

## The impact of schematic knowledge on listening comprehension among Iranian pre-intermediate EFL learners

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### *Abstract*

The main goal of this study was to investigate the impact of schematic knowledge on listening comprehension among Iranian pre-intermediate EFL learners. To fulfill, 60 Iranian pre-intermediate EFL learners were selected among 95 students at a private English Language Institute in Yazd, Iran. Then, the selected participants were divided into two equal groups; an experimental group and a control group. After that, both groups were pretested by a listening comprehension pre-test. Then, the experimental group received the treatment which was activating the learners' background knowledge before each listening session. The control group was in ordinary program and did not receive any treatment. At the end of the study, a listening comprehension posttest was administered to measure the effect of the treatment. The results of Paired samples T-test revealed that the experimental group outperformed the control group on the posttest. It was concluded that schematic knowledge has a considerable significance on enhancing listening comprehension skill of Iranian EFL Learners. Thus, the activation of schematic knowledge before the listening process can be an efficient method in teaching listening comprehension in language classes.

**Keywords:** background knowledge listening comprehension; pre-intermediate EFL learners; schema; schematic knowledge

## The impact of schematic knowledge on listening comprehension among Iranian pre-intermediate EFL learners

### 1. Introduction

One of the fundamental language skills is listening which should be progressed as in our daily lives, it is utilized most frequently. It is characterized as an exceedingly unpredictable critical thinking activity by Byrnes (1984). According to Purdy (1997), Listening is “the active and dynamic process of attending, perceiving, interpreting, remembering, and answering to the communication necessities, concerns, and information presented by other people” (Purdy, 1997, p. 11). Listening is additionally, as indicated by Rubin (1995), considered as “an active process in which a listener chooses and deciphers information which originates from auditory and visual intimations so as to characterize what is happening and what the speakers are attempting to express” (p. 151). Imhof (1998) sees listening as an “active process of choosing and coordinating pertinent information from sonic input and this process is constrained by personal goals which are crucial to listening” (p. 83). In the perception of this profoundly intricate problem-solving activity, it has been presumed that background knowledge assumes a vital role. Since listening is currently viewed as a as an active process, happening among the listeners existing background knowledge and the listening material, it becomes necessary to make the listeners ready preceding the listening exercises so as to facilitate the understanding. Instructors can actuate the students’ schemata and facilitate their listening procedure through pre-listening activities.

Multiple definitions of schema (plural of schemas or schemata) have been proposed by various researches. Rumelhart (1980) defines schemas as “building blocks of cognition” (p. 34) and “skeleton around which the situation is expounded” (p. 37). “A schema is a cognitive structure that consists of some defined stimulus domain. The schema encompasses general knowledge about that domain, containing a determination of the relationships among its properties, as well as particular instances of the stimulus amplitude” and “the schema gives presumption about inbound stimuli, which contain schedules for expounding and collecting schema-related information” (Taylor & Crocker, 1981, p. 91). Moreover, according to Alba and Hasher (1983), schema is “general knowledge a person has about a specific realm” (p. 129). Brewer and Nakamura (1984) believe that “schemas are the unconscious cognitive structures that underlie human knowledge and skill” (p.136). In another definition, Khosrojerdi (1993) defines schemas as “packets of information congested in memory demonstrating general knowledge about objects, situations, events, or actions” (p. 28).

#### 1.1 Research question and null hypothesis

This study attempted to address the following research questions:

**RQ:** Does activating schematic knowledge have any significant effect on Iranian pre-intermediate EFL listening comprehension?

Based on the mentioned research question, the following null hypothesis was formulated:

**H0:** Activating schematic knowledge does not have any significant effect on Iranian pre-intermediate EFL listening comprehension.

