The Application of Schema Theory in College English Listening Teaching

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Abstract—Listening was once believed to be a passive one-way comprehensive process. However, with the development of language teaching, listening comprehension is found to be an interactive process of two-way communication, during which listeners' background knowledge play an important role. Schema theory lays the theoretical foundation for this explanation. Based on this, the author designs a Schema Theory-based Teaching Mode of English Listening, which is a framework of pre-listening, during-listening and post-listening activities for classroom listening teaching. This mode aims to improve reasonably and effectively college English listening teaching and the students' listening competence.

Index Terms—listening, schema theory, application

I. INTRODUCTION

Listening is the most frequently used language skill in everyday life. The effect of the teaching of English listening directly influences the students' language reception and practical communicative competence. However, listening course is not regarded as important as other courses in some colleges in China, and the teaching quality is unsatisfactory. In language teaching, listening comprehension used to be regarded as a passive skill and listeners were even called as tape-recorders. Such a view on listening fails to account for the interpretations listeners make as they hear the spoken text according to their own purpose, their expectations and their own store of background knowledge. In college English listening class in China, many teachers just play the tape without presenting necessary hints or background knowledge to students and they usually plunge the students into listening directly without any preparation, which makes listening comprehension difficult. Students are passive receivers in the process of listening. Teachers emphasize decoding, but neglect the role of cognitive faculties of students toward comprehension. Students seldom have chances to devote their intelligence to listening process.

But now, listening comprehension is treated as an active process. Listeners are thought as active searchers for meaning. When listening, they will use all relevant background knowledge to understand the incoming input. Rumelhart (1980) thinks the role of background knowledge in language comprehension has been formalized as schema theory. According to schema theory, comprehending a text is an interactive process between the learner's background knowledge and the text. And it is suggested that one of the goals of the teaching of college English listening is to help students activate their background knowledge and use the knowledge to understand the new text. Lacking background knowledge can result in all kinds of difficulties. So teachers should help students to improve both their linguistic and non-linguistic knowledge.

On considering the unsatisfactory teaching quality of listening, it is necessary and possible to apply schema theory to the teaching of English listening. The schema theory is of significance to the teaching of English listening, which can provide methodological and instructive guidance to the teaching of listening and can make the listening course interesting and motivating, so as to reach the aims of enhancing students' listening comprehension ability and improving students' communicative competence.

II. LITERARY REVIEW

Before reviewing the schema theory it is necessary to make clear what schemata is. Recent literature has it that it is the British psychologist Frederick Bartlett that first used the term of schema to refer to an active organization of past reactions or past experience in his classic work Remembering (1932).

There are basically three areas of schema that played a part in the act of listening comprehension, which are linguistic schemata, formal schemata, and content schemata. (1) Linguistic schema refers to linguistic knowledge, which is the knowledge of phoneme, vocabulary, phrase, paragraph, sentence structure, grammar, and cohesive structure, etc, which play a basic role in a comprehensive understanding of the text. Linguistic stage is the first step in the whole listening process, during which the listener mainly focuses on the meaning of words, phoneme, pronunciation and syntax.(2) Formal schemata refers to the knowledge of organizational forms and rhetorical structures of a discourse. It includes knowledge of differences in genre, differences in the structure of fables, simple stories, scientific text, newspaper articles, poetry, and so forth. Formal schemata is described as abstract, encoded, internalized, coherent patterns of
In their attempts to understand a meaningful piece of language, listeners use their background knowledge, and various strategies. Listening is not a simple one-way communication during which the listener's background knowledge plays an important role. Listeners do not listen word for word, but rather use their background knowledge, and various strategies such as predicting and confirming to construct meaning from the text. In other words, listening is a meaning-making process involving an interaction between the listener and the text. In summary, the nature of the listening process is an active interactive process to serve certain communication, in which the listener's previous knowledge takes effort with the heard content interactively.

III. APPLICATION OF SCHEMA THEORY IN LISTENING TEACHING

The pedagogical sequence of pre-listening, during-listening and post-listening activities is not new. However, few studies have ever centered upon how Schema Theory can be applied through the whole procedure. In light of this, the author designs a Schema Theory-based Teaching Mode of English Listening, which is a framework of pre-listening, during-listening and post-listening activities for classroom listening teaching. This mode aims to improve reasonably and effectively college English listening teaching.

