The Impact of Developing Short-Term Memory on the Interpretation Performance of Students

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***Abstract*—This article is concentrated on the impacts of short-term memory development techniques on students' performance in interpretation courses. Subjects of the study are chosen among senior students of the Translation Department, Cihan University-Erbil. Based on the result of the current study to develop the interpretation skills of students and trainees, interpretation teaching programs should not only focus on theoretical and practical aspects of interpretation but also cognitive aspects such as memory development. In other words, the findings show that memory boosting techniques have a meaningful impact on the interpretation performance of students. Therefore, practical courses to develop students' memory must be added to the curricula to prepare students for accomplishing their tasks successfully.**

***Keywords*—Interpretation, Memory training models, Short-term memory.**

I. Introduction

Interpretation is known as one of those human activities that demand distinguished cognitive competence and require comprehension of auditory text in one language while producing the massage in another language. Kade (1968) stated that interpretation is a form of translation in which:

- The source-language (SL) text is presented only once and thus cannot be reviewed or replayed, and
- Target-language (TL) text is produced under time pressure, with little chance for correction and revision.

Accordingly, he believes that interpretation as a form of translation is the whole process of rendition in another language that is produced based on the on-time presentation of an utterance in SL.

Different types of interpretations are proposed based on the quality and situation of their happenings but major modes of interpretations are consecutive interpretation and simultaneous interpretation (SI). In Consecutive Interpretation, an idea or a message is delivered by the speaker in parts and then the interpreter interacts what has been said to the audience orally, therefore, the rendering of the speaker's speech is fulfilled with some time lags right after the speaker stops speaking. Time lags may vary from some seconds to a few minutes but most of the interpreters favor the long-lag- speech delivery since they can understand the message much better, at the same time, they believe that many ambiguities can be resolved through longer patches that presented by the speakers.

In SI, the speakers' delivering of speech and interpreters' rendering of the speakers' message occur at the same time, in other words, all processes of listening, comprehension, and reformulation of the speaker's message into TL are carried out at the same time by the interpreter.

As is emphasized by Mahmoodzadeh (1992) "good knowledge of both SL and TL, being familiar with the subject matter, the well-developed ability of listening and understanding of speech, high-level of concentration, strong memory, and being confident enough to speak publicly is the most influential criterion which affects interpreters' performance" (p. 231).

Due to its importance, among the above-mentioned factors, enjoying a powerful memory is the main concern of this study.

Atkinson and Shiffrin (1968) presented a model of human memory classification and suggests that human memory works in a three-phase procedure:

1. Sensory Memory is to store the world perception without any direct processing for a very short time like a few seconds, this phase is going to shape in the mind by taking an image of a visual stimulus like size, color, or the form of something without defining its sense.
2. Short-term memory (STM) is storing information for about 15–30 s in the mind and this duration of time is considered more than enough to be reused at the time of reproduction

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ideas. Through this phase, most information processing will happen and all details have their importance and very specific meaning.
3. Long-Term memory seems to have unlimited capacity to store information for a long time. (Pp. 89,90)

Many researchers have proved the importance of the STM's role in performing interpretation tasks. Smith (1985) believes that "when we receive input from a speaker, the message will transfer to our sensory register and remain there for two or three seconds without any clear meaning, then the data will move to the STM to further processing and in this phase, the message will be encoded either in the form of acoustic, visual or as semantic data and then it will be stored in STM for about less than twenty seconds" (p.82). The process of memorizing the message depends on whether or not the message is coded, retrieved, or practiced. If this process is completed through all these three phases, data will remain in the memory to further processing and usage to perform an interpretation project.

Gile (1995b) defines three types of efforts to describe the real practice of interpretation which are: "1. Listening and Analysis Efforts concerning all comprehension activities, 2. Production Effort: including all mental representation of the message to its reproduction in TL, and 3. STM Effort: all attempts that continuously happen in the time of interpreting are of this kind of effort" (p.179). These attempts take place between the moments of speech delivery and its analyzing and converting it into the idea and finally the time of producing speech in the TL. The later effort may be problematic due to the situation of performing and specific linguistic factors such as the speaker's accent.

As Gile (1995b) stated that the role of memory in performing all interpretation phases is crucial and an appropriate function of STM involves:

- Effective conversion of speech sounds into received information
- Well-organized storage of this received information.
- Retrieval of information successfully at the time of reproduction of the massage.

In contrast, an inappropriate function of STM can lead to very serious problems and can disturb the process of interpretation. The more obvious consequences of poor STM are related to:

- Forgetting qualifiers through speech
- Forgetting the subordinate clause
- Losing sentences in transmitting the message from SL to TL. (p.179)

Some technical methods and actions are at work to level or avoid these kinds of memory problems. Interpreters usually take note of newly received information, complicated technical words, names, numbers, and data during an interpretation job, however, more notes the interpreters take, less attention they can pay to the speech, consequently listening to and analyzing the message, which is crucial to a successful interpretation, would be conducting with deficiency.

