimah | F | 16 | 48 | Najeebah | F | 18 | 39 |
| 17 | Amatillah | F | 18 | 70 | Radha'a | F | 16 | 14 |
| 18 | Abdullateef | M | 8 | 85 | Wafa'a | F | 15 | 29 |
| 19 | Amriyah | F | 12 | 67 | Wajedah | F | 15 | 39 |
| 20 | Abduljaleel | M | 12 | 84 | Sultan | M | 9 | 39 |
| 21 | Kareemah | F | 11 | 56 | A'simah | F | 12 | 23 |
| 22 | Nadiyah | F | 11 | 79 | Adalah | F | 11 | 46 |
| 23 | Sariyah | F | 13 | 90 | Abulwali | M | 8 | 48 |
| 24 | Sarah | F | 13 | 89 | A'amal | F | 8 | 38 |
| 25 | Huda | F | 18 | 67 | Salah | M | 12 | 12 |
| 26 | Sulayman | M | 15 | 56 | Ammar | M | 13 | 8 |
| 27 | Amjad | M | 14 | 47 | Luluah | F | 18 | 45 |
| 28 | Abdullah | M | 11 | 75 | Bilal | M | 14 | 34 |
| 29 | Abdulmajeed | M | 16 | 45 | Ziad | M | 12 | 17 |
| 30 | Raghad | F | 15 | 67 | Ruqayah | F | 18 | 16 |
| 31 | Hafsah | F | 14 | 89 | Asma'a | F | 15 | 27 |
| 32 | Abdurrahman | M | 14 | 98 | Sumayah | F | 17 | 38 |
| 33 | Akram | M | 14 | 78 | Kawthar | F | 13 | 37 |
| 34 | Taqwa | F | 13 | 67 | Khawlah | F | 14 | 48 |
| 35 | Salma | F | 12 | 86 | Tasneem | F | 18 | 45 |
| 36 | Hadiyah | F | 18 | 85 | Amal | F | 10 | 23 |
| 37 | Sayda | F | 18 | 87 | Sami | M | 10 | 28 |
| 38 | Abdulkareem | M | 16 | 45 | Haneen | F | 10 | 37 |
| 39 | Sadeq | M | 8 | 67 | Ayham | M | 16 | 39 |
| 40 | Motaz | M | 10 | 80 | Sajidah | F | 18 | 12 |
| Total | 40 (20 M+20 F) | | 530 | 2962 | 40 (20 M +20 F) | | 525 | 1300 |
| Mean | | - - | 13.25 | 74.05% | | - - | 13.12 | 32.5% |

On the statistical perspective, the scores of the control group exhibited unpredicted outcomes. Compared with the pre-test, the control group registered an evident decrease (1391 scores vs. 1300 scores). Effectiveness of the use of audio-visual aids and CALI was clearly shown in the performance of the treatment group in the posttest where they scored 2962 scores in comparison to their performance in the pre-test where they scored 1419 scores.

Unlike the pre-test where females registered higher scores in both treatment group and control group (745 and 927 scores) in comparison to the males (674 and 464 scores), the performance level in the posttest was slightly different. Whereas males scored 1483 scores, females scored 1479 scores. Certainly, the results of the control group do not make difference since they belong to the control group, not the experimental one.

## 3. Conclusions & Recommendations

Aids to language teaching are of three broad categories: Conventional aids, technological aids (machines other than computer) and CALL. There are some techniques that can be effectively used for teaching language in general. These strategies can be used for teaching nearly all language aspects including the sound system, grammatical structures and vocabulary (language components) as well as teaching the four language skills and culture. Generally, educative aids are of three types. The first type includes visual aids: (e.g., realia, models, pictures/ drawings, posters, maps (geographic and city plans), boards, cards (flash cards, reading cards- Questions & Answers), graphs, forms, menus, slides (35 mm and OHP), film strips, silent films, comic books and strips, facial diagrams, clock faces and hands, calendars, charts, letters of the alphabet and numbers, cross-word puzzles, etc.). The second type is related to audio aids (including lab) (e.g., audio cassette/ tape (reel) recorders, radio, phonograph records (record albums), CDs, conventional labs. The third type is that of audio-visual aids (e.g., video tapes, TV, DVD, sound films, synchronized audio recording with visual presentations (slides), action aids (e.g., dramatization, field trips, games, pantomime, etc. ) and multimedia (e.g., CALT/ L), the use of internet, interactive or not, etc.).