A. Pre-listening Activities

Pre-listening stage is a necessary phase, which turns the students' passive state of mind into an active one and prepares students for the while-listening with a purpose, a high motivation, anticipation as well as some necessary listening skills.

1. Establishing a purpose for listening

There is an association between expectation, purpose, and comprehension; therefore, a purpose should be given to the learners. Listening purposes vary according to whether learners are involved in listening as a component of social interaction, listening for information, academic listening, listening for pleasure, or for some other reasons. By the same token, listening tasks may vary according to whether they require global comprehension or partial comprehension. The definition of a purpose enables the listener to listen selectively for significant information, easier as well as more natural than trying to understand everything.

2. Activating existing knowledge

Teachers should give students the questions before they listen to the target text. By reading the questions, students may build up their own expectations about the coming information, and also by trying to find answers to these questions, their prior knowledge on the topic can be activated. If we ask the students to read the questions carefully, they will know what the main idea of the passage is, and the speaker will mainly talk about the benefits of social recognition of the affair. It can make the understanding of the listening materials become easier.

3. Brainstorming

Brainstorming is “a technique whose purpose is to initiate some sort of thinking process, which involves students in a rapid-fire, free-association listing of concepts or ideas or facts or feelings relevant to some topic or context.” (Brown, 2001, p.181)

Brainstorming serves as a “warming-up” to the theme, as well as the framework for the introduction of some new information. The teacher introduces the general topic and students are asked to brainstorm possible events, characters, feelings, any information they know about the topic. By brainstorming, good learners can make intelligent guesses, use contextual clues and trigger a variety of potentially relevant schemata to help their comprehension.

4. Providing necessary cultural background information

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At the pre-listening stage, the teacher should provide students with much more cultural background knowledge concerned with the listening material. Listeners who are not familiar with the culture may have considerable difficulty in interpreting the words that they hear even if they can understand their surface meaning. Take the following dialogue as an example,

A: Have you got any seats in the stalls, please?
B: Yes, we have.
A: How much are they, please?
B: 3.75 each.
A: Are there any seats at 2.50?
B: Yes, there are some in the balcony, for how many?
A: ...

This dialogue is very simple without new words, but some students still cannot understand it. That is because they know nothing about British theatre. If they know “stalls” refer to the seats in the part of a theatre nearest to the stage and “balcony” refers to the seats at both sides of a theatre, then they will understand why the tickets for the stalls are more expensive than the tickets for the balcony. Therefore, lack of cultural knowledge will be an obstacle to listening comprehension.

5. Multi-media

Projector, computer, scanner, and video presenter will achieve satisfactory results in listening comprehension. Pictures are also very important for listeners to construct complete and permanent schema. It will help them better remember and comprehend and recall the information in the listening materials. For example, while talking about traveling in New York, teachers could show some pictures of the famous places in New York, together with key words below them. Features and history about these places can be explained by teachers. Some English programs about traveling could also be projected here. Thus, students can retrieve or construct relevant schema.

After some actively prepared work at pre-listening stage, students are willing to receive the incoming information.

B. While-listening Activities

Teacher intervention during this phase is virtually impossible, because of the ephemeral nature of listening. In listening, especially, transactional listening, the hearer may not always have the opportunity to stop the speaker. Instead, the stream of speech will continue to flow. Bradley (1988) finds that people listen and think at approximately four times the normal speaking rate. Simply speaking, one can think faster than the speaker can talk. Therefore, students are encouraged to use the “rate gap” to actively process the message. In order to use that extra time wisely, there are several things students can be trained to do: put down key words, or wonder what motives the speaker has in saying it, or predict information expected to be included in the message, or decide whether the ongoing interpretation is consistent with their predictions, or summarize frequently in their minds what has been said, or identify the main points and the speaker’s organization pattern. In all of these above-mentioned activities, schemata can be recalled to help enormously.

In conclusion, an effective listener should constantly check their understanding of message by making predictions, confirming predictions, making inferences, evaluating and reflecting. Besides, according to listening purpose, they should know whether and where close or cursory listening is required. And sometimes, if students listen to a comparatively long passage and are allowed to take notes, they are expected to be flexible note-takers instead of rigid ones who try to get every word down.

