

The Effect of Multisensory Techniques on Reading Comprehension among Pre-Intermediate EFL Learners: The Case of Gender

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Abstract: This paper investigated the effect of multisensory techniques on reading comprehension (RC) through multisensory modalities including visual, tactile, music, and kinetics. Thus 90 pre-intermediate students of an institution in Behbahan were examined through a RC proficiency test and then 60 participants were selected through their homogeneous scores they received on the RC proficiency test. They were randomly divided in two experimental and control groups. During three months of instruction, experimental group was taught RC through multisensory techniques while the control group received some placebos on RC. Data were collected through pre and post- tests which lasted 12 sessions. Experimental group was taught English through visual and tactile modalities while the control group received some placebos. Independent Samples *t*-test was used and findings revealed that there was a significant differences between the two group since the experimental group outperformed the control in RC on the post-test phase ($p < .05$). These results suggest that EFL teachers should be encouraged to use multisensory modalities to escalate EFL learners' reading comprehension abilities.

Key words: Multisensory techniques; Reading comprehension; Visual; Tactile; Music; Kinetics

1. Introduction

This paper investigated the effectiveness of multisensory techniques on female learners' reading comprehension. The efficiency of teaching can be highly improved by utilizing the senses as educational aids (Katai, 2008). This study was to give a detailed description of how the involvement of eyesight, hearing and kinetic can help in teaching and learning process. Furthermore, several works analyze the benefits of the multisensory learning in the case of children learning with disabilities, like dyslexia (Wei & Pouget, 2008).

Compared to other methods, multi-sensory techniques seem to be the most exhaustive, with the advantage of being organized, technique established for teaching. Multisensory teaching is one important aspect of instruction for dyslexic students that is used by clinically trained teachers. Effective instruction for students with dyslexia is also explicit, direct, cumulative, intensive, and focus on the structure of language. Multisensory learning involves the use of visual, auditory, and kinetic-tactile pathways simultaneously to enhance memory and learning of written language. Multisensory techniques may affect the level of reading comprehensibility (Buggey, 2001); however, the extent of such effects should be investigated in educational settings. Visual technique would be an area wherein students could be videotaped acting out poems, scenes from plays, or writing concepts for learning and reinforcement. The visual and auditory stimulation has been excellent for students with disabilities (Gardner, 1993). The techniques used to teach reading really made sense. The main

reasons for reading problems are: Ineffective reading instruction, auditory perception difficulties, visual perception difficulties, language processing difficulties (Cleaton, 2002). For many students reading is a difficult process. For these struggling readers, reading does not come naturally. Students are unable to decode words, read fluently and recognize basic sight words. Much of the reading that we do occurs near our hands. Previous research has revealed that spatial processing is enhanced near the hands, potentially benefiting several processes involved in reading; however, it is unknown whether semantic processing-another critical aspect of reading-is affected near the hands (Wu, 2006). The results of this study might help Iranian EFL learners enable to gain the awareness of the multisensory techniques in developing their reading. This study is going to answer to this question that whether multi sensory techniques can affect on reading comprehension through using figurative and literal meanings of words and ideas enhancing listening, reading, writing, and speaking (Montessori, 1967). This study may give helpful contribution to pre- intermediate learning EFL in Iranian context. The learning experiences are real and meaningful for them. While learning in other disciplines may often focus on development of a single skill or talent, for many students reading is a difficult process. For these struggling readers, reading does not come naturally. Students are unable to decode words, read fluently and recognize basic sight words. Much of the reading that we do occurs near our hands. Previous research has revealed that spatial processing is enhanced near the hands, potentially benefiting several processes involved in reading; however, it is unknown whether semantic processing-another critical aspect of reading-is

affected near the hands. The results of this study might help Iranian EFL learners enable to gain the awareness of the multisensory techniques in developing their reading.