A very legitimate question here is: What is the importance of educative aids (Audio-visual aids and CALI) in speech language pathology? To answer such question, SLTs need to know the characteristics and benefits of audio-visual aids and CALI. Some of these features are relating to attracting attention, maintaining attention. Some SLTs emphasize that audio- visual aids and CALI can be used in matters relating to the clarification of concepts/ meanings of words and utterances. According to these SLTs, these educative aids participate in increasing the chances of remembrance by increasing means of association, saving time, simulation of language use, and presenting authentic language and natural settings for language use. Others add that audio-visual aids and CALI can be exploited to compensate for lack of experience of teachers, individualize learning and instruction, involve of learners, give variety to the lesson, and provide instant feedback.

Computers in general and computer programs in particular were found to be successful in achieving transfer of trained language abilities in speed of processing to similar untrained tasks. They can be used as means of presentation of text and also as means of presentation of exercises and feedback (and/or evaluation). Moreover, one can implement them for other educational purposes where they can be effectively used as sources of texts and also as a means of providing a record of students' progress. In addition, computers are the best educative environments where one can easily find all types of electronic dictionaries (e.g., Thesauri, Sakhr, Atlas, Longman, Contemporary, Webster, etc.). Other available electronic references include grammatical/ usage information, information sources (encyclopedia, etc.), and internet access where communication takes place with others. Strictly, internet facilities found to be useful for teaching, references, consultation, interaction with others, practicing through chatting, learning individually or through collaboration (on assignments, etc.).

CALI requires some procedures to be undertaken before therapeutic sessions take place. Standing alone is the first procedure and this refers to two important points: Considering class

complementary work, and language course (autonomous learning). Network is another procedure that SLTs should pay attention to. They should make sure that all necessary networks (e.g., local area network), internet access, supplementary materials, language course (Autonomous learning), etc., are available. Nor must we forget to add also the feature of benefiting from computer mediated communications (CMC) (e.g., e-mail, chat, distant learning(, information tools ( different topics, language aids like dictionaries, and/ or using computer as a tool (word processing, spell checkers, grammar checker, word count).

Programmed instruction (self-teaching/ learning) can be used to break learning task/ information into small bits, present these in frames which require response by the learner and then provide feedback by the system. In fact, a connection ought to be made between the uses of programmed instruction and CALI since the former is a part of the latter. Such uses of the programmed instruction require us to mention something about the advantages of CALI. These include: Individualization, instant feedback, combining efforts of different experts, assessment, follow-up learner's progress , providing diagnostic report on learners, provision of authentic materials, use of multimedia, combination of different resources (lexical, grammatical, cultural…) and use of corpus linguistic facilities (such as concordancers- key word in context (KWIC)).

For teaching writing to students of special needs, SLTs should consider the types of writing and the characteristic features of each type. Writing can also be mechanical (converting sounds into graphic symbols) or copying, handwriting (calligraphy). Dictation is another sort of writing where SLT can examine the ability of his students, especially those suffering from dysgraphia (e.g., meet, meat, mete out). Lexically, writing falls into several types, each of which requires certain types of questions. Some of these types and the questions that suit them can be explained as follows:

1. Controlled writing:

For this type, SLTs are recommended to use certain types of exercises like unscrambling sentences, matching parts of sentences, using composition/ combination tables (Combination tables: for example, Slot1 (Articles) Slot 2 (Nouns) Slot3 (Verbs) Slot4 (Articles) Slot 5 (Nouns) Slot 6 (Prepositions/ adverbs), Joining sentences (with given expressions), expanded sentences with given words/ phrases, rephrasing sentences (according to certain changes). Aids: writing boards, magnetic/ metallic boards, OHP, Word cards, sentence cards, phrase cards, tables, and computers (cut or copy and paste).

2. Writing mechanics:

In this type of writing, SLPT need to understand a text format and the ways to provide punctuation.

3. Guided writing:

For guided writing, SLT is recommended to make use of detailed questions. He is also supposed to use pictures, sets or other graphic aids. Detailed outline is necessary as it works as the guide that leads the writer if he is lost. SLT is also expected to provide the writer with

prompt words and model texts (letters, application, etc.). Some audio-visual aids and CALI that are recommended for teaching this type of writing are pictures of different types (simple, composite, sets), maps, graphs, OHP, drawings, audio text, written text, forms (e.g., application forms), broadcast materials (radio or TV), other video aids, dictionaries, cue cards, etc. Computers (stand-alone – word press (WP), internet, etc.)) are also recommended due to that they can provide help (lexical, structural and info and automatic evaluation).