C. Post-listening Activities

Well-planned post-listening activities are just as important as those before and during. In this stage, students should be encouraged to act upon what they have heard to clarify meaning and extend their thinking. Students can summarize the listening material orally, in writing, or as an outline. Having students retell or summarize the report is proved a useful way of checking comprehension. In addition to the traditional outline format, students could use time lines, flow charts, ladders, circles, diagrams, webs, or maps. Firstly, these activities strengthen students’ understanding about information having been heard and help them store new information prepared for listening comprehension next time. If students are asked to take notes during listening, then in this stage, students can also review their notes and add information that they do not have an opportunity to take down during the speech. In all, in post-listening stage, prior knowledge that has been activated is consolidated and new information that has just been learned get reviewed. Besides, post-listening activities would help the learners to transfer the listening skill to the world beyond the listening classroom, for example, integrate listening with the other language skills, such as acting out a dialogue, reading a related text, or writing a response journal. Students can also be urged to use whatever information they gather from the listening material to have an extended discussion in this stage. Some controversial reports can lead to a debate or role-play. This again proves that listening comprehension plays a key role in facilitating language learning.

IV. AN EXPERIMENT ON APPLICATION OF SCHEMA THEORY INTO LISTENING TEACHING

A. Purpose

The main purpose of this investigation is to find out whether applying schema theory in the teaching practice of
English listening, especially in pre-listening activities, is more effective than traditional teaching approach in improving the students’ listening comprehension ability.

B. Subjects

The subjects of this investigation are 54 first-year English majors in Dezhou University. They will study English in the college for three years. The textbook is Step by Step of Huadong Normal University. Because they are freshmen of the same grade, just graduating from high middle school, the situation in these two classes is similar to each other. None of them has learned anything about schema theory. The author chose Class One as the experimental class (EC) and Class Two as the control class (CC).

C. Instruments

Two tests (pre-test and post-test) and a three-month teaching experiment are used to verify the purpose of the research. Each test paper is designed purposefully in order to test whether the students’ listening comprehension ability has been improved after the students have been taught with the new teaching approach based on schema theory for three months.

Each of the listening comprehension tests consists of three sections. The total score of each test is 100. Section A consists of 10 short conversations. After listening to each conversation, the listeners are asked to choose the correct answers. In Section B, there is a short passage. The listeners are asked to listen to the short passage and fill in each blank with the exact word they had heard, paying attention to its spelling. The main purpose for choosing these two kinds of exercise is to check the students’ linguistic ability of vocabulary and grammar. In Section C, the students listen to another short passage and then try to answer the questions. In this part, the testing purpose focuses on checking the students’ advanced and comprehensive listening ability.

D. Procedure

In order to make the result more reliable and get a better understanding of students’ listening comprehension level, a pre-test was conducted at the beginning of the experiment. After that, their performance was scored and the scores are analyzed with the SPSS (Statistical Package for the Social Sciences).

A three-month experiment was carried out in the experimental class and the control class. In the control class, the author taught mainly in the traditional way, focusing on the acquisition of linguistic knowledge and explanation of linguistic phenomenon. In the experimental class, a schema-oriented teaching was conducted which emphasis on activating the students’ schemata concerning the listening text and aim at developing their abilities of inference, analysis and prediction.

After that, a final test was conducted to all students. Then, the papers are also scored and analyzed with SPSS.

The mean scores, standard derivations, and t-values are compared to see whether the effect is significant or not.

E. Treatment

In the control class, the author taught mainly in the traditional way, focusing on the acquisition of linguistic knowledge and explanation of linguistic phenomenon. The traditional approach was carried out in this way:

1) pre-teaching of new words and expressions;
2) intensive listening; detailed questions for the students to answer; detailed explanation of the text step by step, analyzing the sentence structures and translating some difficult sentences into Chinese, even the repetition of the original sentence once the students come across difficulties in sound recognition;
3) extensive listening; questions about general context to check whether the students have understood the text or not;
4) examination of vocabularies or exponents of grammar to check the students’ performance.

As to the experimental class, a schema-oriented teaching was conducted. Schema activation was emphasized by employing the classroom activities which were prepared in light of schema theory. At the beginning of the listening class, pre-listening activities were emphasized.

Lesson 28 “Transportation” in step by step book 2 is chosen as an example to show the application of schema theory into listening teaching in the experimental class.

The sample lesson is conducted in the following steps:

Step 1: Before listening, arouse students’ interest by giving warm-up questions: How do you prefer to travel when you are on vacation? Why?