Multisensory techniques that focus on sound and stimulate verbal reasoning are called auditory technique. Auditory techniques include strategies such as using computerized text readers, argumentative; communication devices; auditory trainers; hearing aids; books on tape. Auditory elements are: discussions, internal dialogue, peer explaining, reading aloud, and using the phone and music, audio recording and play back, mnemonics. Multisensory techniques that use body movements are called kinetic strategy. Kinetic-tactile elements are: moving around, changing seating positions, touching and handing things, sequences of movements, practical task, acting out processes and concepts, role play (Hairston, Laurienti, Mishra, Burdette & Wallace, 2003). Visual techniques that use eyes are called visual strategies. Visual elements are: Color coding, visual organizers, learners drawing to explain ideas, image recording and playback, mental images and visualization, displays of postures, key words and learners' work. To conduct a manageable research, the following delimitations were made: (1) all of participants were pre-intermediate EFL learners. They were proficient in English to some extent, (2) the study did not the focus on the gender and all of them were female. They were 16 years old. The size of sample was fifty students. The multisensory techniques including kinetics, music tactile and visual were used the researchers limited to this research.

2. Review of Literature

This section discusses about the background of this study. The key concepts will be explained through theoretical and experimental available literature. Young children need increasing competence and integration across domains including words, gestures, drawings, painting, music, singing, drama, dramatic play, movement, and dance. Children learn through meaningful activities. Activities that are meaningful and relevant to children's daily life experience provide opportunities to teach across the curriculum and assist children in seeing the interrelationships among thing they are learning. Children are active learners, drawing on direct physical and social experience as well s culturally transmitted knowledge to construct their own understandings of the world around them (Goldhawk, 2000). Educators have embraced a range of multisensory techniques in order to make learning richer and more motivating for learners. Students learn in different ways. Some learn best through listening, some by seeing and others by doing. Learning comes more easily to students when instruction is presented using all three stimuli. If lectures are used, for example, they need to be accompanied by visual aids that could be pictures, objects or card with words or math problems.

A visual technique helps the student to understand more easily, to see more clearly, and to have better eye for details. The concept of working from something concrete, such as art, to something abstract such as language, helps student to make association within their

own experience. Visual creations allow students to think of more details for their work because they are able to see and think about what task they are doing. Using tangible examples when writing, such as artistic creations, helps students stay on task and communicate with deeper meaning and understanding (Diana, 2002).

Multisensory techniques that focus on sound and stimulate verbal reasoning are called auditory techniques. Auditory techniques include strategies such as computerized text readers, augmentative communication devices; auditory trainers; hearing aids; books on tape, podcasts, and peer assisted reading, video, film, or multi-image media with accompanying audio; and music, song, instruments, speaking, rhymes, chants, and language games (Praveen,2010). Multisensory techniques that involve using the sense of touch are called tactile techniques. Tactile techniques include strategies such as using small objects, called math manipulative, to represent number values to teach math skills such as counting, addition, subtraction, multiplication, and division, use of modeling materials such as clay and sculpting materials, to create models; and use of sand trays, raised line paper, textured objects, sensory putty, finger paints, and puzzles to develop fine motor skills (Praveen, 2010).

Multisensory methods that use body movement are called kinesthetic techniques. These involve fine and gross motor movement such as preschool and primary games involving jumping rope, clapping, stomping or other movements paired with activities while counting, and singing songs related to concepts, all tactile activities mentioned above; and any large motor activity for older students involving dancing, beanbag tossing, basketball, or other such activities involving concepts, rhythmic recall, and academic competition such as current events quizzes (Praveen, 2010). Haynes and Smallwood (2008) points out that using a song as the text could combine benefits of singing and reading aloud with English language learners. Music can transform classrooms to pleasant and positive learning environments in which children thrive emotionally, socially, and academically. Providing children with structured and open-ended musical activities, creating an atmosphere of mutual trust and respect (Paquette & Rieg, 2008). Music before class sets a tone and mood for a class. It creates a relaxing atmosphere and put people at ease. Music also encourages conversation and serves as a cue for the teacher.