### 2. Review of the related literature

#### 2.1 Theoretical Background

**Defining Schema** - Before looking at the schema theory, it is important to define what a ‘schema’ is (plural:

schemata or schemas). It is clear in the literature that a British psychologist, Frederic Barlett (1932) coined the term 'schema' to refer to an active organization of past experiences in his well-known book, *Remembering*. A schema can be viewed as (hypothetical) mental patterns for representing generic concepts which are kept in memory. It can be defined as the organized background knowledge which can help us make predictions or expectations within our interpretation. Barlett (1932) stated that the prior knowledge and people's expectations form our remembrance and understanding, and these expectations, in our minds, are presented in some types of schematic organization. Similarly, Rumelhart (1980) defined the notion of schemata as units that all knowledge is packed in units, which he calls them 'the schemata'. He also pointed out that, embedded into these packs of knowledge, additionally knowledge itself, information about in what way this knowledge is to be utilized lays in these units.

Adams and Collins (1979) defined schemata as the previously acquired knowledge structures. Taylor and Crocker (1981, p. 91) considered the notion as "a cognitive structure that consists in part of the representation of some defined stimulus domain. The schema contains general knowledge about that domain, including a specification of the relationships among its attributes as well as specific examples or instances of the stimulus domain." Alba and Hasher (1983, p. 129) reported that schema is "general knowledge a person processes about a particular domain." Yekovich and Walker (1988) called schemata as scripted knowledge. Pritchard (1990) defined schemata as our theories of the way things are, or as representations of one's background experiences and it is clear that the culture one lives in impacts schemata. Zhu's (1999) simple definition suggests that schema is background knowledge and background information. Juan and Flor (2006, p. 93) pointed out that "schemata, the relevant packages of prior knowledge and experience that we have in memory, can call on in the process of comprehension."

**Schema Theory** - The search for understanding the relation between comprehension and background knowledge have led to the model termed '*schema theory*'. According to this theory, meaning is shaped when it interacts with the previously acquired knowledge in which a text can only act as directions for reader/listeners. Huang (2009, p. 139) states that 'according to schemata theory, any text, spoken or written, does not carry meaning itself. Comprehending words, sentences, and entire texts require the capacity to link the material to one's own knowledge'. Schema theory puts forward that understanding a text (spoken or written) occurs as a result of an interactive process that goes through between the listeners' background knowledge and the text. This process was highlighted by Goodman (1975, p. 135) as "reading is a psycholinguistic process by which the reader, a language user, reconstructs as best as he/she can a message which has been encoded by a writer as a graphic display".

Anderson (1977) stated that one's knowledge of the world is what determines every act of comprehension. Smith (1994, p. 8) expressed that "everything we know and believe is organized in a theory of what the world is like, a theory that is basis of all our perceptions and understanding of the world, the root of all learning, the source of hopes and fears, motive and expectations, reasoning and creativity. And this theory is all we have. If we make sense of the world at all, it is by interpreting our interactions with the world in the light of our theory. The theory is our shield against bewilderment". Basically, there are three types of schema that play a role in the process of understanding, which are *linguistic schema*, *formal schema*, and *content schema* (Namaziandost, Rahimi Esfahani, & Hashemifardnia, 2018; Yang, 2010). Linguistic schema refers to linguistic knowledge of a learner. It is the learner's current language proficiency in grammar, vocabulary, phoneme, idioms, phrase, paragraph, cohesive structure, sentence structure, etc. Shortage in linguistic schema will lead a learner to have hard times in decoding and understanding a text, written or spoken.

A learner activates his/her linguistic schema to decode syntax, phoneme, the meaning, and pronunciation. It is obvious that the more one has stored linguistic schema in his/her mind, a quicker and better understanding s/he receives. Formal schema refers to the knowledge of organizational and rhetorical structures of a discourse. It involves knowledge of divergences in genre, divergences in the pattern of fables, simple stories, poetry, newspaper articles, simple or scientific text, and so on. The findings of studies exhibit that being aware of what

kind of genre of text is going to be read (or listened to) may ease understanding. Content schema can be defined as the background knowledge of the content area of a text, such as the subject(s) a text speaks about.