Step 2: Help students with prediction as a top-down processing skill by giving the direction that Jason traveling around in London and by writing down the key word “transportation” on the blackboard. To activate existent schemata, divide students into groups then to brainstorm what are some ways he can travel by human power. Elicit answers from a few students.

Step 3: After the first extensive listening with audio only, check prediction results. To build up a general schema, then define “transportation” orally and specifically according to Jason’s own description.

Step 4: Play the audio again for another extensive listening. Then inject the pictures of different means of transportation: boat, bicycle, tube, plane, bus, train taxi to build up a specific schema.

Step 5: Have students review questions in listening exercise to locate important points which should be paid more
attention to. Play the audio again for intensive listening. Ask students finish the exercise.

Step 6: Introduce new words, phrases and language points to modify students’ misunderstandings of linguistic schemata and remind them bottom-up processing skills. Play the audio as a final check. Give students correct answers.

Step 7: Offer feedback of errors and allow students to watch a relative video to consolidate the new schematic knowledge in the follow-up activities.

F. Data Analysis

The author used SPSS 11.5 to analyze the data collected in the two listening comprehension tests. Table 4.1 is the results of the pretest.

<table>
<thead>
<tr>
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<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC</td>
<td>27</td>
<td>77.889</td>
<td>6.66978</td>
<td>1.885</td>
</tr>
<tr>
<td>CC</td>
<td>27</td>
<td>75.5185</td>
<td>6.47106</td>
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</table>

As the table shows, both of the two groups have 27 subjects, and mean scores are similar, 77.889 and 75.5185 respectively, and the standard deviation is 6.66978 and 6.47106. The t-value (1.885), -2<\textless} 2, indicates that the two groups are similar at the starting point.

Table 4.2 is a comparison of the Control Class students’ performance in the pre-test and the post-test.

<table>
<thead>
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<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>T-value</th>
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<tbody>
<tr>
<td>Pre-test</td>
<td>27</td>
<td>75.5185</td>
<td>6.47106</td>
<td></td>
</tr>
<tr>
<td>Post-test</td>
<td>27</td>
<td>77.5556</td>
<td>5.79345</td>
<td>-2.081</td>
</tr>
</tbody>
</table>

The mean scores of the Control Class students in the pre-test and the final-test are 75.518 and 77.5556 respectively. And the t-value (-2.081), t<\textless} 2, which shows the difference between the two sets of data is significant. Therefore, the Control Class students taught in the traditional teaching method also make significant progress in the past three months.

Table 4.3 is the results of the Experimental Class students’ performance in the pre-test and the post-test.

<table>
<thead>
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<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>T-value</th>
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</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>27</td>
<td>77.8889</td>
<td>6.66978</td>
<td>-2.094</td>
</tr>
<tr>
<td>Post-test</td>
<td>27</td>
<td>81.8519</td>
<td>5.59329</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows the contrast of the performance of Experimental Class students between the pre-test and the post-test. The mean score of the Experimental Class students in the post-test is 81.8519, which is 4 points higher than that of the pre-test, 77.8889. And by means of paired t-test, the t-value (-2.094), t<\textless} 2, demonstrates that the difference between the two tests is clear and significant, which suggests that schema theory does exert some effect on students’ listening comprehension.

Table 4.4 is a comparison of the post-test scores of the Experimental Class and the Control Class.

<table>
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<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC</td>
<td>27</td>
<td>81.8519</td>
<td>5.59329</td>
<td>2.217</td>
</tr>
<tr>
<td>CC</td>
<td>27</td>
<td>77.5556</td>
<td>5.79345</td>
<td></td>
</tr>
</tbody>
</table>

The mean score of the Experimental Class is much higher than that of the Control Class, 81.8519 and 77.5556. And by means of grouped t-test, the t-value (2.217), t>\textless} 2, indicates that the difference between the two groups is significant. As the above table shows, the students of the experimental class have made much progress compared with the students in the control class. So we could conclude that in the Experimental Class, based on the introduction of the background knowledge of the materials and the stimulation of students’ known-knowledge, the students could grasp more ideas of the materials and finish doing the task more successfully than those in the control class. Thus, the new Schema Theory-based teaching mode of English Listening is more efficient than traditional one in improving students’ listening comprehension ability.

G. Results and Discussion

Based on the above analysis, some results can be obtained. Firstly, schema theory-based teaching mode can improve students’ listening ability. Secondly, the new Schema Theory-based teaching mode of English Listening is more efficient than traditional one in improving students’ listening comprehension ability.