Multisensory methods are not limited only to students with dyslexia. Both the strengths and learning struggles of dyslexia stem from the student being a visual thinker, this is why multisensory learning techniques work so well with dyslexic students, but almost all students under the age of eleven are going to have a strong tendency to learn better through concrete examples. One study evaluates the effectiveness of an arts-based educational program, Basic Reading through Dance. Basic Reading through Dance is a 20-session, curriculum-based reading intervention for first-grade students developed by Whirlwind, a not-for-profit organization. There were a total of 721 first-grade students from Chicago public schools who participated in the study, with 328 students from 6 schools receiving the program and 393 students

from nine schools serving as controls. The program was designed to improve reading skills, as assessed by the Phonographic Test, such as code knowledge (alphabet sounds) and phoneme segmentation (separating letter sounds within spoken words). Results suggest that the students who participated in the program improved significantly more than control students.

3. Methodology

3.1. Participants

The research population included 60 female EFL learners who participated in a reading comprehension test includes 90 female students learning EFL selected in a private language institutions in Behbahan. The constraints of time, number of institution available, and the participants were selected through non-random judgment sampling. The learners whose scores fell one standard deviation above and below the mean were selected. Their ages were ranged from sixteen to eighteen. Then they were divided in two experimental and control groups i.e. each included 30 participants. Their level was judged through their scores on the pre-test administration as pre-intermediate level. Experimental group received multi-sensory modalities, while the control group was taught through some placebos.

3. 2. Instrumentation

The instruments used in this study were a teacher-made reading comprehension (RC) test including 50 multiple-choice items, determining the learners' level and their reading proficiency as well as their RC knowledge at the pre-test stage at beginning of the treatment period. Thus the homogeneity test was used as the pre-test. Its reliability value was estimated through Cronbach's Alpha as ($\alpha = .76$). The post-test was used to assess learners' RC after the treatment period. It was an RC teacher-made test including 50 multiple-choice items and was designed based on the materials they were taught throughout the treatment period. The reliability of the post- test was calculated as ($\alpha = .86$) respectively. Both experimental and control groups participated in the test administration. Independent Samples *t*-test was used to evaluate the effect of multisensory techniques on learners' RC.

3. 3. Procedure

A teacher made RC pre-test was administered to 90 pre-intermediate EFL learners in a language private school in Behbahan, Iran. Then 60 learners whose scores were one standard deviation (SD.) below and one SD above the mean were selected and divided in two groups of control and experimental randomly. The pre-test

indicated their level as pre-intermediate learners. Each group included 30 participants and received the same materials with different techniques. The experimental group was taught through multisensory modalities (i.e., including visual, tactile, music, and kinetics). First, the sentence read aloud to the experimental group while the students follow the sentence. They received visual and manipulative interventions and tactile modalities with materials students can touch, feel, and manipulate to promote conceptual understanding (Rabkin & Redmond, 2006). The experimental groups then watched power point presentations with more information about the film, and after the film, participate in large-scale kinetic movements having to do with the film. The control groups watched the film without the power point presentation and the kinetic movements. They participated each week for 2 sessions and accomplished 12 sessions each lasted 90 minutes. Both groups covered the reading materials of Interchange 3 developed Richards (2007).

Finally, they took a teacher-made post-test. The control group will not receive visual or manipulative modalities but some RC placebos. Data were collected and analyzed through descriptive and inferential statistics. The Independent Samples *t*-test was run to show any significant differences between the two groups

4. Results

This chapter presents the results of the data analysis of the two groups in the study. In addition, it describes the findings of the whole stage of the experiment. For the purpose of this study descriptive and inferential statistics were utilized to analyze the data. In doing so, first of all the data collected from both groups performances on the pre-test, post-test and, then the results of each groups were separately submitted to statistical Independent Samples *t*-test to find out whether multi sensory techniques had any impact on participants' reading comprehension acquisition.

The entire sample included 50 female students learning EFL selected in a private language institution in Behbahan. Participants were divided in two homogeneous groups of experimental and control. Pre-intermediate level judged by their scores on the pre-test administration. Experimental group received multi-sensory modalities, while the control group was taught through some placebos. A test administered to determine the level of the students. The test was made by the author. After taking the pre and post-tests, the participants' scores were corrected by two raters. The assigned score for each paper was the mean score of two raters' scores.

Descriptive statistics was carried out for all measures involved in this study. The scores for both groups in pre- and post tests phases are presented in Table 1.