**Defining Listening** - There have been a number of attempts to define the listening skill in the literature. For instance, Lundsteen (1979, p. 1) suggested that listening is the skill “by which spoken language is converted to meaning in the mind”. Anderson and Lynch (2000, p. 6) said that successful listening is “understanding is not something that happens because of what a speaker says: the listener has a crucial part in the process, by activating various types of knowledge, and by applying what he knows to what he hears and trying to understand what the speaker means”. Underwood (1989, p. 1) put forward a simple definition that listening is “the activity of paying attention to and trying to get meaning from something we hear”. Mendelsohn (1994) stated that listening comprehension is to have the ability of understanding the spoken language produced by its native speakers. In addition, another definition that Rubin (1995) argued that listening is an active process in which information is selected and interpreted by a listener via auditory and visual clues so that what the speakers are trying to express is defined. Purdy (1997) asserted that listening is the active and dynamic process of attending, perceiving, interpreting, remembering, and responding to expressed needs, concerns, and information offered by other human beings.

Buck (2001) pointed out that listening is made up of both linguistic knowledge and non-linguistic knowledge. Linguistic knowledge, according to Buck (2001) is made up of semantics, discourse structure, phonology, lexis, sociolinguistics, and pragmatics. Nevertheless, the latter involves the context, and knowledge of the world. Moreover, Rost (2002, p. 3) claimed that listening is “equal to experiencing contextual effects that is, listening as a neurological event (experiencing) overlays a cognitive event that is, creating a change in a representation”. Namaziandost, Hafezian, and Shafiee (2018) also stressed that listening goes through a process in which the listener gets what, in fact, the speaker says, representing and structuring meaning, establishing a negotiation in meaning (with the speaker), giving responses, building up meaning with the help of involvement, empathy and imagination.

## 2.2 *Experimental Background*

There have been a number of studies conducted to investigate the effect of schema on listening comprehension. For instance, Shin (1992) proved that when listeners construct enough schemata of the lecture content, they will manage to understand the lecture effectively. Another study was done by Safamanzar (1994) among 90 male college students at Air University. For the sake of the study, he utilized two sets of listening passages and he divided the subjects into two groups, the control and the experimental. The experimental group was provided with passages that were accompanied by a content determining topic and a summary (of the text) which were used as pre-listening activities. On the other hand, the control group was not provided any special pre-listening activities. The study demonstrated that activating schemata had a facilitating effect on learners' listening comprehension since the experimental group could remember information better than the control group.

Shemshadi (1995) investigated the significance of schema-theory on learners' listening comprehension. To reach his goal, the experimental group received suitable schema; yet, the control group received irrelevant information. The findings showed that schemata-building affected learners' listening comprehension positively. Babaie (1996) examined the effects of stereo typical schema utilizing nonconventional and a typical input on listening comprehension among EFL learners who were at different levels of language proficiency. The results supported the positive role of schema in EFL listening comprehension.

Markham and Latham (1987) conducted an investigation to indicate the impact of religious background in listening comprehension. Their study demonstrated that religious background affects listening comprehension. The findings revealed that the participants were more successful in recalling the passage that was related to their own religion. Regarding the impact of background knowledge during the listening process, Bacon (1992) revealed those listeners who were successful in listening tended to use their personal, their world and their

discourse knowledge; however, less successful listeners either structured imperfect meaning from their prior meaning or neglected it altogether. Sadighi (2006) revealed that the facilitating role of background knowledge were consistent with the results of the majority of L2 listening investigations as he revealed that stimulating students' background knowledge resulted in better comprehension.

In another study, Khosrojerdi (2010) investigated the role of background knowledge and IQ and recall of the texts in advanced learners in Iran. She found that there is no relationship between IQ and recall of the texts in advanced learners in Iran. The researcher believes that one probable explanation for this, rather strange, result may be due to the advanced level of the subjects. In other words, advanced learners are capable of using other skills such as reading comprehension strategies for better a better comprehension of the texts and therefore better recalling. When confronting the unfamiliar texts, advanced learners attempt to use skills other than their background knowledge to comprehend and recall the texts. She also found that the subjects' intelligence has no role or effect on the comprehension and recall of the texts. This finding is not in line with the previous ones.