During the experiment, the teaching of every lesson was organized and carried out according to the Schema Theory-based teaching mode in the Experimental Class. In the pre-listening phase, some activities were carried out to
help students to find out the aim of listening and provide the necessary background information. These pre-listening activities turned the students’ passive state of mind into an active one and prepared students for the while-listening with a purpose. While listening, the students were trained to use some strategies consciously to activate and use their background knowledge and to achieve better understanding. After listening, some post-listening activities were carried out. Some of these activities were the extensions of those carried out at pre-listening and while-listening work, but some were not related to them at all and present a totally independent part of the listening session. These activities strengthened students’ understanding of information having been heard and helped them store new information which, in turn, serving as background knowledge, prepared them for listening comprehension next time. After the three-months experiment, students’ linguistic and non-linguistic knowledge were both enriched and strengthened. And with the implementation of the Schema Theory-based teaching mode in the listening class, the majority of students in the Experimental Class had become more and more interested in English listening than ever before; and they had developed their awareness of using listening strategies, thus enhancing second language learning. Meanwhile, students had formed a good habit of listening and even they had more confident in class now. So in the post-test, they did much better than in the pre-test.

From table 4.2, we can see that the Control Class students taught in the traditional teaching mode also had evident improvement in the past three months. But it is much lower than the students in the Experimental Class. The reasons may be as follows:

As English majors, the Control Class students spent much time in practicing their listening ability in their daily language learning, and after three months learning in the university, students’ language ability which includes listening ability developed.

In the traditional listening teaching, most of the teachers and learners only put emphasis on basic language points but not the background knowledge. Lack of such kind of knowledge will not only result in the obstacle of communication but also the failure of simple listening. This is also a fatal weakness of the traditional listening teaching and learning. Lack of linguistic competence will undoubtedly hinder students to obtain accurate comprehension. However, it is sometimes the case that students do not have any problems with the passage at the linguistic level, but they still fail to catch what the speakers want to express, which indicates that an effective listening comprehension requires more than the knowledge of the words and grammatical structures. That is why it is not always the case that the more vocabulary and grammar a listener masters, the better listening comprehension he can obtain. More often than not, the failure of comprehension is resulted from problems of insufficient background knowledge, and a large proportion of learner difficulties can be traced to insufficient general knowledge or pragmatic knowledge.

Therefore, in the traditional listening teaching mode, with no activation of background in their mind before listening, students come to the while-listening phase immediately, which caused them feel anxiety and nervous because they know nothing about the listening materials. These psychological and emotional factors will become obstacles in listening and make comprehension more difficult. And with no background activation, students can only use bottom-up processing model which focuses on deriving the meaning of the message based on the incoming language data, from sounds, to words, to grammatical relationships, to meaning. This is a passive and static process and it is always misleading by understanding the word in isolation. In the traditional teaching mode, listening skills and strategies are seldom introduced to students while listening and the post-listening activities are totally neglected. All these can benefit students neither on their language knowledge accumulation nor their improvement of language comprehension. So after three-months learning, the students’ listening comprehension in the Control Class were not developed so much as those in the Experimental Class.

From the above discussion, we can see that the new teaching mode which based on the schema theory pays due attention not only to the linguistic knowledge but to the background knowledge as well. It helps students obtain background activation before listening and use both bottom-up and top-down processing models to achieve better understanding while listening. So the Schema Theory-based teaching mode can help students improve their listening comprehension. It is effective and applicable.

V. CONCLUSION

Listening comprehension is a process of interaction between the listener's background knowledge and the presupposed knowledge in the listening text. Schema theory which emphasizes the importance of background knowledge in the process of listening comprehension provides theoretical foundation for it; based on this, the author designs a Teaching Mode of English Listening, which is a framework of pre-listening, during-listening and post-listening activities for classroom listening teaching. Through the text, the new approach based on schema theory is more effective than traditional approach in improving students’ listening comprehension ability. The study shows that schema theory facilitates listening comprehension and thus can be applied to practical teaching.

Although schema theory contributes greatly to listening comprehension, it is still imperfect, for it cannot provide explicitly the explanation of all the phenomenon or process concerning listening comprehension. For example, it provides no explanation of why one schema rather than another might be selected to guide comprehension and inference. So, the study is limited. Therefore, much broader research in this respect needs to be further studied.
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