4. Free writing:

Free writing (creative or factual) is important as it provide the student with useful outlines that help him/ her write good and correct writing. In this type of writing, the students in general and those of special needs in particular are recommended to use different types of educative aids. Psychoneurolinguists suggest that most of the aids used in guided composition may be used in free writing, requiring students to make more sophisticated use of them. Using internet and other electronic facilities help them in different ways:

✓ Use of chatting (on the net) with native speakers preferably.

✓ Writing pals.

✓ Collaborative writing through e-mail.

✓ Communication among learners for peer teaching and/ or evaluation and feedback, and between learners and instructors for consultation, teaching and/ or evaluation and feedback (Written or oral comments may be used).

✓ Use of facilities provided by word processor software (dictionaries, thesauri, spelling checking and grammar checking).

✓ Automatic evaluation through special software for the purpose (e.g., E-raters).

Writing skill is often impaired in individuals with aphasia who normally suffer from dysgraphia (agraphia). With currently available pre-and-posttests' outcomes, however, it is easy to describe the descriptive frequencies based on these results. Figure 1 below presents data derived from the pre-and-posttests and these data indicate that the treatment group's general performance in the posttest overpassed the level of the same group in the pre-test as well as that of the control group in both pre-and-posttests. Consider:

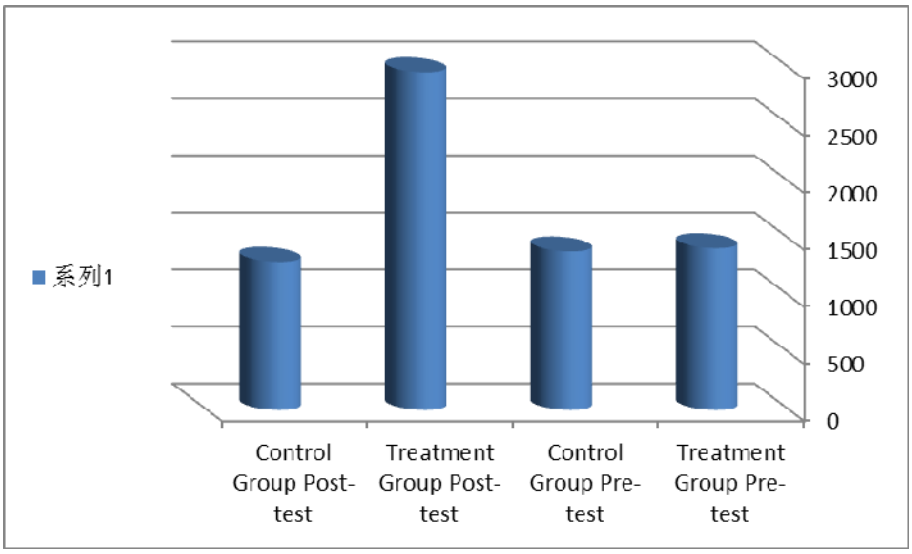


Figure 1. Results of the experimental and control groups' pre-and-posttests: Comparison

As is clearly observed, Figure 1 above aims to highlight our current understanding of the outcomes derived from Tables 2 and 3. Preliminary evidence shows that audio-visual aids and CALI are useful tools, not only for teaching writing skill, but also to complement treatment of aphasia and other learning difficulties for students of special needs, particularly for language production in these aphasics. Statistical analysis showed a huge difference between the performance of the students in the two groups (the experimental group and the control group). While the treatment group scored almost double then their achievements in the pre-test (35.47% vs. 74.05%), the control group's performance has been decreased (34.77% vs. 32.05%). Such findings confirmed other results of many other studies where audio-visual aids and CALI are found to be useful for teaching writing skill to students of special needs (Ghaedsharafi & Bagheri, 2012; White-Farnham, 2012; Chiappedi, et al., 2012; Howe, et al., 2012; Rajabi & Ketabi, 2012; Strassman & O'Dell, 2012; Henderson & Luke, 2012; Perea, 2012; Jeewek, 2013; Sigrist, et al., 2013).

As has been mentioned in the explanation of Table 1, the scores of the females were higher than those achieved by males. However, what matters is the performance level of both males and females in posttest which was conducted after the treatment. In that test, males performed higher level in comparison to that of females and this can be obviously seen in figure 2. Compare:

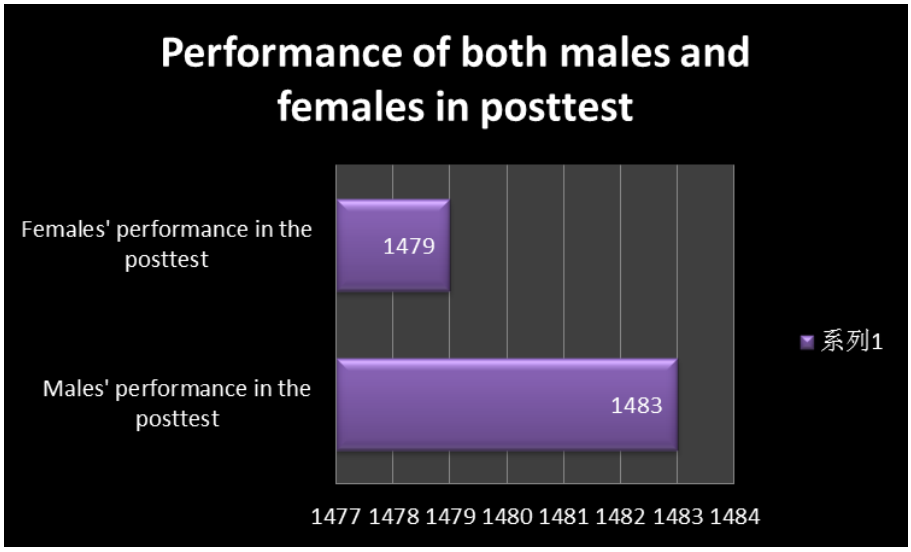


Figure 2.

To build on this exciting work, further experimental research is needed to understand the effects audio-visual aids and CALI cause to the productive skills in general and writing skill in particular, and the applications of these educative aids to current models of aphasia and language disorders' recovery. The potential of these educational aids to overcome writing difficulties encourage further researches to be done in this regard.

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**Glossary**

**ANCA** (Anti-neutrophil cytoplasmic antibodies) = These are a group of autoantibodies and monocytes that are detected as a blood test in a number of autoimmune disorders, but are particularly associated with systemic vasculitis. ANCA often "show combinations of both cytoplasmic and perinuclear staining." (Mead, et al., 1999: p.1).

**CALL/I/T** (Computer-assisted/aided language learning/instruction/teaching) = It is defined as "the search for and study of applications of the computer in language, teaching and learning." (Levy, 1997: p.1). While CALL is related to students, CALT and CALI "fell out of favor among teachers". In that sense, it can be said that while in the former term, the student-centered approach is the dominant perspective, in the latter; a teacher-centered approach is more preferred. CALI/T exhibits all characteristics of English language teaching (ELT) (Davies G. & Higgins, 1992: p.3).

**CD** (Compact Disc) = It is used for storage of data. It was in March 1974, during a meeting of the audio group, two engineers from the Philips research laboratory recommended the use of a digital format on the 20 cm optical disc, because an error-correcting code could be added." (Peek, 2010: p. 10).

**CMC** (Computer-mediated communication) = According to McQuail (2005), CMC is seen as "any communication that occurs through the use of two or more electronic devices." (McQuail, 2005: p.1)

**DVD** (Digital versatile disc) = It is a digital optical disc storage format. The DVD specification provided a storage capacity of 4.7 GB for a single-layered, single-sided disc and 8.5 GB for a

"dual-layered, single-sided disc." (Thrasher, 1996: p. 16).

**ESL/ EFL** (English as a second/ foreign language) = It can be defined as the use or study of English by speakers with different native languages in English speaking countries. Unlike ESL, EFl refers to the teaching of English in a non–English-speaking region. Such differences occurred "during the development of English in the 1930s." (Harcourt & Templer, 2005: p.2).

**KWIC** (Key word in Context) = It is considered the most common format for concordance lines "especially in the phrase" (Collins English Dictionary, 2003).

**OHP** (overhead projector) = It is a variant of slide projector that is used to display images to an audience. In the definition of dictionary, "overhead projector is capable of projecting enlarged images of written or pictorial material onto a screen or wall from a transparency placed horizontally below the projector and lighted from underneath"(The American heritage dictionary of the English language, 2009).

**SLTs** (Speech-Language Therapists) = They are specialized in communication disorders as well as swallowing disorders. They are also called Speech Pathologists (Block et al., 1993, P. 23).

**SPSS** (Statistical program/package/product/ for social sciences/ and service solution) = It is a software package used for statistical analysis and is among the most widely used programs for statistical analysis in social science. Levesque (2007) listed some statistical operations that are normally undertaken by SPSS software. These include: "Descriptive statistics (Cross tabulation, descriptive frequencies, exploration, etc.), descriptive ratio statistics, bivariate statistics (means, t-test, ANOVA, correlation (e.g., bivariate, and partial distances), and nonparametric tests.), and prediction for numerical outcomes (linear regression and prediction for identifying groups (actor analysis, and cluster analysis. (Levesque, 2007: p. 392)