II. STM Training

Interpreters need specific memory training programs to understand SL messages clearly. Crowder, R.G. (1982) believes that "memory in interpretation is nothing, except a well understanding of the meaning of SL message which conveyed by the words" (p. 292). To analyze the ST message and understand its meaning, some steps should be taken by interpreters, these steps help short memory works properly and effectively. According to "Gile's effort model these steps consist of well- recognizing sounds and processing them into known words and information, effective storage of these received data, retrieval of stored data at the right time, and decoding information into TL" (Gile, 1995, p.179). Some common exercises are proposed to improve all these abilities which help STM be involved in the process of interpreting properly.

Due to previous descriptions, there are three main possibilities of storing information in STM: 1. Visual Coding 2. Acoustic Coding and 3. Semantic Coding. In most of the interpretation contexts, acoustic and semantic coding is the main possibility on which interpreters are dependent to do their tasks well. Therefore, to improve STM and to design training models and methods of improving STM these possibilities should be taken into account. The following models are recommended to improve skills related to STM:

A. Retelling

In this method, instructors either read a text or play a recording of limited length and students will retell the text in the same language of SL text. In this model, students are not allowed to take notes and wholly depend on their memory to retrieve and retell the text. The length and extent of the text will increase throughout the course. Zhong, W (2003, p.49) proposed four types of techniques under the retelling as an approach to develop STM:

1. Description: in this model, students are encouraged to describe a scene, a picture, or an object in their own words.
2. Categorization: Grouping items of the same characteristics and features.
3. Generalization: reading or listening to a recorded text and concluding the text based on its understanding.
4. Comparison: highlighting and referring to the similarities and differences between things, events, and facts.

B. Note – Taking

Memory plays a significant role in the retrieval of information that is presented to the interpreters. Gile (1992) pointed out that Consecutive Interpretation has been performed in two different phases, firstly the interpreter needs to listen and take notes of what is presented by the speaker, and then reformulate the message using his memory and token notes for target language audiences. It is believed that memory retrieval consists of both recalling and recognition and is considered as a way to measure the function of memory in performing an interpretation task (Meifang, 2012, p. 120). It is clear that enjoying a

well-trained STM helps interpreters to do their tasks in a better way and taking notes can support memory to restore information and to relieve the working pressure at the time of interpreting, even if the speaker tends to offer information in a long speech and rapidly. Jones (2002) believed that "taking notes is a part of the process of interpretation and if one of the steps mentioned above has not been done correctly, no taking notes can help to make a good interpreter" (p.39).

C. Shadowing

According to Lambert (1992) shadowing "is a paced, auditory tracking task that includes an immediate word by word repetition of massage in the same language, parrot-style, presented through a headphone" (p. 267). Shadowing is used as a training technique for beginner interpreters who need to learn how to listen and speak in the same language simultaneously before trying to interpret from SL to TL (ibid). Shadowing exercise is recommended to train interpreters who are mainly involved in the SI to separate attention skills and STM developing methods in SI.

D. Mnemonic

Mnemonic is a device that plays the role of aiding in the process of memorizing and remembering information that is difficult to recall (McNamara and Scott 2001). As it is referred by Squire and Paller (2000) many mnemonics require memorizing something simple, in form of a formula or rhyme, that can be used as an effective clue to remember what one wants to memorize (p. 431). Mnemonic strategies can be used for general and specific purposes. Chincotta and Underwood (1998) believed that "general mnemonic is not useful, first, because always there is the possibility of proactive interference, and second, it is much easier to take notes the main points in interpreting than to memorize a list of details" (p. 127). Therefore, "using mnemonic strategies for a specific purpose is more effective due to the lack of proactive interference chances and accessibility of them" (Rosen and Engle, 1998, p.426).

According to Mizuno (2005, p. 741), three devices can be used to develop interpreters' mnemonic strategies. These devices are imagination, association, and location. Imagination is the power of imaging that interpreters use later in the process of interpretation, to recall stored information.

The association plays the role of a bridge that connects certain things to others to make the retrieval of the points easier (Ormord 1998). Mizuno (2005) suggested that "location provide the interpreters the ability to place information in a coherent context so that it hangs together, and the ability to separate mnemonics from each other" (p. 742).

III. The Study

The current study is firstly an attempt to find out the deficiencies of teaching curricula in interpretation courses offered by the Cihan University of Erbil-Kurdistan Region-Iraq to fulfill a B.A. degree program in Translation Studies, secondly to improve the author's methodology of teaching interpretation by presenting an academic model helping students of interpretation to acquire skills needed in an occupational situation. Method of study selected based on the availability of types of equipment and conditions which limits the borders of the current study. Rasouli and Ahmadi (2021) believed that "finding appropriate methods of eliciting, improving, and stimulating students' motivation are the most interesting area that researchers and instructors should take into account" (p. 85).

Due to the available tools and facilities, and to reach the main aims of the study, the researcher has selected retelling techniques as a model of the recent study. As mentioned previously, Zhong (2003: Vol 7, p. 45-57) proposed description, categorization, generalization, and comparison as four techniques of retelling to develop short term memory, these techniques have been practiced in a course in which participants of the current study took part for 1 month, 4 days weekly for 2 h a day.