Ostad and Tarang (2014) examined the impact of schematic knowledge on reading comprehension ability of Iranian EFL learners. The data was elicited from sixty-eight intermediate level students who were studying English as a foreign language in a private language institute in Rasht, a city in the north of Iran. After an English Proficiency test, they were divided in two groups, an experimental group and a control one. A pre-test was administered to both groups. Consequently, the experimental group received the treatment. Finally, a post-test was administered to both groups in order to find out the differences between two groups. The experimental group outperformed the control group. It was concluded that schematic knowledge has a noticeable significance on improving the reading comprehension skill of Iranian EFL Learners. Therefore, the activation of schematic knowledge prior to the reading process can be a useful method in teaching reading comprehension in language classes.

Roozbeh, Rostami Abousaidi, and Karbalaei (2016) investigated the effect of schema-theory based on background knowledge and graphic organizers on the listening comprehension of EFL learners. Sixty-five male intermediate learners were selected non-randomly and then divided into two groups. For the first experimental group GO (Graphic Organizer) tasks were used for all the 5 sessions of treatment. As for the second experimental group before listening to the text, the researchers assisted the participants in activating their background knowledge regarding the topic of the listening material. The results of statistical analysis indicated that both schema related activities and graphic organizers led to improvement of the listening comprehension performance of the participants. Moreover, the results of the independent samples t-test on the posttest scores of the two groups indicated that the participants who received graphic organizers as treatment outperformed the participants in the group which received schema related activities on the listening comprehension posttest.

Bao (2016) aimed to investigate the listening teaching mode for English majors under the direction of scheme theory. Research results show that listening teaching which focuses on background knowledge can effectively enhance students' listening comprehension ability. Scheme-based listening teaching has a significant influence on the performance of different levels of English majors.

### **3. Method**

#### *3.1 Participants*

For the present study, among 95 students learning English at a private language institute in Yazd, Iran, 60 students at pre-intermediate level were selected. All participants were between 13 to 16 years old, and they were all Persian natives. All of them were male. Their level of proficiency was determined by the Oxford Placement Test (OPT) which was administered to the whole subjects. Then, based on the normal probability curve, those subjects who were placed between one standard deviation above the mean and one standard deviation below the mean were selected as the main participants. The samples were placed in two equal groups, the control group

and the experimental one.

### 3.2 Instruments

The researcher applied Oxford Placement Test (OPT) as the first instrument of the present study; this test ensured the subjects' level of proficiency and their homogeneity. The second instrument was the pretest of listening, which was administered to assess the initial knowledge of learner's listening ability. This test was made based on the participants' course book. It included 40 objective items including filling the blanks, true or false items, and multiple-choice items. The third instrument was the posttest of listening, which was used to assess the possible differences between the pre and posttest, based on specific treatment program. The post-test was the modified version of the pre-test; the content of the post test was highly similar to that of the pretest, with the same scoring method. The validity of the pre and post-test was proven by five English experts. They were piloted among 20 pre-intermediate EFL learners and their reliabilities indexes were calculated through Cronbach Alpha formula and it was .801 for pretest and .897 for posttest.

### 3.3 Data Collection Procedure

Firstly, the mentioned proficiency test was administered among 95 students in a private language institute; then 60 pre-intermediate students were selected for the target population of the study. The next step was dividing the selected participants into two groups, one group as the experimental group and the other as the control group. Both groups received a pre-test during a fifty-minute session. After that, the treatment was carried out only on the experimental group. The treatment lasted 14 sessions; the allocated time for each session was 55 minutes (two sessions in a week). Before each listening session, the researcher tried to activate the learners' background knowledge in the experimental group. The instructor made them aware of the text structures. Before going to the main text, they were handed a short paragraph to read which was related to the main text in order for their background knowledge to be activated. The participants were also instructed to come up with some questions from the short paragraph they read earlier enabling them to find the answers after the main text was read. The control group did not receive any specific treatment. Finally, the participants in both groups took the posttest and the results were analyzed accordingly.