Table 1. Descriptive Statistics

Groups	N	Min.	Max.	Mean	Std. Deviation
Pre-test (Control)	30	14.00	20.00	17.48	1.939

Post-test (Control)	30	17.00.	20.17	16.52	1.557
Pre-test (Experimental)	30	1500.	20.00	17.72	1.568
Post-test (Experimental)	30	20.00	16.52	19.04	1.059

Tables 1 shows that the mean score of control group in pre-test was 17.48 and mean score of experimental group was 17.72. After administering the post-test the mean score for both control and experimental groups were 16.52 and 19.04 respectively which indicates the higher

performance of experimental group in post-test. An Independent Samples *t*-test was conducted to compare the means of control and experimental groups in pre-and post tests administration as it is shown in Table 2.

Table 2. Independent Samples *t*-test (Pre-and post-tests of both groups)

Groups	Tests	Mean	SD	T-test	df	Level of significance	Critical <i>t</i>
Control group	Pre-test	17.48	1.939	-.872	58	.388	2.01
	Post-test	16.52	1.557				
Experimental group	Pre-test	17.72	1.568	6.687	58	.000*	
	Post-test	19.04	1.059				

*Significant at ($p < 0.05$)

Table 2 indicates that there was a significant difference in the scores for the experimental group. Results indicate suggest that multisensory technique affected learners' reading comprehension at the pre-intermediate level. Specifically, our results suggest that when techniques like visual and kinetic modality, visual and kinetic modality, and kinetics with music are used their reading comprehension increases.

5. Discussion and conclusion

Findings showed that observed *t* was greater than *t*-critical in both stories, so the null hypothesis on the lack of multisensory techniques impact on learners' RC was rejected. There was a significant difference between both control and experimental groups in the post-test. Thus the experimental group outperformed the control one, through using visual and tactile modalities at the pre-intermediate level of private institutions in Iran. In the review of literature section, a number of studies support the results of the study.

Diana's (2002) studies support the present research findings that the learners could feel more comfortable to try new things, express ideas, and tackle harder tasks when they can do it within parameters that feel comfortable to them. Student imaginations sparked by the visual. Incorporating the visual arts into a classroom is also an effective way to tackle multiple standards within a short amount of time. The results are matched with Dickinson (1999) who notes on images of classroom practice in which the arts are taken seriously as modes of learning and methods of teaching cut across grade level and subject matter because visual art offered another dimension to facilitate teaching ESL, a variety of activities involving painting, literature, and writing are offered. Three literary elements that were dealt with are: point of view, figurative language, and characterization.

Within these areas, applications of the use of visual art to facilitate language learning aspects are suggested.

We may conclude that multisensory techniques help the students to understand more easily, to see more clearly, and to have better eye for details. The concept of working from something concrete, such as art, to something abstract such as language, helps students to make association within their own experiences. In the pre and post-test of the control group seeing the picture and touching story object were the highest sensory modalities. Hearing the story and touching a story object, seeing the picture, seeing the printed word, knowing the printed words and oral reading were important modalities. The results also showed that using a song as the text could combine benefits of singing and reading aloud with English language learners at the pre-intermediate levels.

Block's (2001) program of study agrees with the results through which it was demonstrated how phonetic and phonemic awareness combined in a movement and dance class where oral comprehension occurred in the context of the classroom. Commands followed by feedback, written assignments, and research projects from the Internet and other sources supported the students acquiring the language in a cooperative situation. Therefore, maintained temporal or rhythmic perception was equally important with the language and movement skills acquired. Language and movement skills incorporate the right amount of effort and intent with precise timing. Moreover, movement in physical education classes improved native English language acquisition at higher levels of learning the RC skills.

The research limitations included the sample size of sample which was limited to one private institution at the pre-intermediate. It was not clear that which technique is more effective on learners' reading comprehension development. Researchers recommend using more stories through various learners' activities would be more acceptable. Films and songs that were used in this study

focused on Interchange Book 3. Thus it is recommended other researchers replicate this study with different materials that contain more kinetics and movement.

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