A. Participants

Participants of the study were pursuing bachelor's degrees in translation studies at the Cihan University of Erbil-Kurdistan region of Iraq. We asked interested students to take part in a test to choose students with the same level of proficiency in interpretation. Finally, among thirty students who participated in the test, twenty female and male students with approximately the same level of proficiency were selected to take part in the current study. In the next stage, participate attend in a 1-month training course focused mainly on STM development practices. It Should be added that all the participants had passed a course in interpretation previously.

B. Procedure

The procedure of the study commenced with administrating a pre-test and the collected data were classified for further analysis. The Material of the test was a five-minute track sound taken from the VOA news website and played once to the student. Students were asked to interpret the news into the TL which was the Kurdish Language. The performance of students was assessed based on the criteria of the accuracy of meaning, appropriate expressions, and presentation which are proposed by Choi (2006). According to Choi (2006) "accuracy of meaning mainly concentrated on omission, addition, and translation mistakes that occur in the process of interpreting from SL into TL" (p.277). The grammatical structure and terminology of TT is "the main concern of appropriate expression, and the presentation is focusing on the style of presenting regarding the voice, articulation, speed, and rhythm" (ibid).

To collect data statistically the assessment categories have been scored through a five-point scale ranging from 1 to 5 (as illustrated in Table I).

It is assumed that the assessment categories are not equal in their weights, therefore to reach a better result the three categories are received different weights based on their value and the important role they play in conveying the message from SL into TL. The value and importance of each category have been determined based on the definition of Interpretation presented in the current study. It is assumed that transmitting the meaning of SL accurately is the most influential factor in which the message of the SL can be understood by the audience of TL. This assigning of the weights followed by expression and presentation based on their value in the process of interpretation; Therefore, accuracy is multiplied by a value factor of 3, expression by a factor of 2, and presentation by 1. The following Table II depicts the total score of students' performance in both pretest and posttest the criteria and their value which is used in the current study.

Table I
Scoring System of the Study

Scales	Nonsense	Poor	Acceptable	Good	Very Good
Scores	1	2	3	4	5

Table II
The Total Score of Students' Performance

Subject	Criterion	Rating	Value	Weighted score total	Score of each student
1	Accuracy	3	3	Rating * Value=9	20
	Expression	4	2	Rating * Value=8	
	Presentation	3	1	Rating * Value=3	

Table III
Tests of Normality

	Factor	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Grade	1	0.173	20	0.118	0.954	20	0.438
	2	0.142	20	0.200*	0.945	20	0.294

[a]Lilliefors Significance Correction, *This is a lower bound of true significance.

Table IV
Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pretest and posttest	20	0.677	0.001

IV. Results

The current study is an attempt to improve the methodology of teaching interpretation by introducing techniques of developing STM in the teaching programs, to do so, a pretest and post-test were administered to subjects of study to determine the effect of developing STM on students' performance. Collected data were analyzed by SPSS. Both Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted to be sure about the normal distribution of scores. The result of the tests is presented in the following table (Table III).

As illustrated by Table III, the results of both tests have confirmed that the scores of the study are distributed normally.

P-value > Error Type I = 0.05

Table IV shows that there is a positive correlation between acquired Pre-test and Post-test scores, consequently, the gained results of the Pair T-Test are valuable and can be expanded to the larger domain of subjects.

To explain performance variability, a Pair T-Test was conducted comparing total differences in scores across pre-test and post-test. According to the lower scores of significance than error type I (0.05), and probability of 0.95, it can be inferred that there is a significant average difference between pre-test and post-test performance such as on average post-test score is 3.7 higher than pretest. Table V depicts all the differences in students' performance in detail.

V. Discussion

Throughout this study, different memory development strategies have been presented and discussed. Among them retelling models selected to analyze the impact of STM developing strategies on students' interpretation skills and performance, according to the analyzed data in the previous section, the performance of students in the post-test has shown a mean difference of 3.7 higher scores, in contrast to their performance in the pre-test. Consequently, boosting STM through strategies applied in this research has a meaningful impact on students' performance, but this improvement in students' performance can be varied among students, due to different factors such as their ability in oral presentation of the massage from SL into TL publicly. In addition, in the current study only one of STM development strategies was used in a 1-month training course and other strategies may lead to different results.

Table V
Paired Samples Test

Mean		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest-Posttest	−3.700	3.164	0.707	−5.181	−2.219	−5.230	19	0.000

VI. Conclusion

The role of STM in storing and retrieving information is deniable in interpretation and interpreters' performance, but memory training has long been ignored by teachers and instructors in universities and institutes. Effective teaching of interpretation to the students and trainees should be conducted via three steps procedures: first, highlighting skills specific to interpreting, intensive practices, and, finally acquiring job experience in the real context of interpretation. Based on analyzed information of the current study, it is concluded that skills related to memory development should be improved and acquired by an effectively designed curriculum under the supervision of professional instructors and trainers. Finally, the current study is mainly concentrated on one of the proposed models (retelling) of STM development, applying the other elaborated models can reach more decisive results about the significance of memory training programs in interpretation courses.

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