### 3.4 Data Analysis Procedure

After collecting the sufficient data, the researcher used the mean and standard deviation to point out the differences between the performances of the two groups during the pretest. In order to analyze the data quantitatively, after the post test, the Independent and Paired samples t-tests were run to determine the differences between the two groups. Finally, SPSS (Statistical Package for Social Sciences), version 25 was used to analyze the data in the present and post-test of the study.

## 4. Results

In order to analyze the gathered data, the SPSS (Statistical Package for Social Science) software was used.

**Table 1**

*One-sample Kolmogorov-Smirnov test (Groups' Pre and Post-tests)*

	Statistic	df	Sig.
Exp. Pre	.171	30	.086
Exp. Post	.151	30	.079
Cont. Pre	.136	30	.165
Cont. Post	.190	30	.097

Based on Table 1, Since the *Sig.* (2-tailed) is higher than 0.05, therefore, we can conclude that the statistics of scores is normal. In this case, the parametric statistics like independent samples t-test and paired samples t-test can

be used to get the final results.

As the main aim of the study was to find out whether activating schematic knowledge could help learners improve their listening comprehension or not, the pretest and posttest scores of the learners in the experimental group were compared using a paired-samples *t* test:

**Table 2**

*Descriptive statistics (pretest of both groups)*

Groups		<i>n</i>	<i>Mean</i>	<i>SD</i>	<i>SE Mean</i>
Pretest	Experimental Group	30	11.56	.98	.17
	Control Group	30	12.03	1.31	.23

Table 2 indicates the descriptive statistics of both experimental and control groups in the pre-test. As the result shows both groups performed almost equally in the pre-test. Moreover, an independent samples *t*-test was run to indicate the scores of both groups on the pre-test. Outcomes demonstrates that there was no significant difference in the scores for experimental group ( $M=11.56$ ,  $SD=.98$ ) and control group ( $M=12.03$ ,  $SD=1.31$ ) conditions with  $t(58) = 1.56$ ,  $p=.124$ . Since the Sig (.124) is higher than .05, the difference between the groups is not significant at ( $p<.05$ ). In fact, they performed the same on the pre-test.

**Table 3**

*Descriptive statistics (posttest of both groups)*

Groups		<i>n</i>	<i>Mean</i>	<i>SD</i>	<i>SE Mean</i>
Posttest	Experimental Group	30	15.53	.97	.17
	Control Group	30	12.46	1.43	.26

Table 3 reports the control and experimental groups' scores in the post-test; as it is shown clearly above, the mean of experimental group in the post-test is 15.53 and the mean of control group is 12.46. This means that the experimental group performed better than the control group on the post-test. Results indicates that there was a significant difference in the scores for experimental group ( $M=15.53$ ,  $SD=.97$ ) and control group ( $M=12.46$ ,  $SD=1.43$ ) conditions with  $t(58) = 9.674$ ,  $p=.000$ . Hence, the difference between both groups is significant at ( $p<.000$ ). In fact, the experimental group outperformed the control group on the post-test. It can be concluded that the activation schematic knowledge had positive effects on the experimental participants' listening comprehension.

**Table 4**

*Paired samples statistics (Pre and Post-tests of Both Groups)*

		<i>Mean</i>	<i>n</i>	<i>SD</i>	<i>SE Mean</i>
Pair 1	Exp. Post	15.53	30	.97	.17
	Exp. Pre	11.56	30	.98	.17
Pair 2	Cont. Post	12.46	30	1.43	.26
	Cont. Pre	12.03	30	1.31	.23

In table 4 the performances of experimental and control groups are compared in the pre and post-test. Both groups were at the same level of speaking in the pre-test but regarding their performances in the post-test the experimental group did very better.

**Table 5**

*Paired samples T-test (Pre and Post-tests of Both Groups)*

		<i>Mean</i>	<i>SD</i>	<i>SE Mean</i>	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>
Pair 1	Exp. Post – Exp. Pre	3.96	1.29	.23	16.72	29	.000
Pair 2	Cont. Post – Cont. Pre	.43	1.39	.25	1.70	29	.099

Since Sig (.000) is less than .05, the difference between the pre and the post-test of the experimental group is significant at ( $p < .05$ ). The second t-test shows that Sig (.000) is greater than .05, therefore the difference between the pre and the post-test of the control group is not significant ( $p < .05$ ). This means that activating schematic knowledge was significantly more effective than using traditional instruction for the purpose of improving the listening comprehension of the EFL learners.

## 5. Discussion and conclusion

Based on the results of the present study, the experimental group improved from pretest to the post-test. Therefore, it can be concluded that schematic knowledge helped experimental group to develop their listening comprehension. Based on these results, it can be suggested that listening comprehension can be used in pre-intermediate level English course to increase students' achievement in listening comprehension and let them to learn more.

It has been claimed that activation of schemata in the listener's background knowledge to predict and assess or in other words checking compatibility of the new information with previous one is the essential part of comprehension process (Rost, 2002). Schemata facilitate the listening process since listeners are involved in a series of action towards making meaning from the text they listen to, based on their intentions, expectations, inferences, and back ground knowledge. When listeners can successfully match their prior knowledge and experiences with the listening text, listening comprehension takes place.

Regarding Anderson and Lynch's (2000) view of 'Listener as Active Model- Builder,' effective and successful comprehension in listening happen when the listener has schematic knowledge, knowledge of the context and systemic knowledge. The treatment lessons had successfully given the learners with these three types of knowledge. In the treatment lessons, the learners had the chance to learn fundamental vocabulary items that were introduced in the same context as they would hear in the lecture. Other activities that permitted them to relate content to their own experiences like identifying efficient advertisements and the components that make them absorbing additionally gave them an insight into the field of advertising. Making a commercial for their own item allowed the subjects to incorporate their recently gained knowledge on this topic. This recognition of theme empowered the subjects to effectively distinguish the certainties and subtleties of the advertising strategies, as well as details that help these primary thoughts. This capacity facilitated their comprehension of the content which clarifies why they performed fundamentally better in the post-test. This is consistent with past researches (e.g Schmidt – Rinehart, 1994) showing that familiarity with the topic facilitates listening comprehension.

Shin (1992) claims that when listeners develop enough schemata of the lecture content, they will figure out how to comprehend the lecture successfully. Also, Application research (Zhou, 2002) of schema theory-based listening instructing shows that if listeners are short of foundation information or apply it improperly, their listening understanding will be influenced harshly. It is only that learners of controlled groups haven't significant schemata that blocked their listening perception, yet learners of experimental group got many background schemata in their minds, which profited them construct new schemata and influenced them to comprehend the listening materials accurately and completely.

This study verified the usefulness of instructing mode based on schema theory. Schema-based listening educating can improve understudies' excitement and activity in learning; completely apply the controlling role of the instructor in classroom and upgrade the educating productivity and professionalism. This encouraging mode has a few implications to English listening educating, that is, educators should try to do the accompanying: 1) Attach significance to background information. Educators ought to completely acknowledge background learning is as significant as phonetic information. Instructors should change their old awareness, giving an excess of consideration to linguistic information however show less enthusiasm for background learning. 2) Activate learners' current schemata. In the listening procedure, instructor should find each conceivable method to enact learners' current schemata information, along these lines improve learners' listening level.



Despite the fact that this study verified the connection between schema construction exercises and students' listening, a future research can additionally explore whether schema construction exercises upgrades other language aptitudes, particularly productive skills such as speaking and writing. Besides, schema construction exercises are likewise inherently persuading; in this manner, the interconnection between educating with schema construction exercises and students' inspiration can be another examination way.

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